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The relationship between life satisfaction and substance use in adolescence

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The Relationship between Life Satisfaction and Substance Use in Adolescence

by

Leeza Rooks

A thesis submitted in partial fulfillment
of the requirements for the degree of
Education Specialist
Department of Psychological and Social Foundations
College of Education
University of South Florida

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The Relationship between Life Satisfaction and Substance Use in Adolescence

Leeza Rooks

Abstract

Low life satisfaction and substance use in adolescence are causes for concern as each problem is known to be associated with many concurrent and later negative outcomes. To date, only four studies have examined links between these variables in youth. This study added to the literature by examining adolescents' life satisfaction in relation to their frequency of use of a variety of substance types, using an understudied population (i.e., a predominantly Hispanic sample of 130 high school students). Results included significant, inverse bivariate links between adolescent life satisfaction and use of alcohol, cigarettes, and marijuana. When examined simultaneously, adolescents' use of any of the three substance types accounted for a significant but small proportion (6%) of variance in global life satisfaction scores. Other notable results include that gender (but not ethnicity) moderated the relationship between life satisfaction and one type of substance use; specifically, adolescent males who drank alcohol in the past year did not experience diminished life satisfaction. Contrary to hypotheses, high life satisfaction did not protect students who experienced increased risk factors (e.g., poor academic achievement, conduct problems, emotional problems) from actual use of substances. Implications of these findings for future research and practice are outlined and discussed.

Chapter One

Introduction

Statement of the Problem

Life satisfaction is defined as the cognitive evaluation that people make with regard to the overall quality of their lives or the quality of specific domains within their lives (e.g., family, friends, school; Gilman & Huebner, 2003). Youth with high levels of life satisfaction tend to score highest on measures that assess academic, interpersonal and intrapersonal functioning; for instance, they report fewer social problems and more success with interpersonal interactions (Fogle, Huebner & Laughlin, 2002; Gilman & Huebner, 2006; Suldo & Shaffer, 2008). On the other hand, studies have shown that undesirable outcomes can occur when a youth experiences a low level of life satisfaction (MacDonald, Piquero, Valois & Zullig, 2005; Raphael, Rukholm, Brown, Hill-Bailey, & Donato, 1996; Topolski, Patrick, Edwards, Huebner, Connell, & Mount, 2001; Zullig, Valois, Huebner, Oeltman, & Drane, 2001).

Many youth have difficulties dealing with the changes and demands that develop during adolescence, and thus it is not uncommon for these young people to experience a decrease in life satisfaction during this tumultuous stage of life (Suldo & Huebner, 2004a). In addition, their lack of mature and well-developed coping strategies and problem-solving skills can further complicate the situation and result in the selection of inappropriate or harmful ways of dealing with problems. For example, some adolescents

might respond to decreases in life satisfaction by choosing to engage in various risky behaviors in an attempt to improve the way they feel about their lives (Zullig et al., 2001). Some of the risky behaviors that co-occur with decreased life satisfaction are physical aggression, violence, possession of guns, suicide ideation, sexual risk-taking, and substance use (MacDonald et al., 2005; Raphael et al., 1996; Topolski et al., 2001; Valois, Paxton, Zullig & Huebner, 2006; Valois, Zullig, Huebner & Drane, 2004; Valois, Zullig, Huebner, Kammerman, & Drane, 2002). Substance use by adolescents in the United States is a cause for serious concern due to recent increases in prevalence, and the fact that it too is linked to a host of negative outcomes (National Institute on Drug Abuse; NIDA, 1997).

Substance use involves the ingestion of any alcohol, drug, medication or toxin that does not result in serious physiological or psychological problems (Lasser & Schmidt, 2009). Substance abuse, in contrast, refers to a pattern of substance use so protracted and debilitating that it meets the criteria for a clinical diagnosis. Regarding substance use by American adolescents, the 2007 Youth Risk Behavior Survey (YRBS) from the Centers for Disease Control and Prevention (CDC) reported that of the students surveyed, 75% had drunk alcohol, 26% regularly engaged in binge drinking (five or more drinks of alcohol in a row), 50.3% had tried cigarette smoking, and 38% reported having used marijuana one or more times during their life. Moreover, between 2.3% and 13.3% of youth had tried at least one of many other illicit drugs, such as inhalants, hallucinogens, cocaine, ecstasy, methamphetamines, illegal steroids, and heroin.

The prevalence of substance use in youth often varies as a function of demographic characteristics such as gender, age, race/ethnicity, and socioeconomic

status. With regards to gender, data from the YRBS indicated that, with the exception of inhalants, males engage in all of the illicit substance use behaviors at higher rates than females. In contrast, the genders do not differ with respect to alcohol and cigarette use. Regarding age, the older the adolescent, the more likely he or she is to use a variety of substances (CDC, 2009). For example, students in the 12th grade reported the highest rates of usage for seven of the eleven substance use behaviors surveyed (tobacco, regular alcohol use, binge drinking, marijuana, ecstasy, cocaine, and heroin). Regarding rates of usage according to ethnicity, Caucasian and Hispanic students consistently reported higher rates of usage than that of their African American peers (CDC, 2009). Caucasian students engage in more binge drinking, cigarette, inhalant and hallucinogenic drug use; whereas, Hispanic students reported higher rates of ecstasy, methamphetamines, cocaine, illegal steroids, and use of alcohol on a regular basis (CDC, 2009). Within African American students, the most frequently used substances were cigarettes and alcohol, but their rates of usage were still much lower than that reported by Hispanic and White students (CDC, 2009; Johnston, O'Malley, Bachman, & Schulenberg, 2009). With regards to SES, studies typically use parental levels of education and/or annual familial earnings in order to categorize families. However, findings in this area have varied a great deal, and thus researchers posit that the risk and protective factors present in the adolescent's life may matter more than simple SES (CDC, 2009; Trim & Chassin, 2008).

Adolescent substance use is problematic in part because of its links to concurrent and later mental health problems and disorders. For instance, research has shown that the earlier a youth chooses to use substances, the greater the likelihood he or she will experience a substance use disorder in adulthood (DeWit, Adlaf, Offord, & Ogborne,

2000; Hingson, Heeren, & Winter, 2006; Rohde, Lewinsohn, Seeley, Klein, Andrews, & Small, 2007). Some of the negative outcomes that co-occur with substance use in adolescence include: risky sexual behavior; sexually transmitted diseases and HIV infection; involvement with the juvenile system; problems with school including poor grades; suspensions and expulsions; respiratory problems; violence; driving while under the influence; physical health symptoms; reduced life satisfaction; and increased risk for the development of a comorbid psychiatric disorder (Aarons et al., 1999; Arria, Dohey, Mezzich, Bustein & Van Thiel, 1995; CDC, 2009; Crowley & Riggs, 1995; Ellickson, Martino & Collins, 2004; MacDonald et al., 2005; Rohde et al., 2007; SAMSHA, 2008; Tucker, Ellickson, Collins & Klein, 2006; Zullig et al., 2001). Furthermore, research has shown that as adults, youth who use substances often display poor coping skills, higher levels of unemployment, job dissatisfaction, divorce, increased stress, continued substance use, and a lower likelihood of entering into post-secondary education (Bachman, Wadsworth, O'Malley, Johnston, & Schulenberg, 1997; Ellickson, Tucker & Klein 2003; Fergusson & Boden, 2008; Rohde et al., 2007; Tucker et al., 2006).

In addition to the range of negative outcomes outlined above, existing research suggests that substance use is associated with reduced life satisfaction in both adolescence and adulthood. A review of the literature yielded only four studies that specifically focused on the concurrent links between substance use and life satisfaction in youth (Kuntsche & Gmel, 2004; Piko, Luszczynska, Gibbons & Tekozel, 2005; Tu, Ratner & Johnson, 2008; Zullig et al., 2001). These studies consistently found negative correlations between life satisfaction and substance use, supporting that alcohol, tobacco, and drug use during adolescence co-occurs with reduced life satisfaction. These

preliminary studies also found some groups (e.g., females, frequent heavy users, etc.) may evidence stronger links between substance use and life satisfaction. Considering the elevated substance use rates of Hispanic youth (CDC, 2009; Johnston et al., 2009; NAHIC, 2007), additional research is needed with participants from this racial group. Research is also needed to determine the total amount of variance in adolescents' life satisfaction scores that is explained by their substance use behaviors. Such investigations are needed to further demonstrate the problematic effects of substance use on adolescent positive well-being. Comprehensive research on links between behaviors (i.e., substance use) and emotional mental health (i.e., life satisfaction) during adolescence is warranted in part by longitudinal studies that demonstrate the deleterious outcomes of adolescent substance use (particularly if it continues into adulthood) on life satisfaction during adulthood (Ellickson et al., 2004; Fergusson & Boden, 2008; Georgiades & Boyle, 2007; Rohde et al., 2007).

Purpose of the Current Study

The aim of the current study was to examine the relationship between adolescents' life satisfaction and their frequency of use of a variety of substances (e.g., tobacco, alcohol, and illicit drugs). Most prior research has focused on the relationship between an adolescent's life satisfaction and his or her use of only one substance (e.g., only tobacco or only alcohol). Thus, this study adds to the current literature by assessing the relationship between life satisfaction in adolescence and three different substance use behaviors (i.e., alcohol, cigarettes, and marijuana). Additionally, the current study investigated whether the relationship between adolescents' life satisfaction and their substance use varied according to specific demographic characteristics (i.e., gender and

ethnicity). Previous investigations of the relationships between substance use and life satisfaction have typically only controlled for demographic variables; it is hoped that the findings of the current study will be used in future preventative and rehabilitative efforts targeting groups of students who may be at heightened risk for experiencing reduced life satisfaction in the face of substance use. Finally, the current study determined whether high life satisfaction serves as a buffer in the relationship between traditional risk factors for substance use (e.g., poor academic achievement, conduct problems, emotional problems) and actual use of specific substances. The specific research questions that were addressed through this study are:

Research Questions

Research Question 1: What are the specific relationships between adolescents' life satisfaction and their use of the following substances:

- a. Alcohol
- b. Cigarettes
- c. Marijuana?

Research Question 2: How much of the variance in adolescents' life satisfaction is accounted for by their total use of various substances?

Research Question 3: Are specific types of substances particularly predictive of adolescents' life satisfaction?

Research Question 4: Do the relationships between adolescents' life satisfaction and their substance use vary as a function of the following demographic characteristics:

- a. Gender
- b. Ethnicity?

Research Question 5: Does life satisfaction function as a buffer in the relationship between risk factors for substance use (e.g., academic underachievement, conduct problems, mental health problems) and actual use of the following substances:

- a. Alcohol
- b. Cigarettes
- c. Marijuana?

Contributions to School Psychology Practice and Literature

The current study adds to the literature by examining the relationship between life satisfaction and substance use during the adolescent stage of life, a topic that has received minimal attention to date. Furthermore, this study expands on this area of research by targeting a subset of the adolescent population (i.e., Hispanic students) that has typically been overlooked or underrepresented in studies of this nature. This study also contributes to the literature by providing school psychologists with practical information that can be used to identify students who may be particularly at-risk for experiencing problems associated with low life satisfaction and/or substance use. Overall, findings may provide important information that can be used in prevention and/or intervention initiatives with this population of adolescents.

Chapter Two

Review of the Literature

The following review of the literature begins with a brief historical description of how positive psychology came to be recognized as a distinct and important branch within the field of psychology. Following this section, definitions of key terms (e.g., life satisfaction) that are explored within a variety of research studies are provided. A summary of the internal personality and temperament correlates of life satisfaction, the positive and negative outcomes with which it is associated, as well as the consequences of low life satisfaction are then addressed. Next, the prevalence of substance use in youth (including risk factors as a function of a variety of demographic characteristics such as age, gender, ethnicity, etc.) is outlined, followed by a discussion of common protective and risk factors for substance use. Then, issues with substance use across the life span, including factors such as age at first use and effects into adulthood, are addressed. Finally, studies that have specifically examined the relationship between substance use and life satisfaction in youth and adulthood are discussed in detail, followed by concluding comments regarding gaps in the current literature.

Positive Psychology

Dating back to the 1940's, since the period of World War II, psychology has been predominantly focused on dysfunctionality and pathology in human functioning, and thus has consistently concentrated on fixing the negative aspects of life. In recent times,

however, many researchers have called for psychology to move away from a focus on deficits and to instead place more attention on promoting overall levels of health and well-being (Gilman & Huebner, 2003; Seligman & Csikszentmihalyi, 2000; Suldo, Riley, & Shaffer, 2006; Vera et al., 2008). Only when researchers begin to effectively combine the suggestions and practices of these two approaches to psychology will they be able to achieve a comprehensive understanding of the entire range of factors that can play a role in psychological outcomes (Gilman & Huebner, 2003).

This overall interest in shifting the focus of the field towards building fulfilled and thriving people and communities is at the heart of a relatively recent branch of psychology, known as positive psychology. Positive psychology is concerned with a variety of constructs, some of which entail optimal development, contentment, well-being, satisfaction and overall levels of happiness. As pointed out by Diener (2000), the term “happiness” is often used synonymously with the construct of “subjective well-being”. Subjective well-being (SWB) is defined as a broad category of phenomena that can be used to describe how people experience their lives in positive or negative ways. SWB can be broken down into three separate components: positive affect (e.g., joy and fulfillment), negative affect (e.g., sadness and anger) and global judgments of life satisfaction. Life satisfaction refers to the subjective cognitive evaluations that people make with regard to the quality of their overall lives or the quality of specific domains within their lives, such as satisfaction with their family, friends, school experiences, etc. People react differently to the same life circumstances as a result of their individual cognitive schemas and beliefs; it is not solely the objective social indicators (e.g., job,

income level) that define a person's satisfaction with his or her life (Bradley & Corwyn, 2004; Diener, Suh, Lucas, & Smith, 1999; Gilman & Huebner, 2003; Vera et al., 2008).

Although research studies have shown that the three components of SWB are found to correlate substantially with each other, they are in fact distinct constructs that need to be understood in their own right and thus should be studied independently (Diener et al., 1999; Gilman & Huebner, 2003; Lent, 2004). Due to the fact that studies have consistently shown that life satisfaction goes beyond the immediate effects of life events and mood states, and thus is the most stable component of SWB, it is the indicator of SWB most frequently used in studies of youths' perceived quality of life (Gilman & Huebner, 2003; Suldo et al., 2006).

Life Satisfaction in Youth

Over the last 20 years, many researchers have identified a variety of internal personality and cognitive characteristics that are correlated with life satisfaction during childhood and adolescence. These internal variables may play the biggest role in determining how satisfied adolescents feel with their lives both globally and with respect to specific domains (Fogle et al., 2002; Huebner, 1991a). For instance, researchers have found that global self-esteem is a construct quite highly correlated with and predictive of global life satisfaction, suggesting that youth who have overall positive views of themselves also tend to be satisfied with their lives on a whole (Dew & Huebner, 1994; Huebner, 1991a). In addition, youth who have reported having high levels of life satisfaction have also rated themselves high on measures of extraversion and low on neuroticism (Fogle et al., 2002; Greenspoon & Saklofske, 2001; Huebner, 1991a).

Children and adolescents' life satisfaction is also greatly affected by the degree to which they believe that they have the power to control their lives and the things that happen to them, in other words, whether or not they have an internal locus of control (Ash & Huebner, 2001; Dew & Huebner, 1994; Huebner, 1991a). Greenspoon and Saklofske (2001) further asserted that it is indeed important to help youth foster and develop an internal locus of control, as it may play an important role in helping them to deal with negative interactions and situations that they encounter on a daily basis.

Another internal factor associated with life satisfaction is self-efficacy; youth who believe that they have the capabilities necessary to attain desired goals and outcomes also tend to report higher levels of life satisfaction (Fogle et al., 2002; Vecchio, Gerbino, Pastorelli, Del Bove & Caprara, 2007). Self-efficacy is not examined in a global sense, but rather with respect to specific areas of functioning. For example, Vecchio et al. (2007) conducted a longitudinal study in which they examined academic self-efficacy and social self-efficacy and the influence that these two domains of beliefs exerted on an adolescents' subsequent rating of life satisfaction. It was found that change in both of these areas significantly contributed to youths' overall report of life satisfaction five years later. In addition, Fogle et al. (2002) also found that social self-efficacy demonstrated a significant positive relationship with adolescent life satisfaction. Thus, it appears that the beliefs that an adolescent has about his or her ability to be successful in academic and social pursuits play an important role in his or her overall feelings of contentment and subsequent satisfaction with life.

All of the variables outlined above appear to be distinct, yet related factors that predict adolescents' levels of life satisfaction. As demonstrated by Suldo and Shaffer

(2008), knowledge of a youth's level of life satisfaction is very useful information to have when attempting to predict how successfully he or she will function and adjust to his or her daily environment. Importantly, a wide variety of positive outcomes are associated with high levels of SWB. Specifically, the participants in Suldo and Shaffer's (2008) study, who displayed varying levels of life satisfaction and psychopathology, differed in their educational outcomes, social relationships and overall physical health. Youth with the highest levels of SWB (coupled with low levels of psychopathology) had the best reading skills, school attendance, academic self-perceptions and related goals, social support from peers and parents, and self-perceived physical health, as well as fewer social problems. These findings suggest that fostering a child's SWB increases the likelihood that he or she will have positive academic and interpersonal functioning. These conclusions are further supported by previous studies with similar results. For example, Gilman and Huebner (2006) reported that youth with high global life satisfaction had the highest scores on measures that assessed academic, interpersonal, and intrapersonal functioning. Fogle and colleagues (2002) found that youth with high life satisfaction reported fewer social problems and more success in their interpersonal interactions, and Zullig, Valois, Huebner, and Drane (2005) found that life satisfaction was negatively correlated with self-rated physical health problems and mental health problems.

Masten and Coatsworth's (1998) report on how youth develop competence perhaps lends an explanation as to why the above factors are so central to an adolescent's feelings of life satisfaction and subsequent life success. These authors explained that the basis for judging whether youth are competent is related to whether they are meeting a set of socially defined and accepted criteria known as developmental tasks. Two types of

psychosocial tasks that are expected to be met during adolescence are academic achievement and the formation of close friendships with other youth. Therefore, if an adolescent is deemed unsuccessful or struggling to meet these two important developmental tasks, it is likely that the concurrent negative experiences both reduce their resilience to future problems and decrease the degree to which they feel satisfied with life. Undesirable behaviors co-occur with experiences of low levels of life satisfaction in youth.

Problems Associated with Low Life Satisfaction: Engagement in Risky Behaviors

It is well known that adolescence is potentially an unstable and confusing time of life, when a young person has a tendency to display heightened sensitivity to contextual conditions and emotional states (Steinberg & Sheffield Morris, 2001). It is not uncommon for these young people to have difficulties in dealing with the changes and demands in the different domains of their lives, and thus reports indicate that many adolescents experience a decrease in life satisfaction as they enter into and progress through this stage of life (Suldo & Huebner, 2004a). In addition, as adolescents often have less experience in dealing with a variety of problems and by extension a lack of efficient coping strategies and problem solving skills, it is possible that they might select inappropriate and perhaps even harmful ways of dealing with problems. As Zullig et al. (2001) pointed out, some individuals might respond to decreases in life satisfaction and associated emotions by opting to engage in various risk-taking behaviors (e.g., violence, sexual activity, substance use) in an attempt to improve the way that they feel about their lives. Conversely, the opposite path is also plausible, in that the choice to engage in risky behaviors may serve to decrease a student's satisfaction with life. Although both of these

explanations are plausible, there are in fact other possibilities regarding the relationship between the two variables that need to be considered. For example, even though life satisfaction and substance use appear to be strongly correlated, this does not necessarily imply a causal relationship. Research has shown that when two variables are correlated the true relationship could be characterized by one of the four possible associations. For example, it could be that (1) low levels of life satisfaction cause substance use, (2) substance use affects life satisfaction, (3) life satisfaction is linked to substance use via a third shared variable, and/or (4) the relationship between life satisfaction and substance is reciprocal. In the absence of evidence to the contrary, the current study operates from the working hypothesis that substance use affects life satisfaction. A unidirectional relationship was selected due to statistical constraints inherent to testing reciprocal effects, and due to the fact this relationship is consistent with a number of longitudinal studies that have shown strong relationships between substance use in adolescence and reduced life satisfaction in adulthood.

There have been a handful of studies conducted that have focused specifically on the relationship between adolescents' life satisfaction and their engagement in risk-taking behaviors. In a 2005 publication, MacDonald et al. explored the relationships between violent behaviors and perceived life satisfaction; they found that life satisfaction was negatively correlated with carrying guns and instances of physical aggression. These findings were replicated by Valois et al. (2006), who found that physical fighting and having ever carried a gun were both significantly associated with dissatisfaction with life. Valois et al. (2006) speculated that perhaps youth who are dissatisfied with life engage in violent behaviors because they lack the problem-solving and coping skills necessary to

manage stress and conflict-laden situations. This lack of coping skills could also be why youth with reduced life satisfaction report more serious consideration, planning, and actual attempts, of suicide (Valois et al., 2004).

In 2001, Topolski et al. examined the association between self-perceived quality of life and a variety of health-risk behaviors. They found that youth who completely abstained from any risk-taking behavior (i.e. tobacco use, alcohol use, illicit drug use, high-risk sexual behavior) reported the highest quality of life when compared to teens who occasionally or frequently engaged in those behaviors. In addition, they found that adolescents who engaged in many of the risk behaviors reported even lower quality of life than those who reported engaging in only one health-risk behavior. Therefore, there appears to be cumulative negative effect between risky behaviors and quality of life.

Other studies have confirmed that decreases in life satisfaction co-occur with sexual risk-taking and substance use behaviors. Valois et al. (2002) found that having sex before age 13, having many lifetime sexual partners, using alcohol or drugs before intercourse, not using any contraceptive methods, forcing someone or being forced to have sex, etc. were all significantly associated with reduced life satisfaction. In addition, use of substances such as, alcohol, tobacco, marijuana, cocaine, injection drugs and steroid use are all meaningfully linked to reduced perceived quality of life and satisfaction with life (Raphael et al., 1996; Zullig et al., 2001).

On a whole it appears that reduced life satisfaction is significantly correlated with a wide range of risk-taking behaviors, such as, physical fighting, carrying weapons, suicide ideation and self-harming behaviors, sexual risk-taking, and substance abuse. The main focus of this current study is on the interrelationships between life satisfaction and

substance use. Thus, the problem of substance use in adolescence is discussed in more detail in the next section.

Substance Use

In keeping with the Diagnostic and Statistical Manual-IV-TR (DSM-IV-TR, American Psychiatric Association, 2000) throughout this paper the term *substance* is used to refer to any drug, alcohol, medication or toxin of abuse. More specifically, the DSM-IV-TR groups commonly used substances into 11 classes: alcohol; amphetamine or similarly acting sympathomimetics; caffeine; cannabis; cocaine; hallucinogens; inhalants; nicotine; opioids; phencyclidine (PCP) or similarly acting arylcyclohexylamines; and sedatives, hypnotics, or anxiolytics (American Psychiatric Association, 2000). When addressing and studying issues related to drug or alcohol use, it is important to understand and make distinctions between the terms substance use, Substance Abuse and Substance Dependence.

The term substance use is typically used to mean the ingestion of any alcohol, drug, medication or toxin, with typically short-term and insignificant effects, that may not result in serious physiological or psychological problems (Lasser & Schmidt, 2009). However, Substance Abuse and Substance Dependence are considered to be more problematic and thus are classified in the DSM-IV-TR under the category of Substance Use Disorders (SUDs). The DSM-IV-TR defines Substance Abuse as a maladaptive pattern of substance use manifested by at least one of four symptoms (e.g., failure to fulfill major role obligations at work, school, or home; recurrent substance use in situations in which it is physically hazardous; recurrent substance-related legal problems, etc.) that are characterized by repeated harmful use and negative psychosocial

consequences. Substance Dependence is considered to be a more severe syndrome than Substance Abuse and is generally defined as a physiological or psychological dependence manifested by a cluster of cognitive, behavioral, and physiological symptoms (e.g., need for increased amounts of the substance to achieve intoxication; feelings of acute withdrawal which often results in further substance use in an attempt to relieve or avoid those symptoms; compulsive use that leads to the substance being taken in larger amounts or over a longer period of time than was originally intended, etc.) which indicate that a person continues to use the substance despite significant substance-related problems. Generally speaking, Substance Abuse and Substance Dependence can be differentiated with regards to the amount of the substance consumed during a specific amount of time, and the outcomes (emotional, medical, social and behavioral) that ensue as a result of the consumption (Chung & Martin, 2001; Clark, 2004).

Prevalence of Substance Use in Youth

Research has shown that the prevalence of substance use in youth often varies as a function of the type of substance, as well as certain demographic characteristics such as age, gender, race/ethnicity and socioeconomic status. One source of current and trustworthy information comes from the CDC's Youth Risk Behavior Survey (YRBS). This investigation is conducted every two years and is primarily concerned with monitoring a variety of health-risk behaviors (e.g., tobacco use, alcohol and other drug use, as well as violence and risky sexual behaviors) among high school students (grades 9-12) nationwide (CDC, 2009). For the purposes of this study, the results focusing on substance use and its relation to the aforementioned demographic factors are further detailed.

Type of substance. Of the adolescents surveyed in the YRBS in 2007, the three substances with the highest rates of usage were alcohol, tobacco and marijuana. When examining the rates of alcohol consumption, it was found that as much as 75% of the sample had ever drunk alcohol, with 26% reporting that they regularly engaged in binge drinking (five or more drinks of alcohol in a row). In regards to tobacco use, over half of the entire sample of students (50.3%) had ever tried cigarette smoking (even one or two puffs), with 20% of the sample classifying themselves as regular smokers, of whom 10.7% indicated that they smoke more than 10 cigarettes per day. Meanwhile, a total of 38% of the adolescents reported having used marijuana one or more times during their life. Of the seven other substances surveyed, the descending percentages of usage are as follows: Inhalants (13.3%), Hallucinogens (7.8%), Cocaine (7.2%), Ecstasy (5.8%), Methamphetamines (4.4%), Illegal steroids (3.9%), and Heroin (2.3%; CDC, 2009).

Considering the general trends over the past years, the data from this survey indicate that there has been a decrease in cigarette use since the year 2001, and a decrease in alcohol use (including binge drinking) and marijuana use since 1999. Despite decreases in the overall incidences of health-risk behaviors by youth since 1999, the fact that many youth still continue to take part in substance use is a cause for great concern. This information is also strongly supported by results of similar national surveys including the NIDA-funded 2008 Monitoring the Future (MTF) Study and the 2007 National Adolescent Health Information Center (NAHIC), both of which reported comparable percentages and trends of current substance use by youth (Johnston et al., 2009; NAHIC, 2007).

Gender. The data presented earlier were obtained from both genders. However, previous studies have demonstrated that adolescent males and females often vary in their responses to substance use and eventual outcomes. In the YRBS (2007) gender-specific data set, it was found that males were more likely than females to regularly engage in all of the surveyed illicit substance use behaviors (including marijuana) with the exception of inhalants, where 14.3% of girls reported use versus 12.4% of boys. In fact, according to the 2007 National Survey on Drug Use and Health (NSDUH) presented by the Substance Abuse and Mental Health Services Administration (SAMHSA), adolescent males were almost twice as likely as females to report using marijuana in the past month (8.0% vs. 3.8%). No significant differences were found among the genders concerning regular cigarette use (males 10.0% vs. females 9.7%) and alcohol use (males 15.9% vs. females 16.0%) indicating that these are areas of equal concerns for both male and female adolescents (SAMHSA, 2008).

Age. The age of an adolescent is also an important factor to consider when attempting to achieve a broad understanding of substance use by America's youth. According to the data collected by the YRBS, the older the adolescent, the more likely he or she is to use a variety of substances. Specifically, youth in the 12th grade had the highest rates of current tobacco (33.4%), alcohol (54.9%; including binge drinking, 36.5%) and marijuana use (25.1%), with the percentages decreasing between 3-5% with each subsequent grade (11th, 10th, 9th; CDC, 2009). When examining the rates of use for illicit drugs other than marijuana, the trends are more varied. For example, 12th grade students had the highest rates of ecstasy (7.6%), cocaine (4.4%), and heroin use (2.6%), 11th grade students had the highest rates of methamphetamine (5.3%) and hallucinogenic

use (8.1%) and 9th grade students were found to use illegal steroids (3.8%) and inhalants (15%) in greater quantities than older youth. Students in the 10th grade did not report the highest usage rates for any of the substances surveyed; with the exception of illegal steroids and inhalants, their usage rates were between that of 9th and 11th grade students. In sum, these data suggest that older adolescents tend to use substances at higher rates than their younger peers.

Race/ethnicity. The results from the YRBS across all grade levels for the three largest racial/ethnic groups (White, African American, and Hispanic) are as follows. White students reported the highest rates of cigarette (23.2%), inhalant (14.4%) and hallucinogenic drug use (9%), with Hispanic students consistently falling in second for those three categories (16.7%; 14.1%; 7.9% respectively; CDC, 2009). Regarding alcohol use on a regular basis, Hispanic students reported slightly higher amounts (47.6%) in comparison to White students (47.3%). However, White students reported engaging in binge drinking (29.8%) at higher rates than Hispanic students (26.8%). Even though Hispanic and White students reported comparable amounts of regular alcohol usage, it appears that White students are more likely to drink as much as five alcoholic drinks in a row at any one time. For the remaining four categories of drugs studied, Hispanic students reported the highest levels of usage of ecstasy (7.4%), methamphetamines (5.7%), cocaine (5.3%) and illegal steroids (4.6%), with White students coming in second (5.6%, 4.5%, 3%, and 4.1%, respectively).

These results suggest that either White or Hispanic students consistently report higher levels of substance use than their African American peers. Within African American students the most frequently used substances were cigarettes (11.6%) and

alcohol (34.5%), but these percentages were still much lower than the rates reported by Hispanic and White students. This information is further supported by the 2008 MTF findings which include that at all three grade levels, African-American students report substantially lower rates of use of most licit and illicit drugs compared to White students (Johnston et al., 2009).

On a whole, the data presented above may seem contrary to popular assumption, with African American students having the lowest rates of substance use of the three main race/ethnicity groups. Regardless, the results suggest that race/ethnicity may be a factor that deserves more consideration when attempting to plan and implement prevention and intervention programs that will have the greatest likelihood of success.

Socioeconomic status. Parental levels of education and/or annual familial earnings are the two measures that are typically used by researchers to define a family's socioeconomic status (SES). There have been mixed findings with regard to whether SES plays a significant role in substance use and the potential development of a substance use disorder in adolescence. For example, the following claims have been made by different researchers regarding the issue: differences in use by socioeconomic class are very small and therefore not statistically significant; it is very difficult to isolate the effects of SES or culture; SES can inform the probability of substance use; and finally, it is more a matter of the presence of certain risk and protective factors in the adolescent's life, with certain risk factors more likely to be present in families from low SES neighborhoods and communities (CDC, 2009; Johnston et al., 2009; Lowry, Kann, Collins, & Kolbe, 1996; Trim & Chassin, 2008).

For example, some studies have stated that adolescents from low SES backgrounds, after controlling for age, sex, race/ethnicity, and school enrollment status (i.e., in school or out of school), were more likely to report the use of cigarettes and heavy episodic drinking than adolescents from higher SES backgrounds (Lowry et al., 1996). Meanwhile, others have reported that differences between the effects of a low SES neighborhood on adolescent alcohol use depended on whether the adolescent had an alcoholic parent, a potential risk factor for the development of alcohol use in adolescence (Trim & Chassin, 2008). Therefore, before any conclusions can be made, additional research is needed in order to assess the effect of specific contextual factors related to SES. In keeping with the recommendations made by Trim and Chassin, the following section explores both the risk and the protective factors that likely play a significant role in an adolescent's decision to engage in the use of substances.

Risk and Protective Factors

Understanding the numerous and varying influences on an adolescent from childhood throughout the course of his or her youth is a multifaceted and complex problem. There are many sociocultural, psychological and environmental factors that differ in their level of protective or harmful qualities depending on the youth in question; the impact of these variables is not the same for all adolescents across the United States (Masten & Coatsworth, 1998). Some of these factors serve to reduce the likelihood that an adolescent will engage in substance use (i.e., protective factors); meanwhile others may serve to increase the chances that they will misuse substances and thus develop a substance use disorder (i.e., risk factors).

Protective factors. Over the years, a wide variety of studies described a range of variables that can be considered protective factors against adolescent substance use. These factors can often be conceptualized as falling into one of four broad categories: individual/personal characteristics, familial interactions, peer relationships, and community/school involvement. With regards to individual factors, there are certain beliefs and skills that once possessed by a youth, may have protective and preventative qualities. For example, individual social skills, assertive problem-solving abilities, a belief in moral order, and a strong personal belief in God (in contrast to mere religious attendance, or more general spirituality) have all been identified as positive individual characteristics for a youth to possess (Beyers, Toumbourou, Catalano, Arthur & Hawkins, 2004; Kliwer & Murrelle, 2007; Morrison, Storino, Robertson, Weissglass & Dondero, 2000).

When examining familial protective factors, some researchers have found evidence to suggest that these have the most influence and thus play the biggest role in the protection against the development of substance use disorder in adolescence (Martino, Ellickson & McCaffrey, 2009; Wood, Read, Mitchell & Brand, 2004). The array of familial variables that are inversely associated with substance use include: opportunities and recognition for prosocial involvement, positive and consistent communication, strong bonds and levels of attachment, parental involvement in school and pro-school messages, perceived supervision and monitoring, and an overall caring, supportive and healthy environment in the home (Beyers et al., 2004; Cleveland, Feinberg, Bontempo, & Greenberg, 2008; Ellickson, Tucker, Klein & Saner, 2004; Kliwer & Murrelle, 2007; Morrison et al., 2000; Swadi, 1999). In addition, strong and consistent parental

disapproval of substance use and the setting of stringent anti-drug rules have been found to be the most influential of all the familial factors (Martino et al., 2009; Schinke, Fang & Cole, 2008; Wood et al., 2004). In sum, these studies have shown that the behavior, attitudes, values and actions of parents have a meaningful influence towards the prevention of substance abuse/dependence in their children.

The last two categories, peer relationships and community/school involvement, consist of variables that extend beyond the home microsystem and thus involve factors that are more social and communal in nature. As might be expected, frequent interactions and close relationships with peers who attend school regularly and engage in prosocial activities is an important protective factor against substance for youth (Cleveland et al., 2008; Wood et al., 2004). This finding may be due to the effect of positive role models and constructive examples for the youth to internalize and identify with. With regard to school involvement, studies have shown that good grades, regular attendance, positive teacher-student interactions, perceptions of high levels of teacher support, feelings of connectedness, and being involved in after-school programs and extra-curricular activities are all important factors in preventing substance use (Kliewer & Murrelle, 2007; Morrison et al., 2000; Schinke et al., 2008; Suldo, Mihalas, Powell, & French, 2008). In addition, communities that express attitudes and norms that discourage drug use and are generally cohesive, as well as relatively safe and organized, also appear to protect adolescents from substance abuse (Cleveland et al., 2008; Spooner, 1999).

In sum, it is important for parents, teachers, and interventionists to focus on increasing the amount of protective factors in an adolescent's life. Increasing protective factors is particularly important given the fact there exist certain risk factors and

hazardous contextual variables that are unalterable and thus cannot be entirely removed.

The following section outlines and describes these risk factors that have been linked to an increase in the use of substances and the development of substance use disorders in adolescence through adulthood.

Risk factors. Similar to the way in which protective factors have been conceptualized in the literature, risk factors too can be categorized into one of the four broad categories: individual/personal, familial interactions, peer relationships and community/school factors. Individual risk factors include genetic predispositions, personality characteristics, beliefs, expectations and behaviors. Regarding the possible role of genetics, studies have shown that when alcohol and drug abuse problems are present, there is often a family history of substance abuse. However, it appears that these genetic predispositions are mediated by the presence or absence of a variety of other factors; having an alcoholic parent does not mean that an adolescent will automatically follow a similar path, an issue that is further examined in the following paragraphs (Brody et al., 2009; Rhee et al., 2003). Some of the personality characteristics and beliefs that have been linked to substance use are rebelliousness, sensation-seeking, favorable attitudes towards drugs, beliefs that alcohol/drugs are not harmful, feelings of insecurity, and impulsivity (Beyers et al., 2004; Ellickson et al., 2004; Kliewer & Murrelle, 2007; Schinke et al., 2008). Additionally, behaviors such as early age at first use, as well as conduct disorder, antisocial behavior, attention deficit hyperactivity disorder (ADHD) and depression have all been linked to substance use in adolescence (DeWit et al., 2000; Schinke et al., 2008; Thompson, Riggs, Mikulich & Crowley, 1996).

Similar to the claim that positive familial factors play the biggest protective role in the life of an adolescent, it is also true that negative familial factors have the greatest influence and thus place an adolescent at a greater risk for substance use (Beyers et al., 2004; Friedman & Glassman, 2000; Martino et al., 2009; Wood et al., 2004). The wide range of familial risk factors are as follows: favorable attitudes towards substance use, inconsistent discipline, lack of involvement in school-related activities, lack of monitoring or supervision, negative and conflictual interactions, poor communication, and overall poor family management (Beyers et al., 2004; Kliewer & Murelle, 2007; Morrison et al., 2000; Windle, 2000; Wood et al., 2004). In regards to specific family members, having a sibling who used substances further increases an adolescent's risk due to modeling and increased access (Windle, 2000). However, substance use by a parent is not a significant risk factor unless it affects their parenting style in one of the many ways identified above (Swadi, 1999).

With regards to peer relationships factors, peer encouragement/approval and interaction with deviant and substance using peers greatly increases the likelihood that an adolescent will engage in substance use, due to the presence of both active (offers of alcohol) and passive (social modeling, perceived norms) peer influences (Cleveland et al., 2008; Ellickson, Tucker et al., 2004; Friedman & Glassman, 2000; Schinke et al., 2008; Suldo et al., 2008; Windle, 2000; Wood et al., 2004). Finally, risk factors related to the community and levels of success at school have also been found to play a significant role. For example, disengagement from school characterized by a lack of academic interest or motivation, and receiving poor or failing grades, as well as community risk factors such as norms favorable to drug use, disorganization, availability of alcohol and drugs,

exposure to violence and victimization (physical/sexual abuse or assault), have all been linked to substance use in adolescence (Beyers et al., 2004; Cleveland et al., 2008; Kilpatrick et al., 2000; Kliewer & Murrelle, 2007). In sum, risk factors include conduct disorder, antisocial behavior, ADHD, depression, and low levels of success at school. Specific variables that serve to buffer youth from using substances in the presence of such risk factors are unknown.

It is important to keep in mind, however, that there is no absolute relationship between the presence of a variety of risks factors in an adolescent's life and the definite development of a substance use problem; risk factors do not inexorably lead to a substance use disorder later on in life. Moreover, for the majority of individuals, not all risk and protective factors are present at the same time; they come into and out of play throughout the course of their life (Kilpatrick et al., 2000). As a result, when attempting to prevent or intervene with a problem such as adolescent substance use, it is important to consider all of the unique characteristics and aspects of the youth's life at that particular point in time. If protective factors are not promoted and risk factors are not targeted throughout development, it is possible that an adolescent may begin abusing substances at an early age and thus be faced with all of the negative outcomes that often accompany such behavior.

One factor that may protect students with many risk factors from actually engaging in substance use may be adolescent life satisfaction. Specifically, the current study hypothesizes that high life satisfaction serves as a buffer against the use of substances in spite of risk factors. Although the current study is the first to test such a hypothesis, empirical support for this idea is provided by a longitudinal study that found

positive life satisfaction acted as a buffer against negative outcomes in the face of adverse life circumstances (Suldo & Huebner, 2004b). Specifically, these researchers found that middle and high school students with high life satisfaction were less likely to exhibit increases in externalizing behavior problems (e.g., aggression, rule-breaking behavior) as they experienced more stressful life events, as compared to their peers with low life satisfaction. Therefore, for adolescents who reported being satisfied with their lives, their positive outlook on life appeared to buffer them against the development of behavior problems in the face of adverse life circumstances. This finding is especially relevant to those working in prevention and intervention programs, as a youth's life satisfaction may be a very important change agent/protective factor that should be directly assessed and targeted. The current study sought to further this line of research by determining if substance use is a specific type of negative outcome that may be related to risk factors for only those youth with low life satisfaction.

Substance Use across the Lifespan

With the current prevalence rates in mind, there is no doubt that adolescent substance use is one of the most important public health issues in the United States. Its detriment to society is underscored by the fact that it is a major factor in the four leading causes of death among adolescents: motor vehicle accidents, other unintentional injuries (i.e. caused from falls, fires, suffocations and drowning), homicides, and suicides (CDC, 2009; Elickson, Tucker & Klein, 2003; Johnston et al., 2009). As a result, the following section explores the research on substance use across the lifespan, specifically examining age at first use and the detrimental effects that often progress and continue to impact their lives in young adulthood and beyond.

Age at first use. The 2008 Monitoring the Future (MTF) survey highlights the high prevalence rates of youth who use or experiment with substances at young ages, and the particular risks associated with early use. For example, youth who begin using alcohol in their early adolescent years (before the age of 14) are the most vulnerable to the risk of developing alcohol dependence or abuse (at least 5 times greater risk), when compared to youth who delayed alcohol consumption until the legal age of 21 or older (Behrendt, Wittchen, Hofler, Lieb, & Beesdo, 2009; Buchmann et al., 2009; DeWit et al., 2000; Hingson et al., 2006). In fact, a report by SAMHSA in 2004 stated that more than 95% of the adults in their sample (14 million) who were classified as having past year alcohol dependence or abuse, had begun using alcohol before the age of 21.

With regards to the research that has specifically focused on the relationship between age at first cigarette/nicotine use, similar relationships have also been reported. For instance, even relatively small increases in the number of cigarettes smoked during preadolescence was strongly associated with a large increase in the proportion of youth reporting smoking in late adolescence (DuRant, Smith, Kreiter, & Krowchuk, 1999; Jackson & Dickinson 2004). Thus, there is a very strong relationship between the amount of cigarettes smoked at a young age and the tendency towards eventual dependence. Comparable trends have also been detailed with a variety of illicit drugs (e.g. cannabis, cocaine, heroin) providing further evidence for the notion that the earlier adolescents start to use substances, the greater the likelihood that they will experience a substance use disorder later on in their lives (Grant & Dawson, 1998).

Negative outcomes in adolescence. The use of substances from such a young age likely interferes with, and negatively affects, adolescents' physical, psychological,

emotional and social development, resulting in a host of problems that are often difficult to change or completely eradicate. For example, protracted and continuous use during adolescence has been linked to physical health symptoms/problems such as appetite changes, weight loss, eczema, headaches, episodes of loss of consciousness, and respiratory difficulties, plus a variety of trauma-related health problems (i.e., puncture wounds, contusions and bone damage; Aarons et al., 1999; Arria et al., 1995; Tucker et al., 2006). A closely related area is that of risky sexual behavior, with data from the YRBS and other studies indicating that illicit drug and alcohol use are very strongly associated with being sexually active (Anderson & Mueller, 2008; CDC, 2009; Dunn et al., 2008). These reported risky behaviors include: multiple sexual partners, less consistent use of condoms, being drunk or high during sexual intercourse, and unplanned pregnancy (Stueve & O'Donnell, 2005; Tapert, Aarons, Sedler, & Brown, 2001). Furthermore, these behaviors can possibly result in further physical health problems, such as exposure to HIV and other sexually transmitted infections (Tapert et al., 2001).

Another area in which substance-using adolescents show a multitude of problems is in school functioning. These youth appear to be less motivated, receive poor or failing grades resulting in lower GPAs, are more likely to drop out, skip class or get suspended, and display deviant behavior (e.g., stealing) in both middle school and high school (Ellickson et al., 2003; Myers, Aarons, Tomlinson & Stein, 2003; Tucker et al., 2006). In addition, these students display similar forms of deviant behavior at home and in other community settings. For example, Tucker and colleagues (2006) reported that by the time substance-using youth enter the 8th grade, they are more likely than non-substance

abusing youth to be selling drugs, stealing, and engaging in acts of physical aggression and violence against others.

Finally, studies have found correlations between substance abuse/dependence in adolescence and emotional distress, depression, and negative affectivity (i.e., feeling stressed, nervous, upset and tense; Brook, Brook, Zhang, Cohen, & Whiteman, 2002; Brook, Cohen & Brook, 1998; SAMSHA, 2008; Shedler & Block, 1990; Watson & Clark, 1984). Data from the NSDUH indicate that in 2007, two million youth (ages 12-17) had Major Depressive Episode (MDE) during the past year, and of these, 35.5% had used illicit drugs during that period, which was higher than the portion of youth (17.2%) who used drugs but did not have past year MDE. In addition, youth with past year MDE were more likely than youth without MDE to report using cigarettes (4.8% vs. 2.3%) and heavy use of alcohol (3.8% vs. 2.2%; SAMSHA, 2008).

As Brook and colleagues (2002) note, it is often difficult to fully understand the complex interactions (e.g., which occurs first) involved with commonly co-occurring disorders such as substance use disorders and major depressive disorder (MDD) or MDE. One possible explanation is that both substance use disorders and depression are due to the changes in psychosocial, physiological and cognitive functioning caused by protracted substance use. Therefore, since substance use and depression/emotional distress often occur together, this would likely increase the probability that the adolescent would feel further discontented with his or her life and thus experience a subsequent loss of life satisfaction. This statement is supported by many studies that have reported that substance use in adolescence is significantly associated with reduced life satisfaction

(Zullig et al., 2001), a link that will be addressed in greater detail in a later section of this paper.

Considering the large number of negative outcomes that occur during adolescence as a result of substance use, it is not surprising that many of the resultant disorders and similar problems increasingly manifest and continue to affect these individuals as they develop and enter into adulthood.

Effects into adulthood. Over the years, many studies have found strong correlational relationships between substance use in adolescence and the development of problems that extend into adulthood. Some researchers have suggested that substance use in early adolescence may in fact disrupt normal transitions to adulthood and thus cause youth to exit adolescent roles too early without the necessary coping skills and preparation (e.g., dropping out of school, early pregnancy and marriage, and living independently from caregivers; Hagan & Wheaton, 1993; Krohn, Lizotte, & Perez, 1997; Rohde et al., 2007). This tendency for young substance users to experience such transitions unprepared, may well increase their risk for substance abuse in early adulthood.

Substance use can also negatively affect a variety of areas in an adult's life, including employment difficulties (e.g., maintaining a job and earning a consistent income), engaging in violence and other criminal acts of behavior, continued and increased substance use, higher mortality rates, marriage problems, and mental health issues. With regards to job-related difficulties, heavy substance use in adolescence is linked to unreliable work attendance and an increased likelihood of being fired or unemployed by the age of 30 (Ellickson et al., 2003). Furthermore, frequent and heavy

substance use during adolescence was found to have both a direct and indirect relationship with reduced annual earnings in adulthood (as much as \$15,000/year; Ringel, Elickson, & Collins, 2006). This was due to high levels of use affecting educational outcomes (e.g., less likely to graduate from college) and consistent job performance and motivation, resulting in lower incomes and dependency on welfare (Fergusson & Boden, 2008; Staff, Patrick, Loken & Maggs, 2008; Tucker et al., 2006).

Another area of concern is the fact that many substance-abusing adults often engage in violent behaviors and a variety of illegal activities. For example, continued substance use in adulthood has been associated with increased aggressive behavior and committing targeted and physical acts of violence (e.g., fist fights), as well as engaging in criminal activities such as stealing and selling drugs (Clingempeel, Henggeler, Pickrel, Brondino & Randall, 2005; Duncan, Alpert, Duncan & Hops, 1997; Ellickson et al., 2003; Tucker et al., 2006). Substance-abusing adults have also been found to display increased substance use problems characterized by polydrug use (i.e. the use of more than one substance at the same time), continuous marriage problems, and higher rates of mortality (Clark, Martin & Cornelius, 2008; Cornelius et al., 2008; Stacey & Newcomb, 1999). Notably, the combination of two or more substances has been associated more strongly with adult substance abuse/dependence than use of any of the substances in isolation (Ellickson et al., 2003; Georgiades & Boyle, 2007; Steinhausen, Eschmann & Winkler Metzke, 2007; Stenbacka, 2003; Tucker et al., 2006).

Finally, with regards to emotional distress and mental health functioning, it has been reported that adults who abuse substances are often at a higher risk for certain psychiatric disorders. For instance, adults with a substance use disorder display higher

levels of MDD and MDE than adults without substance use disorders (Brook et al., 2002; Mason et al., 2007). This is further supported by data collected from the NSDUH survey which found that adults (aged 18 and older) with past year MDE were more likely than adults without the disorder to engage in illicit drug use (27.4% vs. 12.8%), heavy alcohol use (10.4% vs. 7.1%) and daily cigarette use (28.7% vs. 15.2%; SAMHSA, 2008).

Furthermore, the presence of a substance use disorder is also significantly associated with reduced life satisfaction in adulthood (Georgiades & Boyle, 2007; Rohde et al., 2007). It thus appears that protracted and continuous substance use is associated with reduced life satisfaction in both adolescence and adulthood. As a result, studies that have focused specifically on the relationship between life satisfaction and substance use in both stages of life are discussed in considerable detail in the following section.

Links between Substance Use and Life Satisfaction in Youth

As outlined previously, there are many studies that have reported strong correlations between substance abuse in adolescence and an array of negative outcomes. However, with regards to the effect that substance abuse can have on life satisfaction during this stage of life, there is a paucity of relevant research. A review of the recent literature yielded only four studies that examined the relationship between life satisfaction specifically (excluding the handful of studies on general perceived or health-related quality of life) and a variety of substance use behaviors during adolescence. Of these four studies, only one focused solely on life satisfaction, meanwhile the other three included life satisfaction as one of many factors and thus did not report detailed findings and implications with respect to this construct.

Zullig and colleagues (2001) conducted one of the first studies that focused on the significance and implications of the relationship between life satisfaction and substance use in adolescence; thus this is one of the most widely cited articles within this area of research. Specifically, Zullig et al. examined whether a variety of substance use behaviors (i.e. cigarette smoking, chewing tobacco, marijuana, cocaine, regular alcohol use, binge drinking, injection drug, and steroid use) co-occurred with levels of life satisfaction among adolescents. The participants consisted of 5032 public high school students (grades 9-12) in South Carolina, of which 47.3% were African American, 52.7% were Caucasian and 52.7% were female. Information pertaining to substance use was obtained through the South Carolina Youth Risk Behavior Survey (SCYRBS). The measure of life satisfaction included one self-report item to assess student satisfaction within each of the six domains (family; friends; school; self; living environment; and a global item, overall life) assessed via the lengthier of the Multidimensional Students' Life Satisfaction Scale (MSLSS; Huebner, Laughlin, Ash & Gilman, 1998; Gilman, Huebner & Laughlin, 2000). Analyses were conducted according to gender and race although the only racial groups were black and white. Results showed that of the twenty one substance use behaviors surveyed, white females reported significant relationships between life dissatisfaction and all twenty one substance use behaviors, while fourteen of the substance use behaviors were significant for black females, nineteen for white males and eighteen for black males. These results suggest the magnitude of the relationship between substance use and life satisfaction may vary as function of race and gender. The strongest associations were found for the use of inhalants, cocaine, binge drinking, smoking first cigarette at or before age 13, lifetime marijuana use, steroids and illegal injection drugs

for all four race/gender groups. On the other hand, links between substance use behaviors such as “first cigarette smoked after age 13” and life satisfaction was not significant for either black females or white males, “first alcohol drink after age 13” was not significant for either white or black males, and “first cocaine use after or before 13” was not significant for black females alone. In all, substance using youth from all four groups were found to be at least six times more likely to report low levels of life satisfaction in comparison to youth who did not report using substances. It is unknown what proportion of the variance in adolescent life satisfaction is accounted for by this total substance use. On a whole, even though the results point to a significant relationship between life satisfaction and substance use behaviors in adolescence, the authors caution against making any definitive statements regarding causal relationships pending longitudinal studies to determine whether low levels of life satisfaction are a consequence or determinant of substance use. The study is also limited by its unique sample. Even though the sample consisted of a large number of students, it was not representative of youth in the U.S. in terms of ethnicity/racial background, which ultimately limits the generalizability of the results. Future research with a more ethnically diverse sample (i.e. including students from other racial groups, such as Hispanic students) would serve to improve the generalizability of the findings. Another important limitation concerned the fact that the results were not analyzed according to the different age levels of youth. Therefore, future research needs to address whether the relationship between substance use and life satisfaction varies as a function of age.

The second study found through the literature search was conducted by Piko et al. (2005) in which the relationship between smoking cigarettes and personal influences

(operationalized as academic achievement, life satisfaction, and future-orientedness) in adolescence was explored. Due to the focus of this paper, only the results concerning smoking and life satisfaction are provided. The participants consisted of 2387 high school students ages 13-20 ($M=16$), from urban areas in four different countries: Hungary (560 students), Poland (662), Turkey (626) and Iowa, USA (539). With regards to demographic information, the sample was predominantly white with a relatively even split between genders (46% male). Cigarette use was assessed through a single-response item which asked the students “How many times in the last three months have you smoked cigarettes?” The Life Satisfaction Scale (Diener, Emmons, Larsen & Griffin, 1985) was utilized, which required the students to respond to five statements (e.g., in most ways my life is close to ideal) by indicating how strongly they agreed with each item from 1 (*strongly disagree*) to 7 (*strongly agree*). The results showed that across all four countries, higher levels of life satisfaction were significantly correlated with lower rates of smoking; in other words, the less a student reported smoking the higher they reported their satisfaction with life. Although the results of this study underscore the strong negative relationship between tobacco use and adolescent life satisfaction, the generalizability of the results may be affected by the lack of ethnic diversity in the sample. Therefore, as suggested previously, future research needs to recruit and sample youth from different ethnic backgrounds to see whether similar results will be obtained. Another limitation concerns the fact that the relationships between cigarette use and life satisfaction were not analyzed according to gender. Therefore, future research needs to focus on whether gender plays an important role, in that it significantly alters the magnitude of the relationship between substance use and life satisfaction in adolescence.

The third study in this area focused on the relationship between life satisfaction (as well as other social and violence-related variables) and binge drinking. Kuntsche and Gmel (2004) defined binge drinking as ‘risky, single occasion drinking’ (RSOD) and examined whether the social integration (social versus solitary) of the binge drinker subsequently impacted their levels of life satisfaction. The researchers surveyed a predominantly white sample (82.4% Swiss nationals, 17.6% other European nationals) of 3861 students in 8th and 9th grade, of which 49.3% were male. Alcohol use was assessed through a single question that asked ‘Have you ever had so much alcohol that you were really drunk?’ and those who reported being repeatedly drunk (twice or more) were defined as RSODs. Life satisfaction was also assessed through a single-response item which required students to rate their present lives on a scale from 1-10, with 10 being the best possible life and 1 being the worst. Results showed that RSODs from both genders and grades reported significantly lower life satisfaction and more depressive episodes compared with students not classified as an RSOD. In addition, it was found that solitary RSODs (defined through social indicators focusing on peer interaction and feelings of loneliness) reported being even less satisfied with their lives and feeling depressed more frequently than social RSODs. Therefore, students who engage in binge drinking type activities report lower life satisfaction than students who do not partake in such behaviors, and students who binge drink and report feeling socially isolated are the ones who experience the lowest levels of life satisfaction in comparison to all the groups. The results of this study are limited by the use of a single-item indicator of life satisfaction, rather than a measure with adequate support for reliability and validity. Furthermore, the

lack of ethnic diversity in the sample warrants future studies that include minority youth to see if similar relationships are present.

The final study in this area focused on the relationship between cannabis use and life satisfaction (in addition to seven other factors) in adolescence. Tu et al. (2008) used a cross-sectional survey to sample 42 high schools, 2 middle schools and 5 alternative schools in the Greater Vancouver area, resulting in 8,225 participants in all. The sample was evenly representative of both genders, with the majority of students (72.2%) identifying themselves as White, and the remaining students identifying as ‘Aboriginal’ (16.7%) or ‘Other’ (11.1%). Frequency of cannabis use was measured by specially included sub-items on the British Columbia Youth Survey on Smoking and Health 2 (BCYSOSH2). According to levels of reported usage, students were classified into three groups: “never users,” “frequent users” (used cannabis 1–9 times in past 30 days), and “heavy users” (10+ times in past 30 days). Life satisfaction was measured using the MSLSS. It was found that male heavy users reported lower satisfaction with their family, friends, and school compared with the boys who never used cannabis, and female heavy users reported lower satisfaction with school than did girls who never used cannabis. With regards to frequent users, girls indicated lower levels of satisfaction with their self, family, friends, and school compared with the girls who never used cannabis. While male frequent users reported having lower satisfaction with their family, friends, and school compared to boys who never used cannabis, frequent male users reported higher levels of satisfaction with themselves. The authors hypothesized that this might occur due to drug effects that result in misperceptions of social cues, which in turn serves to protect the adolescent from disruptive social anxieties that are usually present at this age. Though

limitations regarding the lack of ethnic diversity in the sample are worth mentioning, it is important to note that a similar trend was found in a study of college students (Murphy, McDevitt-Murphy, & Barnett, 2005). Specifically, whereas an inverse relationship was found between drinking and life satisfaction among women, the male college student participants' drinking did not have a significant effect on general life satisfaction and was in fact related to higher levels of social satisfaction. The authors hypothesized that drinking might result in increased social interaction and satisfaction, which in turn serves to lessen the negative impact of alcohol-related problems on the general life satisfaction of these students. However, it is important to note that social satisfaction for male students peaked at three to four heavy drinking episodes per week, and decreased with additional heavy drinking episodes. Therefore, frequent heavy drinking (i.e., 5+ drinking episodes per week) was associated with increased alcohol problems and subsequent reductions in life satisfaction. Taken together, these studies demonstrate general inverse relationships between alcohol and cannabis use and life satisfaction, particularly for heavy users, but show that these associations may be weaker for specific demographic groups (e.g., males).

The aforementioned studies illustrate consistently negative correlations between life satisfaction and substance use in adolescence. Additionally, some groups (e.g., females, frequent heavy users etc.) may evidence stronger links between substance use and life satisfaction. Considering the elevated substance use rates of Hispanic youth (CDC, 2009; Johnston et al., 2009; NAHIC, 2007), additional research is needed with participants from this racial group. Research is also needed to determine the total amount of variance in adolescents' life satisfaction scores that is explained by their substance use

behaviors. Such investigations are needed to further demonstrate the problematic effects of substance use on adolescent positive well-being. Comprehensive research on links between behaviors (i.e., substance use) and emotional mental health (i.e., life satisfaction) during adolescence is warranted in part by longitudinal studies that demonstrate the deleterious outcomes of adolescent substance use (particularly if it continues into adulthood) on life satisfaction during adulthood. A summary of such studies is provided next, to highlight the significant negative effects that protracted substance use can have on life satisfaction later on in life.

Long-Term Effects of Substance Use on Life Satisfaction in Adulthood

Four studies have examined substance use during adolescence and life satisfaction in adulthood. Rohde and colleagues (2007) specifically focused on whether a substance use disorder (SUD; i.e. clinically diagnosed with substance abuse or dependence as defined by the DSM-IV) before age 19 was associated with poor life satisfaction at age 30. The participants were 1,709 randomly selected high school students (aged 14–19 years) from urban and rural districts in Oregon. Half of the sample was female (53%) and a total of 91% were Caucasian. The authors collected data on four separate occasions over a period of 11-16 years. The researchers controlled for covariates such as demographic factors associated with a SUD (i.e., age, gender, living with both parents), the occurrence of comorbid adolescent psychopathology, as well as a SUD in adulthood. Results included that experiencing a SUD during adolescence can negatively impact life satisfaction at age 30 in the event that the individual experiences SUD episodes between the ages of 19-30. Therefore, if an adolescent experienced a SUD before 19 but ceased to have any more SUD related problems after the age of 19, their satisfaction with life at age

30 was unaffected. The authors hypothesize that it is likely that an adolescent SUD that progresses into adulthood would serve to negatively affect life satisfaction due to the continued presence and maintenance of a negative experience. The optimistic interpretation of the findings is that for adults who remain SUD free, their life satisfaction will not be negatively affected by their substance use during adolescence.

This finding is consistent with results of longitudinal research conducted by Georgiades and Boyle (2007). The data for this study came from the Ontario Child Health Study (OCHS), which began in 1983, with follow-ups in 1987 and 2001 (Boyle et al., 1987). The sample consisted of 1,302 12-16 yr olds in 1983, 854 in 1987 and 527 in 2001. Data on tobacco and marijuana use was collected in 1983 and 1987 through the use of structured, self-administered questionnaires and interviews with both the adolescents and their parents. In 2001, life satisfaction was assessed via questions (using a 5-point Likert response scale) that surveyed satisfaction with nine different life domains (i.e., job, finances, housing, spouse/partner, friends and family members). After adjusting for a range of covariates assessed in adolescence, results showed that adults with the lowest levels of life satisfaction were those who had been using both tobacco and marijuana (i.e. poly drug users) since adolescence. Following this group, in terms of decreased life satisfaction, were those adults who reported using either tobacco or marijuana since adolescence. For participants who indicated using tobacco and/or marijuana during adolescence only, subsequent satisfaction with life during adulthood was not significantly affected. Therefore, the results echo the finding that life satisfaction during adulthood is only significantly affected by protracted substance use that begins in adolescence and

extends into adulthood, underscoring the need for extensive prevention and intervention efforts geared towards adolescent substance users.

Research pertaining to the effects of specific substances used during youth on later life satisfaction was conducted by Ellickson et al. (2004). Specifically, Ellickson and colleagues examined the extent to which marijuana and hard drug use (uppers, downers, cocaine, PCP [phencyclidine], LSD [D-lysergic acid diethylamide], and heroin) in adolescence predicts outcomes such as life satisfaction at age 29. Data from the RAND Adolescent/Young Adult Panel (a multiyear panel study originally conducted to evaluate a drug prevention program, project ALERT, for middle-school children) was utilized. Participants (baseline N = 6,527) from this data set were drawn from 30 California and Oregon middle schools representing diverse community and school environments. The data was collected over multiple waves of assessment over the course of 16 years, in which participants completed self-administered surveys in school at Grades 7 through 10 and by mail at Grade 12, age 23, and age 29. Due to missing data and attrition rates, Ellickson et al. reported a final sample of 2,499 participants. Frequency of substance use was assessed on substance specific scales that yielded dichotomous indicators of lifetime use of any of the substances measured (e.g. 0 - never used, to 11 - used 20 or more days in the past month). Life satisfaction was assessed with a single item: "In general, how satisfied do you feel with your life?" using a response scale of 1 (*very dissatisfied*) to 5 (*very satisfied*). After controlling for gender, race/ethnicity, house-hold composition and parental education, abstainers (i.e. no substance use over any of the assessment times) reported the highest levels of life satisfaction and the lowest levels of hard drug use rates at age 29 compared to all other groups (light, moderate and heavy users). In addition,

those adolescents who reported lifetime (i.e., extended use into adulthood) cigarette and hard drug use were less likely to be satisfied with their lives at 29. It was hypothesized that this might be due to physiological effects on general mood and well-being caused by continued hard drug use and the negative prolonged effect that cigarettes can have on physical health.

Most recently, empirical research in New Zealand examined cannabis use in adolescence and a variety of outcomes, including life satisfaction, in adulthood (Fergusson & Boden, 2008). The authors followed a birth cohort over the course of 25 years, during which time they examined the average frequency of cannabis use during the period of 14–21 years, as well as important life outcomes as the participants approached their 25th birthday. The original sample consisted of 1265 children (635 males, 630 females), however, information on young-adult outcomes was only available for 1003 participants ages 21–25 years. Participants were interviewed at ages 15, 16, 18 and 21 and questioned about their levels of cannabis use. The information was then summed for the period of 14–21 years, and an estimate of the total number of times participants had used cannabis during that period was recorded. Based on this information, the participants were classified using a categorical measure of total cannabis use, ranging from 1 (*never used cannabis*) to 6 (*used cannabis 400+ times*). A few years later, at the age of 25 years, life satisfaction was measured by responses to 12 custom-written items that focused on areas such as work, family, friends, leisure pursuits and life in general. Each of the items was measured on a 4-point scale, ranging from 1 (*very happy*) to 4 (*very unhappy*). After controlling for family functioning, SES, exposure to adversity, academic achievement, comorbid mental health disorders and other substance use, it was found that increasing

use of cannabis prior to the age of 21 was associated with declining levels of life satisfaction at 25. In addition, it was found that those who used cannabis sparingly (i.e. less than a 100 times) did not differ greatly from non-users and thus did not report significant levels of life dissatisfaction. Taken together, the results showed that reports of life satisfaction decrease as levels of cannabis use increase.

These four studies illustrate that substance use that begins in adolescence and continues into adulthood has the potential to negatively affect satisfaction with life during adulthood. Coupled with results of preliminary studies that have focused exclusively on substance use and life satisfaction in adolescence, the literature clearly illustrates the seriousness of these issues and the fact that they undoubtedly warrant further attention and investigation. The following section summarizes gaps in the literature, and suggestions for future directions for this research, which form the basis for the purposes of the current study.

Conclusions

Substance use remains a significant problem among high school students. The most recent Youth Risk Behavior Survey (YRBS, 2007) reported the following usage statistics among high-school students: alcohol (75%; regular binge drinkers, 26%), cigarettes (50.3%; regular smokers, 20%), marijuana (38%), inhalants (13.3%), hallucinogens (7.8%), cocaine (7.2%), ecstasy (5.8%), methamphetamines (4.4%), illegal steroids (3.9%), and heroin (2.3%; CDC, 2009). Students' demographic characteristics in part predict frequency of substance use. While males and females report similar levels of alcohol and cigarette use, males are more likely to regularly engage in all of the illicit substance use behaviors (including marijuana), with the exception of inhalants. In terms

of age, older adolescents report the highest usage rates with the greatest variety of substances. When examining the three largest racial/ethnic groups (White, African American, and Hispanic), White and Hispanic students consistently report higher usage rates than their African-American peers. White students report the highest rates of binge drinking, cigarette, inhalant and hallucinogenic use; whereas, Hispanic students report the highest levels of usage of ecstasy, methamphetamines, cocaine and illegal steroids. Regarding the role of SES, the findings have been mixed (CDC, 2009; Lowry et al., 1996; Trim & Chassin, 2008) and thus more research is needed related to SES before any conclusions can be made. Finally, with regards to negative outcomes related to substance use in adolescence, a variety of studies have documented that protracted and continuous use is linked to physical health-problems (e.g., appetites changes, weight loss, headaches), sexual-risk taking (e.g., multiple sexual partners, less consistent use of condoms, unplanned pregnancy), deviant behavior (e.g., selling drugs, physical violence against others), school-related problems (e.g., poor or failing grades, more likely to drop-out, skip class or be suspended), as well as mental health issues and psychological distress (e.g. depression, negative affectivity, reduced satisfaction with life; Aarons et al., 1999; CDC, 2009; Dunn et al., 2008; Ellickson et al., 2003; SAMSHA, 2008; Stueve & O'Donnel, 2005; Tucker et al., 2006).

Taken together, the findings from the studies presented above demonstrate that there are indeed a plethora of negative outcomes related to continued substance use during adolescence. Furthermore, the results also suggest that certain demographic factors may play important roles and thus deserve consideration when attempting to examine the relationship between substance use and life satisfaction during adolescence.

It should be emphasized that the true nature of the relationship (i.e., direction and strength) between these two constructs is unknown, the current study proceeds under the assumption that engaging in substance use in turn affects subsequent levels of life satisfaction in line with the results of longitudinal studies with adults in which low life satisfaction in adulthood followed substance use in youth. Also of note, not all youth who are at risk for substance use due to having educational or mental health problems actually engage in substance use; moderators such as life satisfaction may serve to protect some at-risk youth from substance use.

Chapter Three

Methods

This chapter addresses the overall design of this study, including methods and procedures that were implemented throughout the creation of the archival database. First, the participants, including the criteria that ultimately guided the selection process, are described. The data collection procedures and detailed explanations of the measures utilized are then discussed. Finally, an overview of data analyses conducted to answer the specific research questions is provided.

Participants

The current study analyzed an archival dataset that was created in 2008 in order to examine multiple aspects of the phenomenon of substance use in high school students. The research team was led by Dr. Rance Harbor (principle investigator); the author of this thesis was an instrumental member of the research team that designed and carried out the larger study.

Participants in the larger study consisted of students enrolled in grades nine through twelve at a large public high school (approximately 1900 students enrolled at the time of data collection) located in Florida. This sample was a convenience sample as the principal investigator had internal access to the site on a consistent basis. A total of 139 students from the high school participated in the study. With regards to demographic characteristics of the students, the majority of the sample was of Hispanic descent

(56.8%). Because a primary purpose of the current study involved examining the relationship between substance use and life satisfaction among specific ethnic groups, the nine participants who identified themselves as a race/ethnicity other than African-American, Asian, Caucasian, or Hispanic were removed from the dataset, leaving a final target sample of 130. The dataset containing only these 130 participants was employed in all subsequent analyses. See Table 1 for additional details regarding the demographic characteristics of student participants, including comparisons to the school from which the sample was drawn. Of note, at the time of data collection, the school served a primarily low SES population, as indicated by the fact that approximately 67% of the students attending the school received free or reduced-price lunch.

Table 1

Demographic Description of Study Participants

	% of Population (<i>N</i> = 1900)	% of Total Sample (<i>N</i> =139)	% of Target Sample (<i>N</i> =130)
Gender			
Male	48.3	26.6	26.2
Female	51.7	73.4	73.8
Grade			
9 th	30.4	30.9	32.3
10 th	26.5	18.7	18.5
11 th	24.2	22.3	20.8
12 th	18.8	28.1	28.5
Receives Free/Reduced Lunch			
Yes	66.8	69.6	68.5
No	33.2	30.4	30.8
Race			
African American	9.7	8.6	9.2
Asian/Pacific Islander	1.7	7.2	7.7
Hispanic	64.8	56.8	60.8
Native American	.3	.7	--
White	17.6	20.9	22.3
Other	5.9	5.8	--

Approval to conduct the study was obtained from both the school district's Department of Assessment and Accountability, and the University of South Florida (USF) Division of Research Integrity and Compliance, in August of 2008. Data were collected during October of 2008 by a research team comprised of a group of school psychology graduate students (including the author of this thesis) from the USF Department of Psychological and Social Foundations. Dr. Harbor, a faculty member in the USF School Psychology Program, supervised the data collection process.

Participant Selection

In order to be eligible to participate in the larger study, certain requirements needed to be met. First, the youth had to be full-time students at the public high school in

which the data were collected. Second, they needed to possess adequate English language skills to ensure accurate understanding and interpretation of the survey questions. In order to determine English language proficiency, only students in standard diploma classes and who had English listed as their primary language and/or those who had demonstrated proficiency in English, were invited to participate in the study. This requirement resulted in approximately 29% of the student population being excluded from the study. In addition, a third prerequisite mandated the return of a fully signed parent consent form before the students were given access to the survey. Due to the high percentage of Hispanic participants in the study, the researchers provided Spanish and English version of the parental consent forms (see Appendix A and Appendix B, respectively) and subsequently distributed them according to the language spoken at home, as indicated on the student's school records. Students who had written parent permission to participate were required to read and sign a student assent form (see Appendix C). In order to provide students with an incentive to participate, they were notified they would be eligible to win one of four \$25 gift cards from a popular electronics store upon return of the signed consent form and subsequent participation in the study.

Procedures

Prior to official data collection, the principal investigator of the larger study shared information about the project with the teachers and students in all general education English classes. Each of these teachers was given copies of the English and Spanish parent consent forms and was instructed to distribute them to students who met the above-mentioned criteria. In order to ensure that interested families received the

appropriate paperwork, the parental consent forms were matched and labeled according to the native language of each student. The parental consent forms contained information regarding the purpose and nature of the study, as well as contact information for the principal investigator. It was also clearly stated that student participation was entirely voluntary and anonymous, and that withdrawing participation at any time would in no way affect the student's status, grades, or relationship with the school. Over the course of a few weeks, the returned consent forms were gathered and a list of eligible students was compiled.

Data collection took place over the course of three days during the month of October of 2008. On each of the days, eligible students were permitted to leave their classroom and report to the school room designated for survey completion. Upon entering the designated room, the students presented their hall pass to a member of the USF research team and were subsequently provided with a brief overview of the study. The overview served to reiterate the fact that participation could be withdrawn at any time without penalty, but that upon completion of the survey they would be entered into the drawing for one of the gift cards. In addition, the student assent form which outlined the risks and benefits of participating in the study was then read aloud and checked for understanding. After reading and signing the assent form, students were then provided with one of four comparable versions of the survey. The collected student assent forms were kept separate from the surveys in order to maintain participants' anonymity. This process was conducted with groups of no more than 10 students at a time due to space restrictions. At all times, at least two members of the USF research team were present to supervise the students and answer any questions.

The completed surveys and assent forms were returned to the principal investigator. No one outside of the research team was given access to any of the surveys. The forms were ultimately stored in a locked file cabinet in the principal investigator's office at USF. All of the surveys remained completely anonymous and thus could not be traced back to any particular students. Data from the surveys were then carefully entered into a database to assist in the analysis of data, and then rechecked for accuracy. Data entry was found to be 99.9% accurate, and the few errors identified were ultimately corrected.

Measures

The survey utilized during the larger study was developed with the intention of gathering a variety of information from the adolescents so that the results could be used to answer the range of questions posed by the research team. Specifically, the survey was comprised of 14 separate scales, the majority of which had been utilized in previous research studies. In order to assess readability and the time taken to complete the entire survey, a pilot study was conducted with 20 high school students enrolled in an honors psychology class. No concerns were expressed regarding the readability of the questions, and all students were able to complete the entire survey in less than 20 minutes. However, due to concerns regarding the lack of a representative sample, a second pilot study was conducted using 50 students enrolled in general education psychology classes at the same school. The results and comments by the students were analogous to those from the first pilot study conducted. For the purposes of the current study, the responses from only three of the 14 scales were examined and reported. These three scales are described in detail in the following paragraphs.

Demographics scale. Students completed a demographics scale that gathered general information such as their gender, ethnicity, age, grade level, estimated GPA, and free or reduced-price lunch status (see Appendix D). In addition, this scale also included other questions that were designed to gather additional information for the purposes of the larger study. For example, students were asked about issues regarding discipline referrals, suspensions, arrests, and mental health problems (i.e., whether they had ever been diagnosed and prescribed medication for ADHD, anxiety, depression, etc). The majority of the questions were closed ended which required the students to choose from a set of pre-selected choices. To form the risk factor composite score, responses to items 5 and 8-12 from the demographic questionnaire (i.e., GPA, discipline referrals, suspensions, arrests, ADHD diagnosis, and mental health problems) were summed.

The Student Life Satisfaction Scale (SLSS; Huebner, 1991b). The SLSS (see Appendix E) was used to assess the participants' global life satisfaction. This scale is a seven-item, self-report measure that is appropriate for use with children and adolescents between the ages of 8-18 years old. The items require the youth to rate their satisfaction with respect to items that are domain-free (e.g., *my life* is better than most kids' vs. *my family life* is better than most kids') on a 6-point format, with 1 = strongly disagree, 2 = moderately disagree, 3 = mildly disagree, 4 = mildly agree, 5 = moderately agree, and 6 = strongly agree. A summary score of global life satisfaction is created by averaging students' responses to the seven items (after items 3 and 4 have been reverse-scored). With regards to interpreting the summary score that is yielded from the SLSS, to date official guidelines for clinical levels of dissatisfaction with life have not yet been disseminated. A review of the literature revealed only one study that attempted to analyze

the scores according to specific cut points. Specifically, Suldo and Huebner (2004b) considered a score between 1 and 3.9 to indicate low life satisfaction and mean scores at or above 4.0 to indicate high life satisfaction. Because this dichotomy yielded meaningful results in this earlier study, the current study also classified and analyzed the SLSS summary scores in the same manner during analyses for the fifth research question.

It should be noted that the SLSS scale has been thoroughly researched and the scores have been found to have high reliability and validity. In terms of reliability, a variety of studies have shown the SLSS to have high internal consistency, as indicated by alpha coefficients in the .70 to .80 range with students of many different ages (Dew & Huebner, 1994; Gilman & Huebner, 1997; Haranin, Huebner, & Suldo, 2007; Huebner, 1991a, 1991b; Huebner, Funk & Gilman, 2000). In addition, test-retest reliability has also been established with time periods ranging from one month (Gilman & Huebner, 1997) to one year (Huebner et al., 2000). With regards to validity, factor analyses of the SLSS items have consistently provided evidence for a one-factor structure (Dew & Huebner, 1994; Gilman & Huebner, 1997; Huebner, 1991a). The SLSS also has a great deal of support regarding its high levels of discriminant validity (Huebner, 1991a; 1991b; 1991c), predictive validity (Haranin et al., 2007; Huebner et al., 2000; Suldo & Huebner, 2004b), and criterion-related validity (Huebner, Suldo, Smith, & McKnight, 2004). In addition, comparisons of alpha coefficients have shown that the SLSS is appropriate for youth from different ethnic backgrounds and countries, and thus can effectively be used for cross-group comparisons. Specifically, studies have shown that the SLSS can be used with African-American and Caucasian students (Huebner, 1994; Huebner & Dew, 1993),

as well as students from Spain and South Korea (Casas, Alsinet, Rosich, Huebner, & Laughlin, 2001; Park, Huebner, Laughlin, Valois & Gilman, 2004).

Teen Alcohol and Drug Use Scale (TADUS; Harbor, 2008). The TADUS (see Appendix F) is a measure that was developed by the principal investigator of the larger study. This measure was created in order to target specific types of substance use behaviors and collect information relevant to the larger study. The TADUS is a 20 item self-report measure assessing the frequency of adolescents' alcohol and substance use. Each of the items lists a different substance use behavior; students are required to report the amount of times in the past year that they have tried or used the substance in question. The response metric is scored as follows: 1= zero occasions, 2= one to two occasions, 3= three to five occasions, 4= six to nine occasions, 5= 10 to 19 occasions, 6= 20 to 39 occasions, and 7= 40 or more occasions. This specific frequency metric was used because it reflects that used in the Monitoring the Future study, which is known to have sound psychometric properties (Johnston et al., 2009). Lower scores on each item indicate that the specific substance is used less by the student. The "alcohol" variable consists of a composite of items 3, 4, and 5 (i.e., wine, beer, and liquor). Item number 1 is used as an index of use of tobacco, specifically cigarettes. Item number 6 is used an index of use of illicit drugs, specifically marijuana.

Preliminary support for reliability (internal consistency) of the TADUS total score (i.e., all items in the scale) was provided via analyses conducted with data from the pilot study. Specifically, the Cronbach alpha coefficient was 0.82 for the entire scale. Estimates of internal consistency reliability for the multi-item substance use type variable (i.e., alcohol) employed in analyses was calculated with the current sample and was 0.87.

Descriptive Data Analyses

Using data from the target sample ($n=130$), means, standard deviations, and additional descriptive data (i.e. skew, kurtosis, etc.) were obtained for all four variables of interest, which include: life satisfaction scores from the SLSS, as well as alcohol use, cigarette use, and marijuana use from the TADUS. The following analyses were conducted to answer the research questions presented in the current study.

Research Questions

Research Question 1: What are the specific relationships between adolescents' life satisfaction and their use of the following substances:

- a. Alcohol
- b. Cigarettes
- c. Marijuana?

To address all parts of this research question, Pearson correlation coefficients were calculated between the summary score of global life satisfaction from the SLSS and each indicator/composite of substance use as gleaned from the TADUS.

Research Question 2: How much of the variance in adolescents' life satisfaction is accounted for by their total use of various substances?

To address this research question, a simultaneous multiple regression was conducted in which alcohol use, cigarette use, and marijuana use were entered as predictors of SLSS scores. The adjusted R^2 statistic was reviewed to determine the total amount of variance explained in global life satisfaction by the linear combination of frequency of use of substance types.

Research Question 3: Are specific types of substances particularly predictive of adolescents' life satisfaction?

To address this research question, the beta weights and uniqueness indices associated with each substance use predictor (i.e., alcohol use, cigarette use and marijuana use) in the aforementioned simultaneous multiple regression were reviewed. Substance use types that yield statistically significant beta weights were deemed particularly predictive of global life satisfaction. The uniqueness indices (sr^2) were reviewed to determine the relative strength of the significant predictor(s).

Research Question 4: Do the relationships between adolescents' life satisfaction and their alcohol use, tobacco use and marijuana use vary as a function of the following demographic characteristics?

- a. Gender
- b. Ethnicity?

To address this research question, a series of ANCOVAs with moderator variables were conducted. Gender and ethnicity were conceptualized as the moderator variables in order to assess whether they played a role in the relationship between use of specific substances and life satisfaction. Participants' grade level and SES (as reported on the demographic questionnaire) were entered as covariates and thus controlled for statistically. Regarding the ethnicity variable, groups with extremely small sample sizes (i.e., Native American, Other) were not examined, leaving four ethnic group categories. The significance levels yielded for the interaction effects between substance use type and the demographic variable were of particular interest, as a significant interaction term would suggest a moderator effect.

Research Question 5: Does life satisfaction function as a buffer in the relationship between risk factors for substance use (e.g., academic underachievement, conduct problems, mental health problems) and actual use of the following substances:

- a. Alcohol
- b. Cigarettes
- c. Marijuana?

To address this research question, a series of binary logistic regressions with moderator variables were conducted. First, a risk factor composite score was constructed by summing participants' responses to items 5 and 8-12 from the demographic questionnaire, as mentioned previously. Life satisfaction was conceptualized as the moderator variable in order to assess whether high life satisfaction (e.g., global life satisfaction scores at or above 4 on the SLSS) acts as a buffer against use of alcohol, cigarettes, and/or marijuana in the presence of educational, behavioral, and emotional risk factors.

Chapter Four

Results

Overview

This chapter begins by briefly addressing the handling of the data after data collection, followed by a look at the results of the statistical analyses conducted to answer the research questions. Frequency rates of substance use as indicated on the TADUS are presented in terms of use or non-use of alcohol, cigarettes, and marijuana. Following that, the means and standard deviations of the SLSS are presented. Next, the correlations between global life satisfaction and each of the substance use variables are provided. The substance use variables are then examined together in a simultaneous multiple regression to ascertain which are particularly predictive of global life satisfaction. Then, the role of demographic variables as moderators in the link between substance use and life satisfaction is assessed. Last, the results of logistic regression analyses are reported to determine whether life satisfaction acts as a buffer in the relationship between risk factors and substance use.

Treatment of the Data

Data from this study were entered into SPSS by members of the graduate research team who were involved in the data collection for the larger study. Approximately 10% participant protocols (data) were randomly selected and systematically rechecked for accuracy. Additionally, descriptive statistics (i.e., minimum and maximum values) for all

variables of interest for all participants were reviewed to ensure that all reported scores were within the possible range of responses. Approximately 99.9% of the data were entered accurately, and the few errors found were corrected. Due to the focus of the present study on students in specific ethnic groups, the nine participants who reported a race/ethnicity other than African-American, Asian, Caucasian, or Hispanic were removed from the dataset. As a result, the final sample retained for all data analyses consisted of 130 participants.

Frequency of Substance Use

Frequency distributions were calculated to determine specific rates of substance use in the total sample. Initial analyses, as presented in Snodgrass (2009), showed that 12 of the substance use categories included on the TADUS were endorsed by only a handful of participants. These 12 categories (e.g., heroin, cocaine, barbiturates etc.) were therefore excluded from the analyses in the present study, and the remaining five substance categories were condensed into three clusters. The alcohol variable was created by combining use of liquor, beer, and wine/wine coolers/malt beverages. The reliability for the three-item alcohol variable was .77. The remaining two variables consisted of use of cigarettes and marijuana, respectively. The reliabilities for the cigarette and marijuana variables were not calculated as these variables consisted of only one item. Table 2 displays the frequencies of each of the substance use categories in the present study. If a participant had ever used one of the three substances (from one to 40+ times) they were assigned a value of 1 as “yes”, whereas participants who indicated that they had never used any of the substances were assigned a value of 0 as “no”.

Table 2

Frequency of Substance Use (n=130)

Substance Type	Yes		No	
	<i>n</i>	%	<i>N</i>	%
Alcohol	71	54.6	59	45.4
Cigarettes	21	16.2	109	83.8
Marijuana	36	20.0	104	80.0

Overall, alcohol was the most commonly used substance of the three categories surveyed, as 54.6% of all participants reported drinking at least one alcoholic beverage within the last year. Usage rates for marijuana and cigarettes were relatively similar and notably lower than alcohol; 20% of the sample reported using marijuana and 16.2% reported smoking at least one cigarette in the last year. However, the majority of participants reported engaging in substance use on zero occasions in the same time frame. For example, out of 130 participants, a total of 109 reported not smoking a cigarette and 104 indicated that they had not used marijuana in the past year. Alcohol use was the only exception to this trend, as the sample was almost evenly split in terms of use and non-use. Of note, 54 participants (41%) reported never using any of the three substances surveyed in the last year; meanwhile, 15 participants (11%) reported using all three substances at least once in the past year.

SLSS Descriptive Analyses

Means and standard deviations were obtained for responses to each item on the SLSS and can be found in Table 3. These values are listed in descending order, with the

item with the highest mean presented first and the item with the lowest mean presented last.

Table 3

Descriptive Statistics for SLSS (n=130)

Item	#	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt.</i>
4. I wish I had a different kind of life*		128	4.51	1.21		
5. I have a good life		128	4.51	1.21		
1. My life is going well		128	4.44	1.29		
7. My life is better than most kids		130	4.12	1.44		
3. I would like to change many things in my life*		130	4.08	1.57		
2. My life is just right		130	3.92	1.46		
6. I have what I want in my life		126	3.89	1.43		
SLSS summary score		130	4.21	0.86	-0.62	0.41

Note: Response options ranged from 1.0 to 6.0, with 1.0 indicating that the participant strongly disagreed with the statement, and 6.0 indicating that they strongly agreed with the statement. Kurt = kurtosis. *Items are reverse scored.

Means for scale items ranged from 3.89 to 4.51 and standard deviations ranged from 1.21 to 1.43. The mean score for the global life satisfaction variable was 4.21 ($SD=0.86$). As suggested by Suldo and Huebner (2004b), mean scores between 1 and 3.9 were used to indicate low life satisfaction and scores at or above 4.0 were used to indicate high life satisfaction. Therefore, the SLSS means suggest an overall positive level of life satisfaction among most adolescents surveyed. For example, the majority of adolescents surveyed believe that they have a good life and do not wish that it could be different. Following that, most adolescents feel that their lives are going well, are better than most kids' lives, and that there are few things they would like to change. The means for all of these items fell between ratings of "slightly agree" to "agree". Ratings dipped on items that assessed whether participants felt completely content with their lives and that things

were just right. These means fell between ratings of “slightly disagree” to “slightly agree”. Overall, 87 participants (66.9%) indicated high life satisfaction (scores 4.0 to 6.0) and 43 participants (33.1%) indicated low life satisfaction (scores 1.0 to 3.9).

In terms of gender, results of an independent samples *t*-test showed no significant difference in the scores for male ($M=4.03$, $SD=0.84$) and female ($M=4.27$, $SD=0.87$) participants; $t(128)=1.42$, $p = 0.16$. These results indicate that male and female participants reported similar levels of global life satisfaction. The means and standard deviations on the individual items on the SLSS can be found in Table 4.

Table 4

Descriptive Statistics for SLSS by Gender (n=130)

	Females			Males		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
1. My life is going well	94	4.47	1.34	34	4.35	1.15
2. My life is just right	96	4.01	1.50	34	3.65	1.30
3. I would like to change many things in my life*	96	4.00	1.59	34	4.29	1.53
4. I wish I had a different kind of life*	94	4.59	1.22	34	4.29	1.17
5. I have a good life	94	4.59	1.22	34	4.29	1.17
6. I have what I want in my life	92	4.01	1.47	34	3.56	1.26
7. My life is better than most kids	96	4.26	1.45	34	3.74	1.35
SLSS summary score	96	4.27	0.87	34	4.03	0.87

Note: Response options range from 1.0 to 6.0, with 1.0 indicating that the participant strongly disagreed with the statement, and 6.0 indicating that they strongly agreed with the statement. *Items are reverse scored.

With regard to ethnicity, results of an ANOVA similarly indicated no significant differences in life satisfaction scores at the $p<.05$ level between Asian/Pacific Islanders ($M=4.49$, $SD=0.56$), African Americans ($M=4.36$, $SD=1.11$), Hispanics ($M=4.18$,

$SD=0.87$), and Whites ($M=4.10$, $SD=0.82$; $F[3, 126] = 0.66$, $p = 0.58$). The means and standard deviations for the four ethnic groups on the SLSS can be found in Table 5.

Table 5

Descriptive Statistics for SLSS by Ethnicity (n=130)

	African American (n=12)		Asian/Pacific Islander (n=10)		Hispanic (n=79)		White (n=29)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. My life is going well	4.58	1.24	4.80	0.63	4.31	1.34	4.61	1.34
2. My life is just right	3.42	1.31	4.40	1.08	4.03	1.51	3.66	1.45
3. I would like to change many things in my life*	4.00	1.81	4.10	1.10	4.20	1.69	3.76	1.27
4. I wish I had a different kind of life*	4.83	1.47	4.44	0.73	4.51	1.18	4.38	1.32
5. I have a good life	4.83	1.47	4.44	0.73	4.51	1.18	4.38	1.32
6. I have what I want in my life	4.17	1.34	4.33	1.00	3.84	1.56	3.76	1.22
7. My life is better than most kids	4.75	1.49	4.90	1.10	3.90	1.47	4.21	1.29
SLSS summary score	4.36	1.11	4.49	0.56	4.18	0.87	4.10	0.82

Note: Means range from 1.0 to 6.0, with 1.0 indicating that the participant strongly disagreed with the statement, and 6.0 indicating that they strongly agreed with the statement. *Items are reverse scored.

When examining life satisfaction scores by grade, results of an ANOVA also indicated no significant differences at the $p<.05$ level between students in 9th ($M=3.97$, $SD=0.91$), 10th ($M=4.52$, $SD=0.77$), 11th ($M=4.22$, $SD=0.78$), and 12th grade ($M=4.26$, $SD=0.88$; $F[3, 126] = 2.25$, $p = 0.086$). The means and standard deviations for the four grade levels on the SLSS can be found in Table 6.

Table 6

Descriptive Statistics for SLSS by Grade Level (n=130)

	9 th (n=42)				10 th (n=24)				11 th (n=27)				12 th (n=37)			
	<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>	<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>	<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>	<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Kurt</i>
1. My life is going well	4.05	1.40			4.71	1.23			4.59	1.15			4.58	1.25		
2. My life is just right	3.50	1.52			4.63	1.14			3.63	1.50			4.14	1.38		
3. I would like to change many things in my life*	4.60	1.55			3.50	1.62			4.26	1.43			3.73	1.52		
4. I wish I had a different kind of life*	4.02	1.26			5.00	0.89			3.73	1.52			4.64	1.20		
5. I have a good life	4.02	1.26			5.00	0.86			4.65	1.20			4.64	1.20		
6. I have what I want in my life	3.74	1.43			4.58	1.14			3.52	1.40			3.86	1.51		
7. My life is better than most kids	3.83	1.36			4.21	1.64			4.26	1.32			4.30	1.47		
SLSS summary score	3.97	0.91	-0.72	1.13	4.52	0.77	-1.21	2.31	4.22	0.78	-0.56	0.130	4.26	0.88	-0.24	-0.83

Note: Means range from 1.0 to 6.0, with 1.0 indicating that the participant strongly disagreed with the statement, and 6.0 indicating that they strongly agreed with the statement. Kurt = kurtosis. *Items are reverse scored.

Correlational Analyses

To examine the specific relationships between adolescents' global life satisfaction and their use of the three substance use types (i.e. alcohol, cigarettes, and marijuana) measured in the TADUS, Pearson correlation coefficients were calculated. The results of these analyses are presented in Table 7.

Table 7

Correlations between SLSS Summary Score and Substance Use Variables on the TADUS (n=130)

	1	2	3	4
1. Alcohol use	1			
2. Cigarette use	.36**	1		
3. Marijuana use	.42**	.56**	1	
4. SLSS Summary Score	-.25**	-.22*	-.22*	1

*Note: *p<.05. **p<.01.*

The correlations between the SLSS summary score and alcohol, cigarette and marijuana use were -.25, -.22, and -.22, respectively. Therefore, life satisfaction was significantly and inversely correlated with alcohol, cigarette and marijuana use. All correlations were weak in magnitude. Overall, these results indicate that higher scores on the SLSS (i.e., higher life satisfaction) co-occur with slightly lower levels of substance use. In terms of the correlations between the three substance use variables, results show moderate relationships but not complete overlap, indicating the substance use variables are related but separable.

Predictive Analyses

A simultaneous multiple regression was conducted to determine the proportion of the variance in life satisfaction scores accounted for by the linear combination of

frequency of alcohol, cigarette and marijuana use. Results showed that the three variables together explained 6.4% of the variance in global life satisfaction scores (adjusted $R^2 = .064$). Beta weights and uniqueness indices (i.e., semi-partial R^2 ; unique variance contributions) were then reviewed to determine the relative importance of each of the substance use variables in the prediction of life satisfaction. The beta weight for alcohol use was -0.18 ; while, cigarette use was $-.11$, and marijuana use was $-.08$. Importantly, none of these beta weights were statistically significant. These results suggest that none of the substance use variables are unique predictors of life satisfaction; instead it appears the common variance shared by these variables is responsible for predicting a significant amount of variance in global life satisfaction. In other words, substance use in general, rather than use of a specific type of substance, is associated with reduced life satisfaction. The results from this simultaneous multiple regression can be found in Table 8.

Table 8

Summary of Simultaneous Regression Analyses for Substance Use Variables Predicting Life Satisfaction (n=130)

Predictors	Adjusted R^2	Beta Weight		Uniqueness Index	
		β	t	sr^2	p
Alcohol Use		-.18	-1.9	.027	.06
Cigarette Use		-.11	-1.0	.007	.32
Marijuana Use		-.08	-0.7	.004	.46
Total Substance Use	.064				

Predicting Student's Life Satisfaction from their Personal Qualities

A series of ANCOVAs were conducted to examine whether the relationship between students' life satisfaction and their substance use varies as a function of specific demographic characteristics, namely gender and ethnicity. Life satisfaction was conceptualized as the dependent variable, substance use type and ethnicity or gender as the independent variables, the interaction between substance use type and gender or ethnicity as the moderator, and grade level and socioeconomic status as covariates. Exact combinations of variables examined in each ANCOVA are specified in Tables 9 – 14. Due to extremely small sample sizes, Native American students and students that described their ethnicity as “Other” were excluded, leaving four ethnic group categories.

As reported in Tables 9 – 14, results of the six ANCOVAs indicated only one significant interaction term, namely between alcohol use and gender, $F(1,121) = 6.95, p < .05$. The means and standard deviations for alcohol use/non-use by gender can be found in Table 15. The table indicates that the aforementioned inverse relationship between global life satisfaction and alcohol use was found for females only. The effect size of this mean difference is 0.83 which is considered a large effect (Cohen, Cohen, West, & Aiken, 2003). Thus, there is a big difference between female users and non-users, with users reporting significantly lower levels of life satisfaction than non-users. In contrast, the mean global life satisfaction score for males who did not use alcohol was unexpectedly low. The effect size of this mean difference was 0.40 suggesting a medium effect. Thus, the differences in life satisfaction between male users and non-users are also significant, with non-users reporting significantly lower life satisfaction than users.

However, when examining differences between males and females the effect size is 0.28 which is considered a small effect.

Table 9

ANCOVA of Alcohol Use and Ethnicity on Life Satisfaction

	df	Mean Square	F	p
Grade Level	3	1.50	2.11	0.10
Socioeconomic Status	1	0.11	0.15	0.70
Ethnicity	3	0.29	0.41	0.75
Alcohol Use	1	1.38	1.94	0.17
Ethnicity x Alcohol Use	3	0.10	0.15	0.93

Note. * $p < .05$.

Table 10

ANCOVA of Alcohol Use and Gender on Life Satisfaction

	df	Mean Square	F	p
Grade Level	3	1.12	1.70	0.17
Socioeconomic Status	1	0.00	0.01	0.94
Gender	1	1.79	2.72	0.10
Alcohol Use	1	0.86	1.30	0.26
Gender x Alcohol Use	1	4.56	6.95	0.01*

Note. * $p < .05$.

Table 11

ANCOVA of Cigarette Use and Ethnicity on Life Satisfaction

	df	Mean Square	<i>F</i>	<i>p</i>
Grade Level	3	1.94	2.77	0.05*
Socioeconomic Status	1	0.42	0.60	0.44
Ethnicity	3	0.92	1.32	0.27
Cigarette Use	1	0.71	1.01	0.32
Ethnicity x Cigarette Use	2	0.63	0.90	0.41

Note. * $p < .05$.

Table 12

ANCOVA of Cigarette Use and Gender on Life Satisfaction

	df	Mean Square	<i>F</i>	<i>p</i>
Grade Level	3	1.30	1.91	0.13
Socioeconomic Status	3	0.37	0.55	0.46
Gender	1	0.02	0.03	0.86
Cigarette Use	1	1.29	1.90	0.17
Gender x Cigarette Use	1	2.03	3.00	0.09

Note. * $p < .05$.

Table 13

ANCOVA of Marijuana Use and Ethnicity on Life Satisfaction

	df	Mean Square	<i>F</i>	<i>p</i>
Grade Level	3	2.23	3.17	0.03*
Socioeconomic Status	1	0.29	0.41	0.53
Ethnicity	3	0.39	0.55	0.65
Marijuana Use	1	1.86	2.65	0.11
Ethnicity x Marijuana Use	2	0.41	0.59	0.56

*Note. *p < .05.*

Table 14

ANCOVA of Marijuana Use and Gender on Life Satisfaction

	df	Mean Square	<i>F</i>	<i>p</i>
Grade Level	3	1.84	2.74	0.05*
Socioeconomic Status	1	0.03	0.05	0.83
Gender	1	0.00	0.00	0.99
Marijuana Use	1	1.35	2.01	0.16
Gender x Marijuana Use	1	2.36	3.51	0.06

*Note. *p < .05.*

Table 15

Descriptive Statistics for the Relationship between Life Satisfaction and Alcohol Use by Gender

Gender	Alcohol use	<i>M</i>	<i>SD</i>	<i>N</i>
Male	Never Used	3.82	0.98	13
	Used Alcohol at least once	4.15	0.73	21
	Total	4.03	0.84	34
Female	Never Used	4.62	0.72	46
	Used Alcohol at least once	3.95	0.88	50
	Total	4.27	0.87	96
Total	Never Used	4.44	0.84	59
	Used Alcohol at least once	4.01	0.84	71
	Total	4.21	0.86	130

Note: Mean scores between 1 and 3.9 indicate low life satisfaction and scores at or above 4.0 indicate high life satisfaction.

None of the other 5 interaction terms were significant, suggesting the relationships between adolescents' life satisfaction and use of cigarettes or marijuana are similar in magnitude and direction regardless of student gender and ethnicity. Additionally, the relationship between adolescents' life satisfaction and alcohol use is not significantly different across the four ethnic groups examined.

Of note, although not a primary focus of this research question, in three of the six ANCOVAs, student grade level (included in the equations as a covariate, along with student SES) exerted a significant main effect on life satisfaction scores. Although the aforementioned results of an ANOVA conducted for an earlier research question indicated that there were no statistically significant differences in life satisfaction between students in different grade levels, there are trends that may be worth noting and that become statistically significant when other variables (e.g., marijuana or cigarette use,

SES, gender or ethnicity) are included in a model. Regarding trends in mean levels of life satisfaction by grade level, the biggest mean difference was evidenced between students in the 9th ($M=3.96$, $SD=0.91$) and 10th grade ($M=4.52$, $SD=0.77$). Mean SLSS scores for all grade levels are presented in Table 6.

Life Satisfaction as a Moderator in the Link between Student Risk Factors and Substance Use

The role of life satisfaction as a possible buffer in the relationship between risk factors for substance use and the actual use of alcohol, marijuana, and cigarettes, was analyzed using a series of logistic regressions. Demographic variables were entered into the model first in order to control for gender, age, SES and ethnicity. Gender was coded as 1=male and 0=female; SES was based on free and reduced lunch status and was coded as 1=Yes and 2=No; in terms of ethnicity, as mentioned previously, the ethnic groups Native American and Other were excluded due to small sample sizes. Dummy-coded variables were then created for the remaining groups, which allowed for the variables African American, Hispanic and Asian/Pacific Islander to be compared to the variable White. Following that, a risk-factor composite was constructed by summing participants' responses to items 5 and 8-12 (after responses were recoded in such a manner that higher scores on each item indicated greater risk) from the demographic questionnaire. These items referred to issues such as GPA, discipline referrals, suspensions, arrests, ADHD diagnosis, and mental health problems. Life satisfaction was then entered into the model, followed by the interaction between life satisfaction and cumulative risk, to assess whether high levels of life satisfaction act as a buffer against substance use in the presence of these risk factors.

Results of the logistic regression analyses for alcohol use, cigarette use and marijuana use revealed that none of the interaction terms between life satisfaction and the risk factor composite were significant, using an alpha level of .05. This suggests that high levels of life satisfaction do not act as a significant buffer in the relationship between risk factors for substance use and the actual use of alcohol, cigarettes and marijuana. Due to the non-significance of the interactions, the models were then re-run to assess for the presence of main effects.

In terms of alcohol use, a main effect for life satisfaction was found ($X^2 = 6.20$, $df = 1$, $p < .05$), but not for the risk factor composite. This suggests that, the higher the life satisfaction that youth report, the less likely they are to use alcohol. However, having a large number of risk factors does not predict that they will be more likely to use alcohol. With regard to cigarette use, main effects were found for both life satisfaction ($X^2 = 4.268$, $df = 1$, $p < .05$), and risk factors ($X^2 = 4.017$, $df = 1$, $p < .05$). Specifically, youth with lower levels of life satisfaction and a greater number of risk factors were more likely to smoke cigarettes. Finally, when looking at marijuana use, results showed significant main effects for risk factors ($X^2 = 11.845$, $df = 1$, $p < .05$) but not life satisfaction. These results indicate that youth with a greater number of risk factors were more likely to use marijuana. However, a youth reporting low life satisfaction was not more likely to engage in marijuana use, contradicting the significant inverse correlation between marijuana and life satisfaction that was obtained in earlier bivariate correlation analyses. This finding indicates that when other factors (i.e. age, gender, SES, etc.) are considered, the relationship between marijuana use and life satisfaction is no longer significant, suggesting that marijuana use does not significantly relate to life satisfaction in

adolescents after the influence of demographic characteristics is taken into account. No other main effects within the model were statistically significant. Full results of the logistic regressions can be found in Tables 16-18.

Table 16

Logistic Regression Analysis Predicting Alcohol Use from Life Satisfaction and Cumulative Risk Factors (n=130)

Independent Variable	Model A				Model B			
	<i>B</i>	S.E	Odds Ratio	<i>p</i>	<i>B</i>	S.E	Odds Ratio	<i>p</i>
Gender	-.12	.46	.89	.79	-.17	.47	.84	.71
Age	.32	.16	1.37	.05	.32	.16	1.37	.05
SES	-.50	.44	.61	.26	-.50	.44	.61	.26
African American	-.23	.75	.80	.76	-.20	.75	.82	.79
Asian	-1.61	1.19	.20	.18	-1.63	1.19	.20	.17
Hispanic	.51	.51	1.67	.31	.48	.51	1.61	.35
Risk factor composite	.08	.06	1.08	.19	.26	.35	1.29	.46
Life satisfaction	-.62	.25	.54	.01*	-.65	.26	.52	.01*
Life Satisfaction x Risk factor composite					-.04	.08	.96	.60

Note. Values for interaction term were obtained by first entering covariates (i.e., gender, age, SES, and ethnicity), then the main effects of risk factors and life satisfaction, and finally the interaction between risk factors and life satisfaction. S.E. is Standard Error. Numbers in the beta column are on a log odds scale. White represents the reference category. Gender (1=M, 0=F). SES (1=Higher SES, 2=Lower SES).

**p* < .05.

Table 17

Logistic Regression Analysis Predicting Cigarette Use from Life Satisfaction and Cumulative Risk Factors (n=130)

Independent Variable	Model A				Model B			
	<i>B</i>	S.E	Odds Ratio	<i>p</i>	<i>B</i>	S.E	Odds Ratio	<i>p</i>
Gender	.34	.59	1.41	.57	4.9	.64	1.64	.44
Age	.06	.20	1.06	.76	.05	.20	1.06	.79
SES	.40	.58	1.48	.50	.37	.58	1.45	.53
African American	.17	.96	1.19	.86	.16	.98	1.18	.87
Asian	-18.99	12595.63	.00	.99	-18.87	12559.63	.00	.99
Hispanic	-0.11	.63	.99	.99	.07	.63	1.07	.91
Risk factor composite	.13	.07	1.14	.05*	-.09	.28	.92	.76
Life satisfaction	-.59	.28	.56	.04*	-.60	.28	.55	.03*
Life Satisfaction x Risk factor composite					.06	.07	1.06	.43

Note. Values for interaction term were obtained by first entering control variables (i.e., gender, age, SES, and ethnicity), then the main effects of risk factors and life satisfaction, and finally the interaction between risk factors and life satisfaction. S.E. is Standard Error. No Asian students reported using cigarettes resulting in a high S.E. Numbers in the beta column are on a log odds scale. White represents the reference category. Gender (1=M, 0=F). SES (1=Higher SES, 2=Lower SES).

* $p < .05$.

Table 18

Logistic Regression Analysis Predicting Marijuana Use from Life Satisfaction and Cumulative Risk Factors (n=130)

Independent Variable	Model A				Model B			
	<i>B</i>	S.E	Odds Ratio	<i>p</i>	<i>B</i>	S.E	Odds Ratio	<i>p</i>
Gender	.60	.61	1.81	.33	.37	.63	1.44	.56
Age	.20	.21	1.23	.32	.25	.22	1.28	.25
SES	-.50	.65	.61	.44	-.44	.64	.64	.49
African American	-.81	1.19	.44	.49	-.84	1.19	.43	.48
Asian	-18.89	1261 7.55	.00	.99	-19.05	1262 6.31	.00	.99
Hispanic	-.20	.62	.82	.75	-.38	.64	.69	.55
Risk factor composite	.27	.08	1.31	.001**	.95	.51	2.59	.06
Life satisfaction	-.49	.29	.62	.09	-.60	.31	.67	.19
Life Satisfaction x Risk factor composite					-.16	.12	.85	.16

Note. Values for interaction term were obtained by first entering control variables (i.e., gender, age, SES, and ethnicity), then the main effects of risk factors and life satisfaction, and finally the interaction between risk factors and life satisfaction. S.E. is Standard Error. No Asian students reported using marijuana resulting in a high S.E. Numbers in the beta column are on a log odds scale. White represents the reference category. Gender (1=M, 0=F). SES (1=Higher SES, 2=Lower SES).

* $p < .05$.

Chapter Five

Discussion

Study Summary

The purpose of the current study was to examine the relationship between adolescents' life satisfaction and their frequency of use of a variety of substances (e.g., tobacco, alcohol, and illicit drugs). Specifically, this study addressed how this relationship varies as a function of substance/s used, and students' demographic characteristics (i.e., gender and ethnicity). A thorough review of the literature uncovered only four studies examining life satisfaction in relation to substance use in adolescence, and thus this study aimed to add to the literature and expand on existing information. This study also augmented the literature base by employing a predominantly Hispanic sample of high school students, a population that has typically been underrepresented in studies of this nature. Finally, the current study aimed to determine whether high life satisfaction serves as a buffer in the relationship between traditional risk factors for substance use (e.g., poor academic achievement, conduct problems, emotional problems) and the actual use of specific substances.

This chapter summarizes the noteworthy results of the current study and compares these findings to the existing literature as outlined in chapter two of this document. Then, the implications that the current findings have for the field of school psychology and

other mental health practitioners are addressed. Finally, potential limitations of the study, as well as suggested directions for future research, are discussed.

Frequency of Substance Use

Overall, results showed that many of the adolescents surveyed reported no use of substances in the past year. Of those who endorsed use, the most commonly used substance was alcohol with just over half of adolescents having had at least one drink in the past year. Previous research examining alcohol use in adolescence has also suggested that half to three-fourths of high school students have drunk alcohol (CDC, 2009; Johnston et al., 2007). Therefore, rates from the current study are relatively consistent with previous research and fall close to the expected range of alcohol use.

The next most frequently endorsed substance was marijuana, with approximately 20% of the adolescents reporting that they had used marijuana at least once in the past year. This rate was slightly less than that reported in the literature. For example, the Centers for Disease Control and Prevention (CDC), indicated that approximately 38% of adolescents surveyed in 2007 had used marijuana one or more times during their life. Contradictory findings were also evident with regard to cigarette use. Of the adolescents surveyed in this study, only 16% indicated that they smoked at least one cigarette in the past year, which is lower than national studies which reported cigarette use rates ranging from 32% - 50% (CDC, 2009; Johnston et al., 2007).

These contradictory findings may be explained by a combination of hypotheses. First, many of the comparison studies reported lifetime usage rates, whereas the current study only considered substance use within the past 12 months, which may partially account for the lower rates. Another hypothesis relates to the unique ethnic composition

of the current study, which was mainly composed of Hispanic (60%) and White (22%) adolescents. Past research has shown that although Hispanic and White adolescents engage in comparable rates of alcohol use, White adolescents consistently report higher rates of marijuana and cigarette use (CDC, 2009). With this in mind, it is logical that overall rates of substance use in this study would be lower than typically found in nationwide studies with representative samples of youth from all ethnic backgrounds. Furthermore, surveys conducted by the CDC since 1991 indicate that marijuana use has been decreasing among adolescents since 1999, and cigarette use has been on the decline since 2001 (CDC, 2009). Therefore, the relatively low usage rates found in the current study may also be a function of the decreasing nation-wide trend noted over the past few years.

Life Satisfaction

Another central focus of this study was the levels of life satisfaction of the adolescents surveyed. Life satisfaction refers to the subjective cognitive evaluations that people make with regard to the quality of their overall lives or the quality of specific domains within their lives (Diener et al., 1999; Gilman & Huebner, 2003; Huebner, 1991a). Using scores between 1 and 3.9 to indicate low life satisfaction and scores at or above 4.0 to indicate high life satisfaction (c.f. Suldo & Huebner, 2004b), results suggest an overall positive level of life satisfaction among the majority of adolescents surveyed. Specifically, two-thirds of participants indicated life satisfaction in the positive range, while one-third reported being dissatisfied with their lives.

Of the few studies in the literature that focused on life satisfaction in relation to substance use in adolescence, none used the SLSS, thus making this the first such study

to use this psychometrically sound measure of student life satisfaction. However, past research findings of scores from the SLSS in relation to constructs other than substance use help to corroborate the levels of life satisfaction reported by the sample in the current study. Specifically, the mean score for the global life satisfaction variable for the current study was 4.21 ($SD=0.86$), which is consistent with previous studies that have reported mean life satisfaction scores ranging from 4.20 ($SD=0.94$) – 4.44 ($SD=1.04$; Ash & Huebner 2001; Fogle, Huebner & Laughlin, 2002; Huebner, Funk, & Gilman, 2000). In sum, the current study confirms prior research that suggests the majority of youth appraise their lives positively.

Life Satisfaction by Gender, Ethnicity, and Grade Level

In terms of gender, results of life satisfaction ratings showed that the small mean differences between males and females was not statistically significant, consistent with prior research indicating that males and females have similar levels of life satisfaction (Ash & Huebner 2001; Dew & Huebner, 1994; Fogle, Huebner, & Laughlin, 2002). With regard to ethnicity, no statistically significant differences emerged between ethnic groups' life satisfaction scores (although a visual examination of group means suggested that students who were Asian/Pacific Islander or African American had somewhat higher mean SLSS scores than students who were Hispanic or White). These null results are consistent with a study done by Ash and Huebner (2001), in which race and life satisfaction were unrelated. In sum, the results of the current study confirm that an adolescent's gender or ethnic background does not play a significant role in determining his or her level of life satisfaction. The role of grade level in students' life satisfaction is less clear, as some analyses suggested no differences among students in different grade

levels while other analyses highlighted the trend for freshmen to have lower life satisfaction than sophomores. The particularly low level of life satisfaction found among students in 9th grade may be due to stress associated with the transition from middle to high school, or reflect the possibility for students in 9th grade that have mental health problems (including particularly low life satisfaction) may be part of the large contingent of youth that drop out of school during or after their 9th grade year.

Relationships between Life Satisfaction and Substance Use

One of the primary purposes of this study was to examine the bivariate relationships between adolescents' global life satisfaction and their use of alcohol, cigarettes, and marijuana. The results of the bivariate analyses showed that life satisfaction had reliable, albeit weak, inverse correlations with use of all three substances. These results suggest that higher life satisfaction co-occurs with slightly lower levels of substance use. This finding corroborates previous findings from a variety of studies. For example, with regards to alcohol use, Raphael et al. (1996) reported a similar correlation (-.21) between alcohol use and quality of life, and Kuntsche and Gmel (2004) reported that adolescents who drank alcohol regularly increased their odds of being dissatisfied with their lives by .88 times. Furthermore, Zullig et al. (2001) reported that substance using females increased the odds of reporting dissatisfaction with their lives ranging from 1.58 times (alcohol use in the past 30 days), to 2.07 times (marijuana use), to 2.42 times (cigarette use; only white females); substance using males increased their odds of experiencing decreased life satisfaction by 1.56 times (alcohol use), to 1.75 times (marijuana use; white males only), to 1.93 times (cigarette use) in comparison to those who did not report substance use. Topolski et al. (2001) also found that youth who

completely abstained from any substance use (i.e., tobacco use, alcohol use, illicit drug use) reported the highest quality of life when compared to teens who occasionally or frequently engaged in those behaviors. As mentioned previously, while a causal relationship in either direction cannot be confirmed, research has consistently shown that life satisfaction and substance use are consistently negatively correlated.

The current study also explored the influence of substance use on students' life satisfaction when multiple types of substances (specifically, alcohol, cigarettes and marijuana) were considered simultaneously. Results showed that the three variables together explained 6.4% of the variance in global life satisfaction scores. This is the first study to examine the total effect of multiple substances on an adolescent's life satisfaction, as the four previous studies in this area focused on the effect of individual types of substances. The results of this study suggest that the amount of variance that substance use accounts for in youth life satisfaction scores is relatively small, albeit statistically significant. The vast majority of variance in high school students' life satisfaction scores must be explained by factors other than use of illicit substances; such other factors (e.g., social relationships, attitudes and beliefs, life circumstances) were not examined in the current study.

Of note, when the three different types of substances were examined simultaneously, none of the individual substance use variables were unique predictors of life satisfaction. This finding suggests that while the shared variance between substances (i.e., the tendency to use any substance at all) was reliably associated with life satisfaction, use of a particular type of substance is not driving the effect. The weak effect of specific types of substances and life satisfaction is consistent with Piko and

colleagues' (2005) prior research that found that low life satisfaction (among other variables) was linked to smoking for only some samples, as life satisfaction was predictive of smoking in all countries but the USA. Nevertheless, given the larger number of studies that found a negative relationship between youth life satisfaction and substance use (Kuntsche & Gmel, 2004; Raphael et al., 1996; Tu et al., 2008; Zullig et al., 2001), the null results obtained for the individual predictors of the regression analysis in the current study suggests that substance use in general, rather than use of a specific substance, better predicts reduced life satisfaction.

The current study also explored whether certain demographic variables (i.e., gender and ethnicity) play a role in the relationship between adolescents' life satisfaction and their use of alcohol, tobacco and marijuana. The current study found that while the relationship between substance use and life satisfaction was similar across ethnic groups, gender functioned as a moderator in the link between alcohol use and life satisfaction. Specifically, male alcohol users had higher life satisfaction than female users, while female non-users had higher life satisfaction than male non-users. Thus, the typical inverse association between substance use and life satisfaction may not apply for males in the particular case of alcohol use.

These findings corroborate previous findings in that both Zullig et al. (2001) and Kuntsche and Gmel (2004) reported a greater level of decreased life satisfaction for female alcohol users compared to male alcohol users. However, since neither study included non-users in their sample, comparisons between these groups cannot be made. Additional research is needed to determine if teenage males who do not use alcohol are actually at risk for reduced life satisfaction, and if a third variable (e.g., diminished social

relationships) may be driving this effect. The current study's finding that gender and ethnicity did not moderate the relationship between substance use and life satisfaction in any circumstance beyond males and alcohol use is similar to a study by Tu, Ratner and Johnson (2008), which found that boys and girls who used marijuana were at similar risk for reporting dissatisfaction with their lives (.96 and 1.01 times, respectively) in comparison to youth who did not report using substances. In contrast, Zullig et al. (2001) reported significant race/gender interactions in terms of the effect of substance use on reports of life satisfaction. Specifically, these researchers found that while alcohol use in the past 30 days was associated with reported life dissatisfaction for all four race/gender groups (male/female and black/white), black females had the highest odds of reporting low life satisfaction. However, cigarette use in the past 30 days was unrelated to life satisfaction for black females, and marijuana use in the past 30 days was similarly unrelated to life satisfaction in black males. Notably, Zullig and colleagues' research utilized a markedly different sample in terms of demographics (i.e., no Hispanic adolescents were included). Therefore, it is possible that the different participants contributed to the discrepant results.

The Role of Life Satisfaction in the Relationship between Risk Factors and Substance Use

The last purpose of the current study was to assess whether life satisfaction acts as a buffer in the relationship between risk factors for substance use (i.e., academic underachievement, discipline referrals, suspensions, arrests, ADHD diagnosis and mental health problems) and the actual use of alcohol, marijuana, and cigarettes. Results showed that none of the interaction terms between life satisfaction and the risk factor composite were significant when predicting either alcohol use, cigarette use, or marijuana use. This

suggests that high levels of life satisfaction do not act as a significant buffer in the relationship between risk factors for substance use and the actual use of alcohol, cigarettes and marijuana. A review of the literature revealed no other studies that focused on the protective qualities of life satisfaction on concurrent or later substance use in adolescence. Of the studies that focused on life satisfaction in relation to other outcomes, only one included life satisfaction as a moderating variable. Suldo and Huebner's (2004b) study which focused on the development of psychopathological behaviors, found that adolescents with positive life satisfaction were less likely to develop later externalizing behaviors (i.e. delinquent and aggressive behaviors) in the face of stressful life events. In other words, their results suggested that life satisfaction has the potential to buffer against some effects of adverse life events in adolescence. The results of the current study suggest that although positive life satisfaction may serve as a buffer for a variety of externalizing behaviors, it may not protect youth from the use of specific substances per se. Or, perhaps the manner in which "risk factors" were conceptualized in the current study (i.e., as relatively stable and enduring conditions such as mental health diagnoses and criminal behavior resulting in arrests) may be more directly related to problematic outcomes regardless of one's level of life satisfaction, whereas high life satisfaction may be able to buffer against the experience of discrete and temporal stressful experiences (such as the "risk factors" assessed in Suldo and Huebner's study).

Although none of the aforementioned interactions were significant, several interesting main effects emerged. For instance, life satisfaction was significantly and inversely related to alcohol use and cigarette use, but not marijuana use. This suggests that the higher the life satisfaction that youth report, the less likely they are to use alcohol

or cigarettes, but not necessarily marijuana. This finding is in direct contrast to the significant inverse correlation previously reported between marijuana use and life satisfaction. One possible explanation is that when adolescents' demographic characteristics (i.e., age, gender, SES etc.) are considered, as was done in regression analyses conducted to test for moderating variables, the relationship between marijuana use and life satisfaction is no longer significant. In addition, one study that focused on marijuana use and life satisfaction may also lend a possible explanation for the current findings. For example, Tu et al. (2008) found that while "heavy" marijuana users (10+ times in past 30 days) reported lower life satisfaction, "frequent" users (3-9 times in past 30 days) actually reported being more satisfied with themselves than those who never used marijuana. Thus, the relationship between life satisfaction and marijuana may not be problematic for all youth in all areas of life.

With regard to main effects pertinent to risk factors, it was found that the more risk factors adolescents had the more likely he or she would be to use cigarettes and marijuana, but not alcohol. This finding regarding alcohol is in direct contrast to a multitude of studies that have reported a variety of factors (including the ones labeled "risk factors" in the current study) lead to an increased likelihood of alcohol use (in addition to other substances). For example, in keeping with the risk factors included in the current study, other studies have linked alcohol use to depression, anxiety, ADHD, after school detentions, school disengagement and poor grades (Beyers, Toumbourou, Catalano, Arthur, & Hawkins, 2004; Ellickson, Martino, & Collins, 2004; Kliewer & Murrelle, 2007; Rao, 2006; Spooner, 1999; Schinke, Fang, & Cole, 2008; Swadi, 1999; Thompson, Riggs, Mikulich, & Crowley, 1996). Apart from the unique ethnic make-up

of the current study, another explanation for the contradictory findings is that alcohol use may be more strongly related to specific risk factors that were not included in the current study. For example, other researchers have shown relationships between increased alcohol use and rebelliousness, sensation seeking, age at first use, negative family interactions, and association with deviant and substance using peers (Beyers et al., 2004; DeWit et al., 2000; Friedman & Glassman, 2000; Kliewer & Murrelle, 2007; Schinke et al., 2008; Windle, 2000). Therefore, it is possible that the risk factors included in the current study are not as highly related to alcohol use as some of the others outlined in the literature.

Implications

As the field of positive psychology and constructs such as life satisfaction gain more attention, the importance of fostering developmental assets and psychological well-being in youth is beginning to receive the consideration that it deserves. Focusing on subjective well-being helps to expand and go beyond the focus on indicators of psychopathology that have traditionally been used as a measure of psychological wellness in adolescence. It helps to provide further insight into the outlooks and mindsets of adolescents that might otherwise have been overlooked or disregarded because their dissatisfaction with their lives hasn't yet manifested into full-blown psychological disorders. The importance of considering youths' internal, cognitive evaluations of their quality of life is further highlighted by the results of the current study that show connections between low life satisfaction and substance use in adolescence, as youth who experience low life satisfaction may be more likely to turn to illicit substances.

Taken together, the results of the current study suggest that a substantial number of high school students use alcohol, on at least one occasion in the past year. Although the rates of cigarette and marijuana use reported are less than that found in the current literature, they still suggest that a sizable minority of adolescents are choosing to use these substances, too. This fact in and of itself warrants attention and intervention due to the host of negative outcomes linked with substance use in adolescence. Mental health professionals and others serving the adolescent population need to be mindful of the issue of substance use as they make decisions concerning the delivery of services and focus of resources.

In terms of the relationship between substance use and life satisfaction, results showed that high life satisfaction coincides with slightly lower levels of substance use. This finding suggests that adolescents who report being satisfied with their lives are less likely to engage in substance use. Although this fact further supports the importance of fostering life satisfaction in youth, results also showed that substance use on a whole only accounted for a small percentage of the differences in adolescents' life satisfaction. This finding implies that there are other variables, or a combination of other variables, that affect an adolescent's satisfaction with life above and beyond substance use alone. In other words, while reducing the amount/frequency that an adolescent uses substances may help to decrease the likelihood of many negative outcomes, it may not necessarily serve to improve his or her overall satisfaction with life to a great degree. Of note, the direction of the relationship between substance use and life satisfaction is only speculative, as the current study used a cross-sectional design that does not permit the researcher to determine if low life satisfaction precedes substance use, if use of

substances predicts declines in life satisfaction, or if these variables affect each other in both manners. Nevertheless, it is important for professionals in the schools to actively nurture and attempt to increase the life satisfaction of adolescents, for instance by fostering positive relationships with teachers and peers and helping youth to feel connected to their school and people in it.

Another notable finding of the current study was the presence of gender differences in the relationship between alcohol use and life satisfaction. Specifically, male alcohol users reported higher levels of life satisfaction compared to female alcohol users and male non-users. Therefore, it should not be assumed that male alcohol drinkers will experience the detriments in life satisfaction that may be common to substance users. Conversely, the life satisfaction of females prone to alcohol use warrants monitoring. Such gender-specific considerations are important for school psychologists and other mental health practitioners to consider when working and intervening with adolescents who engage in alcohol use.

Another noteworthy, yet surprising, finding was that life satisfaction did not act as a significant buffer for substance use in the presence of relatively stable risk factors. Such a relationship was anticipated based on the findings from Suldo and Huebner (2004b), who found that positive life satisfaction acted as a buffer against the development of delinquent and aggressive behaviors in the face of adverse life circumstances (e.g., changing schools, parental divorce, new sibling, and/or the death of a close friend etc.). These contradictory findings suggest that positive life satisfaction may serve as a buffer for some externalizing behavior problems but not necessarily the decision to engage in substance use. Further, the results of the current study suggest that the risk factors

associated with greater cigarette and marijuana use persist for all youth, including those who have high life satisfaction, underscoring the importance of attempting to address the presence of the risk factors directly.

Limitations

The current study has some potential limitations that should be kept in mind when interpreting the results. First, the sample utilized for this study is not representative of U.S. adolescents in terms of ethnicity and socio-economic status, which may affect the generalizability of the findings. Even though the sample is racially unbalanced, there are currently few studies, if any, that have examined the life satisfaction of Hispanic youth in particular. As a result, this study fills some gaps in the current literature and sheds light on a population that deserves increased attention. Regardless, the small sample size renders the results of the current study preliminary at best when attempting to generalize to the population of Hispanic youth.

In addition, the exclusive reliance on self-report measures can be considered a limitation, as accurate results and subsequent interpretations are dependent on the honesty and openness of the respondents. However, as shown in previous studies, the anonymity afforded to all participants should enhance the validity and reliability of the results (Lintonen, Ahlstrom, & Metso, 2004). Furthermore, the scale used to measure life satisfaction (the SLSS) has been extensively researched and shown to have satisfactory levels of reliability and validity. However, the instrument used to measure alcohol use, tobacco use and marijuana use is new and thus lacks prior support for reliability and validity. It was selected despite the lack of supporting research, due to the fact that its

questions covered a wider range of substance use behavior in comparison to existing measures.

The fact that substance use was dichotomized in terms of use and non-use, may have served to alter the findings to some degree. For example, other studies have shown that when frequency and amount of use are factored into the equation, results show a significant difference between subgroups of users (Kuntsche & Gmel, 2004; Tu et al., 2008; Zullig et al., 2001). Since users were all grouped together and considered to be a homogenous group in the current study, the findings may not be as detailed and informative as they could be if those other factors (i.e., frequency and amount of use) were considered.

Directions for Future Research

As this study is only one of now five that have focused on substance use and life satisfaction in adolescence, additional studies are needed to expand on and replicate the current findings. Future studies focusing on this topic should aim to incorporate the SLSS as the measure of life satisfaction, as this psychometrically sound measure is most likely to produce valid and reliable results of youth life satisfaction that may not be achieved by other indicators (i.e., single response items) that have been used to date. In addition, this was also one of the first studies that examined the effect of a combination of substances on life satisfaction, rather than just the use of a single substance. With the finding that general substance use rather than a specific substance better predicted satisfaction with life, more studies are needed to assess this relationship to ascertain whether certain combinations of substances may have different effects.

Additionally, future studies are needed to address the two somewhat surprising results obtained in the current study. For example, the fact that life satisfaction was not found to act as a significant buffer against substance use in the presence of risk factors needs to be further examined using larger sample sizes that may be more sensitive to detecting effects when small but reliable differences exist. Thus, the hypothesis previously offered that perhaps life satisfaction buffers against only certain negative outcomes, and not necessarily substance use, needs to be examined further in studies employing larger sample sizes, as well as a variety of “risk factors” such as factors that may entail more discrete stressful experiences as opposed to chronic conditions (e.g., psychiatric problems, delinquency). Future research in this area should also aim to determine the specific mechanisms by which life satisfaction could operate as a buffer; currently, such mechanisms are unknown in the literature due to the fact that positive psychology is such a new and relatively under-researched area. The second unexpected finding that needs to be addressed in future studies involves the inconsistent relationship between life satisfaction and marijuana use. Frequency of marijuana use should be factored into the equation to assess whether the relationship differs according to the amount that the adolescent uses marijuana.

In terms of alcohol use, future researchers should explore motives for drinking among each gender to determine why drinking may be harmful (in terms of reduced life satisfaction) to females and not males. Qualitative studies focusing on individual adolescent’s thoughts might help uncover some of the reasons why some youth choose to use substances. Studies of this nature should also address how adolescents think their substance use relates to their perceptions of happiness and fulfillment.

Finally, future studies should also consider incorporating more Hispanic and other minority students into their samples, as these adolescents have typically been overlooked or underrepresented in studies of this nature. Further, earlier research has suggested that particular demographic groups, namely African American females, may be particularly sensitive to the negative effect of substance use on life satisfaction.

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Appendices

Appendix A: Parental Consent Form, Spanish Version

Estimados padres:

Esta carta es para informarles sobre un estudio investigativo que será realizado en la Escuela Secundaria de * . Los investigadores de la Universidad del Sur de la Florida (USF) están tratando de averiguar los efectos que tienen las experiencias en la escuela, la casa y con amistades sobre la salud y el bien psicológico de los alumnos.

Quiénes somos?: El equipo de investigación consiste del doctor Rance L. Harbor, psicólogo para el Condado Escolar de * y profesor visitante de la Universidad del Sur de la Florida (USF) y también consiste de estudiantes licenciados en el Programa de Psicología en la Universidad del Sur de la Florida (USF). Estamos planeando este estudio investigativo en cooperación con el director de la Escuela Secundaria de * para poder asegurar que la información obtenida beneficia a la escuela.

Por qué estamos solicitando la participación de su hijo/hija? Este estudio es parte de un proyecto titulado **“Riesgos y factores protectivos asociados con usos de sustancias entre alumnos en escuelas secundarias.”** Su hijo/hija fue seleccionado porque es un alumno/alumna de la Escuela Secundaria de *.

Por qué su hijo/hija debe de participar? Necesitamos aprender más sobre las razones que atraen a la juventud al uso del alcohol y las drogas cuando están en la escuela secundaria. La información que recibimos de los alumnos puede que nos ayude a entender mejor nuestro conocimiento de los factores peligrosos que atraen a los alumnos al uso del alcohol y las drogas. A propósito, también nos dará la oportunidad de mejor entender nuestro conocimiento sobre las características y las actividades que sirven como factores protectivos en prevenir el uso del alcohol y las drogas. Además, la información que logremos obtener de los alumnos será repartida entre los maestros y la administración de la Escuela Secundaria de * para que estén al tanto de experiencias específicas que ocurren en la escuela que resultan en la salud y el bien psicológico de los alumnos. Ninguno de los alumnos ni sus padres serán compensado por su participación en este estudio investigativo. Sin embargo, todos los alumnos que participen en este estudio investigativo tendrán la oportunidad de ganar uno de varios premios en una rifa.

Los requisitos para participación: Si su hijo/hija tiene permiso para participar en nuestro estudio se le entregará varios cuestionarios de papel y lápiz los cuáles tendrán que responder. Estos cuestionarios se tratan de los pensamientos, el comportamiento y la actitud de su hijo/hija sobre el uso del alcohol y las drogas; también tendrán preguntas sobre la participación de su hijo/hija en programas y actividades fuera de la escuela, sobre su participación en deportes, sobre las amistades y relaciones que mantienen con sus compañeros, y sobre la salud y el bien psicológico. Está estimado que le tomará entre media hora y 45 minutos para llenar los cuestionarios. Personalmente distribuiremos los cuestionarios a los alumnos durante las horas de escuela en el segundo semestre escolar (los meses de invierno y primavera). Estos cuestionarios se le darán a los estudiantes que tengan permiso para participar en nuestro estudio; estos alumnos serán divididos en varios grupos. En total, es estimado que la participación de su hijo/hija tomara no más de una hora durante un día de escuela.

La privacidad de las respuestas de su hijo/hija: Hay un riesgo mínimo en la participación de su hijo/hija en este estudio. Nosotros estaremos presentes durante la administración de los cuestionarios para poder asistir a su hijo/hija por si acaso tienen algunas preguntas o preocupaciones. En cuanto su hijo/hija termina el cuestionario, nosotros le entregaremos una lista de recursos en la comunidad que ofrecen sus servicios si desean hablar con alguna persona sobre preocupaciones personales o sobre el mantenimiento de su salud y su bien psicológicamente. También se le ofrecerá información sobre programas sobre el uso del alcohol,

Appendix A: Parental Consent Form, Spanish Version (continued)

las drogas y los productos de tabaco. Este estudio es anónimo. El nombre de su hijo/hija no aparecerá con las respuestas. Los cuestionarios que termine su hijo/hija se combinarán con los cuestionarios de todos los otros alumnos; nosotros no podríamos distinguir las respuestas y los cuestionarios de un alumno con las respuestas y cuestionarios de los otros alumnos. Nosotros seríamos los únicos con acceso al gabinete con los documentos dándole permiso a su hijo/hija para participar en este estudio y conteniendo la firma de su hijo/hija. El permiso de participación que firman los alumnos se le explicará antes de entregarles los cuestionarios; este documento requiere la firma de su hijo/hija y se recogerá antes de llenar los cuestionarios para asegurar que las respuestas sean anónimas. Los archivos se mantendrán confidenciales al alcance de la ley. Personas autorizadas, empleados del Departamento de Salud y Servicios Humanos, los empleados y los miembros del Panel Institucional de Repaso de la Universidad del Sur de la Florida (USF) y personas actuando por parte de la Universidad del Sur de la Florida pueden revisar los archivos de este estudio, pero las respuestas individuales de cada participante no serán compartidas con empleados del sistema escolar o cualquier otra persona menos el doctor Rance L. Harbor y su grupo de investigadores.

Nota informativa: La decisión permitiendo la participación de su hijo/hija en este estudio investigativo debe ser totalmente voluntario. Usted tiene el derecho de permitir que su hijo/hija participe en este estudio investigativo y también tiene el derecho de retirar la participación de su hijo/hija en este estudio investigativo en cualquier momento deseado. La decisión que usted tome sobre la participación de su hijo/hija en este estudio investigativo no afectará de ninguna manera la posición de su hijo/hija como estudiante, sus notas, o su relación con *, las escuelas del condado de *, la Universidad del Sur de la Florida (USF) o cualquier otra institución.

Lo que haremos con las respuestas de su hijo/hija: Nosotros planeamos utilizar la información obtenida durante este estudio investigativo para mejor informar a los maestros y los psicólogos sobre los efectos de los riesgos y los factores protectivos asociados con usos de sustancias (alcohol y drogas) entre alumnos en escuelas secundarias. Los resultados de este estudio investigativo se podrán publicar. Sin embargo, la información obtenida por parte de su hijo/hija estará combinada con la información obtenida de otros participantes en este estudio investigativo antes de publicación. Los resultados publicados no incluirán ningún tipo de información identificando a su hijo/hija.

Preguntas? Si usted tiene algunas preguntas sobre este estudio investigativo, favor de llamar al doctor Harbor al teléfono (813) 872-5300, extensión 303. Si usted tiene algunas preguntas sobre los derechos de su hijo/hija como una persona participando en este estudio investigativo, favor de llamar a un miembro de la División de Cumplimiento para Investigaciones en la Universidad del Sur de la Florida al teléfono (813) 974-9343.

Usted desea que su hijo/hija participe en este estudio investigativo? Para permitir que su hijo/hija participe en este estudio investigativo, favor de llamar el formulario proporcionado para que su hijo/hija se lo entregue a su maestro/maestra de homeroom.

Sinceramente,

Rance L. Harbor, Ph.D.
Psicólogo para el Condado Escolar de Hillborough
Profesor Visitante de la Universidad del Sur de la Florida
Departamento de Fundamentos Psicólogos y Sociales

Appendix A: Parental Consent Form, Spanish Version (continued)

Permiso para participar en este estudio investigativo

Libremente doy mi permiso para que participe mi hijo/hija en este estudio investigativo. Entiendo que esto es una investigación escolar. Yo he recibido una copia de este formulario y documentos para mis expedientes.

Nombre del Estudiante (Escrito con letras Mayúsculas) Nivel Escolar del Estudiante

Firma del Padre
Alumno Participando En Este Estudio

Nombre del Padre
(Escrito con letras Mayúsculas)

Fecha

Declaración de la persona obteniendo consentimiento informado

Yo certifico que los participantes han recibido un formulario de Consentimiento Informado aprobado por el Panel de Repaso Institucional de la Universidad del Sur de la Florida (USF) explicando la historia, las demandas, los riesgos, y los beneficios asociados con la participación en este estudio investigativo. También certifico que un número de teléfono se ha proporcionado por si acaso tendrían algunas preguntas adicionales.

Firma de la Persona Obteniendo
Consentimiento Informado

Nombre de la Persona Obteniendo
Consentimiento Informado
(Escrito con letras Mayúsculas)

Fecha

Appendix B: Parental Consent Form, English Version

Dear Parent or Caregiver:

This letter provides information about a research study that will be conducted at * Senior High 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 Rance L. Harbor, Ph.D., a * County School Psychologist who is also a visitor professor in the College of Education at the University of South Florida (USF), and several graduate students in the USF School Psychology Program. We are planning the study in cooperation with the principal of * Senior High School (*) 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, "Risk and Protective Factors Associated with Substance Use Among High School Students." Your child is being asked to participate because he or she is a student at * High School.

✓ Why Your Child Should Participate: We need to learn more about what leads to alcohol and drug use during high school. The information that we collect from students may increase our overall knowledge of risk factors that lead to drug and/or alcohol use as well as what characteristics and activities serve as a protective factor. In addition, information from the study will be shared with the teachers and administrators at * 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 drug and alcohol use, participation in extracurricular activities, sports, peer relationships, and mental health history. Completion is expected to take your child between 30 and 45. We will personally administer the questionnaires at *, during regular school hours in the Spring 2008 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.

✓ 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.

✓ 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. 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, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF 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. Harbor and his research assistants.

Appendix B: Parental Consent Form, English Version (continued)

- ✓ 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. Your decision to participate, not to participate, or to withdraw participation at any point during the study will in no way affect your child's student status, his or her grades, or your relationship with *, * County Schools, USF, or any other party.

- ✓ 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 risk and protective factors associated with high school alcohol and/or drug use. 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. Harbor at (813) 872-5300 ext 303. 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 homeroom teacher.

Sincerely,

Rance L. Harbor, Ph.D.
School Psychologist * County Public Schools
Visiting Professor, University of South Florida

Appendix B: Parental Consent Form, English Version (continued)

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

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

Appendix C: 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 Rance L. Harbor, Ph.D., the School Psychologist here at * High School and a professor in the College of Education at the University of South Florida (USF), and several graduate 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, "**Risk and Protective Factors Associated with Substance Use Among High School Students.**" You are being asked to take part because you are a student at * High School.

✓ Why You Should Take Part in the Study: We need to learn more about what leads to drug and/or alcohol use during high school. The information that we gather may help us better understand what causes psychological wellness during high school and specifically what factors help students not to use alcohol and/or drugs. In addition, information from the study will be shared with the teachers and administrators at * 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. However, all students who participate in the study will be entered into a drawing for one of several gift certificates.

Filling Out the Questionnaires: These questionnaires ask you about your thoughts, behaviors, and attitudes towards alcohol and drugs as well as peer relationships, participation in extra-curricular activities, and athletics, and life in general. We expect it will take between 30 and 45 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. Your decision to participate, not to participate, or to withdraw participation at any point during the study will in no way affect your student status or your grades; you will not be punished in any way. If you choose not to participate, it will not affect your relationship with * High 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. *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. 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, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF 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.

Appendix C: Student Assent Form (continued)

✓ 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) 872-5300 ext 303 (Dr. Harbor). 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,

Rance L. Harbor, Ph.D.
School Psychologist, * County Public Schools
Visiting Professor, University of South Florida
Department of Psychological and Social Foundations

Appendix C: Student Assent Form (continued)

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.

Signature of child taking
part in the study

Printed name of child

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 D: Demographic Information Survey

<p>1. Gender <input type="radio"/> 1) Female <input type="radio"/> 2) Male</p> <p>2. Ethnicity <input type="radio"/> 1. African American/Black <input type="radio"/> 2. Asian/ Pacific Islander <input type="radio"/> 3. White <input type="radio"/> 4. Hispanic <input type="radio"/> 5. Native American/ Alaska Native <input type="radio"/> 6. Other (Specify _____)</p> <p>3. Age <input type="radio"/> 13 <input type="radio"/> 18 <input type="radio"/> 14 <input type="radio"/> 19 <input type="radio"/> 15 <input type="radio"/> 20 <input type="radio"/> 16 <input type="radio"/> 21 <input type="radio"/> 17 <input type="radio"/> 22</p> <p>4. Grade <input type="radio"/> 9 <input type="radio"/> 10 <input type="radio"/> 11 <input type="radio"/> 12</p> <p>5. Estimated overall GPA <input type="radio"/> 4.0 or higher (A) <input type="radio"/> 3.0-3.9 (B) <input type="radio"/> 2.0-2.9 (C) <input type="radio"/> 1.0-1.9 (D) <input type="radio"/> Less than 1.0 (F)</p> <p>6. Do you receive Free or Reduced-Priced School Lunch? <input type="radio"/> 1. Yes <input type="radio"/> 2. No</p> <p>7. Including last year, and this year, have you been absent? <input type="radio"/> 1. Zero to 2 times <input type="radio"/> 2. 3-9 times <input type="radio"/> 3. 10 or more times</p>	<p>8. Have you ever received any discipline referrals for behaviors other than being tardy <input type="radio"/> 1. Never <input type="radio"/> 2. 1 to 5 times <input type="radio"/> 3. 6 or more times</p> <p>9. Have you ever been suspended out of school (including ATOSS)? <input type="radio"/> 1. Never <input type="radio"/> 2. 1 to 5 days total <input type="radio"/> 3. 6 or more days total</p> <p>10. Have you ever been arrested? <input type="radio"/> 1. Never <input type="radio"/> 2. 1 to 2 times <input type="radio"/> 3. 3 or more times</p> <p>11. Have you ever been diagnosed with Attention Deficit Disorder (ADD/ADHD)? <input type="radio"/> 1. Yes <input type="radio"/> 2. No</p> <p>12. Have you ever been diagnosed with Anxiety, Depression, or other mental health problems? <input type="radio"/> 1. Yes <input type="radio"/> 2. No</p> <p>13. Have you ever been prescribed medication for Attention Deficit Disorder (ADD/ADHD)? <input type="radio"/> 1. Yes, and I still take the medication. <input type="radio"/> 2. Yes, but I no longer take medication. <input type="radio"/> 3. No</p> <p>14. Have you ever been prescribed medication for Anxiety, Depression, or other mental health problems? <input type="radio"/> 1. Yes, and I still take the medication. <input type="radio"/> 2. Yes, but I no longer take medication. <input type="radio"/> 3. No</p>
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Appendix E: Student Life Satisfaction Survey (SLSS)

I 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 the 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 your **strongly agree** with the statement.

	How Often?					
	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1. My life is going well	1	2	3	4	5	6
2. My life is just right	1	2	3	4	5	6
3. I would like to change many things in my life*	1	2	3	4	5	6
4. I wish I had a different kind of life*	1	2	3	4	5	6
5. I have a good life	1	2	3	4	5	6
6. I have what I want in life	1	2	3	4	5	6
7. My life is better than most kids'	1	2	3	4	5	6

*Items are reverse-scored

Appendix F: Teen Alcohol and Drug Use Scale

In the past 12 months, on how many occasions (if any) have you used the following drugs?

Alcohol/Substance Use	Circle the number that best describes on how many occasions						
	Zero occasions	1-2 occasions	3-5 occasions	6-9 occasions	10-19 occasions	20-39 occasions	40 or more occasions
1. Cigarettes/Cigars	1	2	3	4	5	6	7
2. Chewing Tobacco	1	2	3	4	5	6	7
3. Wine/Wine Coolers/Malt Beverages (e.g., Smirnoff Ice)	1	2	3	4	5	6	7
4. Beer	1	2	3	4	5	6	7
5. Liquor (e.g., vodka, rum, whiskey)	1	2	3	4	5	6	7
6. Marijuana	1	2	3	4	5	6	7
7. Inhalants (e.g., glue or gasoline)	1	2	3	4	5	6	7
8. Over the counter drugs when you are NOT sick/hurt (e.g., cough medicine)	1	2	3	4	5	6	7
9. Prescription drugs NOT prescribed to you (e.g., Zanax, Prozac, Ritalin, Adderall)	1	2	3	4	5	6	7
10. Prescription drugs prescribed to you when you are not sick or hurt (e.g., Zanax, Prozac)	1	2	3	4	5	6	7
11. Steroids	1	2	3	4	5	6	7
12. Ecstasy	1	2	3	4	5	6	7
13. Hallucinogens (e.g., LSD, Mushrooms)	1	2	3	4	5	6	7
14. Stimulants (uppers)	1	2	3	4	5	6	7
15. Barbiturates (downers)	1	2	3	4	5	6	7
16. Meth	1	2	3	4	5	6	7
17. Cocaine	1	2	3	4	5	6	7
18. Crack	1	2	3	4	5	6	7
19. Heroin (e.g., cheese)	1	2	3	4	5	6	7
20. Other _____	1	2	3	4	5	6	7

About the Author

Leeza M. Rooks was born in Trinidad, West Indies and earned a BAsC Degree in Child, Youth and Family from the University of Guelph, Canada, and a MA Degree in School Psychology from the University of South Florida. She has presented at conferences for the Florida Association of School Psychologists and the National Association of School Psychologists on topics such as substance use in adolescence, and suicide prevention and intervention. She worked as a graduate research assistant on the Florida Problem-Solving and Response to Intervention Project, and was part of the School-Based Mental Health research group responsible for training hundreds of local school-based mental health professionals on implementation of a procedures manual focused on suicide prevention, intervention, assessment and postvention.