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The relationship between students' perceptions of school climate, attitudes towards school, and substance use among early adolescents

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The Relationships Between Students' Perceptions of School Climate, Attitudes Towards School, and Substance Use Among Early Adolescents

by

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ABSTRACT

This study investigated the relationships between early adolescent substance use and perceptions of school climate and attitudes towards school using self-report data from a sample of 443 middle school students. The present study examined school climate and attitudes towards school comprehensively in order to identify important relationships between these classes of variables and multiple types of substance use in early adolescents. The results of the study include that the model of school climate consisting of six factors (fairness, order and discipline, parental involvement, sharing or resources, student interpersonal relations, and student-teacher relations) accurately predicted 11% of the variance in middle school students' alcohol use. Additionally, the study found the model of attitudes towards school consisting of four factors (school satisfaction, academic self-efficacy, school belonging, and goal valuation) accurately predicted 13% of the variance in students' alcohol use and 4% of the variance in students' use of illicit drugs. Substance use was most highly associated with student-teacher relations, academic self-efficacy, and attachment to school. Implications for practice are discussed.

Chapter One

Introduction

Statement of the Problem

Substance use during the middle school years is of particular concern because it is associated with a multitude of negative outcomes in multiple domains (e.g., academic achievement, psychosocial development, and for dependency in adulthood) (Diego, Fields, & Sanders, 2003; Miller, Davies, & Greenwald, 2000; Musher-Eizenman, Holub & Arnett, 2003). The present study will investigate specific environmental predictors related to the initiation of substance use in early adolescence. Specifically, students' perceptions of school climate and students' attitudes towards school have been identified as exerting influence on the initiation of substance use (Kitsantas, Ware, & Martinez-Arias, 2004; Perkins & Jones, 2004; Pilgrim, Abbey, & Kershaw, 2004).

Research has demonstrated that substance use by adolescents has a negative impact on their well being as well as substantial costs to society as a whole. Negative consequences of engaging in substance using behaviors in adolescence include decreased academic achievement (Abdelrahman, Rodriguez, & Ryan, 1998), psychosocial consequences such as increased levels of apathy and withdrawl (Molidor, Nissen, & Watkins, 2002), and increased risk for developing a substance use disorder (SUD) as an adult (Offord & Ogborne, 2000). Additionally, adolescents who engage in substance

using behaviors are at an increased risk for suicidal behavior (Hoven, Liu, Cohen, Fuller, & Shaffer, 2004).

An alarming number of adolescents are at-risk for such problems. Data collected from the 2003 Youth Risk Behavior Surveillance System pertaining to substance use among adolescents in grades 9-12 indicates that nationally, 27.8% had consumed alcohol prior to the age of 13 (Centers for Disease Control, 2003). Additionally, 9.9% of adolescents reported trying marijuana prior to the age of 13. Regarding high school students' rates of using illicit substances at some point in their lives, adolescents indicated using one or more times in their lifetime: (a) cocaine or crack (8.7%); (b) inhalants such as glue and gasoline vapors (12.1%); and (c) ecstasy (MDMA) (11.1 %). Prior research has demonstrated that adolescents who use illicit substances at an early age (prior to age 13) have an elevated risk for developing lifelong SUDs compared to adolescents who begin using illicit substances later in life (Miller, Davies, & Greenwald, 2000). Given the known risks involved, it is important to identify the predictors of early-onset substance use so that appropriate preventative measures can be designed.

Recent research has examined the role of SES in adolescents' substance use. Studies focusing on affluent adolescents and rates of substance use compared to less-affluent adolescents have identified higher levels of cigarette, alcohol, marijuana, and other illicit substances among affluent adolescents (Luthar & Ansary, 2005; Luthar & D'Avanzo, 1999). While the research base in this area is small, its findings indicate that financial security is not a protective factor against negative behaviors including use of illicit substances.

Extant research has focused on risk factors associated with adolescents' peer groups, families, and beliefs about their ability to resist substances. Regarding peers, students who affiliate with rule-breaking and substance using peers tend to initiate substance use themselves (e.g., Von Sydow, Lieb, Pfister, Hofler, & Wittchen, 2002). Parental involvement, supervision, and high expectations are factors that protect against use of alcohol during the early adolescent years (Simmons-Morton & Chen, 2005). With respect to cognitive variables, expecting positive outcomes from substance use and perceiving one's ability to resist engaging in substance use are risk factors for substance use (Ellickson & Hay, 1990; Musher-Eizenman, Holub, & Arnett, 2003).

Educational factors that have been found to predict students' substance use include academic underachievement (e.g., Bryant, Schulenberg, Bachman, O'Malley, & Johnson, 2000), students' attitudes towards school (e.g., Bryant & Zimmerman, 2002), and students' perceptions of school climate (e.g., Perkins & Jones, 2004). Previous studies of schooling experiences in relation to adolescent substance use are limited by their examinations of aspects of school climate (e.g., perceived teacher support, perceived safety of the school environment) and specific student attitudes towards learning (e.g., school satisfaction, educational aspirations) in isolation. Additionally, most research has examined only one type of substance (e.g., alcohol, tobacco, marijuana) as the outcome variable (Perkins & Jones, 2004; Coker & Borders, 2001). Nevertheless, extant research has elicited valuable information demonstrating that students' perceptions of the climate of their school do have an impact on outcomes such as the degree to which the students engage in substance using behaviors. Additional research is needed to examine multiple

aspects of school climate simultaneously in predicting multiple types of substance use in early adolescents.

School Climate

Numerous researchers have attempted to conceptualize school climate in various ways (Anderson, 1982; Fischer & Fraser, 1991; Gottfredson, 1991; Haynes, Emmons, & Ben Avie, 1997; Hoy, Tartar, & Kottkamp, 1991; Stockard & Mayberry, 1992). As a result, a consensus definition of school climate remains elusive within the literature. However, many researchers agree that school climate is a multidimensional construct which is comprised of organizational, instructional, and interpersonal dimensions (Brookover, Beady, Flood, Schweitzer & Wisenbaker, 1979; Fraser, 1989; Roeser, Eccles, & Sameroff, 2000). In the current study, school climate is conceptualized consistent with the definition developed by the School Development Program (SDP) of Yale (Haynes, Emmons, & Ben-Avie, 1997). Haynes et al. purport the important aspects of school climate, from the perspective of middle school students, include (a) *fairness* (the equal treatment of students regardless of ethnicity and socioeconomic status); (b) *order and discipline* (appropriateness of student behavior in the school setting); (c) *parent involvement* (frequency of parent participation in school activities); (d) *sharing of resources* (equal student opportunity to participate in school activities, materials, and equipment); (e) *student interpersonal relations* (the levels of caring, respect, and trust that exists among students in the school); and (f) *student-teacher relations* (the level of caring, respect, and trust that exists between students and teachers in the school).

The Haynes et al. conceptualization of school climate was chosen because it is one of the most frequently referenced and empirically sound operationalizations of school climate. This model was derived from a comprehensive literature review of the most salient aspects of a school's climate instead of relying on a pre-defined theory. The product of this research was the School Climate Survey (SCS) which measures school climate comprehensively.

Attitudes Toward School

In the current study, attitudes toward school are operationalized as the set of students' beliefs that are correlated with academic achievement/underachievement. Specifically: (a) *academic self-perceptions* indicated by one's global beliefs of self-worth associated with one's perceived self-confidence, (b) *school belonging* indicated by one's self-reported interest and affect towards his or her school, (c) *goal valuation* indicated by the degree to which one engages in and responds to achievement oriented tasks, and (d) *school satisfaction* indicated by the degree to which one enjoys school. Taken together, attitudes towards school is a multidimensional construct encompassing students' beliefs regarding their ability to perform in school, enjoyment of school, and attachment to their current school.

Substance Use

This study focuses on adolescents, for whom it is unlawful to engage in numerous behaviors that are not unlawful for adults (e.g., consuming alcohol or using tobacco products). As a result, all substances referred to in this study are illicit substances when used by adolescents. Substance use within this study encompasses a wide range of illicit substances. Alcohol, tobacco and other drugs are frequently categorized as distinct

categories of substance use. This study will examine drug class groups in three categories: (a) alcohol, (b) tobacco, (c) other drugs (i.e., marijuana, ecstasy, heroin, cocaine, crack, abuse of peers' non-prescribed methylphenidate (MPH, Ritalin®), and controlled prescription medications such as Oxycontin® and Xanax®.)

Purpose of the Current Study

The current study will expand on the aforementioned research on the relationship between school climate and substance use (i.e., Perkins et al., 2004; Coker et al., 2001; Kitsantas, et al., 2004). As previously mentioned, the existing body of literature has examined students' perceptions of aspects of school climate and one or few of their attitudes towards school in isolation. Additionally, research has not examined substance use comprehensively (e.g., examined only one substance such as alcohol). The present study will examine school climate and attitudes towards school comprehensively in order to identify important relationships between school climate, attitudes towards school, and multiple types of substance use in early adolescents.

The current study will contribute to the literature on adolescent substance use by providing the first investigation of school climate examined comprehensively as well as the complete range of attitudes towards school. The study will examine the strength of the relationships between school climate, attitudes towards school, and multiple types of substance use among early adolescents. Identifying which aspects of school climate and attitudes towards school are most predictive of various types of substance use will aide in developing and implementing effective prevention efforts as well as providing valuable information for future research.

In sum, the research questions answered in this study are as follows:

1. In a high SES middle school, what is the rate of student substance use with respect to the following drug class groups:
    A) Frequency of alcohol use
    B) Tobacco use (cigarettes and smokeless tobacco)
    C) Drugs: marijuana, ecstasy, heroin, cocaine, crack, abuse of peers non-prescribed methylphenidate (MPH, Ritalin), and controlled prescription medications (Oxycontin®, Xanax®, etc)?
2. What are the inter-correlations among types of substances (as defined in question one) and the following school factors:
    A) School climate (e.g., fairness, order and discipline, parent involvement, sharing of resources, student interpersonal relations, student-teacher relations)
    B) Attitudes towards school (e.g., academic goal valuation, academic self-efficacy, school belonging) and satisfaction with school?
3. Which of the following perceptions of school climate are most predictive of early adolescent substance use (i.e., alcohol, tobacco, and drugs)?
    A) Fairness
    B) Order and discipline
    C) Parent involvement
    D) Sharing of resources
    E) Student interpersonal relations
    F) Student-teacher relations?

4. Which of the following attitudes towards school are most predictive of early adolescent substance use (i.e., alcohol, tobacco, and drugs)?

    A) Academic self-efficacy

    B) School belonging

    C) Goal valuation

    D) School satisfaction?

5. Are perceptions of school climate or global attitudes towards school more predictive of the following substance use categories: (alcohol use in the past year, tobacco use in the past year, and use of other drugs in the past month)?

CHAPTER TWO

Review of the Literature

The following literature review begins with a discussion of substance abuse disorders as well as the prevalence of substance use in childhood and adolescence. Negative outcomes associated with adolescent substance use are reviewed. Then, risk factors for the initiation of substance use are discussed. Finally, school variables related to substance use are presented along with the preliminary research on the relationships between school climate and attitudes towards school and adolescent substance use.

Substance use by early adolescents has a negative impact on the well-being of the individual as well as incredible costs to society as a whole. Early adolescents who engage in substance using behaviors are at an increased risk for negative consequences such as social-emotional problems, health problems, and lower social competence (Molidor, Nissen & Watkins, 2002). Early adolescent substance use and abuse is also a predictor of adult substance abuse (Miller, et al., 2000; Newcomb & Bentler, 1988). Clearly, early adolescence is a critical time of development during which children are at a developmental age that is particularly vulnerable to negative influences.

Substance abuse disorders are defined by the Diagnostic and Statistical Manual-IV (DSM-IV-TR, American Psychiatric Association, 2000) as "a maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same twelve-month period:

(a) current substance use resulting in a failure to fulfill major role obligations at work, school, or home, (b) recurrent substance use in situations in which it is physically hazardous (e.g., driving an automobile or operating a machine when impaired by substance use), (c) recurrent substance-related legal problems (e.g., arrests for substance-related disorderly conduct), and (d) continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the (e.g., arguments with spouse about consequences of intoxication, physical fights)." Commonly abused substances as described by the DSM-IV-TR are grouped into eleven classes: alcohol, amphetamine or similarly acting sympathomimetics, caffeine, cannabis or marijuana, cocaine, hallucinogens, inhalants, nicotine, opioids, phencyclidine (PCP) or similarly acting arylcyclohexylamines, sedatives, hypnotics, and anxiolytics (American Psychiatric Association, 2000). Conversely, substance use (as opposed to abuse) is commonly defined as the intake of a licit or legal substance without substantial negative side effects that are commonly associated with substance abuse disorders.

Prevalence of Substance Use in Childhood and Adolescence

Results from the 2003 Youth Risk Behavior Surveillance System (Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System, 2003) pertaining to substance using behaviors among early adolescents (age 13 and younger) indicate that nationally, 27.8% of children consumed their first drink of alcohol other than a few sips prior to age 13. Eighteen percent reported smoking a cigarette for the first time prior to age 13. Regarding the use of marijuana, results indicate that 9.9% had tried marijuana prior to age 13.

Lifetime use prevalence rates of other illicit substance categories from the survey indicate that 74.9% of adolescents have used alcohol, 58.4% have used tobacco, 40.2% have used marijuana, 8.7% of adolescents in grades nine to twelve have used a form of cocaine (powder, crack, or freebase) one or more times during their lifetime, 12.1% have used an inhalant (sniffed glue, inhaled the contents of aerosol spray cans, inhaled gasoline vapors, or paint vapors) in order to get high, 3.3% reported using heroin one or more times, 7.6% reported using methamphetamines one or more times, 11.1% have used ecstasy (MDMA) one or more times, 6.1% of adolescents have used illicit steroids without a prescription one or more times during their lifetime, and 3.2% of adolescents have injected an illicit substance into their body one or more times during their lifetime. Additionally, 28.7% of adolescents reported being offered, sold, or given an illegal substance on school property during the last 12 months.

A paucity of research focusing specifically on affluent adolescents' rates of substance use compared to peers of low or average SES has been conducted. However, the limited research on affluent adolescents and substance use has identified higher levels of use of cigarettes, alcohol, marijuana, and other illicit substances compared to their less-affluent peers (Luthar & D'Avanzo, 1999). More recent research by this research team supports these findings.

Luthar and Ansary (2005) examined 488 10^{th} grade affluent adolescents and adolescents living in poverty. Approximately half the adolescents were drawn from a suburban high school and the other half from an inner city high school characterized as impoverished. To differentiate between the affluent school and the impoverished school, the researchers used median household incomes and median education level among

families living in each respective area. To measure substance use, a grid modified from the Monitoring the Future Survey (Johnston, O'Malley, & Bachman, 1984) was utilized. Adolescents indicated on a scale from "never" to "40+" how many times they used specific substances in the preceding year. Substances measured included cigarettes, alcohol, marijuana, inhalants, LSD, crack, and cocaine. The affluent adolescents reported significantly more substance use than the inner-city adolescents. Specifically, with regard to cigarette use the affluent adolescents reported using a mean of 2.08 (*SD* = 2.41) times in the last month for females and 1.89 (*SD* = 2.46) times for males. In contrast, the less affluent female adolescents reported .84 (*SD* = 1.53) and male adolescents 1.10 (*SD* = 1.80). Regarding alcohol use, the more affluent adolescent females reported using alcohol a mean of 1.94 (*SD* = 1.81) times in the last month and males reported 1.82 (*SD* = 1.95). The less affluent female adolescents reported using alcohol a mean of 1.35 (*SD* = 1.54) times per month and males 1.54 (*SD* = 1.79). Regarding marijuana use, the more affluent adolescent females reported using marijuana a mean of 1.10 (*SD* = 1.72) times and males 1.45 (*SD* = 2.20). The less affluent female adolescents reported using marijuana a mean of .78 (*SD* = 1.74) times and males .90 (*SD* = 1.77). The combination of the findings that affluent adolescents engaged in more stealing behavior in order to obtain money along with higher self-reported use of licit and illicit substances is notable. Findings contradict many commonly held stereotypes about affluent and impoverished adolescents. While the research base on the role of SES in adolescent substance use is small, the aforementioned findings indicate that high-SES adolescents are engaging in substance using behaviors at rates significantly higher than less affluent peers.

Overall, both early and later adolescents are engaging in substance using behaviors with multiple illicit substances. Of particular concern are adolescents who initiate substance use prior to the age of 13, as it has been documented that the earlier one initiates substance use, the greater the risk for developing a substance abuse disorder later in life. The next section will discuss negative outcomes associated with substance use by adolescents.

Negative Outcomes Associated with Adolescent Substance Use

The research literature on substance use trajectories indicates clear associations between early onset substance use and negative outcomes, including a strong correlation between age at first use of an illicit substance and negative outcomes later in life. For example, the age at first drink (AFD) prior to 15 years of age is strongly related to an individual developing alcoholism as an adult (Andreasson, Allebeck, Brandt, & Romelsjo, 1992; Boyle, Offord, Racine, Szatmari, Fleming, & Links, 1992; DeWit, Adlaf, Offord, & Ogborne, 2000; Kandel, Davies, Karus, & Yamaguchi, 1986; Kaplan, Martin, Johnson, & Robbins, 1986; Mills & Noyes, 1984; Robins & Przybeck, 1985; Yamaguchi & Kandel, 1984).

Biopsychosocial consequences in adolescence. Adolescents' brains are still developing, particularly in the early adolescent years. Brown, Tapert, Tate, Granholm, and Delis (2000) conducted a study of alcohol dependent adolescents (33 students who met criteria for DSM-IV alcohol dependence) without a diagnosed dependence on other substances to examine the associations between heavy alcohol use and neuropsychological functioning compared to a control group of individuals without substance use (N=24). The samples were matched on age (15-16 years), gender, SES,

educational attainment, and family history of drug and alcohol dependence. A battery of neuropsychological measures was given to both groups of participants, with the alcohol-dependent group administered the measures after three full weeks of detoxification in an inpatient unit. The alcohol dependent group demonstrated lower performance in the areas of verbal and nonverbal retention of information as well as in the area of recognition discriminability (the ability to discriminate between various objects, photos, and alphanumeric symbols).

Tapert, Granholm, Leedy, and Brown (2002) conducted a longitudinal study of the effects of substance use in adolescence, examining the effects of moderate to heavy alcohol or substance use after neuromaturation was fully complete. This study followed a cohort (N = 122) of adolescents from ages 13-17 years to age 30 which were part of larger studies by Brown, Vik, and Creamer (1989) and Brown, Myers, Mott, and Vik (1994). Subgroups included (a) adolescents who had no history of substance use (community group, n = 26) and (b) adolescents who met criteria for DSM-IV diagnosis of alcohol dependence or dependence of at least one illicit drug (clinical group, n = 47). Neuropsychological evaluations, structured clinical interviews, and the Customary Drinking and Drug Use Record (CDDR: Brown et al., 1998) were administered to both groups at baseline and at the 6 month, 1 year, 2 year, 4 year, 6 year, and 8 year follow-ups. At the 8-year follow-up, adolescents in the clinical sample performed significantly worse on sustained attention as well as memory functioning in the specific areas of verbal learning and accurate recognition of previously learned material presented along with distractor stimuli. Notably, the sample size in the current study was relatively low due to stringent inclusion and exclusion criteria. Additionally, it is very difficult to determine

which substance contributed most to the findings as many of the adolescents engaged in the use of more than one substance on a regular basis. However, a strength of this research is that nearly 90% of the original clinical sample was retained and tested during multiple time-points. Importantly, the findings of this study are consistent with previous literature (e.g., Brown et al., 2000).

In a review of current literature on the effects of adolescent substance use, Molidor, Nissen and Watkins (2002) identified effects including decreased motivation, apathy, withdrawal, lethargy, lack of long-range goals, low academic achievement, and loss of interest in previously held occupational goals. Additionally, a low internal locus of control, self-derogation, alienation, and estrangement from family and peers were psychological consequences associated with early onset substance use.

Overall, these studies underscore the effects of substance use on psychosocial and neuropsychological functioning, which is linked to the ability to function fully in activities of daily living as well as academically in school. Animal research has further supported the long-term effects of substance use on the still maturing brain. White (2000) demonstrated that adolescent-aged animals are more sensitive to the learning and memory impairments produced by moderate to heavy alcohol exposure, yet less sensitive to the sedation and temperature regulation effects of alcohol than non-alcohol exposed animals. This study attempted to mimic the binge drinking patterns that are self-reported by many adolescents in the U.S. Adolescent-aged rats which had been given large quantities of alcohol demonstrated more severe impairments on a spatial learning memory task than rats that only ingested alcohol during adulthood. These findings are consistent with other studies which found that chronic alcohol use in adolescent-aged rats

alters sensitivity to alcohol, induced motor dyscoordination, and produced damage in several frontal regions of the brain (Crews, 2000; Spear, 2002).

While the long-term effects of substance use in adolescence are not yet entirely understood, existing research convincingly points to negative effects in the development of adolescents who engage in substance use prior to adulthood. Animal research has shed light on the effects of heavy alcohol use while the neurocognitive structures of the brain are still developing, suggesting similar outcomes for humans given that the brains of humans and rats operate in similar fashions in many ways. These lines of research underscore the long-term effects on brain functioning for adolescents who begin using illicit substances at early ages (i.e., prior to 13 years of age).

Suicidality. While many factors are involved in an adolescent's decision to attempt or complete suicide, current research has examined the role played by adolescent substance use. Wu, Hoven, Liu, Cohen, Fuller, and Shaffer's (2004) study on substance use and suicidal ideation is unique in that it utilized a representative sample from the community (N = 1,458; ages 9-17) instead of a clinical sample. Alcohol abuse/dependence among adolescents with suicidal ideation was four times greater than that of adolescents without suicidal behaviors, and alcohol abuse/dependence among adolescents who have attempted suicide was twelve times that of adolescents without suicidal behaviors. Tobacco products were found to be another substance that adolescents used to self-medicate; use of tobacco was associated with both suicidal ideation and attempts, but at a rate lower than with alcohol (two times that of adolescents without suicidal behaviors). Incidentally, the authors did not find a strong relationship between drug use and suicidal behavior, possibly due to the small number of adolescents reporting

using illicit drugs in their sample. However, another study conducted in Germany that utilized a sample of older adolescents (ages 14-24) found that drug abuse and dependence significantly predicted suicidal attempts whereas alcohol and cigarette use/dependence were not significant (Wunderlich, Bronisch, & Wittchen, 1998). The differences in ages between these two samples may contribute to the discrepant findings, due to the increased rate of drug use among older adolescents. Taken together, these studies highlight the importance of studying specific substances, and the associations between substances and suicidal behavior.

Psychiatric disorders in adulthood. One long-term consequence of early initiation of substance use is the development of a substance-use disorder in adulthood (Grant & Dawson, 1997). Adolescents who initiate alcohol use prior to the age of 14 have a 41% chance of developing alcohol dependence at some point in their lifetime as compared to individuals who wait until they are of legal drinking age which reduces the risk to 10%, matching epidemiological rates of alcohol dependence in the general population (Grant & Dawson, 1997). Anthony and Petronis (1995) utilized retrospective data to show the strong relationship between age at first use of an illicit substance and the risks associated with early onset substance use later in life. These researchers found that adults who reported substance use prior to age 13 were twice as likely to have a substance use disorder than adults who reported their first substance using episode occurring after the age of 17. These findings speak to the particular need to prevent people from engaging in substance using behaviors at a time in development when the risk is greatest for problems later in life. Additionally, the findings suggest that the major risk factors for developing

a substance use disorder in adulthood may already be established by behaviors in which early adolescents engage.

In addition to increased risk of developing a substance abuse disorder later in life, substance use in early adolescence may result in a multitude of other negative outcomes in adulthood that are associated with continued substance using behavior. Khantazin and Treece's (1985) review of adult clinical and epidemiological literatures suggest that between 50-80% of all persons with a substance abuse disorder have also met criteria for at least one other psychiatric diagnosis. The most common psychiatric comorbidities are antisocial personality disorder, depression, and anxiety disorders. Further, the age of onset of these comorbid disorders with a substance use disorder is generally prior to age 20 (Christie, Burke, Regier, Rae, Boyd, & Locke, 1988).

Gil, Wagner and Tubman (2004) conducted a longitudinal study of 6,700 adolescents who were followed from middle school to early adulthood. The researchers examined the relationship between substance use in middle school to adult substance use along with co-occurring psychiatric disorders. Substance use in early adolescence was measured by the Monitoring the Future and National Household Studies surveys (Johnston, O'Malley, & Bachman, 2002) which asked subjects about levels of lifetime substance use. Adolescents were placed into three categories of substance use: *abstinence* (never used illicit substances), *experimentation* (1-9 lifetime drinks of alcohol, one-time use of other substances such as marijuana), and *regular use* (defined as lifetime alcohol use of 10 or more times and illicit drug use of 6 or more times). Substance use disorders and psychiatric disorders in early adulthood (ages 19-21) were assessed using the Composite International Diagnostic Interview (CIDI: Andrews & Peters, 1998) which

has been shown to be a reliable and valid method for assessing substance use disorders (Cottler, Grant, & Blaine, 1997; Hasin, Grant, & Cottler, 1997). Findings included a strong relationship between early adolescent substance use and subsequent young-adult substance use disorders; the rate of adult substance use disorders was nearly 60% in the regular substance use group, higher than in the experimental group (42.7%), and the abstainers group (26.1%). Stated differently, adolescents who were regular users of illicit substances in middle school were 1.5 times more likely to have a diagnosable substance use disorder in early adulthood than adolescents who were classified as experimenting with substances. Conversely, adolescent abstainers were approximately half as likely to develop a substance use disorder as a young adult. Additionally, higher rates of psychiatric disorders (e.g., depression, affective disorders, and anxiety disorders) were found among the adolescents who reported engaging in substance using behavior in late childhood or early adolescence. The relationship between early adolescent substance use and psychiatric diagnoses varies as a function of race and ethnicity. Regular early adolescent substance use is related to young-adult psychiatric disorders most strongly among non-Hispanic white individuals. Overall, research has shown that engaging in substance use as an adolescent is an aggravating factor for increasing risk of psychiatric difficulties during adulthood. Findings are particularly applicable to non-Hispanic white individuals' and less clear for African American and foreign-born Hispanic populations due to the lack of representation of these groups in study samples. However, the degree of risk of engaging in substance use at an early age for these populations increases the risk of developing psychiatric disorders in early adulthood more than non-Hispanic white

individuals. The reasons for this may go beyond the actual use of illicit substances to the contextual factors that substance use is occurring in (e.g., poverty and family difficulties).

Clearly, multiple negative outcomes are associated with adolescent substance use spanning from immediate negative consequences (e.g., increased risk for suicide) to long-term negative consequences (e.g., increased risk for developing a life-long substance use disorder). Additionally, school-related negative outcomes are also associated with adolescent substance use, one of which is academic achievement.

The Impact of Substance Use on Academic Achievement

Substance using behavior in adolescence has a negative impact on academic achievement. Diego, Fields and Sanders' (2003) study of 89 high school seniors found that adolescents who engage in substance using behaviors including smoking cigarettes, consuming alcohol, and smoking marijuana were more likely to have lower grade point averages. Specifically, the partial correlations for each respective substance in a regression model with the dependent variable of grade point average found for (a) cigarette use -.22, (b) alcohol use -.36, and (c) for marijuana use -.40, $p < .001$).

Similar results were yielded from a large study of younger children. Abdelrahman, Rodriguez, and Ryan (1998) found in a study of 2,849 middle school students in 7th and 8th grades residing in the Northeastern United States that students who engaged in substance using behaviors were far more likely to have significantly lower grades than students who did not. Specifically, students who received "D" and "F" grades were six times more likely to smoke cigarettes, four times more likely to use alcohol, and eight times more likely to abuse drugs compared to students who earned "A" and "B" grades in their study. Abdelrahman and colleagues argue a causal path from

substance use to poor academic performance. Alternatively, other studies have identified academic failure as a strong predictor of substance abuse (Jessor, 1976; Robins 1980). While the exact directional relationship between substance use and academic underachievement is unclear, research strongly supports a relationship between these variables even when accounting for other factors such as socioeconomic status and parental support (Luthar & Ansary, 2005).

Adolescents who engage in substance using behaviors early on are far more likely to drop out of school prior to graduation (Ekstrom, Goertz, Pollack, & Rock, 1986; Jordan, Lara, & McPartland, 1996; Lynskey & Hall, 2000; Rumberger, 1987). The costs of dropping out are significant to both the adolescent in terms of negative outcomes later in life as well as to society in terms of lost tax revenues and the expenses of public assistance programs and increased rates of incarceration. Specifically, students who drop out of school consistently earn far less than their peers who finish their K-12 education as well as utilize public assistance programs such as welfare and food stamps at an increased rate (Ysseldyke, Algozzine, & Thurlow 1992). Further, dropping out of school is correlated with higher probability of incarceration at some point during one's lifetime. In fact, 82% of incarcerated inmates are high school drop outs (Ysseldyke et al., 1992). Aloise-Young and Chavez (2002) found in a study of 1,812 high school students, that one-third of students who recently dropped out of school cited substance using behaviors as an important contributor to their decision to leave school early. Further, adolescents who engage in substance using behaviors early on and do complete high school are still at an increased risk for not attending or not completing a college education (Barber, Eccles & Stone, 2001; Arata, Stafford & Tims, 2003).

Substance use by adolescents has both immediate negative consequences (e.g., lower GPA, nonattendance of school) and long-term consequences (e.g., increase likelihood of dropping out of high school). Research is inconclusive on the direction of causality between academic achievement and substance use. Nevertheless poor academic achievement is linked with numerous long-term negative outcomes (e.g., incarceration) as is substance use (e.g., increased risk of psychiatric disorders and suicidality). Therefore, it is important to identify specific risk factors associated with adolescent substance use initiation.

Risk Factors for Substance Use

Peer influences. Numerous risk factors for adolescent substance use have been identified in the literature. Affiliation with negative peer influences is strongly associated with increased substance use. Peers influence adolescents' decisions to engage in substance using behaviors by altering personal attitudes, serving as role models (both positive and negative), and acting as a source of access which sets the stage for experimentation with substance using behaviors (Adler & Lotecka, 1973). Perceptions of peers engaging in substance using behaviors, whether real or imagined, also is a primary predictor of an adolescents' initial decision to engage in substance using behaviors as well as allowing the behavior to continue (Von Sydow, Lieb, Pfister, Hofler, & Wittchen, 2002).

Flannery, Vazsonyi, Torquati and Fridrich's (1994) study of 1,170 6th and 7th grade students found that interpersonal factors such as peer pressure to engage in alcohol using behaviors as well as the presence of peer alcohol use were better predictors of early adolescent substance use than intrapersonal factors such as self-efficacy, impulsivity,

aggression, anxiety, and depression. These findings were also supported by researchers who studied the influence of peers on the use of cigarettes and other illicit substances such as marijuana (Tolson & Urberg, 1993; Bailey & Hubbard, 1991).

A study that specifically investigated the role of adolescents' attitudes towards substance use and peer influences on substance using behavior in early adolescents (N = 213, ages 12-15 years) and on older adolescents and young adults (N = 219, ages 18-22 years) found that the younger group reported lower levels of resistance self-efficacy (ability to resist peer pressure) regarding substance use (Musher-Eizenman, Holub & Arnett, 2003). Additional studies found that early adolescents in junior high school engaged in substance using behaviors primarily for social reasons (e.g., to increase participation in a desired peer group) and older adolescents and young adults engaged in substance using behaviors for personal reasons (e.g., to increase feelings of extroversion) (Haden & Edmundson, 1991). Other research has confirmed that with specific commonly used drugs such as marijuana, peer influences were the strongest predictor of an early adolescent's decision to use marijuana and that the potency of peer influence diminishes as the early adolescent ages and gains more personal autonomy (Bailey & Hubbard, 1991). In sum, peers are strong predictors of substance use during early adolescence.

Parental Influence. Another identified risk factor for substance use in early adolescence involves poor parenting behaviors, as illustrated in a large scale study of 6-9th grade students (Simmons-Morton & Chen, 2005). In this longitudinal study of 2,453 students, parental involvement, monitoring and expectations for early adolescents protected against engaging in alcohol intake. Specifically, adolescents who reported

higher degrees of parental involvement had a negative relationship with progression of quantity of drinking (-.42, p <.01), monitoring (-.48, p < .01), and expectations (-.58, p < .01). These findings underscore the importance of strong parental support in the early adolescent years, particularly to protect against the possible negative peer influences that increase in intensity during the middle school years and continue through the early years of high school. In a similar line of research, Mounts (2002) found that behaviors consistent with an authoritative parenting style protected 9th and 10th grade students against engagement in substance using behaviors across different parenting styles. Notably, much of the research in the literature on the direct effects of parenting behaviors and negative adolescent problem behavior, including substance use, has been conducted with high school students and not younger age groups. Researchers such as Mounts (2002) and Simmons-Morton et al. (2005) suggest that the effects of parenting behavior are likely to be different for early and middle adolescents than for later adolescents due to various factors including the greater susceptibility of peer influences in early adolescence.

Cognitive variables. Within-person factors also influence an adolescent's decision to use substances. One such variable that researchers Musher-Eizenman, Holub and Arnett (2003) investigated was outcome expectancies (e.g., if I use alcohol it will make me more popular) among early (ages 12-15) and older (ages 18-22) adolescents. To assess this construct, a scale was created that included three items for each of three substances (alcohol, cigarettes, marijuana). Each substance included items that investigated a positive outcome expectancy such as "by using this drug your friends will like you more" and two negative outcome expectancies such as "using this substance can

make your grades go down." Primary findings were that outcome expectancies are more important for early adolescents than for later adolescents. Explanations of these findings include the hypothesis that early adolescents are likely in the acquisition phase of alcohol and substance use which is described by Oei and Baldwin (1994) as deliberate and conscious during the acquisition of substance using behaviors. Older adolescents are more likely to be in the second phase of the two process model of substance use and abuse the maintenance phase, in which the continuation of these behaviors takes over and the decisions to use substances have been reinforced for some time and become automatic.

In light of the strong effects of negative peer influences during early adolescence, the impact of outcome expectancies is exacerbated. If an adolescent perceives that engaging in substance use will increase peer cohesiveness or increase his or her popularity, research suggests that he or she may be far more likely to begin using substances (Adler & Lotecka, 1973; Chen, Kandel & Davies, 1997; Clayton, 1992; Warner & White, 2003).

Another cognitive variable pertaining to early adolescents is self-efficacy, which is defined by Ellickson and Hays (1990) as "the extent to which an individual feels capable of achieving a desired outcome." Resistance self-efficacy is the degree to which an individual feels capable of resisting engaging in a certain behavior. Research on resistance self-efficacy supports the development of resistance self-efficacy skills in children and adolescents as a preventative measure. The predictive strength of resistance self-efficacy depends on the type of substance use and age of the adolescent. For example, Ellickson and Hay's (1990) study of 1,261 8th and 9th grade students found that

the relationship between resistance self-efficacy and perceived peer pressure was greatest for alcohol (-.45, $p > .001$) and weakest for marijuana (-.21, $p < .10$). Specifically, the greater the level of resistance self-efficacy one has, the less likely one is to use alcohol when confronted with peer pressure. However, the same was not found for marijuana. The level of resistance self-efficacy that an adolescent had did not have a significant effect on marijuana use in this sample. Further research is needed to examine the relationship between resistance self-efficacy to specific illicit substances.

In sum, there are multiple risk factors associated with adolescent substance use initiation. Peers exert a strong influence on early adolescents' decisions to engage in substance using behaviors particularly. However, parental influence (e.g., degree of parental support) and internal, cognitive variables (e.g., resistance self-efficacy) also exert influence on initiation of substance use by adolescents. School variables exert influence on adolescent substance use in both a positive and negative direction. Specifically, as previously discussed, academic underachievement is related with initiation and continuance of substance use among adolescents. Identifying school-related protective variables such as attitudes towards school and school climate are particularly important to assist in thwarting or delaying the onset of substance use among adolescents.

School Variables Related to Substance Use

Academic underachievement. Given the negative effects of early onset substance use as previously discussed, it is imperative that comprehensive and empirically sound prevention models are advanced. The general school experience of adolescents should be a central component of such prevention efforts as research has strongly identified this as

an area of risk for future substance use. As noted previously, school variables such as academic achievement have a strong relationship with adolescent substance use (Bryant, Schulenberg, Bachman, O'Malley, & Johnson, 2000; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995). Adolescents who have negative school experiences (e.g., academic underachievement) in general are more likely to engage in substance using behaviors early on than adolescents who have positive school experiences (e.g., achieve academically) (Bachman, Johnston, & O'Malley, 1981; Bryant, et al., 2000; Bryant & Zimmerman, 2002; Diem, McKay, & Jamieson, 1994; Hawkins, Catalano, & Miller, 1992; Petraitis, Flay, & Miller, 1995; Smith & Fogg, 1978).

Jessor, Turbin, and Costa (1998) conducted a study utilizing self-report measures of both proximal (e.g., health related) and distal (e.g., academic achievement, involvement in prosocial activities, level of popularity, and positive attitudes toward school) factors in adolescents and the relationship to maladaptive behaviors, including substance use. One-thousand four hundred and ninety three adolescents (grades 7-9) in a diverse urban school district took part in this study. Similar to the findings of Diego et al. (2003), academic achievement was one of the most strongly related variable (-.34, $p < .001$) to adolescents engaging in substance using behaviors as compared to level of popularity and level of self-reported depressive symptoms.

Research has suggested cigarette use by adolescents increases the risk for poor academic achievement as defined by lower grade-point-averages (GPA). Bryant and colleagues (2000) examined the relationship among self-reported academic achievement (GPA), school bonding, and cigarette use as measured by the frequency of smoking during the past 30 days. School bonding was measured by three questions relating to the

degree to which adolescents' liked school, disliked school, and were interested in schoolwork. Their sample consisted of 3,056 adolescents in grades 8-12. Using structural equation modeling, the researchers found a relationship between poor academic achievement and cigarette use. Specifically, lower levels of academic achievement appeared to contribute to increased reported cigarette use. Additionally, students who reported lower levels of school bonding reported higher levels of cigarette use. These findings are consistent with previous research which found that adolescents with lower grade point averages tend to begin and continue with cigarette use more than their peers with higher grade point averages (Brunswick & Messeri, 1984; Schulenberg, Bachman, O'Malley, & Johnston, 1994). Similar results were yielded in Luthar and Ansary's (2005) research, in which they found that cigarette use, but not alcohol or marijuana use, was highly associated with the grades of high-income students.

Bryant, Schulenberg, O'Malley, Bachman, and Johnston (2003) conducted a six-year multi-wave national longitudinal study (N = 1,897, ages 14-20) to examine the specific academic factors that are most important in preventing the initiation of substance use. Findings are consistent with previously cited studies regarding the relationship between academic achievement and substance use in adolescence. Additionally, the results of this study provide support for including motivation and attitudes towards school in models of substance use and academic underachievement. Over the course of the study, when adolescents reported higher levels of interest in school, effort in school, school bonding, and plans for college, they were significantly less likely to report concurrent use of cigarettes and marijuana. However, in this study, school bonding and plans for college were not protective factors for alcohol use among students with high

academic achievement. In addition to confirming the relationship between academic achievement and substance use among adolescents, this study also demonstrated that attitudes towards school are important correlates of substance use.

Attitudes towards school. Adolescents who have a combination of negative school experiences including academic underachievement and negative attitudes towards school are at particular risk for engaging in substance use (Jessor & Jessor, 1977; Larson, 2000). Adolescents with high levels of academic achievement and who hold positive attitudes towards school (e.g., report enjoying school) are less likely to engage in substance use than peers who do not hold these self-perceptions (Brook, Whiteman, Gordon, & Cohen, 1986; Bryant & Zimmerman, 2002; Hawkins & Weis, 1985; Roeser, Eccles, & Freedman-Doan, 1999; Scheier & Botvin, 1998; Smith & Fogg, 1978; Voelkl & Frone, 2000).

Voelkl and Frone (2000) examined identification with school (i.e., extent to which students feel a sense of belonging and valuing in school) in relation to self-reported substance use and expectancies for substance use in school among 208 adolescents in 37 high schools in upstate New York. Identification with school was measured using a 16-item Identification with School Questionnaire (Voelkl, 1996). Additionally, educational aspirations measured by a single question asking the degree of future educational plans of students ranging from "I do not plan to finish high school" to "achieving a doctoral or related degree". Self-reported substance use was measured by eight items measuring the degree to which adolescents use alcohol and marijuana at school. Substance use related predictors were measured by the Alcohol Expectancies Questionnaire (Christensen, Goldman, & Inn, 1982) and similarly constructed items specific to marijuana. This

measure reflects two dimensions of substance use related expectancies: (a) tension reduction, the degree to which adolescents believe alcohol or marijuana will reduce negative affect and (b) performance regulation, the degree to which adolescents believe alcohol or marijuana will improve performance. Personality predictors were measured in the areas of (a) self-esteem, the degree to which adolescents feel good about themselves and their personal qualities; (b) rebelliousness, degree to adolescents are defiant and frustrated when confronted with regulations preventing them from governing their own behavior; (c) risk taking behavior, degree to which adolescents regard risky situations as exciting and pleasurable; (d) impulsivity, degree to which adolescents behave without forethought to the consequences of their behavior; and (e) negative emotionality, the degree to which adolescents experience negative moods.

The findings of this study illustrate among personality, academic, and substance use related predictors, students' identification with school was among the strongest predictors of alcohol and marijuana use at school. Students who reported feeling a sense of belonging and valuing of school were less likely to engage in substance use and if they did use substances, they were less likely to increase the frequency of use over time. A unique aspect of this study is that it specifically examined adolescents' self-reported substance use during the school day.

Henry, Swaim, and Slater (2005) examined the construct of school bonding, which is described as the degree to which individuals have an attachment to others at school, a commitment to pro-social norms of the school, and a belief in the pro-social values of the school as a community (Catalano & Hawkins, 1996). One thousand and sixty five middle school students were assessed in the 6th and 7th grade (initial survey)

and then two more times during the two-year period. The sample was primarily Caucasian. Henry et al. (2005) assessed school bonding with the following items: "I like school", "my teachers like me", and "school is fun". The researchers also examined adolescents' beliefs about the effects of substance use on their future aspirations operationally defined by the following items: "using cigarettes/alcohol/ marijuana would (a) keep me from doing the things I want to do, (b) mess up my plans for when I am older, and (c) get in the way of what is important to me." Lastly, substance use was measured using a classification system developed by Oetting and Beauvais (1990) which assigns a numeric value to each adolescents' use of illicit substances based on self-report data. Combining items assessing self-report substance use using this classification system, adolescents were classified on a scale from 0 (non-user) to 7 (very heavy user) for cigarettes, alcohol, and marijuana.

The findings suggest that students who report consistently poor bonding to school over time are less likely to perceive that substance use will have negative effects on their goals. Conversely, as adolescents' increase their bonding to their school, the belief that substance using behaviors will harm one's future also changes by increasing the belief that substance use will inhibit future goals. This longitudinal research shows that adolescents who feel bonded towards their school are at a decreased risk for engaging in substance use. By promoting ongoing universal school-based programs that foster strong school bonds, adolescents may be more likely to view using substances as having a negative impact on their future goals and aspirations, and as a result may be at a decreased risk for developing substance abuse problems later in adolescence and adulthood.

Pilgrim, Abbey, and Kershaw (2004) examined adolescents' degree of bonding to their school and negative attitudes towards substance use in a study of 225 primarily Caucasian students in sixth and seventh grade (average age = 11.9 years old). The sample was drawn from a larger study examining substance use prevention in rural areas. School bonding was measured using the 10-item Attachment to School Instrument, a subscale from the Effective School Battery (Gottfredson, 1984; Rosay, Gottfredson, Armstrong, & Harmon, 2000). Attitudes towards substance use was measured by adolescents' answering questions about their friends' behavior relating to substance use on a 4-point scale (ranging from definitely yes to definitely no). The researchers phrased questions relating to attitudes towards substance use in terms of adolescents' friends' behavior in an effort to reduce social desirability responses. Results of this study found the greater degree of bonding to one's school adolescents had, the more negative attitudes towards substance use they endorsed. This study further underscores the positive effects of feeling bonded to one's school.

Abdelrahman et al. (1998) found that in addition to low academic achievement being a risk factor for substance use, a low commitment to school (responded 'not true' to the statement 'I like school') was a very strong risk factor. In fact, in the sample of 2,849 7^{th} and 8^{th} grade adolescents, those who reported that they do not like school were twice as likely to also report substance use as those who reported they enjoyed school.

Simons-Morton, Davis-Crump, Haynie, and Saylor (1999) found in a study of 4,263 adolescents (grades 6-8), the greater the degree to which adolescents developed positive bonds to their school, the less likely they were to engage in maladaptive behavior and are more likely to achieve academically. School bonding was measured using six

items measuring the degree to which students perceive a commitment to their school. Problem behavior was measured using eight items examining the degree to which adolescents engage in (a) substance use (cigarettes, alcohol, and other drugs); (b) bullying; (c) fighting; (d) stealing; (e) vandalism; and (f) weapons carrying in school. The findings of this study indicated that the student-school bond is an important protective factor against problem behaviors as a construct (including substance use as well as the other aforementioned factors).

Clearly, adolescents' attitudes towards school and bonds with school are strongly associated with their substance using behaviors and related beliefs. Specifically, adolescents are less likely to engage in negative behaviors such as substance use when they feel connected to school, value academic achievement, and have overall positive experiences at school. However, what is unknown is which specific attitudes towards school (i.e., school belonging/bonding, valuing of school, school satisfaction- overall positive experiences at school) is most important in predicting adolescent substance use. Additionally, because of the established relationship between academic achievement (i.e., GPA) and adolescent substance use, it is likely that another important attitude is adolescents' perceptions of their academic abilities. Research is necessary to identify which of these attitudes towards school (e.g., academic self-concept, valuing of school/achievement, bonding to school, and school satisfaction) is most important in predicting adolescent substance use. A logical predictor of feelings towards school is the overall environment of the school, later described as the school's climate. Adolescents' perceptions of their school's climate exert influence over their cognitive

and psychosocial development as well influencing their decision to engage in maladaptive behaviors such as substance use (Kasen, Johnson, & Cohen, 1990).

School Climate

There are various definitions of what comprises school climate, but many researchers agree that school climate is a multidimensional construct that includes organizational, instructional, and interpersonal dimensions (Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Fraser, 1989; Roeser, Eccles, & Sameroff, 2000). Research has documented the relevance of perceived positive school environments to academic achievement as well as motivation in school (McEvoy & Welker, 2000). Relatively less attention has been paid to the relationship between school climate and adolescent substance use.

Initial information can be gleaned from Perkins and Jones' (2004) larger study of physical abuse and risky behaviors. In the sub-sample of 3,281 physically abused adolescents, ages 12-17, school climate emerged as a protective factor against many risk behaviors, including substance use (tobacco, alcohol, and other drug use). Specifically, adolescents who endorsed perceiving high levels of two factors associated with school climate (teacher support and school satisfaction, which may reflect total perceptions of school climate) were less likely to also report using illicit substances. Logistical regression analyses indicated that school climate had moderate negative relationships with alcohol use (odds ratio = .77), tobacco use (odds ratio = .79), and drug use (odds ratio = .81). Further, the larger study examined physically abused adolescents and potential protective factors which may decrease the frequency of engaging in risk behaviors (e.g., substance use). The findings of the study indicated that school climate

moderated the relationship between the effects of physical abuse and engagement in risk behaviors such as substance use. Notably, school climate was measured by the following four items within their larger study; "My teachers really care about me," "My teachers don't pay much attention to me," "I get lots of encouragement at school," and "I like school"; Cronbach's alpha for school climate was .70. The combination of items relating to school climate in this study examines only one of six constructs associated with school climate (teacher support). Therefore, a limitation of the findings with respect to school climate is that only one of the constructs of school climate was examined. The results may be different if school climate was examined comprehensively.

Coker and Borders (2001) examined the longitudinal effects of school climate and parental support on adolescent problem drinking behavior. This study utilized a large national sample of 24,599 students in the 8th grade. Follow-up surveys were administered in 10th grade and 11th grade. Parental support was operationally defined as parents' interest and participation in schooling and assessed via self-report items. School climate was defined by the items "there is real school spirit, "the teaching is good at school," "teachers are interested in students," and "teachers praise my efforts", items which appear to reflect attachment to school and only one associated with school climate: teacher support.

Both parental support and "school climate" had positive relationships with the mediating variable of peer values (e.g., importance of good grades, importance of continuing education). The researchers suggest that high levels of parental support and a positive school climate in 8th grade influenced the formation of relationships with peers with positive values in 10th grade which in turn predicted the degree to which

adolescents reported engaging in substance use in the 11th grade. This study examined a subsection of the construct of school climate by examining only one factor, teacher support. Further research in this area could examine school climate comprehensively by including multiple aspects of school climate (e.g., sharing of resources, and order and discipline) which may also have a significant impact upon adolescent substance use but cannot be determined from this study.

Kitsantas, Ware, and Martinez-Arias (2004) examined the relationships among adolescents' perceptions of school safety, community safety, the school environment, and self-reported substance use. This study utilized a sample of 3,092 sixth, seventh, and eighth grade adolescents. School climate was measured via five items from the National Household Education Survey (NHES; U.S. Department of Education, 1997). School environment items included "being challenged at school," "enjoyment of school," "degree to which teachers maintain good discipline in the classroom," "extent to which students and teachers respect each other," and "extent to which the principal and assistant principal maintain good discipline"; internal consistency was .61. Student perceptions of school safety were measured by the following items: "everyone knows what the school rules are," "the school rules are fair," "the punishment for breaking school rules is the same no matter who you are," "the school rules are strictly enforced," and "if a school rule is broken, students know what kind of punishment will follow." Internal consistency was good (.73); and concurrent validity between the measure of fairness of the school's disciplinary code and the school climate measure was .54.

Kitsantas et al. (2004) examined more aspects of school climate than the aforementioned studies. Specifically, in this study the areas of school climate tapped

include: (a) fairness; (b) order and discipline; and (c) student-teacher relations, with a focus on "order and discipline" and "fairness". To assess self-reported substance use, five questions relating to adolescents' perceptions of how easy it is to obtain tobacco, alcohol, marijuana, and other drugs at school were utilized. Using path analysis, findings suggest that school climate had direct effects on student perceptions of substance use in school. Specifically, student perceptions of fairness of the school's disciplinary code had a direct influence/effect (DE) on adolescents' perceptions of substance use in the school (DE = .11, r = .30, p < .01). Perceptions of their school's climate including order and discipline, and student-teacher relations had a direct effect on adolescents' perceptions of substance use in the school as well (DE = .08, r = .24, p <.01).

Notably, this study examined school climate more comprehensively than the previous mentioned studies, but could be strengthened by also examining student perceptions of other factors associated with school climate (e.g., parent involvement and sharing of resources). Further, the five questions used in this study to measure school climate may not sufficiently grasp the construct of an adolescent's perception of his or her school's climate. Measures which examine school climate comprehensively utilize a greater number of items examining the same constructs; as a result, reliability may be stronger using these measures.

Overall, preliminary research has shown that some aspects of school climate are related to adolescent substance use. Longitudinal studies have suggested that over time, adolescents who have positive feelings about their school and the overall climate of it are less likely to engage in risky behaviors including substance use. However, the few studies that have examined aspects of school climate have examined a few dimensions of

school climate in isolation. To date, school climate has not been examined comprehensively to ascertain which aspects of school climate are most predictive of substance use among adolescents. The purpose of the current study is to comprehensively examine specific dimensions of school climate and the previously identified attitudes towards school that may have an effect on adolescents' decisions to engage in substance use. The current study will yield a better understanding of the relationships between multiple, important aspects of school climate, attitudes towards school, and substance use. In order to accomplish this goal, a comprehensive definition of school climate must be identified along with a valid assessment method for measuring the important aspects of school climate.

Definitions of School Climate.

Anderson's (1982) seminal review of research in the area of school climate indicated multiple, discrete variables that are commonly associated with school climate. They include (a) ecology variables: physical or material variables in the school that are external to the participants (e.g., cleanliness, lighting, equipment, school size, and classroom size); (b) milieu variables: variables that represent characteristics of individuals in the school, such as teacher characteristics (e.g., number of years teaching), satisfaction, teacher morale, student body characteristics (e.g., demographic information), and student morale; (c) social system variables: variables that concern patterns or rules (both formal and informal) of operating in the school, such as administrative organization, instructional programming, ability grouping of students, teacher-administrator rapport, teacher shared decision making, communication, teacher-student relationships, student shared decision making, opportunity for student participation,

teacher-teacher relationships, and community school relationships; and (d) culture variables: variables that reflect norms, belief systems, and values of various groups within the school such as teacher commitment, peer norms, cooperative emphasis, expectations, degree of consistency, and clear goals. These variables described by Anderson have provided the core foundation of what is commonly thought of as the components of school climate.

Later theorists and researchers attempted to define and measure school climate in different ways. For example, Stockard and Mayberry (1992) proposed a theoretical framework to examine school climate. These researchers argued that the social psychological nature of schools can be organized into two categories: social order and social action. The first area, social order consists of norms and values, environmental climate, as well as the organizational structure of the school. Social action refers to the everyday interactions between personnel in the school and includes the level of quality communications and planning of activities that occur in the school on a daily basis. The researchers hypothesize that level of positive interactions between staff, students, and parents support a high level of academic performance in the school. They also hypothesize everyday interactions among the stakeholders in the school (e.g., teachers, students, administrators) promote positive feelings among each of the respective stakeholders. Unfortunately, an assessment tool has not been advanced to assess this framework of school climate.

Another theoretical framework which has been proposed in the literature is by Hoy, Tartar, and Kottkamp (1991) which characterizes a school's overall climate in terms of its "health". The researchers' view healthy schools as consisting of three levels:

technical, managerial, and institutional. All three of these areas work in a synergistic way to address both the instrumental and expressive needs of students as well as working to achieve the school's mission. In this model, the technical level is comprised of morale, cohesiveness, and academic emphasis and is focused on the teaching-learning process. The managerial level is comprised of principal influence, consideration, initiating structure and resource allocation which is focused on the internal administration of the school. When all of these variables are working in harmony, the researchers suggest that the school will reach its goals of high levels of achievement as well as growth in the students in areas of emotional growth, motivation, and high levels of trust. The Organizational Health Inventory (OHI; Hoy & Feldman, 1999) attempts to measure and define school climate via ratings completed by employees (e.g., teachers and other personnel) of the extent to which specific behavior patterns occur in the school based on the theoretical framework proposed by Hoy et al. (1991). The seven dimensions that are examined include: institutional integrity, initiating structure, consideration, principal influence, resource support, morale, and academic emphasis. These dimensions were originally derived from Miles's (1969) seminal analysis of the overall organizational health of public schools. An expert panel (e.g., teachers and other stakeholders) was utilized to first pilot test the initial items for the measure and to reduce and refine the measure's subtests. An additional second pilot study was conducted to determine test stability as well as factor structure. The final results were the seven dimensions previously mentioned. A limitation to this measure is that it seeks information on the school's climate from one perspective: the employees of the school. The unique perspective of the students is not taken into account when deriving an overall index of the

climate of the school. Certainly, the perspectives of the overall climate of a school may be perceived differently from these two distinct perspectives.

The Effective School Battery (ESB; Gottfredson, 1991) is a measure which seeks to assess perceptions of students' and teachers' about their school's climate. In contrast to Hoy et al. (1999), this measure assesses both students' and teachers' perceptions of a school's climate and combines both parties perceptions when deriving an index of overall school climate. The dimensions of school climate that are assessed include: (a) safety; (b) respect for students; (c) planning and action; (d) fairness of rules; (e) clarity of rules; (f) morale; (g) planning; race relations; (h) parent/community involvement; and avoidance of grades as sanctions. The theoretical basis for developing the previously mentioned dimensions of school climate were mainly based upon previous research by Gottfredson and Gottfredson (1985) as well as exploratory factor analysis.

Fischer and Fraser (1991) designed a measure to assess teachers' perceptions of the psychosocial dimensions of the environment of the school. The dimensions that are examined include: student support, affiliation, professional interest, staff freedom, participatory decision making, innovation, resource adequacy, and work pressure. The dimensions measured were developed through an expert panel of teachers. These researchers attempt to measure a school's climate through the perceptions of the faculty of the school, not the students. Limitations of this measure are that it neglects the unique contributions of student perceptions and technical adequacy data is not available for this measure.

One of the most popular and empirically sound current operationalizations of school climate was developed by the School Development Program (SDP) (Haynes,

Emmons, & Ben-Avie, 1997). This model assesses school climate at different school levels (e.g., elementary and middle, and high school), and relies on reports from teachers and students. Rather than based on a pre-defined theory, the components were selected after conducting a comprehensive literature review of the most salient aspects of a school's climate. Some of the studies reviewed include work by Comer, Haynes, and Hamilton-Lee (1988); Keefe, Kelly, and Miller (1985); Trickett and Moos (1974); and Wallich (1981). Originally, nineteen variables were derived from this literature and then were collapsed into fourteen variables (academic focus, achievement motivation, caring and sensitivity, collaborative decision-making, equity and fairness, job satisfaction, order and discipline, parent involvement, respect and trust, school leadership, school-community relations, sense of common purpose, staff dedication to student learning, and teacher and staff expectations). All fourteen of the variables are assessed on the staff version of the School Climate Survey (SCS), however for the student survey, only six variables are assessed in the elementary and middle-school version.

These six variables, along with their respective definitions and reliability coefficients are: (a) fairness (the equal treatment of students regardless of ethnicity and socioeconomic status)(.83); (b) order and discipline (appropriateness of student behavior in the school setting)(.75); (c) parent involvement (frequency of parent participation in school activities)(.68); (d) sharing of resources (equal student opportunity to participate in school activities, materials, and equipment)(.75); (e) student interpersonal relations (the levels of caring, respect, and trust that exists among students in the school)(.84); and (f) student-teacher relations (the level of caring, respect, and trust that exists between students and teachers in the school)(.87). The SCS assesses these areas of a school's

climate and compares scores for a particular school to those scores in a normative sample. A relative strength of the SCS is that it was developed from numerous studies instead of one predefined and untested theory.

Additionally, the SCS has available the largest normative sample of all currently available measures of school climate (6,429 elementary students, 11,797 middle school students, 7,226 high school students, 1,902 school teachers/staff, and 1,837 parents). The SCS may be well suited for use in studying school climate relative to the specific outcome variable of substance use because based on the previously discussed studies, the SCS measures school climate comprehensively instead of tapping just one or two sub-components of school climate. As a result, this measure may be particularly useful in building upon the existing literature base of school climate and adolescent substance use by simultaneously examining multiple components of school climate.

Conclusions

Substance use by adolescents has been linked to a multitude of negative outcomes in various domains including academics (Diego, Fields, & Sanders, 2003), psychosocial development (Musher-Eizenman, Holub & Arnett, 2003), and increased risk for future dependency (Miller, Davies, & Greenwald, 2000). Given that research has illustrated that the earlier an individual begins using illicit substances, the greater the likelihood is that the individual will develop a degree of dependency or a diagnosable disorder, it is important to identify the range of predictors that are related to the initiation of substance use. Peers exert a direct influence on substance using behaviors and parenting variables (e.g., positive parent-child relationship, degree of parental involvement, and expectations/monitoring adolescents' activities) are another important class of predictors.

Additionally, internal, cognitive variables such as outcome expectancies and resistance self-efficacy exert an influence on substance using behaviors. Attitudes towards school are an additional cognitive correlate of substance use in adolescence. Environmental variables that have been shown to negatively influence adolescents' substance use behaviors include student perceptions of the overall climate of the school (Coker & Borders, 2001).

To date, the research on the relationship between the cognitive and environmental influences of school and substance use among adolescents has been limited by the narrow, fragmented manner in which these constructs have been investigated. It is unknown which aspects of attitudes towards school and school climate are most important, or even if school related cognitions or perceptions of the school environmental (i.e., school climate) are most related to substance use. Additionally, existing research has combined various illicit substances (e.g., tobacco, alcohol, and other drugs) into one category of "substance use" or has studied only one specific substance (i.e., alcohol) in relation to school environment and attitudes. As a result, research has not comprehensively examined school climate, attitudes towards school, and substance use to ascertain which facets of school are most predictive of certain illicit substances used by adolescents.

The School Development Program's model of school climate along with its School Climate Survey will allow for comprehensively assessing the unique and combined contributions of school climate to substance use specific in middle school aged adolescents. The current study will utilize the School Climate Survey as well as valid measures of important attitudes towards school (e.g., school bonding, valuing of school,

academic self-perceptions, and school satisfaction) to examine the strength of the relationship between school climate, attitudes towards school, and multiple types of substance use in early adolescence.

Chapter Three

Method

Participants

Participants for this study consisted of students enrolled in grades six through eight at a local middle school. The middle school that provided the database analyzed in the current study is a public school within the School District of Hillsborough County (SDHC). The dataset in the current study was part of a larger study investigating the overall level substance use of middle school students in relation to various educational and psychosocial outcomes.

Approval to conduct the study was obtained from the University of South Florida (USF) Institutional Review Board in January of 2005. Additionally, the SDHC Department of Assessment and Accountability granted approval for the study in January of 2005. Data were collected in May of 2006 by a research team comprised of graduate students from USF; the author of this proposal was an instrumental member of the research team. A faculty member of the School Psychology Program at USF served as the principal investigator of the larger study and supervised data collection.

Selection of Participants

The middle school in which the study took place is considered to be a predominantly high socioeconomic status (SES) school due to the local census data of the average home price in the local area. Specifically, in the vicinity surrounding the school

the median home sale price was $272,000 in 2005 compared to $207,000 for the entire state of Florida (Hillsborough County Property Apprasiers Office, 2005). Additionally, the low percentage of students at this school receiving free or reduced lunch indicates a predominantly high SES school. Specifically, at this school 14.38% of students receive free or reduced lunch compared to the state average of 46.8% (Florida Department of Education, 2005). In order to participate in the larger study, students were required to be enrolled full-time at the middle school *(N*=1,509*)* in which the data collection was conducted and obtain informed parental consent in writing (see Appendix A). Additionally, all students who participated in the study were asked to sign a student assent form (see Appendix B) before beginning the study. In this study, certain groups of students were intentionally excluded. Specifically, students served exclusively in self-contained special education classrooms were excluded due to a higher risk of experiencing emotional distress while completing the self-report instruments as well as a higher incidence of low reading skills precluding the accurate completion of the surveys. Lastly, students who met the requirements for participation but were absent on the date of data collection for their specific grade were also excluded.

Students were not individually paid for their participation in this study. However, incentives were offered to increase the rate of participation. All students who sought parent consent to participate were entered into a drawing to win one of three $25.00 Best Buy gift cards. Additionally, the homerooms in each grade level with the highest ratio of student participants (i.e., students who returned consent forms indicating participation or non-participation) to overall class size received a class party supplied by the researchers. A total of 467 students returned signed parent consent forms which represented

approximately a 35% return rate. Of the students whose parents provided consent for their participation, 100% of the students provided their individual assent to also participate in the study. The demographic characteristics of the sample along with the demographic characteristics of the entire school population are presented Table 1.

To test the consistency of alignment of the sample used in this study with the demographics of the entire school population, chi square tests were conducted. A Bonferroni adjustment results in an alpha level of .0125. Regarding similarities between the sample of students who received active parental consent to participate and the larger population of students (i.e., entire school population) from which the sample was drawn, the two groups differed significantly on grade level representation, χ^2 (2) = 23.57, $p <$ .0001. Specifically, in the sample, sixth grade students were over-represented and eighth grade students were under-represented. Regarding ethnicity, Hispanic students were underrepresented and "other" category students (comprised of mixed-ethnicity students or students who checked "other") were over-represented χ^2 (1) = 31.24, $p <$ .0001. In the sample, females were over-represented, χ^2 (1) = 12.45, p = .0004. The two groups did not differ in terms of SES.

Procedures

A list of all students who had returned parental consent forms was compiled prior to the commencement of data collection. A school official called students by grade level to the school cafeteria by the school public communications system. Students completed the surveys in a large group format by grade level on three separate dates. The researchers were careful to seat students three per table, with empty spaces between each student in order to give sufficient room for privacy of responses. Each table was a large

institutional type round lunchroom table which seated eight individuals. Prior to beginning the packet of surveys, the student assent form was read aloud to the students by one of the researchers via a microphone. Students were explicitly told they were free to withdraw from the study at any time during the course of the data collection. Students completed demographic questions (see Appendix C) assessing their age, grade, and socioeconomic status (SES). SES was assessed using the most frequent school-based assessment criteria-eligibility for free or reduced lunch. Students were asked to indicate "yes" or "no" to the question "do you receive free or reduced lunch?" Additionally, the researchers instructed students on how to answer Likert-type questions using an example of a frequency ("I go to the beach") and agreement ("Going to the beach is fun") item.

All survey measures were counterbalanced to control for order effects using versions "A" through "F". USF-affiliated research assistants circulated the room during the administration of the surveys to assist students with questions. The researchers circling the room during the administration of surveys ranged in age from 24 to 29 years of age. The students were encouraged to ask questions if any items were not clear. Overall, the vast majority of students across grade levels who took part in the study exhibited a polite and compliant demeanor and appeared to be on-task during administration of the surveys. The average time to complete each survey packet was approximately 45 minutes. Upon each student's completion of the survey packet, a member of the research team examined the survey packet to determine if the student had inadvertently missed any questions and/or made errors. If a student had made errors or skipped questions, he or she was asked to correctly complete the missed questions or errors. Care was taken by the research team to only look for missing data or errors, not

content of the data (e.g., a student endorsing drug use). Data was entered during the summer of 2005. During this time period, 10% of the data was randomly checked for data entry errors and was manually corrected. Protocols with an error found were then reviewed in their entirety for data entry errors. This procedure was completed by two graduate students on the research team; one member of the research team read aloud the items from the survey packet while the other member manually checked the entered into the SPSS spreadsheet to ensure a match.

Ethical Considerations

Numerous precautions were taken to protect students who participated in this study. First, active parental consent was obtained for each participant. In contrast to passive parental consent, active consent requires parents to sign a participation form which outlines all the potential risks and benefits associated with their child's participation. The letter sent to each student provided parents with the principal investigator's contact information in order to give parents the opportunity to discuss their concerns or questions about the nature of the study and their child's involvement.

Additionally, each student participant completed a student assent form which also outlined the risks and benefits to participating in the study. This was included because the age of the students (i.e., early adolescents) provided sufficient maturity to make an informed decision whether or not to participate in the study. The research team assessed readability of the assent letter to ensure that all students in grades 6-8 would be able to adequately understand their assent to participate in the study. A member of the research team verbally reviewed the letter with all students via a microphone in the cafeteria where data collection took place. Students were informed that at any time they may

decline to participate without any type of penalty. The student assent letter also included an attachment containing local mental health and substance abuse resources that students may contact if they wish to do so (see Appendix D).

Prior to beginning the study, the principal investigator for the larger study obtained formal approval from the University of South Florida (IRB) ensuring that all necessary precautions were taken to protect human research participants before the study began. Additionally, the principal investigator also obtained formal approval from the school district's Department of Assessment and Accountability which ensured that the participants of the study did not miss an excessive amount of instructional time.

Measures

School Climate Survey-Revised, Elementary and Middle School Version (SCS-MS: Haynes, Emmons, Ben-Avie, Joyner, & Comer, 2001). The SCS-MS (see Appendix E) is a 37-item questionnaire designed to measure students' perceptions of their school's climate. The use of a self-report measure to assess school climate is necessary to determine the students' perceptions of their school's climate. Separate teacher/staff measures are available to assess the overall climate of the school from additional perspectives.

On the student self-report measure, respondents are asked to indicate on a 3-point scale (1= disagree, 2 = not sure, 3 = agree) the degree to which they endorse various items comprising school climate (e.g., "children at my school are caring people", "some children carry knives or guns at my school", and "I can talk to my teachers about my problems"). Several of the items on the SCS-MS are reversed scored. After reverse scoring negatively worded items, all items are then scored in a positive direction; the

higher the score, the greater the degree of school climate the students perceive. Additionally, cluster scores are available to assess each of the six dimensions of school climate that are assessed by the SCS-MS. This is accomplished by adding the scores for the items that define the cluster and dividing the sum by the number of items within the cluster.

The items on the SCS-MS were developed through a comprehensive literature review as well as establishing content validity via expert panels of educators (Haynes, Emmons, & Ben-Avie, 1997). The SCS-MS assesses school climate in six domains: fairness (the equal treatment of students regardless of ethnicity and socioeconomic status), order and discipline (appropriateness of student behavior in the school setting), parent involvement (frequency of parent participation in school activities), sharing of resources (equal student opportunity to participate in school activities, materials, and equipment), student interpersonal relations (the levels of caring, respect, and trust that exists among students in the school), and student-teacher relations (the level of caring, respect, and trust that exists between students and teachers in the school). The SCS-MS is unique in that it attempts to measure school climate comprehensively instead of examining only one or two aspects of a school's climate.

The SCS-MS has high internal consistency; coefficient alpha ranges from .92 - .96 (Kuperminc, Leadbeater, Emmons, & Blatt, 1997; Haynes et al., 2001). Test-retest reliability was not identified in the manual or relevant literature (i.e., published studies that have utilized or attempted to validate the SCS-MS). The manual states that construct validity were assessed using "principal factor analysis" to group items measuring the same underlying constructs. Regarding convergent and discriminant validity, one study

(Kuperminc, et al., 1997) utilized the SCS-MS in an examination of the social adjustment of 499 middle school students. Discriminant validity was established through non-significant relationships between the total score on the SCS-MS and variables from which it's theoretically separable, namely demographic characteristics and evaluations of one's self, such as self-concept and self-worth. Notably, no published studies have compared the SCS-MS to other published measures of school climate; research on convergent validity is warranted.

In contrast to the paucity of empirical support for construct validity, a strength of the SCS-MS is the large normative sample. National norms for the SCS-MS version consisted of 6,429 elementary school students and 11,797 middle school students. The SCS-MS has been included successfully in previous empirical evaluations of perceived school climate in sixth and seventh grade students (Kuperminc et al., 1997).

School Attitude Assessment Survey-Revised (SAAS-R: McCoach & Siegle, 2000). The SAAS-R (see Appendix F) is a 35-item questionnaire designed to measure academic beliefs that are correlated with academic underachievement. The SAAS-R measures five factors: (a) academic self-perceptions (global beliefs of self-worth associated with one's perceived academic competence), (b) attitudes toward school (self-reported interest and affect towards school), (c) attitudes toward teachers and classes (beliefs and feelings about their teachers and interest in coursework), (d) motivation and self-regulation (self-generated thoughts, feelings, and actions systematically oriented to the attainment of desired goals), and (e) goal valuation (degree to which children engage in and respond to achievement oriented tasks). Of note, on the SAAS-R, the attitudes towards school scale will be used as the indicator of school bonding. In the current study, approximately half

of the items from the SAAS-R were not administered. Specifically, only attitudes towards school, academic self-perceptions, and goal valuation were administered out of the five possible subscales. Because motivation/self-regulation and goal valuation are highly correlated (r =.79) (McCoach & Siegle, 2003), only one factor was administered in this study. Attitudes towards teachers was purposefully omitted because the SCS-MS measures this construct through the student-teacher relations scale.

The SAAS-R utilizes a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). Adequate reliability and validity have been established for the SAAS-R. Confirmatory factor analysis was utilized to support five distinct factors (McCoach & Siegle, 2003). Internal consistency reliability coefficients were at least .85 for each of the five factors. To determine discriminant validity, a series of t-tests were conducted on the mean scale scores of each of the five subscales to determine if the measure could differentiate high-achieving gifted students from gifted underachievers (McCoach & Siegle, 2003). Underachievers referred to students in the bottom half of their class or those who had GPAs of less than 2.5. High achievers were in the top 10% of their class. The sample used in this analysis was 176 gifted high school students. In this study, two of the five subscales (specifically, motivation/self-regulation, and goal valuation) differentiated between gifted overachievers and gifted underachievers.

School Satisfaction Subscale of the Multidimensional Students' Life Satisfaction Scale (MSLSS: Huebner, 1994). The school subscale of the MSLSS (See Appendix G) is an 8-item scale that measures school satisfaction which is part of a larger scale measuring students' satisfaction with five important domains of life: school, family, friends, living environment, and self. Respondents are asked to indicate on a 6-point scale (1 = strongly

disagree to 6 = strongly agree) the degree to which they endorse general statements about their school (e.g., "I feel bad at school," "I look forward to being in school"). Negatively worded items are reverse scored so that higher scores represent higher levels of satisfaction with school.

Validity studies of the MSLSS have yielded reliability alpha coefficients of .77 to .84 for domain scores (Huebner & Gilman, 1998). With respect to construct validity, the five-factor structure of the MSLSS has been supported through both exploratory and confirmatory factor analyses (Greenspoon & Saklofske, 1997; Huebner, 1994; Huebner, Laughlin, Ash, & Gilman, 1998). Convergent and discriminant validity has been established for the MSLSS through other measures (Self-Description Questionnaire-II, Marsh, 1990; Children's Loneliness Social Dissatisfaction Scale, Asher et al., 1984). However, the aforementioned measures assessed different, but related constructs as there is no measure available that assesses precisely the same constructs as the MSLSS. The MSLSS has been utilized with early adolescent populations (Huebner et al., 1998). Although the MSLSS was originally intended to be administered in its entirety, previous research on students' feelings of satisfaction with school successfully used the school satisfaction subscale of the MSLSS as the sole indicator of school satisfaction (Baker, 1999).

American Drug and Alcohol Survey (ADAS: Beauvais, Edwards, & Oetting, 1987). The American Drug and Alcohol Survey (see Appendix H) is a 50 item self-report survey designed to assess adolescents' nature and extent of substance use. Reliability for the measure is very well established; Cronbach alpha coefficents range from .72 to .94 based in a large representative sample of 6^{th} to 12^{th} graders (N = 108,249) from across the

United States (Beauvais et al., 1987). Concurrent validity for the ADAS is supported by the finding that ADAS scores are consistent with other established surveys measuring substance use in adolescent populations. For instance, findings from the University of Michigan's National Monitoring the Future Survey (NMFS: Johnston, Bachman, O'Malley, & Schulenberg, 2003) pertinent to adolescent substance use are similar to findings of the ADAS. The NMFS tracks substance use rates nationally and reports national levels each year. The results of the ADAS closely match the results of the NMFS as well with respect to changing rates of substance use over time.

Construct validity has been established by examining the rates of self-reported substance use with other constructs that are expected to be associated with substance use. Specifically, the ADAS was examined in relation to several risk factors (e.g., low family caring, low parental monitoring, and adolescents' poor school adjustment) (Oetting & Beauvais, 1990). The findings indicate that there is a significant relationship between the self-reported substance use on the ADAS and other risk factors (correlations ranging from .75 to .84). Notably, the ADAS has also been utilized in numerous empirical studies examining adolescent substance use (Beauvais, Chavez, Oetting, Deffenbacher, & Cornell, 1996; Donnermeyer & Davis, 1998; Oetting, Deffenbacher, Taylor, Luther, Beauvais, & Edwards, 2000).

In the current study, items measuring adolescents' reported use of the following illicit substances were used: (a) alcohol, (b) tobacco, (c) drugs (i.e., ecstasy, heroin, cocaine, crack, abuse of non-prescribed methylphenidate (MPH, Ritalin®), and controlled prescription medications (Oxycontin® and Xanax®). Responses are given on a 6-point scale indicating increasing levels of use (e.g., none, 1-2 times, 3-9 times, 10-19

times, 20-49 times, and 50+ times). Additionally, for alcohol and tobacco, items pertaining to how often in the past year as well as month these substances were used are included. For the other aforementioned substances (e.g., marijuana and ecstasy), items pertaining to the frequency of use in the past month were used. To detect honest/dishonest responding, two questions asking the degree of respondents' honesty in responding to questions related to substance use were included at the end of the measure. Responses are given on a 3-point scale indicating whether a respondent was very honest, endorsed questions indicating more use than they actually use, or less use than the actual level of use; students who report dishonest responding will be excluded from analyses. In this study, the data from the ADAS were dichotomized (e.g., use versus non-use) for alcohol, tobacco, and drugs due to sample data indicating the normality of the outcome variable (substance use) is skewed. As a result, a logistic regression model was used to account for the non-normality of the data set pertaining to substance use.

Data Analyses

A series of statistical analyses were conducted in order to answer the research questions for this study.

Question 1:

Descriptive analyses. Frequencies were obtained for all variables of interest with respect to substance use. For alcohol and tobacco frequency distributions for each substance are presented using items such as "how often in the last YEAR have you had alcohol to drink" as well as "how often in the last MONTH have you had alcohol to drink" and "how often in the last YEAR have you smoked cigarettes" as well as "how often in the last MONTH have you smoked cigarettes". For other illicit substances,

frequency distributions are presented using items such as "have you used any of these drugs to get high in the last month". Each question allowed the respondent to answer (a) none, (b) 1-2 times, (c) 3-9 times, (d) 10-19 times, (e) 20-49 times, and (f) 50 or more times. Data are presented by gender group.

Question 2:

Correlational analyses. In order to determine the inter-relationships among each illicit substance (e.g., alcohol, tobacco, and other drugs) and a) students' perceptions of dimensions of school climate (e.g, fairness, order and discipline, parent involvement, sharing of resources, student interpersonal relations, and student-teacher relations), and b) attitudes towards school (e.g., academic goal valuation, academic self-efficacy, school belonging, and school satisfaction), Pearson bivariate coefficients were calculated. Correlation coefficients which range from -1 indicating a perfect negative relationship to +1 indicating a perfect positive relationship provide information regarding the strength and direction of the relationship between two variables. For this study, to control for multiple tests, an adjusted alpha level of .004 was used in order to determine if findings are statistically significant. Substance use was dichotomized for consistency with other analyses in the study.

Question 3, 4, and 5:

Predictive analyses. In order to determine which facets of attitudes towards school and perceptions of school climate are most predictive of early adolescent substance use, a series of logistic regressions were conducted. Logistic regression is a statistical technique that allows a researcher to predict a discrete outcome from variables that are dichotomous, discrete, continuous, or mixed. Logistic regression makes no

assumptions about the distribution of the outcome variable. The outcome variable does not have to be normally distributed as is necessary in a linear regression model. Sample data from this study indicated the distribution of the outcome variable (substance use) is skewed. Thus, in logistic regression analyses, substance use was dichotomized into two categories "substance use" and "no substance use" for alcohol, tobacco, and other drugs. The first series of logistic regression models were used to determine which facets of school climate (e.g., fairness, order and discipline, parent involvement, sharing of resources, student interpersonal relations, and student-teacher relations) are most predictive of (a) alcohol use; (b) tobacco use; and (c) drug use. A second set of logistic regression analyses was conducted to determine which attitudes towards school (e.g., academic self-efficacy, school belonging, goal valuation, and school satisfaction) are most predictive of (a) alcohol use; (b) tobacco use; and (c) drug use. Finally, the results of both logistic regressions was reviewed to determine whether perceptions of school climate or global attitudes towards school are more predictive of (a) alcohol use; (b) tobacco use; and (c) drug use. For both sets of analyses, gender was entered as an additional predictor in order to statistically control for gender.

Limitations of the Current Study

Potential threats to validity were addressed during data collection in order to ensure that the researcher will obtain valid conclusions from the data set. During administration of the measures, the survey packets containing all measures comprising the larger study were counterbalanced. Six versions of survey packets were used to control for order effects. Students were also explicitly informed that the measure they are currently completing will not be the same measure their peer is completing to decrease

socially desirable responding by early adolescents. The research team was trained prior to data collection on appropriate answers to students' questions as well as how to control for administration errors. As each student completed his or her packet of measures, a member of the research team skimmed through the student's measures to be sure no data was missing and check for errors. Careful attention was paid by each researcher not to examine the content of each students' responses (e.g., endorsement of drug use), rather to simply skim for missing data/errors.

The research team arranged the data collection site (school cafeteria) in a manner that facilitated private responding to questions. Specifically, the researchers were careful to seat students at appropriate distances from each other so responses were confidential. Finally, the researchers circulated the room during data collection to answer any questions students might have and to also encourage students to stay on-task (e.g., discouraged talking among students, or other off-task behaviors).

When interpreting the results, the researcher has taken necessary precautions. Due to a convenience sampling method being used as well as requiring active parent consent and active student consent to participate, the students who did participate could differ significantly from students who declined themselves or whose parents declined for them. Ecological validity is the degree to which a researcher can generalize the results of a study to other settings. Violations to ecological validity include a researcher drawing conclusions about the results to populations in other geographical areas or settings. In this study, a suburban high SES middle school was utilized with a median home price greater than the surrounding area. As a result, the findings of the study would not generalize to a lower SES area, even within the same geographic area. Additionally,

findings may not generalize to urban and rural areas either, regardless of the SES demographics of that area.

An additional threat to validity for this study is population validity. Population validity is the degree to which results from a study can generalize to a larger population. Because this study takes place in a single geographic area and examines school climate, attitudes towards school, and substance use globally which has not been conducted to date, the results will not generalize to other populations. A multitude of unique characteristics of the sample of students utilized in this study may prohibit the extent to which results can be generalized across settings.

Contributions to the Literature

The current study will add to the literature on school climate, attitudes towards school, and substance use by comprehensively examining the construct of school climate along with adolescents' attitudes towards school. To date, studies examining the effects of a school's climate on adolescent substance use have examined only some aspects of school climate (Perkins & Jones, 2004; Pilgrim, Abbey, & Kershaw, 2004; Coker & Borders, 2001). Further, most studies including the aforementioned have examined only one type of substance (e.g., alcohol, tobacco, *or* marijuana) in relation to a specific aspect of school climate (e.g., teacher support) without also examining adolescents' school attitudes. This study will examine school climate globally along with attitudes towards school as well as examining many different type of substances that are frequently associated with early adolescent substance use (e.g., prescription medications not prescribed to the individual and over-the-counter medications). A greater understanding of what specific components of school climate and attitudes towards school predict

certain illicit substances that early adolescents use will add to the literature base by providing more detailed information and a rationale for more specific school-based prevention efforts.

Chapter Four

Results

Treatment of the Data

Data were entered during the spring and summer of 2006 by the author of this thesis as well as other members of the research team of the larger study. Working individually, members of the research team entered data from completed questionnaire packets into a SPSS spreadsheet. Data were then checked for possible errors using a multi-step process. First, data were checked for scores outside of the possible range for each variable. Next, every tenth subject's data entered were checked for possible errors. Data were checked using two members of the research team per data checking session. If an error was detected, the entire set of data for the subject were re-entered. Then, the data for the subject immediately preceding and following the protocol found with an error was checked for accuracy. At the completion of this process, approximately 20% of the entire data set was reviewed for accuracy.

Data were analyzed for the presence of univariate outliers. Stevens (1999) guidelines for detecting univariate outliers were employed. Specifically, responses which fell over three standard deviations away from the mean scores on any variable were identified. Eleven subjects were identified as falling outside three standard deviations from the mean. However, upon closer inspection of specific outliers, it became apparent that the individuals who reported using illicit substances at all were the subjects identified

as outliers. As a result, these individuals were retained in the sample because the overall mean for substance use was extremely skewed in this dataset such that any substance use at all was abnormal. Exclusion of participants identified as univariate outliers would have in essence eliminated the subjects of most interest in the current study of substance use in middle school students. Additionally, data were screened for individuals who reported dishonest responding on the American Drug and Alcohol Survey (ADAS). Specifically, two questions on the ADAS ask whether an individual reported more or less drug or alcohol use than they actually use. Individuals who reported dishonest responding on this measure were excluded from the dataset. This resulted in 10 individuals being excluded.

Data were also examined for the presence of multivariate outliers using Fidell and Tabachnick's (2001) guidelines for the detection of multivariate outliers. The Mahalanobis distance statistic was calculated for all subjects. A criterion of $\alpha = .001$, critical $\chi^2 = 29.52$ was employed. The variables employed in the multivariate outlier analysis included all six dimensions of school climate (fairness, order and discipline, parental involvement, sharing of resources, student interpersonal relations, and student-teacher relations) as well as all four attitudes towards school (school satisfaction, academic self-efficacy, school belonging, and goal valuation). Additionally, seven subjects were identified as multivariate outliers and were subsequently excluded from analyses. Thus, the final sample retained for all subsequent data analyses was comprised of 443 subjects.

Descriptive Analyses

Means and standard deviations for all variables were obtained. To assess univariate normality of variables, box and whisker plots along with skewness and kurtosis were examined. Values for the dependent variables of alcohol, tobacco, and drug use were all outside the normal range of -2.00 to 2.00. Thus, the dependent variables of alcohol, tobacco, and drugs were dichotomized (i.e., use vs. no-use) due to extreme non-normality. The dichotomized forms of alcohol, tobacco, and drugs were employed in all correlational and regression analyses. Values for the independent variables of school climate factors and attitudes towards school were within the normal range of 2.00 to -2.00 with the exception of academic self-efficacy (skewness = -1.37, kurtosis = 2.21) and goal valuation (skewness = -2.06, kurtosis = 4.66). The original forms of these variables (academic-self efficacy, goal valuation) were retained for all subsequent analyses, as attempting to transform these variables would result in extreme difficulty of interpretation as both variables are from a standardized measure. Means and standard deviations were obtained for all school climate variables: (a) fairness (M = 2.23, SD = .58), (b) order and discipline (M = 2.04, SD = .40), (c) parental involvement (M = 1.74, SD = .53), (d) sharing of resources (M = 1.63, SD = .44), (e) student interpersonal relations (M = 1.98, SD = .49), (f) student-teacher relations (M = 2.45, SD = .51). With respect to attitudes towards school variables, means and standard deviations are as follows: (a) school satisfaction (M = 3.83, SD = 1.04), (b) academic self-efficacy (M = 3.83, SD = 1.04), (c) school belonging (M = 5.06, SD = 1.77), and (d) goal valuation (M = 6.54, SD = .70).

Frequency of Illicit Substance Use

To determine the specific rates of substance use in the sample, frequency distributions were calculated. Rates for each substance are presented in Table 2 by gender. Overall, the overwhelming majority of participants reported not engaging in any substance use. The illicit substance with the highest reported rate of use was using alcohol in the prior year. Numerous illicit substances (e.g., cocaine, heroin, and ecstasy) were reported as not being used by any participants. Findings relevant to gender include girls reporting using inhalants (sniff) more frequently than boys (4.25% vs. 1.63%) and boys reporting the use of over-the-counter medications (e.g., cough syrup and cold pills) to get high more frequently (5.43% vs. 0.77%) than girls.

As previously discussed, for all subsequent analyses, substance use was dichotomized (no use vs. any use) for three types: alcohol use, tobacco use, and drug use. The category of alcohol use is comprised of alcohol use reported in the last year. The category of tobacco use consisted of mean cigarette and smokeless tobacco use reported in the last year. The composite drug use variable consisted of participants' average use in the past month of the following substances: inhalants (e.g., glue, paint, gasoline), marijuana, and abusive use of over-the-counter drugs (e.g., cough syrup and diet pills). The substances which comprised the drug use composite variable were selected for inclusion in the composite variable because they displayed the greatest amount of variance (i.e., drugs used most frequently) among all drug categories. Of note, drug use in the past month (vs. past year) was employed as the outcome because data on participants' drug use in the past year was not collected.

Correlational Analyses

To determine the relationships between school climate, attitudes towards school, and self-reported substance use, Pearson product-moment correlation coefficients were calculated. Intercorrelations among all measures are presented in Table 3. An alpha level of .05 was initially used to determine statistical significance. However, a Bonferonni adjustment was conducted to adjust for multiple comparisons. As a result, a modified alpha level of .004 was used to determine significant bivariate correlations. All significant correlations occurred in the expected directions. Specifically, all school climate and school attitudes variables were negatively correlated with substance use variables, indicating that the better one perceives his or her school climate and the more positive his or her attitudes towards school are, the less likely he or she is to report co-occuring substance use. Alcohol use had the most significant relationships with school climate and attitudes towards school variables. The only schooling factor related to tobacco use was goal valuation. Academic self-efficacy was the only significant correlate of drug use.

Predictive analyses

To test the relationships between substance use and perceptions of school climate and attitudes towards school, data were subjected to a series of logistic regression analyses. A logistic regression analysis does not assume linearity of the dependent variable and employs discrete criterion variables. Because the dependent variables of alcohol use, tobacco use, and drug use were dichotomized (i.e., no use vs. any use), logistic regression analyses were appropriate statistical techniques to answer the research questions. To account for six independent tests being conducted, a Bonferonni

adjustment was employed to adjust for multiple comparisons. Thus, a modified alpha level of .008 was used in all regression analyses.

Prior to logistic regression analyses, the independent variables were assessed for multicollinearity. Multicollinearity in logistic regression analyses results from inflated correlations between independent variables. If multicollinearity exists, the variances of the parameter estimates may be artificially inflated. The existence of multicollinearity in small to medium-sized sample sizes can result in a lack of significant findings among individual independent variables. Additionally, the existence of multicollinearity may result in incorrect magnitudes of regression coefficient estimates and may lead the researcher to erroneous conclusions about the relationships among independent and dependent variables (Ying, Peng, Lee, & Ingersoll, 2002). To examine for existence of multicollinearity, the data were subjected to multicollinearity diagnostic statistics. Specifically, the tolerance for each independent variable were examined and were found to be close to one which is within the guidelines set for by Myers (1990). Therefore, the researcher proceeded with the logistic regression analyses.

To determine which perceptions of school climate (i.e., fairness, order and discipline, parent involvement, sharing of resources, student interpersonal-relations, and student-teacher relations) are most predictive of early adolescent substance use, separate logistic regression analyses were conducted for each illicit substance (i.e., alcohol, tobacco, and drugs). The results of the analyses are depicted in Tables 4-6.

For the dependent variable of alcohol, based on the likelihood ratio test, the model with gender and the six facets of school climate was found to be significantly more effective than a constant-only model χ^2 (7, N = 443) = 52.96, p = <.0001. These results

indicate that the predictors, as a set, did distinguish between participants who used alcohol and those who did not. The score on the Wald's test supports these conclusions. Additionally, the Hosmer-Lemeshow goodness-of-fit test was significant. The Wald's chi-square statistic indicated that one predictor was statistically significant: teacher-student relations χ^2 (1, N = 443) = 15.66, p = <.0001. This indicates that teacher-student relations made a statistically unique contribution while holding all other variables constant in the prediction model. Students who indicated high levels of student-teacher relations were less likely (odds ratio = .30) than other participants to report the use of alcohol.

For the dependent variable of tobacco, based on the likelihood ratio test, the model with the seven factors of school climate was not found to be significantly more effective than the constant-only model χ^2 (7, N = 443) = 11.37, p = .12. These results indicate that the predictors, as a set, did not reliably distinguish between participants who used alcohol and those who did not. The score on the Wald's test supports these conclusions. Additionally, the Homer-Lemeshow goodness-of-fit test was not significant.

For the dependent variable of drugs use, the model with gender and the six factors of school climate was not found to be significantly more effective than the constant-only model χ^2 (7, N = 443) = 10.85, p = .15. These results indicate that the predictors, as a set, did not reliably distinguish between participants who used drugs and those who did not. The score on the Wald's test supports these conclusions. Additionally, the Homer-Lemeshow goodness-of-fit test was not significant.

To determine which attitudes towards school (i.e., academic self-efficacy, school belonging, goal valuation, and school satisfaction) predict early adolescent substance use, three separate logistic regression analyses were conducted. The results are depicted in Tables 7-9. For alcohol, based on the likelihood ratio test, the model with gender and four attitudes towards school was found to be significantly more effective than the constant-only model, χ^2 (5, N = 443) = 61.11, p = <.0001 based on the significance level selected a priori (.008). The Wald's chi-square statistic indicated academic self-efficacy made a statistically unique contribution while holding all other variables constant in the prediction model, χ^2 (1, N = 443) = 7.95, p = .005. Students who indicated high levels of academic self-efficacy were less likely (odds ratio = .68) than other participants to report the use of alcohol. Additionally, the Wald's chi-square statistic indicated school belonging made a statistically unique contribution while holding all other variables constant in the prediction model χ^2 (1, N = 443) = 7.95, p = .005. Students who indicated high levels of school belonging were less likely (odds ratio = .77) than other participants to report the use of alcohol.

For the dependent variable of tobacco, the model with gender and four attitudes towards school was not found to be significantly more effective than the constant-only model, χ^2 (5, N = 443) = 13.51, p = .02. These results indicate that the predictors, as a set, did not reliably distinguish between participants who used tobacco and those who did not. The score on the Wald's test supports these conclusions. Additionally, the Homer-Lemeshow goodness-of-fit test was not significant.

For the dependent variable of drugs, the model with the four factors of attitudes towards school was found to be significantly more effective than the constant-only

model, χ^2 (5, N = 443) = 18.93, p = .002. These results indicate that the predictors, as a set, reliably distinguished between participants who used drugs and those who did not. The score on the Wald's test supports these conclusions. The Homer-Lemeshow goodness-of-fit test was not significant. Within the model, academic self-efficacy emerged as a significant predictor of drugs. The Wald's chi-square statistic indicated academic self-efficacy made a statistically unique contribution while holding all other variables constant in the prediction model, χ^2 (1, N = 443) = 8.68, p = .003. Students who indicated high levels of academic self-efficacy were less likely (odds ratio = .58) than other participants to report the use of drugs.

In order to determine whether perceptions of school climate (i.e., fairness, order and discipline, parent involvement, sharing of resources, student interpersonal-relations, and student-teacher relations) or global attitudes towards school and learning (i.e., academic self-efficacy, school belonging, goal valuation, and school satisfaction) were more predictive of early adolescent substance use, each logistic regression by substance type was examined. The model comprised of school climate accurately predicted 11% of alcohol use. The model comprised of attitudes towards school accurately predicted 13% of alcohol use. Thus, attitudes towards school may be a somewhat larger predictor of alcohol use among early adolescents. For tobacco use, neither model was able to predict a reliable amount of variance in students' use of cigarettes and/or smokeless tobacco. For drug use, only the attitudes towards school model was significant; the entire model accurately predicted 4% of drug use. In sum, results suggest that attitudes toward school (particularly perceptions of academic self-efficacy and school belonging) are more highly

related to certain types of substance use among early adolescents than are perceptions of school climate.

Chapter Five

Discussion

Summary of the Study

The purpose of this study was to examine the relationships between students' perceptions of the climate of their school as well as their attitudes towards school and students' substance using behaviors. Specifically, this study attempted to determine which facets of students' perceptions of their school's climate and which global attitudes towards school were most predictive of alcohol, tobacco, and drug use. Of note, this study purposefully examined school climate as a whole construct in order to add to the extant research which has examined only specific aspects of school climate in relation to substance use (e.g., Perkins & Jones, 2004; Bryant, et. al., 2002). Also notably, this study attempted to determine which facets of students' attitudes towards school were most predictive of substance using behaviors therefore expanding on previous research (e.g., Bryant & Zimmerman, 2002) which examined attitudes towards school in isolation. Prior to the current study, it was unknown which specific attitudes towards school (i.e., school belonging/bonding, valuing of school, school satisfaction- overall positive experiences at school) were most important in predicting adolescent substance use. Additionally, because of the established relationship between academic achievement (i.e., GPA) and adolescent substance use, it is likely that another important attitude is adolescents' perceptions of their academic abilities. This study attempted to identify

which of these attitudes towards school (e.g., academic self-concept, valuing of school/achievement, bonding to school, and school satisfaction) are most important in predicting adolescent substance use.

This chapter will summarize results of the current study and specifically address notable findings (e.g., school climate factors and attitudes towards school most predictive of substance use), as well as discuss similarities and differences between findings in the current study and findings in previous research. Lastly, this chapter will discuss the implications of the results for school psychologists, identify limitations of the study, and provide directions for future research.

Notable Findings Regarding Frequency of Substance Use

Overwhelmingly, most middle school students in the current study did not report engaging in substance use of any type. The illicit substance with the highest reported rate of use was alcohol in the prior year, which was endorsed by 23% of participants. Numerous illicit substances (e.g., cocaine, heroin, and ecstasy) were reported as not being used by any participants. Compared to previous research examining early adolescent substance use in a high SES sample (Luthar & Ansary, 2005), frequency of use was lower in the current study. For example, Luthar et al. (2005) used a similar scale to measure self-reported substance use (0 = never to 40+ times in the last year) and found early adolescents reported a mean score of 1.94 on self-reported alcohol use in the past year compared to 1.31 in this study. Additionally, Luthar et al. (2005) found a mean of 1.98 on tobacco use in the past year compared to 1.04 in this study; tobacco use was virtually absent among participants in the current study. The researcher's hypothesis for these findings are the discrepancy may have been a function of the sample as the

difference between Luthar et al. (2005) and the current study is relatively low. Regarding gender, Luthar et al. (2005) found that girls reported more cigarette use than boys as girls (mean of 2.08 vs. 1.89). In the current study, nearly identical proportions of boys and girls reported using cigarettes in the last year (i.e., mean of 1.06 vs. 1.04).

Notable Findings Regarding Interrelationships between Variables.

The intercorrelations between variables demonstrated numerous significant relationships between school-related variables and substance use, particularly use of alcohol. With respect to alcohol, all school climate and attitudes towards school variables except parental involvement in school were negatively related to substance use. The variables with the largest associations with substance use were school belonging, academic self-efficacy, and student-teacher relations. Previous research with middle and high school students reported similar findings. Specifically, Perkins and Jones (2004) found adolescents who endorsed high perceptions of teacher support and school satisfaction were less likely to also report consuming alcohol. The current study also found small to moderate negative relationships between alcohol use and student-teacher relations and school satisfaction.

Coker and Borders (2001) also found similar results for teacher support but not for parental involvement with respect to alcohol in their research with middle school students. Specifically, the researchers examined two factors associated with school climate: teacher support and parental involvement as well as one factor associated with attitudes towards school: school belonging. The researchers found significant negative relationships between all three variables and co-occuring alcohol consumption. These results are consistent with some findings of the current study, as alcohol use was

moderately negatively related to school belonging and student-teacher relations. However, parental involvement was not a statistically significant correlate of alcohol use in this study. Other researchers have also found nonsignificant results of parental involvement and alcohol. Specifically, Olds and Thombs (2001) found that peer norms exert greater influence on the use of alcohol than parental involvement among middle and high school students. Another study (Kitsantas, Ware, & Martinez-Arias, 2004) examined teacher support along with two other facets of school climate (fairness, order and discipline) in relation to students' perceptions of substance use in their school. These researchers found negative relationships between all factors associated with school climate and perceptions of substance use within the school. In the current study, the same school climate factors have small to moderate inverse associations with alcohol use.

In the current study, school climate was unrelated to tobacco use; only one attitude towards school (valuing of school) was a significant bivariate predictor of tobacco use. The importance of valuing school was previously suggested by Voelkl and Frone (2000) who found that valuing of school and having high aspirations for future success were among the strongest predictors of alcohol and marijuana use at school. Bryant et al., (2003) found students who reported cigarette use also reported lower levels of school bonding and future goals. Kitsantas et al., (2004) found one factor of school climate (fairness) to be negatively associated with tobacco use. However, these researchers examined perceptions and attitudes towards tobacco use rather than assessing actual use. In the current study, it is plausible that actual tobacco use resulted in extremely low numbers of participants indicating any current use of tobacco; the lack of variance likely contributed to the insignificant results.

In the current study, academic self-efficacy was the only significant correlate of drug use (i.e., use of marijuana, inhalants, and over the counter medications). Specifically, lower perceptions of academic competence were associated with more frequent use of drugs. Previous research has also found negative relationships between schooling variables and substance use. For instance, Perkins and Jones (2004) found adolescents who reported higher levels of satisfaction with school reported lower levels of drug use. Henry, Swaim, and Slater (2005) found students who consistently reported poor bonding to school were less likely to perceive that substance use will have negative effects on their goals. The researchers also found the converse to be true; as adolescents increase their bonding to their school, the belief that substance using behaviors will harm one's future also changes by increasing the belief that substance use will inhibit future goals. Within the current study, it is plausible that very low levels of drug use reported (compared to the previously mentioned studies) may have contributed to only one facet of global attitudes towards school being significantly related to drug use. Additionally, the current study differs from previous research such as Henry et al., (2005) in that it examined school bonding simultaneously with other important attitudes towards school. As a result, the shared variance with variables such as academic self-efficay may have reduced the potential significance of other attitudes towards school such as school bonding.

Notable Findings Regarding Predictive Analyses and Substance Use

Students' perceptions of school climate accounted for 11% of the variance with their use of alcohol. Student-teacher relations emerged as the factor of school climate most highly associated with alcohol use. This finding is consistent with previous

research by Perkins and Jones (2004) which exemplified the importance of teacher support with respect to adolescent substance use. The findings in the current study suggest that previous research which identified other school climate variables as significant correlates of substance use (e.g., school bonding, order and discipline, and sharing of resources) may have found different results if the researchers also included and controlled for the important influence of student-teacher relations.

Taken together, attitudes towards school (i.e., academic self-efficacy, school belonging, goal valuation, and school satisfaction) explained 13% of the variance in middle school students use of alcohol. In particular, students who indicated greater perceptions of academic self-efficacy and stronger bonds to their school were less likely to report the use of alcohol. These findings are consistent with previous research. Pilgrim, Abbey, and Kershaw (2004) and Simons-Morton, Davis-Crump, Haynie, and Saylor (1999) also found students who reported stronger bonds to their school reported less alcohol use. With regard to drug use, Henry, Swaim, and Slater (2005) found students who reported strong bonds to their school reported less co-occuring drug use. However, as previously mentioned, Henry et al. (2005) examined an attitude towards school (school bonding) as a single construct. As a result, other attitudes towards school were not considered. Notably, no previously published research has specifically examined academic self-efficacy in relation to early adolescent alcohol use. Results of the current study suggest academic self-efficacy should be included in future studies of attitudes related to students' use of alcohol.

Taken together, attitudes towards school explained 4% of the variance in students' use of illicit drugs, specifically marijuana, over-the-counter medications used to get high,

and inhalants. In particular, students who reported high perceptions of academic self-efficacy were less likely to report co-occuring drug use. Previous research supports these findings. Specifically, Bryant and Zimmerman (2002) found students who held high beliefs about their abilities to do well in school as well as reporting connections with teachers and other students were less likely to report co-occuring drug use.

With respect to school climate variables and the use of illicit drugs, results of the current study were nonsignificant. Previous research found significant results with respect to certain factors associated with school climate. Specifically, Kitsantas, et al., (2004) found middle school students who reported high perceptions of three facets of school climate (student-teacher relations, fairness, and order and discipline) reported lower perceptions of illicit drug use in their school. The current study found that neither school climate nor attitudes towards school were significant predictors of tobacco use. Previous research found various facets of school climate as well as attitudes towards school to be significant with respect to tobacco use (e.g., Pilgrim Abbey, & Kershaw, 2004; Perkins et al., 2004; Bryan & Zimmerman, 2002). Plausible hypotheses for these discrepant findings include the low base rates of actual use of tobacco and drugs in the current study. Within the current sample of middle school youth, tobacco and drug use were almost nonexistent, making it difficult to identify predictors.

Taken together, logistic regression analyses suggest global attitudes towards schooling may be more predictive of early adolescent substance use than school climate, particularly with respect to alcohol and drug use. This author is unaware of any prior research examining whether global attitudes towards schooling or perceptions of school climate are more predictive of early adolescent substance use. This was the first study to

comprehensively investigate both school climate and global attitudes towards school relative to substance use within an early adolescent population.

Of note, gender was controlled for throughout all analyses conducted in this study. Gender was not a significant predictor in any of the regression analyses, indicating that among study participants, boys and girls did not differ significantly in terms of frequency of use of alcohol, tobacco, or total drug use.

Implications of Results for School Psychologists

In light of previously mentioned research on the relationship between the age of onset of substance use and probability of developing a substance use disorder (SUD) later in life (Gil, Wagner & Tubman, 2004), it is important for school psychologists to be concerned with preventing or delaying the onset of substance using behaviors in early adolescents. Additionally, research has clearly identified immediate negative consequences (e.g., increased risk for suicide) (Wu, Hoven, Liu, Cohen, Fuller, & Shaffer, 2004) and academic underachievement (Diego, Fields & Sanders, 2003). Thus, school psychologists must remain knowledgeable about substance use prevention efforts in order to help prevent current and later problems.

This study investigated the links between students' perceptions of school climate and their attitudes towards school and students' decisions to use illicit substances. The results from this study can assist in informing school psychologists about specific facets of school climate and particular attitudes towards school that either place a student at-risk for substance use or diminish their risk for substance use.

School psychologists may be interested in screening early adolescents at-risk for substance abuse and the information gleaned from this study may contribute to screening

efforts. Specifically, early adolescents who reported low levels of teacher-student relations, low school bonding, and/or low levels of academic self-efficacy may be those students most in need of prevention and intervention programs. Given the previously mentioned research on age of onset of substance use and the increased probability of developing a SUD as an adult, early identification and intervention is crucial.

At the universal school-wide level, interventions which target those facets of school climate and attitudes toward school may have a wider effect on the school population. Specifically, in light of the findings of the current study as well as previous research (e.g., Perkins & Jones, 2004), increasing student-teacher relations may exert a positive effect upon adolescents' decisions to use illicit substances. Additionally, increasing adolescent's bonding to school and academic self-efficacy may also prevent substance use among this population.

Developing prevention efforts which seek to enhance adolescents' relationships with their teachers, bonding to school, and academic-self efficacy at the universal level can take numerous forms. Classroom-wide interventions such as suggested by Simons-Morton, et al., (1999) which target middle school students at the universal level may be beneficial. Such interventions specifically target variables (school bonding) identified in the current study as well as previous research as having an impact on adolescent substance use. Specifically, Simons-Morton et al., (1999) implemented a universal prevention effort entitled *Going Places* which attempts to increase school bonding through skills training, parent education, and environmental change over the course of the middle school years. The curriculum consisted of 18 class sessions taught in sixth and seventh grade and nine lessons in eighth grade. The curriculum aimed to increase

participation in classroom and school activities, influence perceived social norms regarding academic achievement and prosocial behavior, and increase authoritative classroom management techniques including high expectations for academic achievement and teacher support for student academic achievement.

Early adolescents who have positive, supportive relationships with their teachers can enhance numerous facets of their lives (e.g., academic achievement and protection from maladaptive behaviors such as substance use). Malecki and Demeray (2003) identified specific types of teacher support from which early adolescents may benefit. Specifically, the provision of informational support (providing information and advice) and emotional support are beneficial to students. Emotional challenge support (supporting students when faced with challenging tasks such as academics) as well as fostering perceptions among students that they are cared about and treated fairly also help. In fact, Malecki et al. (2003) found that emotional support was even more predictive of students' level of social skills and academic competence (as rated by students' teachers) than other types of support such as informational. Other researchers have identified specific strategies teachers can take to increase student perceptions of teacher support. Cothran, Kulinna, and Garrahy (2003) suggest teachers inquire with their students about their family history or important experiences which may have impacted their lives in an effort to expand connections beyond academics. Additionally, confidential journaling activities as well as open door policies for discussing concerns and issues are recommended. Of course, teachers can also link and refer students to other resources (e.g., school counselors and school psychologists) if concerns that students express need further action. Additionally, gathering data regarding classroom climate

through confidential questionnaires can bolster the perceptions among students that their teachers care about them and their well-being. Taken together, both general teacher support and specific subtypes of support. School psychologists can provide this information to teachers via in-services; staff development efforts that summarize results of research (e.g., the identified link between student-teacher relations and substance use) and provide specific recommendations regarding positive teacher behaviors may assist in universal prevention efforts.

Universal efforts to increase academic self-efficacy should also be incorporated into substance use prevention programs for early adolescents. Research has clearly demonstrated academic self-efficacy is strengthened when early adolescents are provided with mastery experiences in which they complete moderately challenging academic tasks with scaffolded assistance from educators as needed (Bandura, 1977; Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). Failure to successfully complete tasks which are above students' current academic level can lead to undermining the development and maintenance of academic self-efficacy (Bandura, 1977). In addition to monitoring task difficulty, researchers have identified strategies to adjust task demands for student needs. Specifically, the inclusion of student choice has been identified as crucial for middle school students. Research has found that as students progress from elementary to middle school, they report student opportunities to participate in class decision-making markedly drops once they enter middle school (Eccles, Wigfield, Harold, & Blumenfeld, 1993). In essence, considering the developmental needs of early adolescents (i.e., needs for increased independence and autonomy) the decreased decision-making opportunities that frequently occur can create a mismatch. Therefore, in order to foster and sustain

academic self-efficacy in early adolescents, problem-solving how choice-making can be meaningfully incorporated into classroom practices and other school activities can bolster and sustain academic self-efficacy (Eccles, et al., 1993).

Additionally, teacher feedback can foster and sustain academic self-efficacy in early adolescents. Schunk (1989) found early adolescents differ in how they attribute successfully completing an academic task from older adolescents. Specifically, early adolescents are more likely to attribute success to purposeful effort (e.g., "I did well because I tried very hard") and older adolescents are more likely to attribute success to their ability (e.g., "I did well because I am good at this") to successfully complete the task. It may be more beneficial for teachers seeking to foster academic self-efficacy to provide immediate specific praise with an emphasis on effort for early adolescents. Importantly, Schunk (1994) points out early adolescents who are struggling academically should never be told they would be successful if they tried harder. Students already experiencing low academic self-efficacy are likely to further diminish their self-perceptions of academic competence if given this type of feedback about their lack of success. Rather, in order to foster increased academic self-efficacy in early adolescents who are struggling, it is crucial to give students concrete and explicit evidence of small incremental gains in academic achievement that are directly related to their own efforts (Schunk, 1994).

Other researchers have also advocated for utilizing the powerful influence of peers to foster academic self-efficacy. Zimmerman, Bonner, and Kovach (1996) found teaching students to compare their individual task success to self-monitoring notes kept about productive use of study time and daily perceptions of academic self-efficacy to be

beneficial. During assigned study times during the school day, students are placed in small teams and teach each other specific skills and provide written documentation of their expectations for success using the skills each team utilized. The use of written documentation assists students in developing awareness about how they can positively impact their own academic performance through self-perceptions and effortful actions. Additionally, this author recommends the use of reinforcement strategies to augment these types of interventions to build academic self-efficacy, such as interdependent group-oriented reinforcement strategies.

Taken together, building academic self-efficacy, fostering strong student-teacher relations, and enabling adolescents to feel bonded to their school may all act as protective factors against substance use in early adolescence. This is particularly important as the aforementioned research clearly demonstrates the earlier an individual begins using illicit substances the greater the chances are for negative impact later in life. Utilizing strategies to build academic-self efficacy, student-teacher relations, and school bonding should assist in preventing current and future problems.

Limitation of the Current Study

Several precautions were taken to address potential threats to validity during data collection. However, not all threats to validity can be controlled. Threats to validity in quantitative research include population validity and ecological validity.

Population validity. Population validity is referred to as the ability to generalize the results of the sample to a larger population (Gall, Borg, & Gall, 1996). Unique characteristics of the sample under study may decrease the extent to which results can be generalized outside of the study population. The current study employed a convenience

sampling method in which students at a pre-selected school whose parents agreed to participate and the students provided assent to participate were included. The characteristics of the students whose parents allowed participation differed from students whose parents did not consent in several ways. The students in the convenience sample were more likely to be sixth grade students, Hispanic, and female compared to the entire school population.

Also notable, this study required active parental consent in order to participate. Research has suggested that passive parental consent may result in greater disclosure of substance use among early adolescents (White, Hill, & Effendi, 2004). Specifically, these researchers found that among 12-15 year olds, students in a passive consent sample reported more substance use than students in an active parental consent sample. Therefore, the relatively low rates of substance use uncovered in the current study may not reflect overall low use in the population, but instead the low use rates of a biased sample of students who secured parental consent to participate.

Ecological validity. Ecological validity is referred to as the ability of the researcher to generalize the results of a study across settings (Brewer, 2000). When ecological validity is violated, it leads the researcher to draw erroneous conclusions to populations with different settings than the setting of the study sample. In the current study, all participants were current students at a middle school located in Tampa, Florida. Additionally, the middle school was located within a middle to high SES community (only 14% of students received free or reduced lunch at the middle school). Because this study takes place in a single geographic area, the results of the pilot study that provided the first investigation of school climate, attitudes towards school, and substance use may

not generalize to other populations. A multitude of unique characteristics of the sample of students utilized in this study (e.g., high SES, suburban homes, and high achieving school) may prohibit the extent to which results can be generalized across settings. The results of this study may not generalize to lower SES areas, rural, or inner-city locations.

Limitations inherent to the design of the study also limit the findings. Specifically, this study attempted to obtain self-reported *actual* use of substances which may have resulted in diminished findings as many early adolescents may not be using substances currently, but may hold attitudes favorable towards future use which is a risk factor. Other researchers (Pilgrim, Abbey, & Kershaw, 2004) assessed early adolescents' attitudes towards substance use rather than actual use. Adolescents who hold positive attitudes towards substance use such as believing using drugs or alcohol may enhance their performance in social situations or increase their status among peers are highly predictive of later use (Hawkins, Catalano, & Miller, 1992). In order to accurately assess how school climate and global attitudes towards school predict substance use, it is necessary to have a relatively normal distribution of substance use among the sample; assessment of attitudes surrounding use may provide a more normal distribution of scores. Without a normally distributed sample, assumptions of many statistical analyses are violated (e.g., linear regression). In the current study, the use of a logistic regression procedure was necessary given the non-normality of substance use in the sample. Predicting simple presence of use or non-use of substances in the past month or year ignores the severity of substance use (e.g., daily or occasional use).

Lastly, this study is limited with respect to utilizing only self-report data with regard to perceptions of school climate, attitudes towards school, and substance use

within a single school. School climate should vary more between schools than within a single school. Research that provides objective information about dimensions of school climate via such sources as teacher ratings of parent involvement and discipline referrals to assess safety and gather such information across schools may yield different results. Since substance use was assessed by student self-report, it is possible that students underreported substance use. Early adolescents self-report of substance use may be influenced by a multitude of factors present in this study (e.g., collecting self-report data in a full cafeteria with adults present). Study designs that employ toxicology/drug screens may yield different results.

Directions for Future Research

The current study was the first to date to comprehensively examine both school climate and global attitudes towards school with co-occuring substance use in early adolescents. Further replications of this study should use more indicators of substance use that provide greater variance in responses, such as attitudes towards substance use rather than assessing actual use. Second, future research should use indicators beyond self-report data to control for shared variance due to method similarities. For instance, researchers may gather data from parents regarding their attitudes towards their children engaging in substance use. For example, Pilgrim et al., (2004) also assessed mothers' perceptions of attitudes towards substance use.

Replications of this study will add to the existing literature base and strengthen rationales for school-based prevention efforts as well. Continued findings in this area may augment universal screening prevention program development efforts that may further delay the onset of substance use.

Final Thoughts

This study has provided the first comprehensive examination of school climate and attitudes towards school relative to substance use in middle school students. Findings support important links between student-teacher relations, academic self-efficacy, school belonging, and students' use of alcohol and drugs. The results from this study may assist in informing school personnel as to which climate variables within their school are most important to monitor and build and alternatively, which attitudes within students may pose a risk for early initiation of substance use.

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Table 1.

Descriptive Statistics

Variable	*n*	*sample* %	*n*	*school* %
Gender				
Male	197	42.27	779	51.6
Female	269	57.73	730	48.4
Grade				
6th	194	41.54	491	32.5
7th	160	34.26	478	31.6
8th	112	24.20	540	35.7
Ethnicity				
Caucasian	356	76.39	1121	75.44
African-American	20	4.29	89	5.99
Asian	8	1.72	23	1.55
Hispanic	36	7.73	183	12.31
Native American	11	2.36	6	.40
Other	35	7.51	64	4.31
SES				
Low*	67	14.38	209	14.66
High*	399	85.62	1277	85.94

*SES (socioeconomic status) was determined by asking students to indicate whether or not they receive free/reduced school lunch

Table 2.

Rates of Illicit Substance Use by Type and Gender

Illicit Substance	Male (n = 184)		Female (n = 259)		Total (N = 443)	
	N	%	*N*	%	*N*	%
Alcohol- Last Year						
None	148	80.43	194	74.91	342	77.2
1 – 2 times	26	14.13	44	16.99	70	16.0
3 – 9 times	8	4.35	18	6.95	26	.06
10 – 19 times	1	.54	1	.39	2	.005
20 – 49 times	1	.54	1	.39	2	.005
50 or more times	-	-	1	.39	1	.002
Alcohol- Last Month						
None	171	92.96	230	88.80	401	90.5
1 – 2 times	11	5.98	28	10.81	39	0.88
3 – 9 times	2	1.09	1	.39	3	.07
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-
Cigarettes- Last Year						
None	175	95.11	251	96.91	426	96.1
1 – 2 times	5	2.72	5	1.93	10	2.25
3 – 9 times	1	.54	1	.39	2	.045
10 – 19 times	2	1.09	1	.39	3	.07

Table 2 (continued).

Rates of Illicit Substance Use by Type and Gender

Illicit Substance	Male (n = 184)		Female (n = 259)		Total (N = 443)	
	N	%	*N*	%	*N*	%
Cigarettes- Last Year (cont'd)						
20 – 49 times	1	.54	1	.39	2	.04
50 or more times	-	-	1	.39	1	.02
Cigarettes- Last Month						
None	180	97.83	254	98.07	434	97.9
1 – 2 times	3	1.63	4	1.54	7	15.8
3 – 9 times	1	.54	1	.39	2	.02
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-
Smokeless Tobacco- Last Month						
None	180	97.83	255	98.46	405	91.4
1 – 2 times	3	1.63	3	1.16	6	13.5
3 – 9 times	1	.54	1	.39	2	.02
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-

Table 2 (continued).

Rates of Illicit Substance Use by Type and Gender

Illicit Substance	Male (n = 184)		Female (n = 259)		Total (N = 443)	
	N	%	*N*	%	*N*	%
Smokeless Tobacco- Last Month						
None	183	99.46	258	99.61	441	99.5
1 – 2 times	1	.54	1	.39	2	.04
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-
Marijuana- Last Month						
None	181	98.37	256	98.8	437	98.6
1 – 2 times	1	.54	2	.77	3	.006
3 – 9 times	1	.54	1	.39	2	.004
10 – 19 times	1	.54	-	-	1	.002
20 or more times	1	.54	-	-	1	.002
50 or more times	1	.54	-	-	1	.002

Table 2 (continued).

Rates of Illicit Substance Use by Type and Gender

Illicit Substance	Male (n = 184)		Female (n = 259)		Total (N = 443)	
	N	%	*N*	%	*N*	%
Downers- Last Month						
None	184	100	259	100	443	100
1 – 2 times	-	-	-	-	-	-
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-
"Sniff" - Last Month						
None	181	98.37	248	98.75	429	.97
1 – 2 times	2	1.09	7	2.70	6	13.5
3 – 9 times	1	.54	2	.77	3	.006
10 – 19 times	-	-	1	.39	1	.002
20 or more times	-	-	-	-	-	-

Table 2 (continued).

Rates of Illicit Substance Use by Type and Gender

Illicit Substance	Male (n = 184)		Female (n = 259)		Total (N = 443)	
	N	%	*N*	%	*N*	%
LSD - Last Month						
None	183	99.4	259	100	443	100
1 – 2 times	1	.005	-	-	1	.002
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-
Psychedelics - Last Month						
None	184	100	259	100	443	100
1 – 2 times	-	-	-	-	-	-
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-

Table 2 (continued).

Rates of Illicit Substance Use by Type and Gender

Illicit Substance	Male (n = 184)		Female (n = 259)		Total (N = 443)	
	N	%	*N*	%	*N*	%
PCP - Last Month						
None	184	100	259	100	443	100
1 – 2 times	-	-	-	-	-	-
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-
Ketamine - Last Month						
None	184	99.4	259	100	443	100
1 – 2 times	1	.005	-	-	1	.002
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-

Table 2 (continued).

Rates of Illicit Substance Use by Type and Gender

Illicit Substance	Male (n = 184)		Female (n = 259)		Total (N = 443)	
	N	%	*N*	%	*N*	%
Heroine - Last Month						
None	184	100	259	100	443	100
1 – 2 times	-	-	-	-	-	-
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-
Adrenochromes - Last Month						
None	184	99.4	259	100	443	100
1 – 2 times	1	.005	-	-	1	.002
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-

Table 2 (continued).

Rates of Illicit Substance Use by Type and Gender

Illicit Substance	Male (n = 184)		Female (n = 259)		Total (N = 443)	
	N	%	*N*	%	*N*	%
Methampetamine - Last Month						
None	184	100	258	99.6	442	99.7
1 – 2 times	-	-	1	.002	1	.002
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-
Ecstasy (MDMA) - Last Month						
None	184	100	258	99.6	442	100
1 – 2 times	-	-	1	.002	1	.002
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-

Table 2 (continued).

Rates of Illicit Substance Use by Type and Gender

Illicit Substance	Male (n = 184)		Female (n = 259)		Total (N = 443)	
	N	%	*N*	%	*N*	%
Methylphenidate - Last Month						
None	183	99.4	258	99.6	441	99.5
1 – 2 times	1	.54	1	.002	2	.004
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-
Ecstasy (MDMA) - Last Month						
None	184	100	258	99.6	442	100
1 – 2 times	-	-	1	.002	1	.002
3 – 9 times	-	-	-	-	-	-
10 – 19 times	-	-	-	-	-	-
20 or more times	-	-	-	-	-	-

Table 3.

Intercorrelations between Substance Use, School Climate, and Attitudes Towards School Variables (N = 443)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Alcohol use	1												
2. Tobacco use	-.38*	1											
3. Drug use	-.17*	.24*	1										
4. Fairness	-.23*	-.09	-.09	1									
5. Order and discipline	-.21*	.10	-.09	.46*	1								
6. Parental involvement	-.12	-.09	.04	-.31*	.11*	1							
7. Sharing of resources	-.15*	-.07	-.13	.27*	.25*	.05	1						
8. Student interpersonal rel	-.15*	-.02	-.08	.58*	.45*	.29*	.15*	1					
9. Student Teacher rel	-.31*	-.10	-.10	.59*	.37*	.37*	.26*	.53*	1				
10.School satisfaction	-.25*	-.11	-.06	.38*	.39*	.31*	.21*	.45*	.57*	1			
11.Academic self-efficacy	-.32*	-.11	-.22*	.26*	.26*	.20*	.13	.26*	.41*	.44*	1		
12.School belonging	-.33*	-.12	-.13	.51*	.37*	.32*	.22*	.52*	.71*	.51*	.67*	1	
13.Goal valuation	-.23*	-.19*	-.13	.24*	.20*	.22*	.16*	.26*	.38*	.37*	.52*	.43*	1

**p <.004*

Table 4.

Logistic Regression Analysis: Alcohol Use and School Climate

Predictor	*B*	SEB	Wald's χ^2	*df*	*p*	Odds Ratio	95% CI
Constant	2.7716	0.8964	9.5610	1	0.0020	NA	NA
School Climate Variables & Gender							
Gender	0.3900	0.2522	2.3919	1	0.1220	1.477	0.901- 2.421
Fairness	-0.2347	0.2816	0.6949	1	0.4045	0.791	0.455-1.373
Order and Discipline	-0.7660	0.3524	4.7232	1	0.0298	0.465	0.233-0.928
Parental Involvement	-0.0946	0.2565	0.1360	1	0.7123	0.910	0.550-1.504
Sharing of Resources	-0.3471	0.2910	1.4225	1	0.2330	0.707	0.399-1.250
Student Interpersonal Relations	0.5024	0.3342	2.2600	1	0.1328	1.653	0.858-3.182
Student-Teacher Relations	-1.2035	0.3041	15.6629	1	<.0001	0.300	0.165- 0.545

Test	χ^2	*df*	*p*
Overall model evaluation			
Likelihood ratio test	52.9660	7	<.0001
Score test	53.8406	7	<.0001
Wald test	46.5457	7	<.0001
Goodness of fit test			
Hosmer & Lemeshow	6.1885	8	0.6261

Note: $R^2 = .1127$

Table 5.

Logistic Regression Analysis: Tobacco Use and School Climate

Predictor	*B*	SEB	Wald's χ^2	*df*	*p*	Odds Ratio	95% CI
Constant	1.0470	1.5605	.4502	1	<.5022	NA	NA
School Climate Variables & Gender							
Gender	-0.2647	0.4396	0.3625	1	0.5471	0.767	0.324- 1.817
Fairness	-0.2342	0.5104	0.2105	1	0.6464	0.791	0.291- 2.152
Order and Discipline	-1.0086	0.6436	2.4556	1	0.1171	0.365	0.103-1.288
Parental Involvement	-0.6861	0.4924	1.9418	1	0.1635	0.504	0.192-1.322
Sharing of Resources	-0.2778	0.5249	0.2802	1	0.5966	0.757	0.271-2.119
Student Interpersonal Relations	0.9641	0.6008	2.5752	1	0.1085	2.623	0.808-8.514
Student-Teacher Relations	-0.5896	0.5327	1.2249	1	0.2684	0.555	0.195-1.575

Test	χ^2	*df*	*p*
Overall model evaluation			
Likelihood ratio test	11.3666	7	0.1234
Score test	11.2980	7	0.1261
Wald test	10.7233	7	0.1512
Goodness of fit test			
Hosmer & Lemeshow	5.0537	8	0.7518

Note: $R^2 = .0253$

Table 6.

Logistic Regression Analysis: Drug Use and School Climate

Predictor	*B*	SEB	Wald's χ^2	*df*	*p*	Odds Ratio	95% CI
Constant	.2251	1.2187	.0341	1	<.8535	NA	NA
School Climate Variables & Gender							
Gender	0.2108	0.3459	0.3714	1	0.5422	1.235	0.627-2.432
Fairness	-0.1180	0.3886	0.0921	1	0.7615	0.889	0.415-1.904
Order and Discipline	-0.3903	0.4790	0.6639	1	0.4152	0.677	0.265-1.731
Parental Involvement	-0.0857	0.3514	0.0595	1	0.8073	0.918	0.461-1.828
Sharing of Resources	-0.8816	0.3982	4.9017	1	0.0268	0.414	0.190-0.904
Student Interpersonal Relations	-0.2964	0.4472	0.4394	1	0.5074	0.743	0.309-1.786
Student-Teacher Relations	0.1088	0.4165	0.0683	1	0.7939	1.115	0.493-2.522

Test	χ^2	*df*	*p*
Overall model evaluation			
Likelihood ratio test	10.8500	7	0.1453
Score test	10.8457	7	0.1455
Wald test	10.4374	7	0.1651
Goodness of fit test			
Hosmer & Lemeshow	3.7221	8	0.8813

Note: $R^2 = .0242$

Table 7.

Logistic Regression Analysis: Alcohol Use and Attitudes Towards School

Predictor	*B*	SEB	Wald's χ^2	*df*	*p*	Odds Ratio	95% CI
Constant	2.9987	1.0954	7.4947	1	0.0062	NA	NA
Attitudes Towards School Variables & Gender							
Gender	0.1973	0.2625	0.5650	1	0.4523	1.218	0.728-2.037
School Satisfaction	-0.1176	0.1641	0.5136	1	0.4736	0.889	0.645-1.226
Academic Self-Efficacy	-0.3771	0.1337	7.9550	1	0.0048	0.686	0.528-0.891
School Belonging	-0.2562	0.0907	7.9759	1	0.0047	0.774	0.648-0.925
Goal Valuation	-0.1219	0.1836	0.4404	1	0.5069	0.885	0.618-1.269

Test	χ^2	*df*	*p*
Overall model evaluation			
Likelihood ratio test	61.1172	5	<.0001
Score test	64.1652	5	<.0001
Wald test	51.6500	5	<.0001
Goodness of fit test			
Hosmer & Lemeshow	15.2857	8	0.0538

Note: $R^2 = .1289$

Table 8.

Logistic Regression Analysis: Tobacco Use and Attitudes Towards School

Predictor	*B*	SEB	Wald's χ^2	*df*	*p*	Odds Ratio	95% CI
Constant	2.3155	1.5519	2.2262	1	0.1357	NA	NA
Attitudes Towards School Variables & Gender							
Gender	-0.2314	0.4655	0.2470	1	0.6192	0.793	0.319-1.976
School Satisfaction	-0.1446	0.2982	0.2352	1	0.6277	0.865	0.482-1.553
Academic Self-Efficacy	-0.0397	0.2191	0.0329	1	0.8561	0.961	0.626-1.477
School Belonging	-0.1068	0.1709	0.3903	1	0.5322	0.899	0.643-1.256
Goal Valuation	-0.5738	0.2703	4.5070	1	0.0338	0.563	0.332-0.957

Test	χ^2	*df*	*p*
Overall model evaluation			
Likelihood ratio test	13.5177	5	<.0190
Score test	17.7823	5	<.0032
Wald test	14.8723	5	<.0109
Goodness of fit test			
Hosmer & Lemeshow	9.0281	8	0.3399

Note: $R^2 = .0301$

Table 9.

Logistic Regression Analysis: Drug Use and Attitudes Towards School

Predictor	*B*	SEB	Wald's χ^2	*df*	*p*	Odds Ratio	95% CI
Constant	0.6212	1.3969	0.1978	1	0.6565	NA	NA
Attitudes Towards School Variables & Gender							
Gender	-0.0773	0.3663	0.0446	1	0.8328	0.926	0.451-1.898
School Satisfaction	0.2681	0.2272	1.3927	1	0.2380	1.308	0.838-2.041
Academic Self-Efficacy	-0.5362	0.1819	8.6864	1	0.0032	0.585	0.410-0.836
School Belonging	-0.1274	0.1305	0.9537	1	0.3288	0.880	0.682-1.137
Goal Valuation	-0.0393	0.2446	0.0258	1	0.8723	0.961	0.595-1.553

Test	χ^2	*df*	*p*
Overall model evaluation			
Likelihood ratio test	18.9346	5	<.0020
Score test	22.6883	5	<.0004
Wald test	19.7576	5	<.0014
Goodness of fit test			
Hosmer & Lemeshow	1.9218	8	0.9833

Note: $R^2 = .0418$

Appendices

Appendix A
Parent Consent Form

Dear Parent or Caregiver:

This letter provides information about a research study that will be conducted at Randall Middle School by investigators from the University of South Florida. Our goal in conducting the study is to determine the effect of students' experiences at school, home, and with friends on their psychological wellness and health**.**

- ✓ Who We Are: The research team consists of Shannon Suldo, Ph.D., a professor in the College of Education at the University of South Florida (USF), and several doctoral students in the USF school psychology program. We are planning the study in cooperation with the principal of Randall Middle School (RMS) to make sure the study provides information that will be helpful to the school.

- ✓ Why We Are Requesting Your Child's Participation: This study is being conducted as part of a project entitled, "Predictors of Mental Health Outcomes in Middle School Students." Your child is being asked to participate because he or she is a student at RMS.

- ✓ Why Your Child Should Participate: We need to learn more about what leads to happiness and health during the pre-teen years! The information that we collect from students may increase our overall knowledge of risk and protective factors that lead to psychological wellness during middle school. In addition, information from the study will be shared with the teachers and administrators at RMS in order to increase their knowledge of specific school experiences that lead to wellness in students. Please note neither you nor your child will be paid for your child's participation in the study. However, all students who participate in the study will be entered into a drawing for one of several gift certificates.

- ✓ What Participation Requires: If your child is given permission to participate in the study, he or she will be asked to complete several paper-and-pencil questionnaires. These questionnaires will ask about your child's thoughts, behaviors, and attitudes towards school, teachers, classmates, family, and life in general. The surveys will also ask about your child's participation in (and attitudes about) risky health

behaviors, such as tobacco, alcohol, and drug use. Completion is expected to take your child between 30 and 60 minutes. We will personally administer the questionnaires at RMS, during regular school hours in the Spring 2005 semester, to large groups of students who have parent permission to participate. In total, participation will take about one hour of your child's time during one school day.

- ✓ Please Note: Your decision to allow your child to participate in this research study must be completely voluntary. You are free to allow your child to participate in this research study or to withdraw him or her at any time. If you choose not to participate, or if you withdraw at any point during the study, this will in no way affect your relationship with RMS, USF, or any other party.

- ✓ Anonymity of Your Child's Responses: There is minimal risk to your child for participating in this research. We will be present during administration of the questionnaires in order to provide assistance to your child if he or she has any questions or concerns. In addition, after your child has completed the questionnaires, we will give your child a list of community mental health resources in case he or she would like to discuss personal issues or find out more information about tobacco, alcohol, and drug use. Your child's privacy and research records will be kept confidential to the extent of the law. Authorized research personnel, employees of the Department of Health and Human Services, and the USF Institutional Review Board may inspect the records from this research project, but your child's individual responses will not be shared with school system personnel or anyone other than Dr. Suldo and her research assistants. This study is anonymous. Your child's name will not be linked in any way to his or her responses. Your child's completed packet of questionnaires will be added to the stack of packets from other students; we will not be able to identify which student completed which questionnaires. Only we will have access to the locked file cabinet stored at USF that will contain the form your child must sign in order to take part in this study. This permission form will be explained, signed, and collected before questionnaires are handed out in order to avoid linking students' names to their responses.

- ✓ What We'll Do With Your Child's Responses: We plan to use the information from this study to inform educators and psychologists about the effects of various experiences at school, home, and with friends on students' happiness and risky health behavior. The results of this study may be published. However, the data obtained from your child will be combined with data from other people in the publication. The published results will not include your child's name or any other information that would in any way personally identify your child.

- ✓ Questions? If you have any questions about this research study, please contact Dr. Suldo at (813) 974-2223. If you have questions about your child's rights as a person who is taking part in a research study, you may contact a member of the Division of Research Compliance of the USF at 813-974-9343.

- ✓ Want Your Child to Participate? To permit your child to participate in this study, complete the attached consent form and have your child turn it in to his or her first period teacher.

Sincerely,

Shannon Suldo, Ph.D.
Assistant Professor of School Psychology
Department of Psychological and Social Foundations

Consent for Child to Take Part in this Research Study

I freely give my permission to let my child take part in this study. I understand that this is research. I have received a copy of this letter and consent form for my records.

_____	_____	
Printed name of child	Grade level of child	
_____	_____	_____
Signature of parent of child taking part in the study	Printed name of parent	Date

Statement of Person Obtaining Informed Consent

I certify that participants have been provided with an informed consent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study. I further certify that a phone number has been provided in the event of additional questions.

_____	_____	_____
Signature of person obtaining consent	Printed name of person obtaining consent	Date

Appendix B
Student Assent Form

Hello!

Today you will be asked to take part in a research study by filling out several questionnaires. Our goal in conducting the study is to determine the effect of students' experiences at school, home, and with friends on their psychological wellness and health**.**

- ✓ Who We Are: The research team consists of Shannon Suldo, Ph.D., a professor in the College of Education at the University of South Florida (USF), and several doctoral students in the USF school psychology program. We are working with your principal to make sure the study provides information that will be helpful to your school.

- ✓ Why We Are Asking You to Take Part in the Study: This study is part of a project called, "Predictors of Mental Health Outcomes in Middle School Students." You are being asked to take part because you are a student at Randall Middle School.

- ✓ Why You Should Take Part in the Study: We need to learn more about what leads to happiness and health during the pre-teen years! The information that we gather may help us better understand what causes psychological wellness during middle school. In addition, information from the study will be shared with the teachers and administrators at RMS to help them understand which specific school experiences lead to wellness in students. Please note you will not be paid for taking part in the study.

- ✓ Filling Out the Questionnaires: These questionnaires ask you about your thoughts, behaviors, and attitudes towards school, teachers, classmates, family, and life in general. The surveys will also ask about your participation in (and attitudes about) risky health behaviors, such as tobacco, alcohol, and drug use. We expect it will take between 30 and 60 minutes to fill out the questionnaires.

- ✓ Please Note: Your involvement in this study is completely voluntary. By signing this form, you are agreeing to take part in this research. If you choose not to participate, or if you wish to stop taking part in the study at any time, you will not be punished in any way. If you choose not to participate, it will not affect your relationship with Randall Middle School, USF, or anyone else.

- ✓ Privacy of Your Responses: We do not expect that there will be more than minimal risk to you for taking part in this research. We will be here to help the entire time you are filling out the surveys in case you have any questions or concerns. When you

hand in your completed questionnaires, we will give you a piece of paper that lists places you can call and go to in the community if you would like to discuss personal issues. The paper also tells you how to find out more information about tobacco, alcohol, and drug use. Your privacy and research records will be kept confidential (private, secret) to the extent of the law. People approved to do research at USF, people who work for the Department of Health and Human Services, and the USF Institutional Review Board may look at the records from this research project, but your individual responses will not be shared with people in the school system or anyone other than us and our research assistants. This study is anonymous. Your name will not be linked in any way to your responses. Your completed packet of questionnaires will be added to the stack of packets from other students; we will not be able to tell which student completed which questionnaires. Only we will have access to the locked file cabinet stored at USF that will contain this signed permission form.

- ✓ What We'll Do With Your Responses: We plan to use the information from this study to let others know about the effects of different experiences at school, home, and with friends on students' happiness and risky health behavior. The results of this study may be published. However, your responses will be combined with responses from other people in the publication. The published results will not include your name or any other information that would in any way identify you.

- ✓ Questions? If you have any questions about this research study, please raise your hand now or at any point during the study. Also, you may contact us later at (813) 974-2223 (Dr. Suldo). If you have questions about your rights as a person who is taking part in a research study, you may contact a member of the Division of Research Compliance of the USF at 813-974-9343, or the Florida Department of Health, Review Council for Human Subjects at 1-850-245-4585 or toll free at 1-866-433-2775.

Thank you for taking the time to take part in this study.

Sincerely,

Shannon Suldo, Ph.D.
Assistant Professor of School Psychology
Department of Psychological and Social Foundations

Assent to Take Part in this Research Study

I freely give my permission to take part in this study. I understand that this is research. I have received a copy of this letter and assent form for my records.

_____	_____	Date: _____
Signature of child taking part in the study	Printed name of child	

Statement of Person Obtaining Informed Consent

I certify that participants have been provided with an informed consent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study. I further certify that a phone number has been provided in the event of additional questions.

_____	_____	Date:_____
Signature of person obtaining consent	Printed name of person obtaining consent	

Appendix C
Student Demographics Form

Birthdate _____(month)- _____(day)- _____(year)

PLEASE READ EACH QUESTION AND CIRCLE **ONE** ANSWER PER QUESTION:

1. I am in grade: 6 7 8

2. My gender is: Male Female

3. Do you receive free or reduced lunch? Yes No

4. My race/ethnic identity is:
   a. American Indian or Alaska Native
   b. Asian
   c. Black or African American
   d. Hispanic or Latino
   e. Native Hawaiian or Other Pacific Islander
   f. White
   g. Multi-racial (please specify: _____)
   h. Other (please specify: _____)

5. My biological parents are:
   a. Married
   b. Divorced
   c. Separated
   d. Never married
   e. Never married but living together
   f. Widowed

6. On average, how much time <u>per week</u> do you spend doing your homework:
   a. Less than 1 hour
   b. From 1 hour to less than 3 hours
   c. From 3 hours to less than 5 hours
   d. From 5 hours to less than 10 hours
   e. From 10 hours to less than 15 hours
   f. From 15 hours to less than 20 hours
   g. From 20 hours to less than 25 hours
   h. 25 hours or more

Sample Questions:

	Never	**Almost Never**	Sometimes	Fairly Often	**Very Often**
1. I go to the beach	1	2	3	4	5

	Strongly Disagree	**Disagree**	**Not Sure**	**Agree**	**Strongly Agree**
2. Going to the beach is fun	1	2	3	4	5

Appendix D
Local Mental Health and Substance Use Resources

Explanation of Research Project

Thank you for participating in the survey! We appreciate your time and honesty. You may be asking yourself, "Why do people at USF care about this stuff?" We care because we are interested in finding out what things influence middle school students' behavior and decisions. For example, we want to know how teenagers' experiences at school, home, and with their friends relate to different things they may take part in, such as drinking alcohol and using drugs. We also are interested in learning which aspects of school have a positive impact on your life and help you make good choices.

General Mental Health Support and Resources

In order to support you and your families, there are places in your community that provide mental health counseling services for reduced fees. Below you will find a list of non-profit centers that offer help.

NORTHSIDE MENTAL HEALTH CENTER
12512 Bruce B. Downs Blvd, Tampa, FL 33612
813-977-8700
www.northsidemh.org

DIRECTIONS FOR MENTAL HEALTH, INC.
1437 S. Belcher Rd., Clearwater, FL 33764
727-524-4464
www.directionsmh.org

FAMILY SERVICE ASSOCIATION
5800 North Nebraska, Tampa, FL, 813-238-3727

Substance Use Support and Resources

Below you will find a list of agencies that can provide more information about the effects of substance use. This list also contains support service providers to help either you or someone you know that may be dealing with a problem.

DACCO (Drug Abuse Comprehensive Coordination Offices)

- Provides a number of services including counseling, support over the phone for questions, substance abuse treatment programs (outpatient and inpatient)
- Phone number: (813) 984-1818

211, Big Bend

- Free, confidential phone call—Just call 211
- Get counseling, crisis help, and community-based referrals

Informational Sites on Drug Abuse and Teens
http://www.teens.drugabuse.gov

- This site tells you the facts about how drugs affect the brain and body! There are quizzes, games, and pictures to help you learn more about how your body reacts on

drugs like marijuana, nicotine, ecstasy and steroids. There is also a doctor available that you can chat online with and ask questions.

Substance Abuse Treatment Locator
http://findtreatment.samhsa.gov/

- Quick and easy way to locate a center to meet your needs. All you need to do is type in the area code of where you want to receive help and services will be listed for you.

Appendix E

School Climate Survey-Revised, Elementary and Middle School Version

(SCS-MS: Haynes, Emmons, Ben-Avie, Joyner, & Comer, 2001)

We want to know how you feel about your school. Please tell us if you agree or disagree with each statement. Please fill in ***only one*** response after each statement.

Please read each sentence carefully before answering.

		Agree	**Not Sure**	**Disagree**
1	Some children at my school often say that they will hit or beat others…..	**1**	**2**	**3**
2.	The children at my school behave well……..	**1**	**2**	**3**
3.	At my school, all children are treated the same, even if their parents are rich or poor…….	**1**	**2**	**3**
4.	At my school, parents often come to help in the classrooms…….	**1**	**2**	**3**
5.	Children at my school are caring people……	**1**	**2**	**3**
6.	Children at my school often get hurt in school……..	**1**	**2**	**3**
7.	Everyone is treated equally well at my school……...	**1**	**2**	**3**
8.	My parent(s) often attends parent meetings at school……	**1**	**2**	**3**
9.	My school is usually very noisy…….	**1**	**2**	**3**
10.	My teachers work hard to get me to do well on tests…….	**1**	**2**	**3**
11.	Teachers at my school help us children with our problems……...	**1**	**2**	**3**
12.	When we have fun games at my school, the same children are always put in charge……...	**1**	**2**	**3**
13.	At my school, children of all racers are treated the same……..	**1**	**2**	**3**
14.	At my school, the same person always gets to help the teacher……	**1**	**2**	**3**
15.	Children at my school like one another…….	**1**	**2**	**3**

16.	Children at my school trust one another……	**1**	**2**	**3**
17.	I feel that I can do well in this school……...	**1**	**2**	**3**
18.	My school is usually clean and tidy……...	**1**	**2**	**3**
19.	My teachers care about me……	**1**	**2**	**3**
20.	Some children carry guns or knives at my school……	**1**	**2**	**3**
21.	The same children always get to use things, like a computer, a ball or a piano, when we play……...	**1**	**2**	**3**
22.	At my school, children help one another……	**1**	**2**	**3**
23.	At my school, the same children get chosen every time to take part in After-school or special activities……..	**1**	**2**	**3**
24.	Children at my school fight a lot……	**1**	**2**	**3**
25.	Children at my school respect the teachers……	**1**	**2**	**3**
26.	I enjoy learning at this school……	**1**	**2**	**3**
27.	My parent(s) visits my school often……..	**1**	**2**	**3**
28.	My teachers believe that I can do well in my school work……	**1**	**2**	**3**
29.	Parents often come to my school to help with special projects…….	**1**	**2**	**3**
30.	Teachers at my school help us children with our school programs……..	**1**	**2**	**3**
31.	At my school, boys and girls are treated equally well……..	**1**	**2**	**3**
32.	At my school, teachers are fair to everyone……...	**1**	**2**	**3**
33.	Children at my school call each other bad names……..	**1**	**2**	**3**
34.	Children at my school respect one another……...…….	**1**	**2**	**3**
35.	I can talk to my teachers about my problems……..……..	**1**	**2**	**3**
36.	My parent(s) often comes to my school to meet with my teachers…… ……..	**1**	**2**	**3**

37.	My teacher makes me feel good about myself……..	**1**	**2**	**3**

Appendix F

School Attitude Assessment Survey-Revised (SAAS-R: McCoach & Siegle, 2000)

Please rate how strongly you agree or disagree with the following statements. In answering each question, use a range from (**1**) to (**7**) where (**1**) stands for **strongly disagree** and (**7**) stands for **strongly agree**. Please circle only one response choice per question.

	Statement:	**Strongly Disagree**	**Disagree**	**Slightly Disagree**	**Neither Agree nor Disagree**	**Slightly Agree**	**Agree**	**Strongly Agree**
1	I am intelligent	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2	I can learn new ideas quickly in school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3	I am smart in school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4	I am glad that I go to this school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5	This is a good school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6	I am good at learning new things in school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7	This school is a good match for me	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8	School is easy for me	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9	I want to get good grades in school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10	Doing well in school is important for my future career goals	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11	I like this school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12	I can grasp complex concepts in school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13	Doing well in school is one of my goals	**1**	**2**	**3**	**4**	**5**	**6**	**7**
14	I am capable of getting straight A's	**1**	**2**	**3**	**4**	**5**	**6**	**7**
15	I am proud of this school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
16	It's important to get good grades in school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
17	I want to do my best in school	**1**	**2**	**3**	**4**	**5**	**6**	**7**
18	It is important for me to do well in school	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Appendix G

School Satisfaction Subscale of the Multidimensional Students' Life Satisfaction Scale
(MSLSS: Huebner, 1994)

We would like to know what thoughts about life you've had during the past several weeks. Think about how you spend each day and night and then think about how your life has been during most of this time. Here are some questions that ask you to indicate your satisfaction with life. In answering each statement, circle a number from (**1**) to (**6**) where (**1**) indicates you **strongly disagree** with the statement and (**6**) indicates you **strongly agree** with the statement.

	Strongly Disagree	**Mostly Disagree**	**Mildly Disagree**	**Mildly Agree**	**Mostly Agree**	**Strongly Agree**
1. I feel bad at school	1	2	3	4	5	6
2. I learn a lot at school	1	2	3	4	5	6
3. There are many things about school I don't like	1	2	3	4	5	6
4. I wish I didn't have to go to school	1	2	3	4	5	6
5.. I look forward to going to school	1	2	3	4	5	6
6. I like being in school	1	2	3	4	5	6
7. School is interesting	1	2	3	4	5	6
8. I enjoy school activities	1	2	3	4	5	6

Appendix H

The American Drug and Alcohol Survey

(ADAS: Beauvais, Edwards, & Oetting, 1987)

The next 8 questions ask about cigarettes, alcohol and drugs. Some of these questions ask about your friends' and parents' thoughts about these things. Other questions ask you to indicate how often you have used cigarettes, alcohol, and drugs during the last month. Please answer each question honestly (remember this survey is anonymous- your res ponses can not be connected to you in any way).

1. How often in the last YEAR (12 months) have you:	**None**	**1-2 times**	**3-9 times**	**10-19 times**	**20 or more times**	**50 or more times**
Had alcohol to drink?	1	2	3	4	5	6
Gotten drunk?	1	2	3	4	5	6
Smoked cigarettes?	1	2	3	4	5	6
Used smokeless tobacco (chewing tobacco, snuff)?	1	2	3	4	5	6

2. How often in the last MONTH have you:	**None**	**1-2 times**	**3-9 times**	**10-19 times**	**20 or more times**
Had alcohol to drink?	1	2	3	4	5
Gotten drunk?	1	2	3	4	5
Smoked cigarettes?	1	2	3	4	5
Used smokeless tobacco (chewing tobacco, snuff)?	1	2	3	4	5

3. Have you used any of these drugs <u>to get high</u> in the last MONTH?	**None**	**1-2 times**	**3-9 times**	**10-19 times**	**20 or more times**
Marijuana ("pot," "weed")	1	2	3	4	5
Uppers (speed, etc.)	1	2	3	4	5
Cocaine	1	2	3	4	5
"Sniff" something like glue, gasoline, etc.	1	2	3	4	5
LSD (acid)	1	2	3	4	5
Other psychedelic (mushrooms, peyote, etc.)	1	2	3	4	5
PCP	1	2	3	4	5
Ketamine ("Special K")	1	2	3	4	5
Heroin	1	2	3	4	5
Adrenochromes ("Bovays")	1	2	3	4	5
Methamphetamines (Crystal meth, ice, crank)	1	2	3	4	5
Ecstasy ("XTC", MDMA)	1	2	3	4	5
Methylphenidate (Ritalin, Adderall,	1	2	3	4	5

MPH)					
Other prescription drugs (OxyContin, Xanax, Vicodin, etc.)	1	2	3	4	5

8. How honest were you when…	**I was very honest**	**I said I used more than I really do**	**I said I used less that I really do**
…you answered the questions about alcohol?	x	x	x
…you answered the questions about drugs?	x	x	x