AN EXAMINATION OF THE IMPACT OF DIRECT PEER INFLUENCE AND SOCIAL NORMS ON YOUTH PARTICIPATION IN STRUCTURED ACTIVITIES AND SUBSTANCE USE

by

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TABLE OF CONTENTS

ABSTRACT

During adolescence many youth spend increasing amounts of time gaining new knowledge and skills outside of their home in environments such as structured afterschool activities. In these settings, youth have meaningful opportunities to explore new interests, develop varied competencies, and seek social support from peers and adults. As youth get older rates of participation in structured activities decline. Given the role that structured activities can play in nurturing positive youth development, gaining a better understanding of how peers may affect youth's choice to participate in structured activities is important. This study used logistic regression to examine the role of peer influence and how the perceptions of close friends (direct peer influence) and other peers (social norms) impact a youth's decision to participate in structured activities as well as use alcohol and marijuana. Additionally, the association between youth participation in structured activities and reported use of alcohol and marijuana was examined. Study results indicated that youth who reported engaging in specific types of structured activities, specifically performing arts and volunteering, reported lower rates of alcohol and marijuana use respectively. Direct peer influence was an important factor in substance use whereby for each additional best friend a youth had that participated in school activities, students were less likely to have used alcohol or marijuana. Findings are interpreted using an ecological systems perspective and demonstrate that gaining a better understanding of the influence that direct peers and social norms exert on youth behavior has important implications for promoting the positive development of youth.

CHAPTER 1

Introduction

Adolescence is an important developmental period during which youth increasingly transition their reliance from parents to self. They begin to explore varied interests, gain increasingly complex skills, and engage in new behaviors and activities (Eccles & Gootman, 2002; Huebner & Mancini, 2003). Many youth begin to spend a greater amount of time gaining these skills and knowledge in environments outside of their family, such as in schools and community settings. Structured afterschool activities (structured activities) serve as a unique context that promotes the developmental processes of youth. Structured activities typically have an adult leader present, meet regularly, and offer skill-building opportunities within a peer context (Persson, Kerr, & Stattin, 2007). Examples of structured activities include school-sponsored activities (e.g., sports, performing arts, yearbook/journalism club, or academic clubs) and community-sponsored activities (e.g. sports, performing arts, religious groups, Boy Scouts and Girl Scouts, 4-H and other clubs). The literature demonstrates that youth who engage in structured activities are more likely to experience positive outcomes such as increased academic performance (Eccles &Gootman, 2002), higher levels of civic engagement (Eccles & Gootman, 2002; Flanagan, 2004; Flanagan & Faison, 2002; Larson, 2000), reduced substance use (Catalano & Hawkins, 2004; Hawkins & Catalano, 1992; Mahoney & Stattin, 2000), and delayed onset of sexual activity (Fredricks & Eccles, 2006; Mahoney & Stattin, 2000). Within an adolescent's ecological system of development, structured activities offer a unique setting in which youth are able to develop a sense of belonging and are able to stimulate their own development. Youth are able to interact with and seek social support from peers and non-familial adults while engaging in meaningful opportunities to safely explore new interests and develop varied skills.

The literature shows that as youth get older, rates of participation in structured activities decline (Persson, Kerr, & Stattin, 2007). Youth cite increasing academic demands, family responsibilities, and lack of interest as some of the reasons why they do not choose to continue participating in structured activities (Borden & Serido, 2007; Flanagan, 2004). While the explanations for non-participation are notable given the importance of peers during adolescence, the role that peer influence plays in encouraging a youth to participate (or not) in structured activities remains an area for further research. A substantial literature exists which documents how peers influence risky behaviors among adolescents including engagement in substance use, unprotected sexual activity, and delinquent behavior (Albert & Steinberg, 2011; Albert, Chein & Steinberg, 2008; Bauman & Ennet, 1996; Dishion, Bullock & Granic, 2002; Steinberg, 2013; Steinberg & Monahan, 2007). However, an equally important area of scholarship is understanding how peers may influence positive, prosocial behaviors such as engaging in structured afterschool activities. In light of the increasing reliance that many adolescents place on their peers for support, counsel, and decision-making, understanding how factors such as direct peer influence and social norms impact a youth's decision to engage in prosocial opportunities as well as risk behaviors is an important area of investigation.

The purpose of the present study is two-fold. First, the association between youth participation in structured afterschool activities and reported differences in alcohol and marijuana use will be examined. Furthermore, the role of peer influence, direct peer influence and social norms, will be studied to assess how these factors impact a youth's decision to use illegal substances (e.g., alcohol, marijuana) and to participate in structured afterschool activities.

CHAPTER 2

Literature Review

Adolescence is a developmental period marked by physical and emotional growth, increased independence from parents, and the emergence of identity (Larson, 2000; Scales, Benson, Leffert, & Blyth, 2000; Eccles & Gootman, 2002; Lerner, Almergi, Theokas, Lerner, 2005). The evolving understanding of developmental processes, especially during adolescence, contributed to the emergence of an important body of applied research referred to as positive youth development (PYD). The positive youth development perspective asserts that adolescence is a time of developmental opportunity, growth, and competency-building. This assets-based view is in direct contrast to prior deficits-based characterizations which described adolescence as a time of storm and stress (Hall, 1904; Larson, 2000; Steinberg & Lerner, 2004). The PYD movement informed the design of how youth development programming is designed to provide structured, high quality opportunities for youth to learn new skills and competencies.

Positive Youth Development

Prior to the PYD movement, adolescence was largely described as a turbulent and challenging time of development. Specifically, adolescents were characterized as being impulsive and likely to engage in risky or destructive behaviors (Lerner, Almerigi, Theokas, & Lerner, 2005; Steinberg, & Lerner, 2004). Viewed from a deficits-based perspective, adolescents were thought of as being in need of psychosocial repair or were considered problems that needed to be managed (Roth, Brooks-Gunn, Murray, & Foster, 1998). In contrast, the positive youth development perspective, which began in the late 1980s, viewed the period of adolescence positively and as a crucial time of growth and development. As the PYD movement matured over the past three decades, a collective understanding of key tenets emerged among

practitioners and this knowledge informed approaches to support adolescents as they successfully transition to adulthood.

Various scholars in the PYD field constructed several complementary conceptual frameworks to guide the promotion of positive development of young people. For instance, Lerner and colleagues (2000) used the Five Cs to describe crucial ingredients that nurture positive youth development. These five components include: (a) *competence* in academic, social, and vocational areas; (b) *confidence* or a positive self-identity; (c) *connections* to community, family, and peers; (d) *character* or positive values, integrity, and moral commitment; and (e) *caring* and compassion. In the early 1990s the Search Institute released a research-based framework identifying 40 internal and external developmental assets that serve as the building blocks of healthy development. These skills, experiences, relationships, and behaviors are the positive assets that aid young people to develop into successful and contributing adults. Specifically, the external assets identified consist of Support, Empowerment, Boundaries and Expectations, and Constructive Use of Time. The internal assets include Commitment to Learning, Positive Values, Social Competencies, and Positive Identity. The more assets young people possess the less likely they are to engage in a variety of high risk behaviors (Benson, Leffert, Scales & Blyth, 1998) and the more likely they are to successfully transition to adulthood.

These two frameworks serve as examples of the guiding principles that emerged from the PYD movement. These approaches demonstrate the field's collective emphasis on providing youth access to safe places, challenging experiences, and caring people on a consistent basis. Positive youth development-oriented practitioners deem these factors as necessary to support the development of competencies that youth will need for successful transition to adulthood. Youth

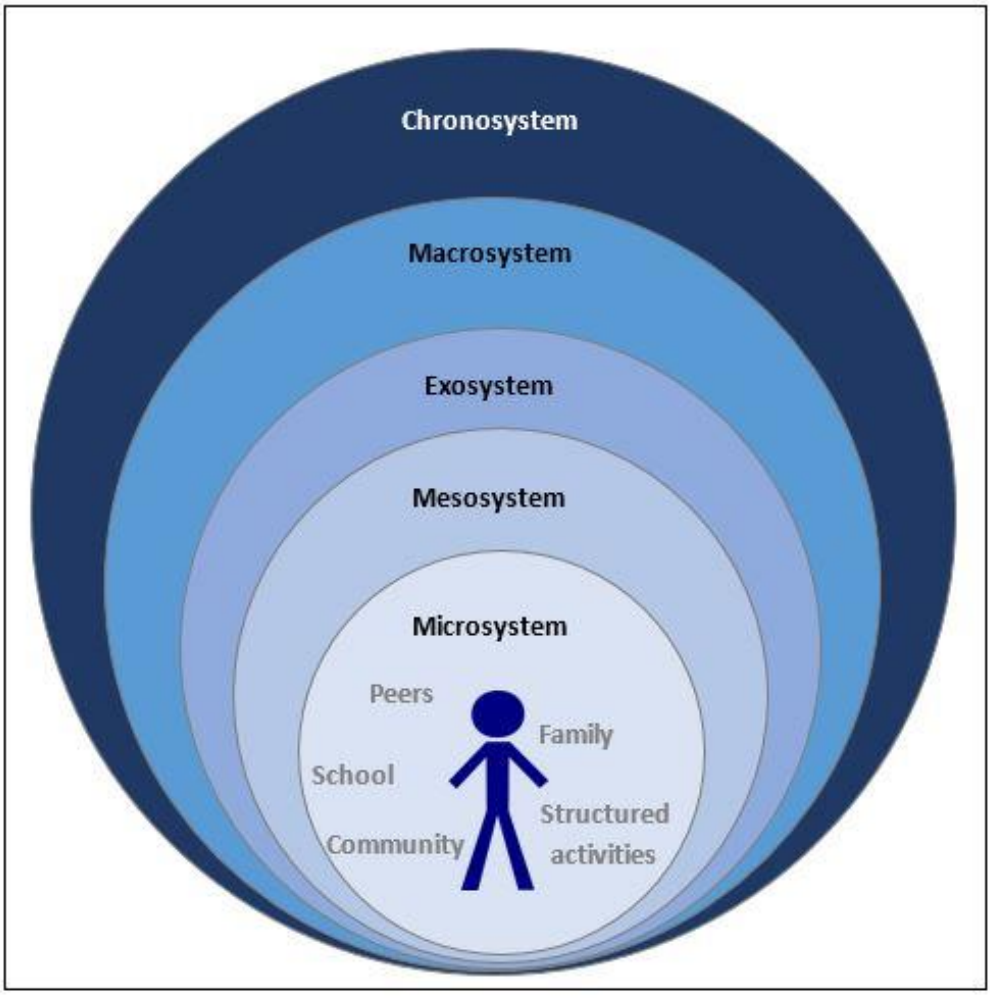
development programs can offer developmentally rich contexts where learning occurs, relationships form, and opportunities for growth in multiple areas proliferate (Roth & Brooks-Gunn, 2003). As the guiding principles regarding youth development continue to be refined, the manner in which practitioners engage youth in programming also continues to evolve.

Youth development programs offer an avenue for supporting and fulfilling the needs of youth. However, structured youth development programs vary in how they achieve this end. While overarching tenets that guide high quality youth development programming exist, instruction on how to execute these tenets is not highly prescriptive in nature. In general, youth development programs encourage participants to interact with others (e.g., peers, adult staff) while completing increasingly complex activities. As a result youth may acquire new knowledge and skills that enhance their competencies and support their ultimate transition into healthy, responsible, caring adults.

An additional key aspect of a positive youth development approach is to consider how the multiple systems of a youth's life (e.g., peer groups, family, school, and community) can be leveraged to influence development. This perspective is a shift from previous intervention efforts that were often focused on the prevention of a single problem behavior in isolation (Roth & Brooks-Gunn, 2003). Important theoretical perspectives and frameworks including Bronfenbrenner's Ecological Systems Theory of Development (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998) contributed to the intentional creation of PYD approaches. Ecological Systems Theory of Development accounts for the dynamic interplay of all of the contexts of a young person's life. This theoretical framework acknowledges that youth are developing within a complex, multi-faceted, and interdependent system of contexts (see Figure A). As many adolescents begin to spend greater amounts of time attending school and engaging

in out-of-school time leisure activities, structured afterschool activities become an increasingly meaningful context for promoting youth learning, development, and social support (Persson, Kerr, & Stattin, 2007). This theoretical approach also informs how many youth development programs are created and implemented to ensure that each of the contexts of a youth's ecosystem are considered. The importance of the Ecological Systems Theory of Development on the current study will be examined in more detail in a later section.

Figure A. Bronfenbrenner's Ecological Systems Theory



Structured Activities as a Context for Positive Youth Development

When viewed through a PYD lens, adolescence is seen as a time for acquiring the skills, competencies, and attitudes that will promote successful maturation into adulthood. Structured activities can serve as a setting that nurtures positive development by offering consistency and meaningful opportunities to interact with others as well as explore and master increasingly complex skills (Eccles & Gootman, 2002). According to the applied research literature, structured activities can be either school- or community-sponsored, include the presence of an adult leader, present opportunities to interact with familiar and new peer groups, and offer formal learning opportunities that promote youth development (Eccles & Gootman, 2002). Young people exposed to these experiences can develop an increased sense of agency as well as a feeling of belonging to a socially recognized and valued community (Eccles & Barber, 1999). Through social interactions with others in the program, youth establish supportive social networks comprised of both peers and non-familial adults and learn to navigate challenges in the presence of supportive individuals.

Adolescents have great potential for healthy, positive developmental outcomes especially when the proper support systems are put into place. A young person's plasticity or ability to learn new skills can be fostered in a structured afterschool program setting. This type of environment provides a young person with opportunities for skill development that are coupled with exposure to increasingly complex challenges (Hamilton, Hamilton & Pittman, 2004; Eccles & Gootman, 2002). In the presence of a supportive peer group and non-familial staff providing scaffolding, structured activities can promote positive developmental outcomes for youth. Scaffolding allows the adult leader to bridge a youth's learning gaps by offering varying levels of temporary support which permit the youth to reach greater levels of independence, skill, and

competency acquisition (Steinberg, 2005; Stenberg & Lerner, 2004; Vygotsky, 1978). Unlike school settings, structured activities offer programming and activities that incorporate an effective blend of intrinsic motivation, concentration, initiation, and agency (Larson, 2000). The alchemy of these features creates a unique environment that can potentially promote youth's skill- and competency-building. For instance, in this type of environment youth may have the opportunity to take on leadership roles, engage in shared decision-making with peers and adults, develop youth voice, and cultivate a sense of belonging to a socially valued group (Borden & Serido, 2009; Eccles & Barber, 1999). Efforts among youth development practitioners to create supportive, structured settings have been heavily influenced by Bronfenbrenner's (1987) Ecological Systems Theory framework. This approach includes both acknowledging and incorporating, when possible, the influences in a youth's life – peers, families, communities, and other contexts – in meaningful ways to support youth's growth. During adolescence the role of peers may be particularly noteworthy.

Positive outcomes associated with participation in structured activities. The applied research literature documents a variety of positive outcomes associated with youth participation in structured activities including academic achievement (Cooper, Valentine, Nye, & Lindsay, 1999; Eccles & Barber, 1999; Eccles, Barber, Stone, & Hunt, 2003; Marsh, 1992), reduced risk of school dropout (Mahoney & Cairns, 1997, McNeal, 1995), increased life satisfaction (Gilman, 2001), and lower rates of depression (Mahoney, Schweder, & Stattin, 2002) and delinquency (Landers & Landers, 1978; Mahoney, 2000). For instance, Eccles and Barber (1999) conducted a longitudinal study of Michigan youth from sixth grade into early adulthood (25 years). The majority of youth in the study were White and from working and middle class families. With regard to academic achievement, the authors found that participation in school-related clubs and

nonathletic activities was positively related to liking school at Grade 10. Participating in these kinds of school-related activities predicted better than expected 12th grade GPA and greater than expected likelihood of attending college full-time at age 21. These results held true when social class, gender, and academic aptitude were controlled. Eccles, Barber, Stone & Hunt (2003) found within the same longitudinal sample of Michigan youth that having a relatively more academically-oriented group of friends was predicted by activity participation such that participants in prosocial activities, team sports, performing arts, school promotion activities, and academic clubs had a higher proportion of academic friends than expected by chance. In contrast, non-participants in each of these activities had fewer academic friends than expected by chance. These patterns were true for both females and males with one exception: sports. The authors note that the finding for sports is likely associated with the social networks athletes maintain which typically have more friends who report drinking regularly (Barber, Eccles & Stone, 2001). Marsh (1992) found that positive effects of extracurricular activity participation, including increased academic achievement, are consistently found across sex and ethnicity; however, youth from lower socioeconomic status (SES) tended to benefit more from engagement in these activities.

Overall the research literature demonstrates that these positive outcomes are due to several key features including: regular participation schedules; adult-guided learning opportunities; focus on skill building; involvement that requires sustained attention; opportunities for meaningful participation; and clear feedback (Eccles and Gootman, 2002; Fredricks & Eccles, 2005; Fredricks & Eccles 2006). By actively engaging youth in challenging learning experiences, structured activities offer valuable opportunities for engagement that differ from their traditional school learning environment. Youth often elect to participate in structured afterschool activities because they are intrinsically interested in the activity. These settings offer

an opportunity for young people to exert effort, persistence, and concentration as well as explore their identities and gain agency (Eccles and Barber, 1999; Larson, 2000). Some scholars (Mahoney and Stattin, 2000; Osgood et al., 1996) note that as an additional collateral benefit, the more time that youth are engaged in constructive learning opportunities with peers and adults the fewer opportunities they have to spend their discretionary time engaged in non-structured, unsupervised and potentially problematic behaviors.

Structured afterschool activities provide contexts that link adolescents to supportive adults and peers outside of the classroom (McLauglin, 2000). Both youth as well as adult staff benefit from the bi-directional exchanges and mutually beneficial interactions with one another (Larson, 2000). In these exchanges there is information traded, mutual learning developed, connections created, and trust built between the youth participant and others (e.g., peers, adult staff). The research also notes that participation in structured afterschool programs facilitates membership in a prosocial peer group for many youth (Eccles and Barber, 1999; Mahoney et al., 2005). Structured activities present youth with opportunities to potentially interact in meaningful ways with others in their social world (Borden & Serido, 2009; Lerner et al., 2005; Flanagan, 2004; Eccles & Gootman, 2002; Flanagan & Faison, 2001).

Conversely, unstructured leisure activities that are primarily peer-oriented or unsupervised (e.g., hanging out with friends/peers without adult monitoring, watching television) offer fewer opportunities for structured, goal-oriented skill development. Moreover, many informal leisure activities that youth engage in are relatively spontaneous and do not have formal rules or guidance from an adult (Mahoney & Stattin, 2000). While many youth engage in unstructured leisure activities without exhibiting antisocial or deviant behaviors, the research literature has demonstrated that occupying one's time in more structured activities offers vast

developmental benefits (Eccles & Gootman, 2002). Generally, the more time youth spend in unstructured leisure activities creates more opportunities to explore and initiate potentially antisocial behaviors, especially if in the company of deviant peers (Mahoney, 2000; Mahoney & Stattin, 2000). Research has demonstrated that high levels of participation in unstructured activities is related to more negative outcomes (e.g., criminality, antisocial behavior) (Mahoney, Stattin, & Lord, 2004; Osgood, Wilson, O'Malley, Bachman, & Johnston, 1996, Persson, Kerr, & Stattin, 2004; Stattin, Kerr, Mahoney, Persson, & Magnusson, 2005). One of the strongest predictors of delinquent behavior in adolescence is spending time with delinquent peers, especially exposure to peers during risk taking tasks (Stenberg & Monahan, 2007). Who youth choose to spend their time with and what activities they choose to engage in influences their selection of friends and also helps to shape the norms and values to which they are exposed.

Ecological Systems Theory of Development - a Framework to Support Youth Development

Bronfenbrenner's Ecological Systems Theory of Development (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998) contributes to the understanding of an adolescent's dynamic and interdependent life contexts. Bronfenbrenner describes development as a process of growing competence and he stresses the importance of engaging in challenging activities and supportive relationships, both of which endure and change over time. According to Bronfenbrenner, the drivers of development are the proximal processes or activities that take place regularly over time and become progressively more complex (Hamilton, Hamilton & Pittman, 2004). Interactions that an individual experiences with others and relationships that are forged are essential to development and are most beneficial when they are reciprocal, regular, and enduring. Bronfenbrenner asserts that development occurs in a set of nested contexts (refer to Figure B). However, as an individual matures and seeks increased independence from parents this process

of individuation from parents may lead to a period of heightened peer conformity and this susceptibility to peer influence can continue until an adolescent experiences increasing psychosocial maturity (Hamilton, Hamilton & Pittman, 2004).

The Ecological Systems Theory framework complements the PYD perspective, and more specifically youth development and structured afterschool programs, by recognizing that these settings offer a context to promote and nurture youth development. With opportunities for skill development, engagement in learning, and exposure to increasingly complex challenges with supportive peers and adult scaffolding there is the opportunity for structured afterschool programs to promote desired and positive developmental outcomes (e.g., increased academic achievement; civic engagement; reduction in school dropout, criminality and sexual risk taking) among youth participants (Lerner et al., 2005; Flanagan, 2004; Mahoney, Cairns, & Farmer, 2003; Eccles & Gootman, 2002).

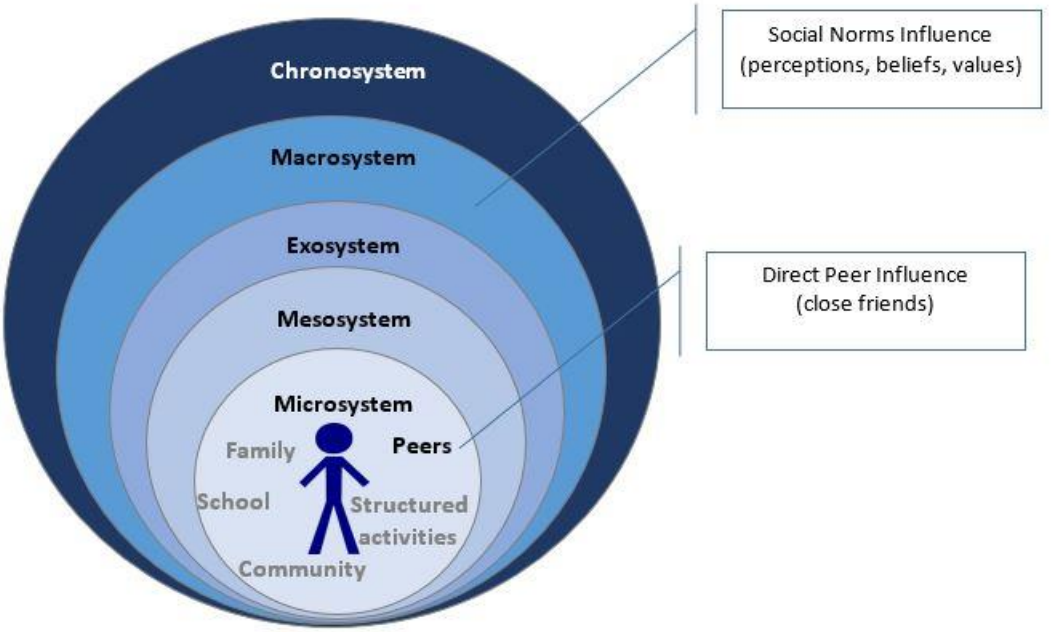
Bronfenbrenner's (1979) Ecological Systems framework specifically describes how an individual's (i.e., youth) development is influenced by several contexts including: microsystem, mesosystem, exosystem, macrosystem, and chronosystem. Each of these contexts plays a unique role in influencing the development of the individual, not only through direct interactions with the person but also through indirect linkages and influence. For instance, the microsystem describes the individuals, groups, and institutions that directly influence the youth including parents, peers, schools, structured afterschool programs, and neighborhoods. The mesosystem describes the relations between microsystems (e.g., relations between contexts) and how, for instance, a youth's family experiences may influence the youth's peer experiences. The exosystem identifies the relations between a setting/context in which the youth does not have an active role and the individual's immediate context. Although the youth may not have direct

experience with a parent's work setting, the parent's experiences in the work setting may greatly influence the youth. The macrosystem acknowledges the cultural influences of the individual and can include race/ethnicity, socioeconomic status (SES), religion, and others. The macrosystem influences a youth's development through a shared identity, heritage, and values. The chronosystem describes the time and influence of historical transitions, events, and shifts over the life course on an individual.

Bronfenbrenner's description of these multiple contexts acknowledges that there are numerous persons, environments, and influences that impact human development and it is important to understand how each of these contexts can be leveraged to complement the development of a youth. For instance, according to the Ecological Systems Theory framework, the microsystem relations are among the most direct and influential on youth development and thus play an integral role in impacting youth outcomes. Both peers and structured afterschool activities are located within the microsystem. During the transition into adolescence close friends and other peers may play a heightened role in influencing youth's developmental outcomes. An adolescent's closest friends hold a very proximal position in the youth's life and can directly impact a youth's attitudes and behaviors. Many adolescents seek out their close friends to find social support and may modify his or her behavior to fit in with close friends. In addition to one's circle of close friends, a youth may also feel the pressure to fit into a larger youth culture which can be defined by social media and other influences that dictate the perceived norms, values, and beliefs held by other groups of peers (Dubow, Huesmann, & Greenwood, 2007). While this influence may be more distal than that of close friends, the pressure of social norms can still exert an influence on youth development. Since social norm influences may be more

distally located – potentially located in an individual's macrosystem – the impact of these social norms influences may be more diffuse (see Figure B).

Figure B. Conceptual Model of Peer Influence: Direct Peer Influence and Social Norms Influence



The Impact of Peer Influence on Youth Behavior

During adolescence many youth place a heightened importance on peers' influence (Brown, 2004). The effects of peer influence tend to be higher during adolescence compared to adulthood, but even within the adolescence period there is noted variability of peer influence. Research on peer influence (Bell & Baron, 2015; Berndt, 1979; Steinberg & Monahan, 2007) reveals that peer conformity increases from approximately 3rd to 9th grade, then there is a slight decline in peer conformity from 11th grade and into early adulthood. This curvilinear pattern demonstrates that the relationships that youth establish early in their development may substantially influence their later outcomes. A large portion of research on peer influence has been devoted to negative, antisocial behaviors related to peer pressure (Steinberg & Monahan,

2007). These studies identify trends related to homophily or the tendency of youth to spend time with like-minded friends (Stenberg & Monahan, 2007). The literature highlights, particularly during early adolescence, that there is diminished capacity to stand up for what one believes (Brown, 2004). Therefore, a young person might find it difficult to resist the pressure to do what peers want.

A couple of mutually compatible explanations have been offered to address variability in peer influence (Brown, Clasen, & Eicher, 1986). The first explanation stresses changes in the importance of peers as a reference group and identifies the increasingly important role that peer groups play in defining the social status of early and middle adolescence. As youth begin to arrange themselves into peer groups, both perceived and actual pressure to adopt the norms, values, and interests of friends can increase as adolescents use social influence to regulate the behavior of one another (Brown, 2004). These perceived and actual pressures emerge as influential and dynamic features within an adolescent's ecological system. Many adolescents desire to develop solidarity and uniformity within their group and to develop and maintain a group identity that distinguishes them from other students (Steinberg & Monahan, 2007). Brown (2004) notes that this process of normative regulation can be an especially powerful influence during middle adolescence, when approximately 85% of American youth report membership in at least one peer crowd. The second explanation of peer conformity focuses more on the individual than the social context. Based on this view, the dominant role of peer influence during early adolescence is due primarily to changes in a youth's susceptibility to peer pressure (Steinberg & Monahan, 2007). Adolescents may modify their behavior due to a heightened concern regarding how others (i.e., peers) will react to them. They are more likely to conform to what peers want in order to avoid being rejected (Brown et al., 1986). These explanations shed

light on some of the different ways youth may react to peer influence. When assessing peer influence through an ecological systems lens, it is interesting to consider not only how youth react in response to peer influence but whether they are more susceptible to the influence exerted by close friends (direct peer influence) or other less proximal peers (social norms) as they attempt to navigate their social world and find a sense of belonging.

The vast majority of research examining peer influence effects focuses on socialization of antisocial, deviant, and health-risk behaviors (Brechwald & Prinstein, 2011). Although many investigators have examined peer influence related to delinquency, more recent research suggests that peer influence effects are relevant to the development of healthy, prosocial behaviors (Barry & Wentzel, 2006; Bechwald & Prinstein, 2011). There is a gap in the literature examining differences in direct peer influence, the influence that close friends exert on an individual, and social norms, the pressure an individual feels to conform to generally held views and values. The current study examines the influence of direct peers (close friends) as well as social norms (other peers). Examining if and how these types of peer influences affect a young person's choices in behaviors will contribute to the understanding of peer influence.

Alcohol and Marijuana Use during Adolescence

The use and abuse of alcohol and other drugs among adolescents is a public health concern. While the majority of adolescents do not abuse alcohol or illegal drugs at high rates, the early onset of alcohol and other drug use has been closely associated with numerous adverse short-term and long-term consequences. Early onset of use and the potential for subsequent addiction to alcohol and other drugs can result in increased rates of morbidity and mortality (Bonomo, Coffey, Wolfe, Lynskey, Bowes, & Patton, 2001; Marshall, 2014; National Institute of Drug Abuse, 2014). Given this, there have been focused efforts employed by educators,

healthcare practitioners, researchers, and policymakers to educate adolescents regarding the effects of alcohol and other drug use with a primary emphasis on early prevention of use.

Among adolescents and young adults, early onset of alcohol use has been associated with motor vehicle crashes (Millstein & Irwin, 1988; U. S. Congress, 1991), tobacco and other drug use (Schuckit & Russell, 1983), sexual intercourse, infrequent condom use and pregnancy (Di Clemente, 1992; Epstein & Tamar, 1984), sexually-transmitted diseases (Shafer & Boyd, 1991), violence (Choquet, Menke, & Manfredi, 1991), depression and suicide (Kaplan, Landa, Weinhold, & Shenker, 1984; Deykin, Levy, & Wells, 1987; Robbins & Alessi, 1985), and alcohol abuse and dependence symptomatology (Gruber, DiClemente, Anderson, & Lodico, 1996). Early alcohol use has frequently been linked with adult psychopathology, maladaptive behaviors and negative outcomes (Irons, Iacono & McGue, 2014). Starting to use alcohol at an early age is related to higher prevalence of alcohol abuse and dependence throughout young adulthood (Grant & Dawson, 1997; DeWit, Adlaf, Offord & Ogborne, 2003) and adult use and abuse of other psychoactive substances, as well as antisocial behaviors (Ellickson, Tucker & Klein, 2003; Flory, Lynam, Milich & Leukefeld, 2004; McGue & Iacono, 2005). However, data from the 2014 Monitoring the Future survey on drug use and attitudes among American 8th, 10th, and 12th graders, there are positive trends regarding substance use including decreasing use of alcohol and no increase in use of marijuana (National Institute of Drug Abuse, 2014). Supporting adolescents as they refrain from experimenting with alcohol use is an important effort that can be supported by family, schools, communities, and positive youth development programs such as structured afterschool programs.

According to the Center for Behavioral Health Statistics and Quality (2015) and the National Institute on Drug Abuse (2014), marijuana is the most commonly used illicit drug in the United States. Its use is widespread among young people. Attitudes regarding marijuana use are also shifting with the legalization of marijuana in several states across the US. While the decriminalization of marijuana use is more prominently discussed, there is still widespread documentation that there may be negative health consequences associated with marijuana use, especially among developing teens. Past research indicates that marijuana use causes short-term impairment by altering sense of time, affects changes in mood, and impairs thinking, problem-solving, and memory (National Institute on Drug Abuse, 2014). Physical and mental health effects associated with marijuana use include breathing problems, increased heart rate, experiencing temporary hallucinations and paranoia. Additionally, its use has been linked with higher rates of depression, anxiety, and suicidal thoughts among adolescents (National Institute on Drug Abuse, 2014). Moreover, the long-term consequences of marijuana use can include impairment of brain development, especially when use begins during adolescence. Yet while a yearly survey of middle and high school students indicates that rates of marijuana use have steadied in the past few years after several years of increase, the number of young people who believe marijuana use is risky is decreasing (National Institute on Drug Abuse, 2014).

As previously discussed peers can play a key role in influencing youth behavior and attitudes. In understanding adolescent substance use, the role of peers is often described as a key influence on initiation to as well as recovery from substance use addiction. There is demonstrated evidence that peers are a particularly salient influence during adolescence, thus making it all the more important to understand peer influence at this developmental stage and how it impacts substance use (Kelly, Stout, & Slaymaker, 2013). To more fully understand the

influence peers have on adolescent substance abuse, examination of different types of peer influence (e.g., close friends vs. social norms) is called for.

Current Study and Research Questions

The purpose of the present study is to explore the association between youth participation in structured activities (e.g., sports, performing arts, volunteering, and clubs) and their reported use of substances (e.g., alcohol, marijuana). Furthermore, the role of peer influence, both direct peer influence and social norms, will be examined to assess how the perceptions of close friends as well as other peers impact a youth's decision to participate in structured activities and use alcohol and marijuana. The following research hypotheses will be addressed:

Participation in structured afterschool activities and reported substance use outcomes

(H1a). Participation in structured activities (broken out by activity type) will be negatively associated with reported use of alcohol compared to youth who do not participate in structured activities.

(H1b). Participation in structured activities (broken out by activity type) will be negatively associated with reported use of marijuana compared to youth who do not participate in structured activities.

(H1c). There will be differences in substance use outcomes (alcohol, marijuana) based on type of structured activity that youth engage in such that youth who participate in sports activities will report higher levels of substance use compared to youth who participate in performing arts, clubs, or volunteering.

Effects of direct peer influence and social norms influence

(H2a). Direct peer influence (e.g., close friends' perceptions) will be positively associated with youth's participation in structured activities.

(H2b). Social norms influence (e.g., peers' perceptions) will be positively associated with youth's participation in structured activities.

(H2c). Direct peer influence will be positively associated with youth's choice to use alcohol and marijuana.

(H2d). Social norms influence will be positively associated with youth's use of alcohol and marijuana.

CHAPTER 3

Methods

Data used for the current study were originally collected by the Arizona Criminal Justice Commission. The Arizona Criminal Justice Commission, as required by Arizona Revised Statute §41-2416, conducts a biennial statewide survey using the Arizona Youth Survey (AYS) to evaluate the prevalence and frequency of substance abuse by youth as well as their attitudes toward substance abuse. The AYS is based on the Communities that Care survey that was developed by Hawkins and Catalano (1992) and a team of researchers at the University of Washington. The focus of the AYS is to better understand the prevalence and frequency of negative youth behaviors including juvenile delinquency, gang involvement, and alcohol, tobacco and other drug use. The survey also examines the risk and protective factors that are correlated with those behaviors. The 2012 AYS was administered between January and April 2012 in Arizona public and charter schools. School principals and teachers at schools that participated in the 2012 AYS survey were given detailed instructions for administering the survey. Surveys were self-completed by students who were instructed not to place their name on the survey to maintain anonymity. The 2012 version of the AYS survey contained 149 items. This statewide effort included all 15 counties and 349 schools, which resulted in the participation of 62,817 8th, 10th, and 12th grade students.

Procedures

Permission to use the 2012 AYS for the present secondary data analysis study was secured by the study author from the Arizona Criminal Justice Commission. All of the required processes outlined by the University of Arizona's Institutional Review Board were completed in order to conduct the secondary data analysis using the AYS data.

Instrumentation and Reliability

The 2012 AYS is an instrument that evaluates the prevalence and frequency of substance abuse by youth, as well as their attitudes toward substance abuse. For the purpose of this study, only demographic items, items relating to structured afterschool activities, and two items measuring direct peer influence and social norms were investigated. Additionally, two items were used to measure whether or not youth used alcohol or marijuana during their lifetime. All items in the 2012 AYS were descriptive and categorical. Table 2 presents frequency counts and percentages of the responses for each of the variables of interest.

When the 2012 AYS was developed, steps were taken to reduce response bias including: carefully pretesting the questionnaire to ensure that students understood the meaning of each question, using a well developed and tested administration protocol, and reading the same instructions to all students who participated in the survey, (Harrison, 2012). Therefore, the AYS 2012 instrument was considered reliable and used in inferential analysis.

Participants

Youth across the state in grades 8, 10, and 12 participated in the AYS. During the 2012 administration of the AYS there were 62,817 respondents who completed the survey. For purposes of the present study, data from respondents in 12^{th} grade were not used due to the high potential for this sub-sample to be more highly skewed to favor youth who remained in school by the 12^{th} grade and did not drop out. Therefore the total number of respondents used for analyses was 47,698 and included only youth in 8^{th} grade (n=28,932) and 10^{th} grade (n=18,766).

Among respondents, nearly an equal number were males (48.3%) and females (49.3%). More than one-third (38.3%) of all respondents surveyed reported they were of Hispanic ethnic background and 55.8% reported being non-Hispanic. The primary language spoken in

respondents' homes was English (77.3%). Additional demographic data is discussed in the Results section and is presented in Table 1.

Measures

Refer to Appendix A for the full version of the 2012 AYS instrument.

Demographic items include self-report measure of (a) sex, (b) age, (c) grade, (d) race, (e) ethnicity, (f) family structure, (g) mother's educational level, and (h) parent(s) military status.

Engagement in school-sponsored afterschool activities, a one item self-report measure asked respondents which school-sponsored activities they engaged in. Activity options included (a) sports; (b) performing arts; (c) academic clubs; (d) service (volunteering, service, mentoring); (e) student government/council; (f) newspaper or yearbook; (g) homework help or tutoring; (h) other school group/club; or (i) "I do not participate in an organized activity at school." Respondents were instructed to "mark all responses that apply" to identify which of the listed activities they participated in and response options were Yes/No. Note that the survey instrument differentiated between "*school-sponsored activities*" and "*afterschool activities that are not school-sponsored*" (i.e., community-sponsored activities).

Engagement in community-sponsored afterschool activities, a one item self-report measure asked respondents which community-sponsored activities they engaged in. Activity options included (a) sports; (b) performing arts; (c) service (volunteering or service); (d) Scouts/Campfire; (e) Boys & Girls Clubs/Juniors Achievement/YMCA; (f) 4-H/Future Farmers of America; (g) Big Brothers Big Sisters or other mentoring; (h) other afterschool activity; or (i) "I do not participate in an organized activity afterschool." Respondents were instructed to "mark all responses that apply" to identify which of the listed activities they participated in and response options were Yes/No. Analyses were conducted using both school-sponsored and

community-sponsored activities; however, no significant differences were identified between school-sponsored and community-sponsored activities so ultimately these two items were collapsed into a single variable called “Structured Activities” to allow for more parsimonious models.

Social norms influence, a self-report measure that asks respondents to rate how cool others would perceive them if they engaged in specific activities (i.e., “What are the chances you would be seen as cool if you…”). Specifically, respondents were asked if they would be perceived as cool if they, “Began drinking alcoholic beverages regularly, that is at least once or twice a month?”, “Smoked marijuana?”, and “Regularly volunteered to do community service?” A five point Likert-type scale (e.g., 1 = “No or very little chance”, 5 = “Very good chance”) served as response options.

Direct peer influence, a self-report measure asking respondents to think of their four closest friends and to identify how many of their four friends engaged in a specified behavior during the past year. Items included, “Participated in clubs, organizations or activities at school?”, “Tried beer, wine, or hard liquor when their parents didn’t know about it?”, “Used marijuana?” Respondents were asked to identify how many of their four closest friends (e.g., 0. 1. 2. 3. 4) engaged in the specific activity.

Substance use, self-report measures of lifetime use. Response options included “0, 1-2, 3-5, 6-9, 10-19, 20-39, 40+”. Items included “Had an alcoholic beverage (beer, wine or hard liquor) to drink in your lifetime – more than just a few sips?” The substance use item used included “Used marijuana in your lifetime?”

CHAPTER 4

Results

The results are divided into several sections, (a) population and descriptive findings, (b) investigation of assumptions, (c) correlational analysis and findings, (d) model building, (e) hypothesis testing, and (f) a brief summary of study findings. SPSS v22.0 was used for all descriptive and inferential analyses. All inferential analyses were tested at the 95% level of significance. The research hypotheses were directional and thus a 1-sided p-value was computed for all inferential tests.

The purpose of this study was to explore the association between youth participation in structured activities and differences in alcohol and marijuana use. Furthermore, the role of peer influence was examined to assess how the perceptions of close friends (direct peer influence) as well as other peers (social norms) were associated with a youth's decision to participate in structured afterschool activities. Additional goals of the present study include identifying: (1) trends in participation in structured afterschool activities, as a function of age and other control variables (race, gender, etc.) and (2) a comparison of differences in alcohol and marijuana use among youth who participate in structured afterschool activities, and youth who do not participate in structured afterschool activities. The research hypotheses of this study are as follows:

(H1a). Participation in structured activities (broken out by activity type) will be negatively associated with reported use of alcohol compared to youth who do not participate in structured activities.

(H1b). Participation in structured activities (broken out by activity type) will be negatively associated with reported use of marijuana compared to youth who do not participate in structured activities.

(H1c). There will be differences in substance use outcomes (alcohol, marijuana) based on type of structured activity that youth engage in such that youth who participate in sports activities will report higher levels of substance use compared to youth who participate in performing arts, clubs, or volunteering.

(H2a). Direct peer influence (e.g., close friends' perceptions) will be positively associated with youth's participation in structured activities.

(H2b). Social norms influence (e.g., peers' perceptions) will be positively associated with youth's participation in structured activities.

(H2c). Direct peer influence will be positively associated with youth's choice to use alcohol and marijuana.

(H2d). Social norms influence will be positively associated with youth's use of alcohol and marijuana.

Population and Descriptive Findings

Refer to Table 1 for a detailed breakdown of the frequencies and percentages of the categorical descriptive variables, as well as the dichotomous variables of Alcohol Use and Marijuana Use which were used as dependent variables in the logistic regression analyses. The dataset used in this study consisted of only 8th and 10th grade students (N = 47,698) attending public and charter middle and high schools throughout the state of Arizona. Over half of the sample was made up of 8th grade students (60.7%), and the remaining percentage of the sample was made up of 10th grade students (39.3%). Age was used as a continuous, descriptive variable

(calculated in years). Participants ranged in age from 12 to 18 years (M = 14.45 years, SD = 1.13 years). Gender of survey respondents was split almost evenly between male students (48.3%) and female students (49.3%). The majority of students (52.9%) did not receive any form of lunch assistance. Over half of the sample (53.1%) self-identified their race as White and 38.3% of respondents self-identified their ethnicity as Hispanic or Latino. More than three-fourths (77.3%) of the sample reported that English was the primary language spoken at home. With regard to place of birth, 66.0% of respondents reported that both they and their parents were born in the US while 24.6% reported that they were born in the US but at least one parent was born elsewhere. Level of maternal education was reported by youth respondents, 15.1% of mothers completed four years of college and 14.9% of mothers completed high school or obtained a GED. The majority (78.9%) of students reported that their parents never served in the military. Slightly more than half of all students (51.2%) never used alcohol during their lifetime. Almost three-fourths of all students (72.1%) never used marijuana during their lifetime.

Table 1

Frequency Counts and Percentages of the Demographic Variables of Study (N = 47,698)

Variable	Frequency	%
Gender		
Male	23025	48.27
Female	23507	49.28
Not reported	1166	2.44
Grade		
8th grade	28932	60.66
10th grade	18766	39.34
Socio-economic status		
No lunch assistance	25230	52.89
Reduced cost lunch	4315	9.05
Free lunch	16967	35.57
Not reported	1186	2.49
Race		
White	25314	53.07
American Indian or Alaska Native	2572	5.39
Black or African American	2243	4.70
Asian	1383	2.89
Hawaiian or other Pacific Islander	431	0.90
Multiple races	3081	6.46
Not reported	12674	26.57
Ethnicity		
Hispanic/Latino	18281	38.33
Non-Hispanic/Latino	26594	55.75
Not reported	2823	5.94
Language		
English	36871	77.30
Spanish	6519	13.66
Another language	1218	2.55
Not reported	3090	6.48
Birthplace		
Student and parents born in the US	31493	66.03
Student born in US, parent(s) born out of US	11733	24.60
Student born out of US	3896	8.17
Not reported	576	1.21

Table 1 (cont'd)

Variable	Frequency	%
Mother's highest level of education		
8th grade or less	2496	5.23
Some high school	4790	10.04
Completed high school or GED	7085	14.85
Some college	6033	12.65
Completed community college or technical school	2831	5.94
Completed 4 year college	7222	15.14
Graduate or Professional	4402	9.23
Don't know / No response	12839	26.91
Parent(s) current military status		
Neither parent has ever been in the military	37627	78.89
Active duty	144	0.30
Active duty: in country	123	0.25
Active duty: overseas – not in a combat zone	112	0.23
Active duty: overseas – in a combat zone	50	0.10
Reserve	203	0.43
Reserve: not deployed	212	0.44
Reserve: in country	55	0.12
Reserve: overseas – not in a combat zone	699	1.47
Reserve: overseas – in a combat zone	53	0.11
Former military	4243	8.92
Died while serving in the military	81	0.16
Multiple responses	1115	2.34
Not reported	2981	6.25
Alcohol Use		
Never used alcohol	24423	51.20
Used alcohol at least once during lifetime	20789	43.61
Not reported	2486	5.21
Marijuana Use		
Never used marijuana	34385	72.09
Used marijuana at least once during lifetime	10600	22.22
Not reported	2713	5.71

Table 2

Frequency Counts and Percentages of All Variables of Interest (N = 47,698)

Variable	Frequency	%
Structured activities - participation		
Sports	11855	24.9
Performing arts	2586	5.4
Volunteering, service, or mentoring	912	1.9
Clubs	755	1.6
Other afterschool activity	1984	4.2
Multiple activities	16755	35.1
Does not participate in a structured afterschool activity	12018	25.2
No response	833	1.7
Social norm influence - alcohol		
1 = No or very little chance	23139	48.5
2 = Little chance	7374	15.5
3 = Some chance	7092	14.9
4 = Pretty good chance	5694	11.9
5 = Very good chance	3116	6.5
No response	1283	2.7
Social norm influence - marijuana		
1 = No or very little chance	23946	50.2
2 = Little chance	5604	11.7
3 = Some chance	5810	12.2
4 = Pretty good chance	5355	11.2
5 = Very good chance	5760	12.1
No response	1223	2.6
Social norm influence - volunteering		
1 = No or very little chance	15730	33.0
2 = Little chance	11212	23.5
3 = Some chance	10278	21.5
4 = Pretty good chance	5647	11.8
5 = Very good chance	3596	7.5
No response	1235	2.6
Direct peer influence - school activities		
0 = 0 friends	8253	17.3
1 = 1 friend	6912	14.5
2 = 2 friends	9182	19.3
3 = 3 friends	6789	14.2
4 = 4 friends	14542	30.5
No response	2020	4.2

Table 2 (cont'd)

Variable	Frequency	%
Direct peer influence - alcohol		
0 = 0 friends	20206	42.4
1 = 1 friend	7001	14.7
2 = 2 friends	5725	12.0
3 = 3 friends	4102	8.6
4 = 4 friends	8639	18.1
No response	2025	4.2
Direct peer influence - marijuana		
0 = 0 friends	25724	53.9
1 = 1 friend	5902	12.4
2 = 2 friends	4217	8.8
3 = 3 friends	3317	7.0
4 = 4 friends	6385	13.4
No response	2153	4.5

Assumptions

The dataset was investigated to ensure that it satisfied the assumptions of the correlational analysis and the logistic regressions of study: absence of missing data, absence of outliers, and absence of multicollinearity.

Records were missing data on both dependent variables of alcohol use (<6% of all records) and marijuana use (<6% of all records). Furthermore, records were missing data on many of the independent variables of study (see Table 1). SPSS software offers an option of pairwise deletion of records with missing data. Pairwise deletion is a technique that excludes cases only when they are missing data for a particular analysis, but includes the case for all analyses for which they have the needed information (Pallant, 2013). Therefore, to help retain as much power as possible for the study, the records with the missing information on the dependent variables and independent variables were excluded only for the hypothesis tests in which they were included, but the cases were retained for the hypothesis tests in which they had the available information. Therefore, the assumption of absence of missing data was met.

Logistic regression is sensitive to outliers and multicollinearity (Pallant, 2013). Outliers in a dataset have the potential to distort results of an inferential analysis. A check of residuals in the final models, using the test dataset, for the dependent variables of alcohol use and marijuana use was performed to inspect for outliers. A standardized residual value with a z-score greater than 2.5 or less than -2.5 for a case is indicative of an outlier (Pallant, 2013). One outlier was found in the test model for marijuana use ($z = 11.56$). The outlying record has a predicted probability of .007 of being classified as having used marijuana, but was still predicted as a marijuana user. The record for the outlier was closely inspected, and none of the responses to the independent variables or the coding of the case were anomalous. Furthermore, this outlying case made up a very small percentage of the dataset (<0.1%). Therefore, it was determined that the outlier would be retained for inferential analysis, and the outlier assumption was assumed to be met.

Multicollinearity occurs when independent variables of a study are highly correlated with each other. Highly correlated is defined as a correlation coefficient between two variables of .90 or greater, (Pallant, 2013). Multicollinearity between the variables used as independent predictors and control variables in the logistic regression were performed via correlational analysis. Multicollinearity was not detected for any of the variables used as independent predictors for the logistic regressions. Therefore, the assumption of absence of multicollinearity was met.

Correlational analysis and findings

A correlational analysis was performed to investigate the multicollinearity assumption between the independent variables of the regression models and also to test the Research Hypothesis 2a and Research Hypothesis 2b: (a) direct peer influence - school activities (an

ordinal variable coded as the number of close friends the participant has who participated in structured activities); (b) direct peer influence - alcohol (an ordinal variable coded as the number of close friends the participant has who have tried alcohol without their parents knowing); (c) direct peer influence - marijuana (an ordinal variable coded as the number of close friends the participant has who have tried marijuana); (d) social norm influence - alcohol (an ordinal variable coded as 1 = no or very little chance, 2 = little chance, 3 = some chance, 4 = pretty good chance, and 5 = very good chance); (e) social norm influence - marijuana (an ordinal variable coded as 1 = no or very little chance, 2 = little chance, 3 = some chance, 4 = pretty good chance, and 5 = very good chance); (f) social norm influence - volunteering (an ordinal variable coded as 1 = no or very little chance, 2 = little chance, 3 = some chance, 4 = pretty good chance, and 5 = very good chance); and (g) structured activities (6 dummy coded variables describing each activity, 1 = student participated in that activity, 0 = student did not participate in that activity). A Spearman's Rank Order correlational analysis was used rather than Pearson's product moment correlations because many of the variables were ordinal. The very large sample size of this study and the sensitivity of correlational analysis to very large sample sizes caused overpowering, which resulted in statistically significant findings on very small correlations that were not very meaningful (Tabachnick & Fidell, 2007). In order to interpret the correlational findings as accurately as possible, effect sizes were considered as well as p-values. Effect sizes are useful because they provide an unbiased measure of the importance of the effect, regardless of the level of significance (Field, 2005). Correlation coefficients are effect sizes. A bi-variate correlation coefficient of 0 implies there is no effect, and a correlation of 1 implies there is a perfect effect (Field, 2005). Correlations of .10 to .29 are considered weak, .30 to .49 are considered moderate, and .50 to 1.0 are considered strong (Pallant, 2013). Table 3 presents the correlation coefficients

for each of the variables of interest for research hypotheses 2a and 2b. Only bivariate correlations between the variables of interest with a magnitude of .30 or greater are reported below in the text. However, a full correlation table including all variables investigated in the study is presented in Appendix B.

A negative, moderate statistically significant relationship was found between the structured activities = none variable and the direct peer influence – school activities variable (r = -.336, $p < .0005$). A moderate statistically significant relationship was found between the direct peer influence – alcohol variable and the social norm influence – alcohol variable (r =.380, $p <$ .0005). A moderate statistically significant relationship was also found between the direct peer influence – alcohol variable and the social norm influence – marijuana variable (r =.370, $p <$ .0005). A moderate statistically significant relationship was found between the direct peer influence – marijuana variable and the social norm influence – alcohol variable (r =.315, $p <$ .0005). A moderate statistically significant relationship was also found between the direct peer influence – marijuana variable and the social norm influence – marijuana variable (r =.423, $p <$ .0005).

A strong statistically significant relationship was found between the social norm influence – alcohol variable and the social norm influence – marijuana variable (r =.747, $p <$ .0005). The magnitude and direction of this correlation coefficient indicated that as youth's view on how cool they will be perceived for using alcohol increase, their view on how cool they will be perceived for using marijuana also increase. Conversely, as youth's view on how cool they will be perceived for using alcohol decreased, their view on how cool they will be perceived for using marijuana also decreased. Additionally, a direct, strong statistically significant relationship was found between the direct peer influence – alcohol variable and the direct peer influence –

marijuana variable (r =.698, p < .0005). The magnitude and direction of the correlation coefficients indicated that as the number of youth's best friends who drink alcohol increase, the number of their best friends who smoke marijuana also increase. Conversely, as the number of youth's best friends who drink alcohol decrease, the number of their best friends who smoke marijuana also decrease.

Table 3

Correlation Coefficients of the Variables of Interest used in Hypothesis Testing (N = 47,698)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Structured activities - Sports											
2. Structured activities - Performing Arts	-.004										
3. Structured activities - Volunteering	.138**	.231**									
4. Structured activities - Clubs	.107**	.178**	.259**								
5. Structured activities - Other	.042**	.150**	.263**	.168**							
6. Structured activities - None	-.628**	-.320**	-.301**	-.243**	-.309						
7. Social norm influence - Alcohol	.027**	-.011*	.028**	-.018**	.020**	-.028					
8. Social norm influence - Marijuana	-.010	-.032**	-.015*	-.029**	-.011**	.025**	.747**				
9. Social norm influence - Volunteer	.056**	.097**	.163**	.078**	.104**	-.118**	-.166**	-.210**			
10. Direct peer influence - School activities	.269**	.157**	.210**	.123**	.151**	-.336**	.003	-.057**	.183**		
11. Direct peer influence - Alcohol	-.006	-.090**	-.060**	-.072**	-.036**	.053**	.380**	.370**	-.110**	-.047**	
12. Direct peer influence - Marijuana	-.037**	-.102**	-.092**	-.066**	-.054**	.101**	.315**	.423**	-.125**	-.117**	.698**

Note. * $p < .05$ (1-sided test); ** $p < .01$ (1-sided test).

Model Building

A total of *N* = 47,698 records were available for hypothesis testing. Since the full dataset was very large there was a possibility of over fitting the regression models to the collected data. When the model is over fitted, the regression model becomes tailored to fit the quirks and random error in a specific sample rather than reflecting the overall population such that if one drew another sample, it would have its own quirks and random error and the original over fit model may not fit the new data well. Over fitting a model can cause the regression coefficients, p-values, and R-squared to be misleading. To approximate a good model for the entire population, the model should not only fit the current sample, but new samples too (Tabachnick & Fidell, 2007). To adjust for possible over fitting, a hold-out technique was used and the dataset was randomly split into three smaller datasets: a training set (50% of the original sample, *N* = 23,849 students), a validation set (25% of the original sample, *N* = 11,925 students), and a test set (the remaining 25% of the original sample, *N* = 11,924 students). The logistic regression models were tested in the training phase to investigate the best model fit and parameters. Checks to the model fit with the chosen parameters were then performed with the validation set, and further refinements to the model were made to achieve a better fit. The final chosen model from the validation set was then tested using the test dataset. Although a detailed description of findings is provided for both the training and validation sets, hypothesis testing and conclusions of the tests were performed utilizing the regression model findings from the test dataset.

There are many ways to check model fit. A popular fit test is the Hosmer-Lemeshow Goodness of Fit Test (H-L Test; Hosmer & Lemeshow, 2000). However, the test is very sensitive to large sample sizes and will return significant findings, meaning the model is not a good fit, for very large samples (Kramer & Zimmerman, 2007). All of the logistic regression models built in

this study returned H-L Test p-values of < .0005. Therefore, the H-L Tests are not reported in the results. However, the models were good fits according to other criteria, namely the Omnibus Tests of Model Coefficients and the percent in correct classification percentages. Cox and Nagelkerke pseudo R-squared values are also presented. Finally, a likelihood ratio test using the -2 log likelihood values (deviance) between the full and reduced models derived inside the validation set were compared to check that reduction in the number of parameters did not affect the fit of the models, i.e. that removal of some predictors did not remove important information from the models. If a particular likelihood ratio test between two models returned non-significant findings, then the model with the lesser number of predictors was chosen to preserve model parsimony and was used with the test dataset. If the findings were significant, then the model with the greater number of predictors was retained and used in the test dataset. During the analyses with the training set, the -2 log likelihood values were reported, but the researcher made the determination on the variables to use in the validation set based on extant theory and knowledge, the initial model findings, and the predictive capacity of each independent variable in a given model (based on odds ratios and p-values of each predictor) rather than the -2 log likelihood values of the models. The reason the model fit was not tested with comparison of the -2 log likelihood values in the training dataset was that the -2 log likelihood value is also sensitive to sample size (Pampel, 2000). Since the training set included twice as many records as the validation and test sets, and the first set of validation models included the same specifications as the second set of training models, the statistical comparisons of model fit were better done inside the validation data set since it included a similar number of records to the test set.

Training Set – Initial Variable Specification. The two initial logistic regression analyses were performed using the training dataset (*N* = 23,849 students). The first logistic

regression included the dependent variable of alcohol use, which was coded as 0 = never used alcohol and 1 = used alcohol at least once in lifetime. The second logistic regression included the dependent variable of marijuana use, which was coded as 0 = never used marijuana and 1 = used marijuana at least once in lifetime. A total of 24 independent variables were included in the first set of logistic regression models: (a) gender (coded as 0 = female and 1 = male); (b) age (a continuous variable ranging from 12 to 18, this variable was mean centered); (c) socio-economic status (coded as 0 = not low SES, 1 = low SES) the SES variable was derived from a variable representing if a student received a free lunch or not. Students who received free lunches were coded as 1 = low SES; e) five dummy coded race variables (representing American Indian, Black, Asian, Pacific Islander, and multiple races). Each dummy coded variable was coded as 0 or 1 depending on the students' race. White was used as the reference variable for race; (f) ethnicity (coded as 0 = not Hispanic or Latino, and 1 = Hispanic or Latino); (g) mother's level of education (coded into two categories of 0 = higher education (the aggregate of some college through graduate or professional) and 1 = lower education (the aggregate of 8th grade or less through completed high school or GED); (h) five structured activities variables (representing sports, performing arts, volunteering, academic clubs, and other). Each dummy coded variable was coded as 0 or 1 depending on the students' membership in a particular structured activity; (i) three dummy coded school-sponsored activities (representing student government, newspaper, and tutoring. Each dummy coded variable was coded as 0 or 1 depending on the students' membership in a particular school-sponsored activity); (j) three ordinal social norm variables representing the participants' views on how cool they would be perceived if they participated in the use of alcohol, the use of marijuana, and/or volunteering (each of the three social norm variables was coded as 1 = no or very little chance, 2 = little chance, 3 = some chance, 4 = pretty

good chance, and 5 = very good chance); and (k) three ordinal direct peer influence variables representing the number of close friends the youth has that have participated in structured activities, the use of alcohol, and the use of marijuana (each of the three direct peer influence variables was coded as 0 = 0 friends, 1 = 1 friend, 2 = 2 friends, 3 = 3 friends, and 4 = 4 friends).

Initial training model results for the dependent variable of alcohol use. While outcomes from the training set are highlighted below, these descriptions are intended to reflect the model building and testing process and do not reflect findings supporting hypothesis testing. The training set (N = 23,849) and the full variables specification as described above were included in the logistic regression for the dependent variable of alcohol use. Table 4 presents the results of the first logistic regression model performed with the dependent variable of alcohol use, using the training dataset.

The Omnibus Tests of Model Coefficients gives an indication of how well the model performs over and above results that would be obtained for a model with no predictors entered (an intercept only model). The test was statistically significant χ^2 (24) = 4751.71, $p < .0005$, indicating that the predictors, as a set, reliably differentiated between those who used alcohol and those who did not. Therefore, goodness-of-fit was indicated for this model. Variability of the model was assessed using two statistics, Cox and Snell R-Square (R^2 = .343) and Nagelkerke R-Square (R^2 = .459). Percentage accuracy in classification (PAC) of the correct outcome category of alcohol use for the predictors in the model was 77.9%, an improvement over the base model constant only (no predictors, all cases reported no alcohol use) percentage correct of 53.8%. The -2 log likelihood value of the model was 10,850.05.

Wald statistics indicated that many of the predictors contributed significantly to the model. Gender was significant, OR = 0.83, 95% CI for OR = (0.75, 0.91); $p < .0005$. The odds

ratio for the gender variable indicated that the odds of a male student using alcohol at least once in his lifetime is .83 the odds of a female student, when controlling for all other variables in the model. The mean centered age variable was significant, OR = 1.19, 95% CI for OR = (1.14, 1.24); $p < .0005$. The odds ratio for the age variable indicated that the odds of a student participating in the use of alcohol are 1.19 times greater for each 1-year increase from the mean centered age of 14.5 years, when controlling for all other variables in the model.

Race = Pacific Islander was significant, OR = 0.67, 95% CI for OR = (0.42, 1.07); $p = .048$. The odds ratio indicated that the odds of a Pacific Islander student participating in the use of alcohol were 0.67 times the odds of a White student, when controlling for all other variables in the model. Race = multiple was also significant, OR = 1.20, 95% CI for OR = (1.02, 1.42); $p = .016$. The odds ratio for the dummy coded race variable indicated that the odds of a student participating in the use of alcohol are 1.20 times greater for students of multiple races, when compared to White students, when controlling for all other variables in the model. Ethnicity was significant, OR = 1.25, 95% CI for OR = (1.11, 1.40); $p < .0005$. The odds ratio for the ethnicity variable indicated that the odds of a student participating in the use of alcohol are 1.25 times greater for Hispanic students when compared to non-Hispanic students, when controlling for all other variables in the model. Mother's level of education was significant, OR = 1.13, 95% CI for OR = (1.01, 1.25); $p = .015$. The odds ratio for the mother's level of education variable indicated that the odds of a student participating in the use of alcohol are 1.13 times greater for students with mothers who had a lower level of education, when controlling for all other variables in the model.

Four of the structured activities variables were significant: structured activities = sports (OR = 1.09, 95% CI for OR = (0.99, 1.21); $p = .048$); structured activities = volunteering (OR =

0.84, 95% CI for OR = (0.74, 0.94); p = .002); structured activities = clubs (OR = 0.78, 95% CI for OR = (0.68, 0.89); p < .0005); and structured activities = other (OR = 1.12, 95% CI for OR = (1.00, 1.25); p = .026). Two of the social norm influence variables were significant: social norm influence - alcohol (OR = 1.17, 95% CI for OR = (1.11, 1.23); p < .0005), and social norm influence - marijuana (OR = 1.11, 95% CI for OR = (1.06, 1.17); p < .0005). Lastly, all three direct peer influence variables were significant: direct peer influence - structured activities (OR = 0.93, 95% CI for OR = (0.89, 0.96); p < .0005), direct peer influence - alcohol (OR = 2.00, 95% CI for OR = (1.92, 2.09); p < .0005), and direct peer influence - marijuana (OR = 1.22, 95% CI for OR = (1.17, 1.28); p < .0005).

Initial training model results for the dependent variable of marijuana use. Table 5 presents the results of the first logistic regression model performed with the dependent variable of marijuana use, using the training dataset. The training set (N = 23,849) and the full variables specification as described above were included in the logistic regression for the dependent variable of marijuana use. The Omnibus Tests of Model Coefficients was statistically significant χ^2 (24) = 5228.68, p < .0005, indicating that the predictors, as a set, reliably differentiated between those who used marijuana and those who did not. Therefore, goodness-of-fit was indicated for this model.

Variability of the model was assessed using two statistics, Cox and Snell R-Square (R^2 = .371) and Nagelkerke R-Square (R^2 = .556). Percentage accuracy in classification (PAC) of the correct outcome category of marijuana use for the predictors in the model was 86.0%, an improvement over the base model constant only (no predictors, all cases reported no marijuana use) percentage correct of 76.0%. The -2 log likelihood value of model was 7,188.07.

Wald statistics indicated that many of the predictors contributed significantly to the model. The mean centered age variable was significant, OR = 1.38, 95% CI for OR = (1.31, 1.47); $p < .0005$. The odds ratio for the age variable indicated that the odds of a student participating in the use of marijuana are 1.38 times greater for each 1-year increase in the mean centered age variable, when controlling for all other variables in the model. Socioeconomic status (SES) was significant, OR = 1.39, 95% CI for OR = (1.22, 1.59); $p < .0005$. The odds ratio for the SES variable indicated that the odds of a student participating in the use of marijuana are 1.39 times greater for students who were coded as low SES, when compared to students who were coded as "not low" SES, when controlling for all other variables in the model. Race = multiple was also significant, OR = 1.39, 95% CI for OR = (1.14, 1.71); $p = .001$. The odds ratio for the dummy coded race variable indicated that the odds of a student participating in the use of marijuana are 1.39 times greater for students of multiple races, when compared to White students, when controlling for all other variables in the model. Mother's level of education was significant, OR = 1.23, 95% CI for OR = (1.09, 1.40); $p = .001$. The odds ratio for the mother's level of education variable indicated that the odds of a student participating in the use of marijuana are 1.23 times greater for students with mothers who had a lower level of education, when controlling for all other variables in the model.

Three of the structured activities variables were significant: structured activities = performing arts (OR = 0.85, 95% CI for OR = (0.73, 0.99); $p = .017$); structured activities = volunteering (OR = 0.81, 95% CI for OR = (0.69, 0.95); $p = .004$); and structured activities = clubs (OR = 0.82, 95% CI for OR = (0.68, 0.99); $p = .017$). Two of the social norms variables were significant: social norm influence - alcohol (OR = 0.83, 95% CI for OR = (0.77, 0.88); $p < .0005$), and social norm influence - marijuana (OR = 1.57, 95% CI for OR = (1.48, 1.67); $p <$

.0005). Lastly, all three direct peer influence variables were significant: direct peer influence - structured activities (OR = 0.89, 95% CI for OR = (0.86, 0.93); $p < .0005$); direct peer influence - alcohol (OR = 1.28, 95% CI for OR = (1.22, 1.35); $p < .0005$); and direct peer influence - marijuana (OR = 2.18, 95% CI for OR = (2.07, 2.30); $p < .0005$).

Table 4

First Multiple Logistic Regression Analysis of Alcohol Use Regressed on Independent Variables of Study using the Training Dataset (N = 11,301)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	-0.19	0.05	14.00	<.0005	0.83	0.75	0.91
Age (mean centered)	0.17	0.02	57.28	<.0005	1.19	1.14	1.24
Socioeconomic status (SES)	0.06	0.06	1.31	.126	1.07	0.96	1.19
Race = American Indian	-0.03	0.10	0.06	.403	0.98	0.80	1.19
Race = Black	0.03	0.10	0.10	.375	1.03	0.84	1.27
Race = Asian	0.12	0.13	0.83	.181	1.12	0.88	1.44
Race = Pacific Islander	-0.40	0.24	2.78	.048	0.67	0.42	1.07
Race = multiple	0.18	0.09	4.64	.016	1.20	1.02	1.42
Ethnicity	0.22	0.06	14.30	<.0005	1.25	1.11	1.40
Mother's level of education	0.12	0.05	4.75	.015	1.13	1.01	1.25
SA activities = sports	0.09	0.05	2.77	.048	1.09	0.99	1.21
SA activities = performing arts	-0.06	0.06	1.01	.158	0.94	0.84	1.06
SA activities = volunteering	-0.18	0.06	8.85	.002	0.84	0.74	0.94
SA activities = academic clubs	-0.25	0.07	13.23	<.0005	0.78	0.68	0.89
SA activities = other	0.11	0.06	3.82	.026	1.12	1.00	1.25
SS activities = student government	0.06	0.32	0.03	.432	1.06	0.56	1.98
SS activities = newspaper	0.00	0.32	0.00	.499	1.00	0.53	1.89
SS activities = tutoring	0.17	0.19	0.84	.180	1.19	0.82	1.71
Social norm influence-alcohol	0.16	0.03	31.81	<.0005	1.17	1.11	1.23
Social norm influence-marijuana	0.10	0.03	16.58	<.0005	1.11	1.06	1.17
Social norm influence-volunteering	-0.03	0.02	2.64	.052	0.97	0.93	1.01
Direct peer influence-school activities	-0.08	0.02	17.76	<.0005	0.93	0.89	0.96
Direct peer influence-alcohol	0.69	0.02	1004.26	<.0005	2.00	1.92	2.09
Direct peer influence-marijuana	0.20	0.02	71.78	<.0005	1.22	1.17	1.28
Constant	-1.69	0.10	294.02	<.0005	0.18	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; Reference category for School-Sponsored Activities (SS) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Table 5

First Multiple Logistic Regression Analysis of Marijuana Use Regressed on Independent Variables of Study using the Training Dataset (N = 11,265)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	-0.07	0.06	1.16	.281	0.93	0.82	1.06
Age (mean centered)	0.33	0.03	121.84	<.0005	1.38	1.31	1.47
Socioeconomic status (SES)	0.33	0.07	23.44	<.0005	1.39	1.22	1.59
Race = American Indian	0.66	0.12	32.40	<.0005	1.93	1.54	2.41
Race = Black	0.08	0.13	0.45	.251	1.08	0.85	1.39
Race = Asian	-0.29	0.19	2.19	.070	0.75	0.52	1.10
Race = Pacific Islander	-0.27	0.29	0.90	.171	0.76	0.44	1.33
Race = multiple	0.33	0.10	10.18	.001	1.39	1.14	1.71
Ethnicity	0.02	0.07	0.04	.418	1.02	0.88	1.17
Mother's level of education	0.21	0.07	10.31	.001	1.23	1.09	1.40
SA activities = sports	0.08	0.07	1.42	.117	1.08	0.95	1.23
SA activities = performing arts	-0.17	0.08	4.56	.017	0.85	0.73	0.99
SA activities = volunteering	-0.21	0.08	7.03	.004	0.81	0.69	0.95
SA activities = academic clubs	-0.20	0.09	4.48	.017	0.82	0.68	0.99
SA activities = other	0.11	0.08	2.15	.071	1.12	0.96	1.29
SS activities = student government	-0.13	0.42	0.10	.379	0.88	0.38	2.01
SS activities = newspaper	-0.34	0.46	0.54	.232	0.71	0.29	1.76
SS activities = tutoring	0.02	0.23	0.01	.461	1.02	0.66	1.60
Social norm influence-alcohol	-0.19	0.03	33.14	<.0005	0.83	0.77	0.88
Social norm influence-marijuana	0.45	0.03	228.63	<.0005	1.57	1.48	1.67
Social norm influence-volunteering	0.02	0.03	0.74	.195	1.02	0.97	1.08
Direct peer influence-school activities	-0.11	0.02	25.22	<.0005	0.89	0.86	0.93
Direct peer influence-alcohol	0.25	0.03	92.85	<.0005	1.28	1.22	1.35
Direct peer influence-marijuana	0.78	0.03	906.70	<.0005	2.18	2.07	2.30
Constant	-3.67	0.13	784.18	<.0005	0.03	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; Reference category for School-Sponsored Activities (SS) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Training Set – Second Model Set Variable Specification. After the two initial training models were assessed, it was determined that all three school-sponsored activities variables, along with the community-sponsored activity variable of "other" could be removed from both of the models. The school-sponsored activities variables were not significant in either model. The community-sponsored activities = other variable was not specific to the research hypotheses, and was not significant in the model using the dependent variable of marijuana use. A check of the bi-variate correlations of alcohol use, marijuana use, the school-sponsored activities, and the community-sponsored activity = other variable were very small with a magnitude of less than r = .10 (see Appendix B). The very low correlations suggested little association between the variables. Under the law of parsimony, the removal of these variables could lead to a better model fit and possibly allow for better estimation on the effects of the remaining variables.

Thus, a second set of logistic regressions were performed using the training dataset and the reduction in variables. The dependent variables were the same as in the previous models: alcohol use (coded as 0 = never used alcohol and 1 = used alcohol at least once in lifetime), and marijuana use (coded as 0 = never used marijuana and 1 = used marijuana at least once in lifetime). A total of 20 independent variables were included in the second set of logistic regression models. Independent variables included in the second set of models were identical to the variables included in the first set of models, with the exception of the community-sponsored activities = other variable and the three school-sponsored activities variables which were removed from analysis.

Second training model results for the dependent variable of alcohol use. Table 6 presents the results of the second training logistic regression model performed with the dependent variable of alcohol use. The training set (N = 23,849) and the variables specification

using the 20 remaining variables were included in the logistic regression for the dependent variable of alcohol use.

The Omnibus Tests of Model Coefficients was statistically significant χ^2 (20) = 4768.01, $p < .0005$, indicating that the predictors, as a set, reliably differentiated between those who used alcohol and those who did not. Therefore, goodness-of-fit was indicated for this model. Variability of the model was assessed using two statistics, Cox and Snell R-Square ($R^2 = .343$) and Nagelkerke R-Square ($R^2 = .458$). Percentage accuracy in classification (PAC) of the correct outcome category of alcohol use for the predictors in the model was 77.8%, an improvement over the base model constant only (no predictors, all cases reported no alcohol use) percentage correct of 53.8%. The -2 log likelihood value of the reduced model was 10,897.82.

Wald statistics indicated that many of the predictors contributed significantly to the model (see Table 6). Many of the independent variables that were significant predictors of alcohol use in the first model were also significant in the second model. Furthermore, odds ratios for the significant predictors were very similar to the initial model. There was one difference in the models, namely, the variable of community-sponsored activities = sports was no longer a significant predictor of alcohol use.

Second training model results for the dependent variable of marijuana use. Refer to Table 7 for presentation of results from the second logistic regression model performed with the dependent variable of marijuana use, using the training dataset. The training set (N = 23,849) and the variables specification using the 20 remaining variables were included in the logistic regression for the dependent variable of marijuana use. The Omnibus Tests of Model Coefficients was statistically significant χ^2 (20) = 5247.59, $p < .0005$, indicating that the predictors, as a set, reliably differentiated between those who used marijuana and those who did

not. Therefore, goodness-of-fit was indicated for this model. Variability of the model was assessed using two statistics, Cox and Snell R-Square (R^2 = .371) and Nagelkerke R-Square (R^2 = .556). Percentage accuracy in classification (PAC) of the correct outcome category of marijuana use for the predictors in the model was 86.1%, an improvement over the base model constant only (no predictors, all cases reported no marijuana use) percentage correct of 76%. The -2 log likelihood value of the reduced model was 7,218.57.

All of the independent variables that were significant predictors of marijuana use in the first model were also significant predictors of marijuana use in the second model. Furthermore, odds ratios for the significant predictors were very similar to the initial model.

Table 6

Second Multiple Logistic Regression Analysis of Alcohol Use Regressed on Independent Variables of Study using the Training Dataset (N = 11,349)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	-0.19	0.05	14.69	<.0005	0.82	0.75	0.91
Age (mean centered)	0.17	0.02	58.90	<.0005	1.19	1.14	1.24
Socioeconomic status (SES)	0.06	0.06	1.19	.138	1.06	0.95	1.19
Race = American Indian	-0.02	0.10	0.04	.426	0.98	0.81	1.19
Race = Black	0.01	0.10	1.01	.469	1.01	0.82	1.24
Race = Asian	0.12	0.13	0.92	.169	1.13	0.88	1.45
Race = Pacific Islander	-0.40	0.24	2.76	.048	0.67	0.42	1.07
Race = multiple	0.19	0.09	4.83	.014	1.21	1.02	1.43
Ethnicity	0.22	0.06	14.20	<.0005	1.25	1.11	1.40
Mother's level of education	0.12	0.05	4.81	.014	1.13	1.01	1.25
SA activities = sports	0.08	0.05	2.22	.069	1.08	0.98	1.19
SA activities = performing arts	-0.05	0.06	0.81	.184	0.95	0.85	1.06
SA activities = volunteering	-0.15	0.06	6.67	.005	0.86	0.76	0.96
SA activities = academic clubs	-0.25	0.07	12.92	<.0005	0.78	0.68	0.89
Social norm influence-alcohol	0.16	0.03	31.77	<.0005	1.17	1.11	1.23
Social norm influence-marijuana	0.11	0.03	17.08	<.0005	1.11	1.06	1.17
Social norm influence-volunteering	-0.03	0.02	2.48	.058	0.97	0.93	1.01
Direct peer influence-school activities	-0.07	-0.02	16.80	<.0005	0.93	0.90	0.96
Direct peer influence-alcohol	0.69	0.02	1005.85	<.0005	2.00	1.92	2.09
Direct peer influence-marijuana	0.20	0.02	72.79	<.0005	1.22	1.17	1.28
Constant	-1.67	0.10	293.48	<.0005	0.19	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Table 7

Second Multiple Logistic Regression Analysis of Marijuana Use Regressed on Independent Variables of Study using the Training Dataset (N = 11,313)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	-0.07	0.06	1.08	.149	0.94	0.83	1.06
Age (mean centered)	0.33	0.03	124.46	<.0005	1.39	1.31	1.47
Socioeconomic status (SES)	0.33	0.07	23.29	<.0005	1.39	1.22	1.59
Race = American Indian	0.65	0.12	32.25	<.0005	1.92	1.53	2.41
Race = Black	0.08	0.12	0.67	.272	1.08	0.85	1.37
Race = Asian	-0.29	0.19	2.30	.065	0.75	0.51	1.09
Race = Pacific Islander	-0.28	0.29	0.95	.165	0.76	0.43	1.32
Race = multiple	0.33	0.10	9.96	.001	1.39	1.13	1.70
Ethnicity	0.02	0.07	0.10	.379	1.02	0.89	1.18
Mother's level of education	0.21	0.07	10.18	.001	1.23	1.08	1.40
SA activities = sports	0.07	0.07	1.25	.132	1.08	0.95	1.22
SA activities = performing arts	-0.15	0.08	3.65	.028	0.86	0.74	1.00
SA activities = volunteering	-0.19	0.08	5.67	.009	0.83	0.71	0.97
SA activities = academic clubs	-0.18	0.09	3.84	.025	0.83	0.69	1.00
Social norm influence-alcohol	-0.19	0.03	32.65	<.0005	0.83	0.78	0.88
Social norm influence-marijuana	0.45	0.03	228.45	<.0005	1.57	1.48	1.67
Social norm influence-volunteering	0.02	0.03	0.70	.201	1.02	0.97	1.08
Direct peer influence-school activities	-0.11	0.02	23.78	<.0005	0.90	0.86	0.94
Direct peer influence-alcohol	0.25	0.03	96.12	<.0005	1.28	1.22	1.35
Direct peer influence-marijuana	0.78	0.03	912.82	<.0005	2.18	2.08	2.30
Constant	-3.66	0.13	795.66	<.0005	0.03	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Validation Set – Initial Variable Specifications. It was determined that the regression models derived using the training dataset were a reasonable fit for the data, and that no further changes would be made on the training set models. The model specifications of the second set of regressions using the training set were used to build models with the validation set (N = 11,925) to further assess model fit. The dependent variables were the same as in the training dataset: alcohol use (coded as 0 = never used alcohol and 1 = used alcohol at least once in lifetime), and marijuana use (coded as 0 = never used marijuana and 1 = used marijuana at least once in lifetime). The same 20 independent variables from the second set of regressions using the training data were included in the logistic regression models using the validation dataset.

Initial validation model results for the dependent variable of alcohol use. Table 8 presents the results of the first logistic regression model performed with the dependent variable of alcohol use, using the validation dataset. The validation set (N = 11,925) and the variable specification using the same 20 predictor variables as the second models of the training set were included in the logistic regression for the dependent variable of alcohol use. The Omnibus Tests of Model Coefficients was statistically significant χ^2 (20) = 2376.24, $p < .0005$, indicating that the predictors, as a set, reliably differentiated between those who used alcohol and those who did not. Therefore, goodness-of-fit was indicated for this model.

Variability of the model was assessed using two statistics, Cox and Snell R-Square (R^2 = .341) and Nagelkerke R-Square (R^2 = .456). Percentage accuracy in classification (PAC) of the correct outcome category of alcohol use for the predictors in the model was 77.5%, an improvement over the base model constant only (no predictors, all cases reported no alcohol use) percentage correct of 54.2%. The -2 log likelihood value of the model was 5,481.83.

Wald statistics indicated that many of the predictors contributed significantly to the model. Many of the independent variables that were significant predictors of alcohol use in the second model using the training dataset were also significant predictors of alcohol use in this model. Furthermore, odds ratios for the significant predictors were very similar to the previous model. There were some differences in the models, namely: the variable of gender was no longer a significant predictor of alcohol use, socioeconomic status (SES) was a newly significant predictor of alcohol use, race = Black was a newly significant predictor of alcohol use, race = Pacific Islander was no longer a significant predictor of alcohol use, ethnicity was no longer a significant predictor of alcohol use, and structured activities = volunteering was no longer a significant predictor of alcohol use. As mentioned, socioeconomic status (SES) was a newly significant predictor of alcohol use (OR = 1.19, 95% CI for OR = (1.03, 1.39); p = .012). The odds ratio for the SES variable indicated that the odds of a student using alcohol are 1.19 times greater for students who are classified as low SES when compared to students who were not classified as low SES, when controlling for all other variables in the model. Race = Black was also newly significant, OR = 0.73, 95% CI for OR = (0.55, 0.96); p = .014. The odds ratio indicated that the odds of a student participating in the use of alcohol are 0.73 times the odds of White students, when controlling for all other variables in the model.

Initial validation model results for the dependent variable of marijuana use. Table 9 presents the results of the first logistic regression model performed with the dependent variable of marijuana use, using the validation dataset. The validation set (N = 11,925) and the variable specification using the same 20 predictor variables as the second models of the training set were included in the logistic regression for the dependent variable of marijuana use. The Omnibus Tests of Model Coefficients was statistically significant χ^2 (20) = 2571.72, p < .0005, indicating

that the predictors, as a set, reliably differentiated between those who used marijuana and those who did not. Therefore, goodness-of-fit was indicated for this model. Variability of the model was assessed using two statistics, Cox and Snell R-Square (R^2 = .364) and Nagelkerke R-Square (R^2 = .548). Percentage accuracy in classification (PAC) of the correct outcome category of marijuana use for the predictors in the model was 86.1%, an improvement over the base model constant only (no predictors, all cases reported no marijuana use) percentage correct of 76.4%. The -2 log likelihood value of the model was 3,632.39.

Wald statistics indicated that many of the predictors contributed significantly to the model. Many of the independent variables that were significant predictors of marijuana use in the second model using the training dataset were also significant predictors of marijuana use in this model with the validation set. Furthermore, odds ratios for the significant predictors were very similar to the second training model. There were some differences between the two models, namely: the variable of race = American Indian was no longer a significant predictor of marijuana use, the variable of race = multiple was no longer a significant predictor of marijuana use; the variable of structured activities = performing arts was no longer a significant predictor of marijuana use, the variable of structured activities = volunteering was no longer a significant predictor of marijuana use, and the variable of structured activities = clubs was no longer a significant predictor of marijuana use.

Table 8

First Multiple Logistic Regression Analysis of Alcohol Use Regressed on Independent Variables of Study using the Validation Dataset (N = 5,697)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	-0.06	0.07	0.76	.193	0.94	0.82	1.08
Age (mean centered)	0.20	0.03	39.28	<.0005	1.22	1.14	1.29
Socioeconomic status (SES)	0.18	0.08	5.19	.012	1.19	1.03	1.39
Race = American Indian	-0.10	0.14	0.45	.253	0.91	0.69	1.20
Race = Black	-0.32	0.15	4.90	.014	0.73	0.55	0.96
Race = Asian	-0.19	0.18	1.10	.148	0.83	0.58	1.18
Race = Pacific Islander	-0.25	0.34	0.53	.234	0.78	0.40	1.52
Race = multiple	0.32	0.12	7.18	.004	1.38	1.09	1.74
Ethnicity	0.12	0.08	2.15	.072	1.13	0.96	1.33
Mother's level of education	0.23	0.07	9.96	.001	1.26	1.09	1.46
SA activities = sports	-0.02	0.07	0.07	.396	0.98	0.85	1.13
SA activities = performing arts	0.08	0.08	1.11	.147	1.09	0.93	1.27
SA activities = volunteering	-0.04	0.08	0.17	.340	0.97	0.82	1.14
SA activities = academic clubs	-0.31	0.10	10.13	.001	0.73	0.60	0.89
Social norm influence-alcohol	0.13	0.04	11.99	.001	1.14	1.06	1.23
Social norm influence-marijuana	0.15	0.04	16.98	<.0005	1.16	1.08	1.25
Social norm influence-volunteering	-0.04	0.03	1.94	.082	0.96	0.91	1.02
Direct peer influence-school activities	-0.11	0.03	19.37	<.0005	0.89	0.85	0.94
Direct peer influence-alcohol	0.68	0.03	489.09	<.0005	1.98	1.86	2.10
Direct peer influence-marijuana	0.19	0.03	32.68	<.0005	1.21	1.13	1.29
Constant	-1.67	0.14	138.82	<.0005	0.19	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Table 9

First Multiple Logistic Regression Analysis of Marijuana Use Regressed on Independent Variables of Study using the Validation Dataset (N = 5,676)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	0.10	0.09	1.31	.127	1.11	0.93	1.32
Age (mean centered)	0.36	0.04	78.52	<.0005	1.44	1.33	1.56
Socioeconomic status (SES)	0.25	0.10	6.71	.005	1.28	1.06	1.54
Race = American Indian	0.16	0.17	0.96	.163	1.18	0.85	1.63
Race = Black	0.27	0.17	2.46	.059	1.31	0.94	1.82
Race = Asian	-0.17	0.26	0.43	.256	0.84	0.50	1.41
Race = Pacific Islander	-0.07	0.39	0.04	.424	0.93	0.44	1.98
Race = multiple	0.24	0.15	2.65	.052	1.27	0.95	1.68
Ethnicity	0.01	0.10	0.01	.458	1.01	0.83	1.23
Mother's level of education	0.18	0.09	4.07	.022	1.20	1.01	1.43
SA activities = sports	-0.07	0.09	0.55	.230	0.93	0.78	1.12
SA activities = performing arts	0.07	0.11	0.49	.242	1.08	0.88	1.32
SA activities = volunteering	-0.17	0.11	2.36	.062	0.84	0.68	1.05
SA activities = academic clubs	-0.19	0.13	2.07	.075	0.83	0.64	1.07
Social norm influence-alcohol	-0.12	0.05	6.08	.007	0.89	0.81	0.98
Social norm influence-marijuana	0.38	0.04	82.35	<.0005	1.47	1.35	1.59
Social norm influence-volunteering	0.01	0.04	0.14	.353	1.02	0.94	1.09
Direct peer influence-school activities	-0.17	0.03	28.14	<.0005	0.85	0.80	0.90
Direct peer influence-alcohol	0.18	0.04	23.34	<.0005	1.19	1.11	1.28
Direct peer influence-marijuana	0.83	0.04	501.91	<.0005	2.29	2.13	2.47
Constant	-3.47	0.19	352.35	<.0005	0.03	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Validation Set – Second Model Set Variable Specification. After the initial validation models were assessed, it was determined that two of the dummy coded race variables (a) race = Asian, and (b) race = Pacific Islander, could be aggregated into one group (Asian/Pacific Islander). The frequencies for these race categories were very small relative to the entire sample and these variables were not significant in any of the previous models. Furthermore, the aggregation of these variables may lead to a parsimonious and better model fit.

Thus, a second set of logistic regressions were performed using the validation dataset. The dependent variables were the same as in the previous models: alcohol use (coded as 0 = never used alcohol and 1 = used alcohol at least once in lifetime), and marijuana use (coded as 0 = never used marijuana and 1 = used marijuana at least once in lifetime). A total of 19 independent variables were included in the second set of logistic regression models. Independent variables included in the second set of validation models were identical to the variables included in the first set of validation models, with the exception of the merged race variable referred to as race = Asian/Pacific Islander.

Second validation model results for the dependent variable of alcohol use. Table 10 presents the results of the second logistic regression model performed with the dependent variable of alcohol use, using the validation dataset. The validation set (N = 11,925) and the variable specification using the 19 predictor variables were included in the logistic regression for the dependent variable of alcohol use. The Omnibus Tests of Model Coefficients was statistically significant χ^2 (19) = 2376.24, $p < .0005$, indicating that the predictors, as a set, reliably differentiated between those who used alcohol and those who did not. Therefore, goodness-of-fit was indicated for this model.

Variability of the model was assessed using two statistics, Cox and Snell R-Square (R^2 = .341) and Nagelkerke R-Square (R^2 = .456). Percentage accuracy in classification (PAC) of the correct outcome category of alcohol use for the predictors in the model was 77.5%, an improvement over the base model constant only (no predictors, all cases reported no alcohol use) percentage correct of 54.2%. The -2 log likelihood value of the reduced model was 5,481.86. A likelihood ratio test was performed to check for significant differences between the full and reduced alcohol models built with the validation data set. Results were not statistically significant, $\chi^2(1) = 0.03$, $p = .138$. Since the likelihood ratio test statistic was not statistically significant, the models were determined to not be significantly different and the reduced model with the aggregated variable of race = Asian/Pacific Islander was analyzed with the test dataset. Wald statistics indicated that many of the predictors contributed significantly to the model. All of the independent variables that were significant predictors of alcohol use in the first validation model were also significant predictors of alcohol use in the second validation model. Furthermore, odds ratios for the significant predictors were very similar to the previous model.

Second validation model results for the dependent variable of marijuana use. Table 11 presents the results of the second logistic regression model performed with the dependent variable of marijuana use, using the validation dataset. The Omnibus Tests of Model Coefficients was statistically significant χ^2 (19) = 2571.68, $p < .0005$, indicating that the predictors, as a set, reliably differentiated between those who used marijuana and those who did not. Therefore, goodness-of-fit was indicated for this model. Variability of the model was assessed using two statistics, Cox and Snell R-Square (R^2 = .364) and Nagelkerke R-Square (R^2 = .548). Percentage accuracy in classification (PAC) of the correct outcome category of marijuana use for the predictors in the model was 86.1%, an improvement over the base model constant only (no

predictors, all cases reported no marijuana use) percentage correct of 76.4%. The -2 log likelihood value of the reduced model was 3,632.43. A likelihood ratio test was performed to check for significant differences between the full and reduced marijuana models built with the validation data set. Results were not statistically significant, $\chi^2(1) = 0.04$, $p = .159$. Since the likelihood ratio test statistic was not statistically significant, the models were determined to not be significantly different and the reduced model with the aggregated variable of race = Asian/Pacific Islander was analyzed with the test dataset. Wald statistics indicated that many of the predictors contributed significantly to the model. All of the independent variables that were significant predictors of marijuana use in the first validation model were also significant predictors of marijuana use in the second validation model. Furthermore, odds ratios for the significant predictors were very similar to the previous model.

Table 10

Second Multiple Logistic Regression Analysis of Alcohol Use Regressed on Independent Variables of Study using the Validation Dataset (N = 5,697)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	-0.06	0.07	0.75	.193	0.94	0.82	1.08
Age (mean centered)	0.20	0.03	39.27	<.0005	1.22	1.14	1.29
Socioeconomic status (SES)	0.18	0.08	5.17	.012	1.19	1.02	1.38
Race = American Indian	-0.10	0.14	0.44	.253	0.91	0.69	1.20
Race = Black	-0.32	0.15	4.90	.014	0.73	0.55	0.96
Race = Asian/Pacific Islander	-0.20	0.16	1.56	.106	0.82	0.60	1.12
Race = multiple	0.32	0.12	7.19	.004	1.38	1.09	1.74
Ethnicity	0.12	0.08	2.13	.072	1.13	0.96	1.33
Mother's level of education	0.23	0.07	9.95	.001	1.26	1.09	1.46
SA activities = sports	-0.02	0.07	0.07	.395	0.98	0.85	1.13
SA activities = performing arts	0.08	0.08	1.11	.146	1.09	0.93	1.27
SA activities = volunteering	-0.03	0.08	0.17	.341	0.97	0.82	1.14
SA activities = academic clubs	-0.31	0.10	10.17	.001	0.73	0.60	0.89
Social norm influence-alcohol	0.13	0.04	11.97	.001	1.14	1.06	1.23
Social norm influence-marijuana	0.15	0.04	17.00	<.0005	1.16	1.08	1.25
Social norm influence-volunteering	-0.04	0.03	1.95	.082	0.96	0.91	1.02
Direct peer influence-school activities	-0.11	0.03	19.37	<.0005	0.89	0.85	0.94
Direct peer influence-alcohol	0.68	0.03	489.10	<.0005	1.98	1.86	2.10
Direct peer influence-marijuana	0.19	0.03	32.66	<.0005	1.21	1.13	1.29
Constant	-1.67	0.14	138.90	<.0005	0.19	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Table 11

Second Multiple Logistic Regression Analysis of Marijuana Use Regressed on Independent Variables of Study using the Validation Dataset (N = 5,676)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	0.10	0.09	1.30	.127	1.11	0.93	1.32
Age (mean centered)	0.36	0.04	78.52	<.0005	1.44	1.33	1.56
Socioeconomic status (SES)	0.25	0.10	6.75	.005	1.28	1.06	1.54
Race = American Indian	0.16	0.17	0.96	.164	1.18	0.85	1.63
Race = Black	0.27	0.17	2.46	.059	1.31	0.94	1.82
Race = Asian/Pacific Islander	-0.14	0.22	0.42	.259	0.87	0.57	1.33
Race = multiple	0.24	0.15	2.65	.052	1.27	0.95	1.68
Ethnicity	0.01	0.10	0.01	.454	1.01	0.83	1.24
Mother's level of education	0.18	0.09	4.08	.022	1.20	1.01	1.43
SA activities = sports	-0.07	0.09	0.54	.231	0.93	0.78	1.12
SA activities = performing arts	0.07	0.11	0.48	.244	1.08	0.88	1.32
SA activities = volunteering	-0.17	0.11	2.37	.062	0.84	0.68	1.05
SA activities = academic clubs	-0.19	0.13	2.05	.076	0.83	0.64	1.07
Social norm influence-alcohol	-0.12	0.05	6.06	.007	0.89	0.81	0.98
Social norm influence-marijuana	0.38	0.04	82.30	<.0005	1.47	1.35	1.59
Social norm influence-volunteering	0.02	0.04	0.15	.352	1.02	0.94	1.09
Direct peer influence-school activities	-0.17	0.03	28.13	<.0005	0.85	0.80	0.90
Direct peer influence-alcohol	0.18	0.04	23.37	<.0005	1.19	1.11	1.28
Direct peer influence-marijuana	0.83	0.04	502.26	<.0005	2.29	2.13	2.47
Constant	-3.47	0.19	353.16	<.0005	0.03	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Test Dataset – Variable Specifications. The reduced models derived with the validation dataset were a good fit for the data, and no further revisions or improvements were made to the model specifications. These models were then computed with the test dataset. The findings of the test set models were then used to address the research hypotheses. The dependent variables were the same as in the previous models: alcohol use (coded as 0 = never used alcohol and 1 = used alcohol at least once in lifetime), and marijuana use (coded as 0 = never used marijuana and 1 = used marijuana at least once in lifetime).

Test model results for the dependent variable of alcohol use. Table 12 presents the results of the logistic regression model performed with the dependent variable of alcohol use, using the test dataset. The Omnibus Tests of Model Coefficients was statistically significant χ^2 (19) = 2445.89, $p < .0005$, indicating that the predictors, as a set, reliably differentiated between those who used alcohol and those who did not. Therefore, goodness-of-fit was indicated for this model. Variability of the model was assessed using two statistics, Cox and Snell R-Square (R^2 = .353) and Nagelkerke R-Square (R^2 = .472). Percentage accuracy in classification (PAC) of the correct outcome category of alcohol use for the predictors in the model was 78.5%, an improvement over the base model constant only (no predictors, all cases reported no alcohol use) percentage correct of 53.4%. Wald statistics indicated that many of the predictors contributed significantly to the model. Many of the independent variables that were significant predictors of alcohol use in the second model using the validation dataset were also significant predictors of alcohol use in this model. Furthermore, odds ratios for the significant predictors were very similar to the previous model. There were some differences in the models, namely: the variable of socioeconomic status (SES) was no longer a significant predictor of alcohol use, race = Black was no longer a significant predictor of alcohol use, race = multiple was no longer a significant

predictor of alcohol use, mother's level of education was no longer a significant predictor of alcohol use, structured activities = performing arts was a newly significant predictor of alcohol use, structured activities = clubs was no longer a significant predictor of alcohol use, and social norm influence – marijuana was no longer a significant predictor of alcohol use.

Only one of the structured activities variables was significant: performing arts (OR = 0.85, 95% CI for OR = (0.72, 1.00); $p = .025$). The odds ratio for the structured activity = performing arts indicates that the odds of youth reporting using alcohol at least once in their lifetime is .85 less for youth who participate in performing arts compared to youth who do not participate in a structured afterschool activity, when controlling for all other variables in the model.

Test model results for the dependent variable of marijuana use. Table 13 presents the results of the logistic regression model performed with the dependent variable of marijuana use, using the test dataset. The Omnibus Tests of Model Coefficients was statistically significant χ^2 (19) = 2672.18, $p < .0005$, indicating that the predictors, as a set, reliably differentiated between those who used marijuana and those who did not. Therefore, goodness-of-fit was indicated for this model. Variability of the model was assessed using two statistics, Cox and Snell R-Square ($R^2 = .380$) and Nagelkerke R-Square ($R^2 = .568$). Percentage accuracy in classification (PAC) of the correct outcome category of marijuana use for the predictors in the model was 86.1%, an improvement over the base model constant only (no predictors, all cases reported no marijuana use) percentage correct of 75.9%. Wald statistics indicated that many of the predictors contributed significantly to the model. Many of the independent variables that were significant predictors of marijuana use in the second model using the validation dataset were also significant predictors of marijuana use in this model. Furthermore, odds ratios for the significant predictors

were very similar to the previous model. There were some differences in the models, namely: the variable of gender was a newly significant predictor of marijuana use, race = American Indian was a newly significant predictor of marijuana use, structured activities = volunteering was a newly significant predictor of marijuana use, social norm influence – alcohol was no longer a significant predictor of marijuana use, and social norm influence – volunteering was a newly significant predictor of marijuana use.

As mentioned above, gender was significant, OR = 1.26, 95% CI for OR = (1.05, 1.51); p = .006. The odds ratio for the gender variable indicated that the odds of a student participating in the use of marijuana are 1.26 times greater for male students when compared to female students, when controlling for all other variables in the model. Race = American Indian was significant, OR = 1.48, 95% CI for OR = (1.08, 2.04); p = .007. The odds ratio for the dummy coded race variable of American Indian indicated that the odds of a student participating in the use of marijuana are 1.48 times greater for American Indian students, when compared to White students, when controlling for all other variables in the model.

One of the structured activities variables was significant: structured activities = volunteering (OR = 0.74, 95% CI for OR = (0.59, 0.93); p = .005). The odds ratio for the structured activity = volunteering indicates that the odds of youth reporting using marijuana at least once in their lifetime is .59 less likely for youth who participate in volunteering compared to youth who do not participate in a structured afterschool activity, when controlling for all other variables in the model.

In addition to the significant social norm influence – marijuana variable, social norm influence – volunteer was significant (OR = 1.07, 95% CI for OR = (0.99, 1.15); p = .045). The odds ratio for the social norms influence – volunteer variable indicated that the odds of a student

reporting using marijuana at least once in their lifetime is 1.07 times greater with each 1-unit increase in how cool they feel they would be perceived for volunteering, when controlling for all other variables in the model.

Table 12

Multiple Logistic Regression Analysis of Alcohol Use Regressed on Independent Variables of Study using the Test Dataset (N = 5,613)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	-0.02	0.07	0.09	.384	0.98	.085	1.13
Age (mean centered)	0.13	0.03	16.29	<.0005	1.14	1.07	1.21
Socioeconomic status (SES)	0.08	0.08	0.99	.160	1.08	0.93	1.26
Race = American Indian	-0.10	0.14	0.54	.231	0.90	0.69	1.19
Race = Black	-0.16	0.15	1.09	.148	0.85	0.64	1.15
Race = Asian/Pacific Islander	0.18	0.17	1.08	.150	1.19	0.86	1.67
Race = multiple	0.07	0.12	0.31	.289	1.07	0.84	1.36
Ethnicity	0.06	0.08	0.44	.255	1.06	0.90	1.24
Mother's level of education	0.06	0.08	0.65	.211	1.06	0.92	1.24
SA activities = sports	0.07	0.07	0.95	.165	1.08	0.93	1.24
SA activities = performing arts	-0.16	0.08	3.89	.025	0.85	0.72	1.00
SA activities = volunteering	-0.06	0.09	0.51	.239	0.94	0.79	1.11
SA activities = academic clubs	-0.07	0.10	0.51	.237	0.93	0.77	1.13
Social norm influence-alcohol	0.31	0.04	57.08	<.0005	1.36	1.26	1.48
Social norm influence-marijuana	-0.01	0.04	0.08	.392	0.99	0.92	1.07
Social norm influence-volunteering	-0.01	0.03	0.02	.439	1.00	0.94	1.06
Direct peer influence-school activities	-0.10	0.03	15.59	<.0005	0.90	0.86	0.95
Direct peer influence-alcohol	0.74	0.03	538.09	<.0005	2.10	1.97	2.23
Direct peer influence-marijuana	0.22	0.03	42.14	<.0005	1.25	1.17	1.34
Constant	-1.80	0.15	151.40	<.0005	0.17	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Table 13

Multiple Logistic Regression Analysis of Marijuana Use Regressed on Independent Variables of Study using the Test Dataset (N = 5,595)

						95% CI for *B*	
Variable	*B*	*SE B*	Wald	*p*	Odds Ratio	Lower	Upper
Gender	0.23	0.09	6.25	.006	1.26	1.05	1.51
Age (mean centered)	0.23	0.04	31.67	<.0005	1.26	1.17	1.37
Socioeconomic status (SES)	0.25	0.10	6.63	.005	1.29	1.06	1.57
Race = American Indian	0.40	0.17	5.99	.007	1.48	1.08	2.04
Race = Black	-0.02	0.18	0.01	.458	0.98	0.69	1.40
Race = Asian/Pacific Islander	-0.18	0.25	0.53	.235	0.83	0.51	1.36
Race = multiple	-0.02	0.15	0.03	.436	0.98	0.73	1.31
Ethnicity	0.04	0.10	0.17	.342	1.04	0.86	1.27
Mother's level of education	0.33	0.09	12.32	<.0005	1.39	1.16	1.67
SA activities = sports	0.05	0.09	0.23	.315	1.05	0.87	1.26
SA activities = performing arts	-0.14	0.11	1.55	.107	0.87	0.70	1.08
SA activities = volunteering	-0.30	0.12	6.70	.005	0.74	0.59	0.93
SA activities = academic clubs	-0.03	0.13	0.07	.399	0.97	0.74	1.26
Social norm influence-alcohol	0.02	0.05	0.19	.331	1.02	0.93	1.12
Social norm influence-marijuana	0.32	0.04	59.01	<.0005	1.38	1.27	1.50
Social norm influence-volunteering	0.06	0.04	2.90	.045	1.07	0.99	1.15
Direct peer influence-school activities	-0.13	-0.03	16.22	<.0005	0.88	0.82	0.94
Direct peer influence-alcohol	0.23	0.04	39.75	<.0005	1.26	1.17	1.35
Direct peer influence-marijuana	0.85	0.04	529.38	<.0005	2.35	2.18	2.53
Constant	-4.01	0.20	417.21	<.0005	0.02	---	---

Note. Reference category for Gender = Female; Age is a mean centered variable (*M* = 14.45 years, *SD* = 1.13 years); Reference category for SES = No lunch assistance; Reference category for Race = White; Reference category for Ethnicity = Not Hispanic or Latino; Reference category for Mother's Level of Education = High education; Reference category for Structured Activities (SA) = None; *B* = intercept; *SE B* = standard error of the intercept; *p* = one-sided level of significance.

Hypothesis Testing

The correlation findings using the full dataset and the logistic regression model findings from the test dataset were used to address the research hypotheses of the study. The conclusions are presented below according to each individual hypothesis.

(H1a). Participation in structured activities (broken out by activity type) will be negatively associated with reported use of alcohol compared to youth who do not participate in structured activities.

In the final logistic regression model performed on the test dataset, there were many significant predictors of the dependent variable of alcohol use. However, only one of the structured activities variables was significant: structured activities – performing arts (OR = 0.85, 95% CI for OR = (0.72, 1.00); p = .025). The odds ratio for the structured activity = performing arts indicates that the odds of youth reporting using alcohol at least once in their lifetime is .85 less likely for youth who participate in performing arts compared to youth who do not participate in a structured afterschool activity, when controlling for all other variables in the model. These results indicated that students who participated in performing arts were less likely to have used alcohol when compared to students who did not participate in a structured afterschool.

Conclusion as relates to Hypothesis 1a. Findings of the logistic regression were significant for the variable of structured activities = performing arts. Furthermore, students who participated in performing arts were negatively associated with reported use of alcohol. Therefore, Research Hypothesis 1a was partially supported for performing arts, but not necessarily for other structured school activities.

(H1b). Participation in structured activities (broken out by activity type) will be negatively associated with reported use of marijuana compared to youth who do not participate in structured activities.

In the final logistic regression model performed on the test dataset, there were many significant predictors of the dependent variable of marijuana use. However, only one of the structured activities variables was significant: structured activities = volunteering (OR = 0.74, 95% CI for OR = (0.59, 0.93); $p = .005$). The odds ratio for the structured activity = volunteering indicates that the odds of youth reporting using marijuana at least once in their lifetime is .74 less likely for youth who participate in volunteering compared to youth who do not participate in a structured afterschool activity, when controlling for all other variables in the model. These results indicated that students who participate in volunteering were less likely to have used marijuana when compared to students who did not participate in a structured activity. With the exception of the variable representing "none", the individual structured activities variables were significantly and negatively correlated with marijuana use. However, the correlation coefficients were very small with a magnitude of $r < .10$ (see Appendix B).

Conclusion as relates to Hypothesis 1b. Findings of the logistic regression were significant for the variable of structured activities = volunteering. Furthermore, students who participated in volunteering were negatively associated with reported use of marijuana. Therefore, Research Hypothesis 1b was partially supported for volunteering, but not for other structured activities.

(H1c). There will be differences in substance use outcomes (alcohol, marijuana) based on type of structured activity that a youth engages in such that youth who participate in sports

activities will report higher levels of substance use compared to youth who participate in performing arts, clubs, or volunteering.

There were differences between the results of the logistic regression model performed using the dependent variable of alcohol use and the logistic regression model performed using the dependent variable of marijuana use, with regards to the independent structured activities variables. Specifically, structured activities = performing arts was a significant predictor of alcohol use, such that participants involved in performing arts were less likely to use alcohol. Additionally, structured activities = volunteering was a significant predictor of marijuana use, such that youth involved in volunteering were less likely to use marijuana. However, the structured activities = sports variable was not significant in either model, and results for this independent predictor variable were not interpreted further.

Conclusion as relates to Hypothesis 1c. Findings of the logistic regression were not significant for the variable of structured activities = sports. Therefore, Research Hypothesis 1c was not supported. There is not sufficient evidence to indicate that youth who participate in sports activities reported higher levels of substance use compared to youth who participate in performing arts, clubs, or volunteering.

(H2a). Direct peer influence (e.g., close friends' perceptions) will be positively associated with youth's participation in structured activities.

The results of the correlational analysis indicated significant findings between the direct peer influence variables and many of the structured activities variables. However, the correlation coefficients were very small for many bi-variate relationships ($r < .10$) and significance may have been due to overpowering from the very large sample size. However, there were some significant correlations with coefficients above $r = .20$ which indicated small to moderate effects.

Direct peer influence – school activities was positively correlated with the structured activities of sports (r = .269, p < .0005), volunteering (r = .210, p < .005) and none (r = -.336, p < .0005).

Conclusion as relates to Hypothesis 2a. The variable of direct peer influence – school activities was positively associated with the structured activities of sports and volunteering and the effect sizes were small to moderate. Other direct peer influence variables were also positively and significantly correlated with structured activities, although the effect sizes were very small. Therefore, Research Hypothesis 2a was partially supported.

(H2b). Social norms influence (e.g., other peers' perceptions) will be positively associated with youth's participation in structured activities.

The results of the correlational analysis indicated positive and significant findings between the social norms variables and many of the structured activities variables. However, the correlation coefficients were very small for many bi-variate relationships (r < .10) and significance may have been due to overpowering from the very large sample size. There was one significant correlation with coefficients above r = .10 which indicated a small effect. Social norm influence - volunteer was positively correlated with the structured activity of volunteering (r = .163, p < .0005).

Conclusion as relates to Hypothesis 2b. The variable of social norm influence - volunteer was positively associated with the structured activities of volunteering and the effect size was small. Other social norms variables were also positively and significantly correlated with structured activities, although the effect sizes were very small. Therefore, Research Hypothesis 2b was supported. There is sufficient evidence to indicate that social norms influence (e.g., peers' perceptions) was positively associated with youth's participation in structured activities.

(H2c). Direct peer influence will be positively associated with youth's choice to use alcohol and marijuana.

The logistic regression analyses performed to address Hypotheses 1a, 1b, and 1c were also used to address Hypotheses 2c and 2d. In the final logistic regression model performed on the test dataset, there were many significant predictors of the dependent variable of alcohol use. Notably, all three of the direct peer influence variables were significant: direct peer influence - structured activities (OR = 0.90, 95% CI for OR = (0.86, 0.95); $p < .0005$), direct peer influence - alcohol (OR = 2.10, 95% CI for OR = (1.97, 2.23); $p < .0005$), and direct peer influence - marijuana (OR = 1.25, 95% CI for OR = (1.17, 1.34); $p < .0005$).

Furthermore, all three of the direct peer influence variables were significant for marijuana use: direct peer influence - structured activities (OR = 0.88, 95% CI for OR = (0.82, 0.94); $p < .0005$), direct peer influence - alcohol (OR = 1.26, 95% CI for OR = (1.17, 1.35); $p < .0005$), and direct peer influence - marijuana (OR = 2.35, 95% CI for OR = (2.18, 2.53); $p < .0005$). These results indicated that for each additional best friend youth have that participate in school activities, they were less likely to use alcohol or marijuana. These results also indicated that for each additional best friend youth have that use alcohol or marijuana, they were more likely to use alcohol and marijuana.

Conclusion as relates to Hypothesis 2c. Findings of the logistic regression using the dependent variable of alcohol use were significant for all three direct peer influence variables. Results indicated that for each additional best friend youth have that use alcohol or marijuana, they are more likely to use alcohol. Furthermore, findings of the logistic regression using the dependent variable of marijuana use were significant for all three direct peer influence variables. Results indicated that for each additional best friend youth have that use alcohol or marijuana,

they are more likely to use marijuana. Therefore, Research Hypothesis 2c was supported. There is sufficient evidence to indicate that direct peer influence was positively associated with youth's choice to use alcohol and marijuana.

(H2d). Social norms influence will be positively associated with youth's use of alcohol and marijuana.

In the final logistic regression model performed with the test dataset, there were many significant predictors of the dependent variable of alcohol use. Notably, only one of the social norm influence variables was significant: social norm influence - alcohol (OR = 1.36, 95% CI for OR = (1.26, 1.48); $p < .0005$). There were many significant predictors of the dependent variable of marijuana use. Notably, two of the social norm influence variables were significant: social norm influence - marijuana (OR = 1.38, 95% CI for OR = (1.27, 1.50); $p < .0005$), and social norm influence - volunteer (OR = 1.07, 95% CI for OR = (0.99, 1.15); $p = .045$). These results indicated that for each 1-level increase in how cool they would be perceived for drinking alcohol, youth are more likely to use alcohol. These results also indicated that for each 1-level increase in how cool they would be perceived for smoking marijuana, youth were more likely to use marijuana. Furthermore, these results indicated that for each 1-level increase in how cool they would be perceived for volunteering, youth are more likely to use marijuana.

Conclusion as relates to Hypothesis 2d. Findings of the logistic regression using the dependent variable of alcohol use were significant for the variable of social norm influence - alcohol. Results indicated that for each 1-level increase in how cool they would be perceived for drinking alcohol, youth are more likely to use alcohol. Furthermore, findings of the logistic regression using the dependent variable of marijuana use were significant for two social norm influence variables. Results indicated that for each 1-level increase in how cool they would be

perceived for smoking marijuana, youth are more likely to use marijuana. Similarly, for each 1-level increase in how cool they would be perceived for smoking marijuana, youth are more likely to participate in volunteering. Therefore, Research Hypothesis 2d was supported. There is sufficient evidence to indicate that social norms was positively associated with youth's use of alcohol and marijuana.

CHAPTER 5

Discussion

The current study uses Ecological Systems Theory as the framework for understanding that youth navigate through complex, interdependent contexts that are populated with various people and experiential opportunities. These experiences confer distinctive influences on youth's behaviors, values, and developmental outcomes. The goal of the present study was to assess the benefits of participating in structured afterschool activities by examining the association between youth participation in structured afterschool activities and reported differences in alcohol and marijuana use. In addition, the role of peer influence, direct peer influence and social norms, was studied to assess how the perceptions of close friends (direct peer influence) as well as other peers (social norms) impact youth's use of alcohol and marijuana as well as participation in structured afterschool activities. Overall, the study's results demonstrate that youth who participate in structured afterschool activities such as performing arts and volunteering report using less alcohol and marijuana respectively, compared to youth who do not participate in structured afterschool activities. In addition, direct peer influence and social norms each influence youth behavior in both positive and negative ways.

The findings from the study are reflective of a sample of Arizona youth in 8th and 10th grades. Among all respondents there were low rates of alcohol and marijuana use reported with less than half (43.6%) of youth reporting ever using alcohol during their lifetime and only 22.2% reporting ever using marijuana in their lifetime. These lower rates of alcohol and marijuana use among youth in early to middle adolescence are consistent with findings in the literature (National Institute of Drug Abuse, 2014). Given the smaller subgroup of youth who reported using alcohol and marijuana, the generalizability of the study findings may be limited.

With regard to participation in structured activities, the majority of youth (73.1%) reported participating in at least one structured activity with 35.1% of youth citing that they participated in more than one structured activity. These rates of participation for youth in early to middle adolescence are consistent with the rates of participation documented in the literature (Eccles & Gootman, 2002). The approach utilized in the current study was to assess participation in structured activities, broken out by specific type of activity, to assess whether there were different outcomes associated with participation in specific types of structured activities. Although collapsing participation in structured activities into a dichotomous variable, participation in structured activities compared to non-participation, would have provided a larger subsample to examine this approach was not employed for several reasons including: (1) the overall dataset was already quite large and the subsample of youth reporting participation in structured activities was sufficiently large so there was not a need to increase the subsample size for the analyses; (2) assessing the structured activities as distinct and separate during the analyses allowed for the examination of differences in reported outcomes based on participation in a specific type of structured activity which was of interest to the researcher; and most notably (3) central to the current research hypotheses was the idea that different peer groups and different contexts confer unique influences on developmental outcomes and examining participation in structured activities broken out by specific activity type would allow for a more granular examination of the different outcomes that youth who engaged in those activities might experience.

Structured Activity Participation and Substance Use

Many predictors were significant for the dependent variables of alcohol use and marijuana use. For instance, the variable of structured activities = performing arts was negatively

associated with reported use of alcohol such that youth who reported participating in performing arts were less likely to indicate that they had ever drank alcohol in their lifetime, compared to youth who did not participate in structured activities. One possible explanation for this finding is related to peer influence and homophily influencing the type of youth who are drawn to performing arts. Specifically, self-selection bias into performing arts activities may result in youth seeking out performing arts as a structured activity because it offers a group identity that resonates with the youth's personal identity, interests, and values. Eccles and Barber (1999) described this effect as a synergistic system connecting activity involvement with peer group composition and identity exploration. These authors observed different patterns of outcomes, depending on the type of activity adolescents were involved in and their social identity group, whereby involvement in prosocial activities and having a creative, academically-oriented identity was associated with low alcohol and drug use and positive academic outcomes.

The variable of structured activities = volunteering was negatively associated with reported use of marijuana such that youth who reported participating in volunteering were less likely to indicate that they had ever used marijuana in their lifetime, compared to youth who did not participate in a structured activity. The literature (Flanagan, 2004; Flanagan & Faison, 2001) demonstrates that youth who are more civically engaged and are actively involved in their community through volunteering typically self-select into peer and activity groups that are more civically-oriented. Again there may be an effect of homophily which draws like-minded peers together and they develop a group identity based on their values and behaviors.

These findings suggest that youth who report engaging in specific types of structured activities, namely performing arts and volunteering, report lower rates of alcohol and marijuana use respectively. This outcome is consistent with findings in the literature that note youth who

participate in structured activities are less likely to engage in the use of alcohol and other drugs. Possible explanations including self-selection effects and homophily are offered as possible influences affecting these findings. Another possible explanation may be linked to the specific skills and competencies that these structured activities promote among their youth participants. However, without information on the programming content or quality for these activities it is not possible to measure the extent of these influences on youth's outcomes. The 2012 AYS did not include items which asked about programming or quality of the structured afterschool activities. Capturing data regarding the quality and content of programming remains an important area of needed evaluation for the positive youth development field.

The Effects of Peer Influence

Direct peer influence on alcohol use. Findings of the logistic regression using the dependent variable of alcohol use were significant for all three direct peer influence variables: direct peer influence - structured activities (OR = 0.90, 95% CI for OR = (0.86, 0.95); $p < .0005$), direct peer influence - alcohol (OR = 2.10, 95% CI for OR = (1.97, 2.23); $p < .0005$), and direct peer influence - marijuana (OR = 1.25, 95% CI for OR = (1.17, 1.34); $p < .0005$). These results indicated that for each additional best friend a youth had that participated in structured activities, a youth was less likely to have used alcohol. For each additional best friend a youth had that used alcohol, the youth was more likely to have used alcohol. And for each additional best friend a youth had that used marijuana, the youth was more likely to use alcohol. These findings demonstrate that direct peer influence among this sample of youth played a significant role in influencing youth's behavior in both positive and negative ways.

Direct peer influence on marijuana use. Similarly, findings of the logistic regression using the dependent variable of marijuana use were significant for all three direct peer influence

variables: direct peer influence - structured activities (OR = 0.88, 95% CI for OR = (0.82, 0.94); $p < .0005$), direct peer influence - alcohol (OR = 1.26, 95% CI for OR = (1.17, 1.35); $p < .0005$), and direct peer influence - marijuana (OR = 2.35, 95% CI for OR = (2.18, 2.53); $p < .0005$). For each additional best-friend a youth had that used alcohol, the youth was more likely to have used marijuana. And for each additional best friend a youth had that used marijuana, the youth was more likely to use marijuana. These findings demonstrate that direct peer influence among this sample of youth played a crucial role in influencing youth's use of marijuana. Overall, these results indicate that for each additional best friend youth had that participated in school activities, youth were less likely to have used alcohol or marijuana. Whether this finding is impacted by the skills and competencies developed as part of participation in the activity or whether there is an effect of homophily and self-selection into a group that promotes positive developmental outcomes, these findings are important to note. These results also indicate that for each additional best friend a student had that used alcohol or marijuana, students were more likely to have used alcohol and marijuana. Again, this finding aligns with the idea that peers play an important role in influencing youth's behavior and this influence can be exerted in both positive and negative ways.

Social norms influence on alcohol use. Findings of the logistic regression using the dependent variable of alcohol use were significant for the variable of social norm influence - alcohol: social norm influence – alcohol (OR = 1.36, 95% CI for OR = (1.26, 1.48); $p < .0005$). These results indicated that for each 1-level increase in how cool youth believed they will be perceived by others, youth were increasingly more likely to have used alcohol. This finding demonstrates that social norms related to alcohol use can impact a youth's use of alcohol.

Social norms influence on marijuana use. Findings of the logistic regression using the dependent variable of marijuana use were significant for the two variables: social norm influence – marijuana (OR = 1.38, 95% CI for OR = (1.27, 1.50); $p < .0005$) and social norm influence – volunteering (OR = 1.07, 95% CI for OR = (0.99, 1.15); $p = .05$). These results indicate that for each 1-level increase in how cool youth believe they will be perceived by others for smoking marijuana, youth were more likely to have used marijuana. Similar to direct peer influence, social norms exert an influence in both positive and negative ways.

An interesting finding was observed related to social norms, volunteering, and marijuana use. For each 1-level increase in how cool youth believe they will be perceived by others for volunteering, youth were more likely to have used marijuana. While this finding may initially seem contradictory to the previously described outcome which found that youth who participate in volunteering were less likely to use marijuana, it is perhaps the result of measurement and interpretation issues with the survey item itself. The AYS item in question reads, "What are the chances you would be seen as cool if you regularly volunteered to do community service?" The other volunteer-related items on the AYS reference purely volunteering; however, this item references volunteering to do community service. It is possible that some youth who responded to this item were required to perform community service as a punishment for engaging in negative behaviors (e.g., mandated to perform community service as a result of delinquent or criminal behaviors). If youth who are mandated to perform community service due to engagement in negative behaviors, it is also likely that these youth may be more inclined to engage in marijuana use as well. This measurement issue is a limitation of conducting secondary data analysis since the item was not originally developed to tap into the social norms construct that is currently being examined in this study.

Limitations

It is important to acknowledge several limitations in the current study. Secondary data analysis was conducted for this study. Specific items in the survey tool were identified for use in this study's analyses; however, there are limitations with how extensively one can interpret the findings given that the items were not originally developed to measure the research hypotheses in the current study. Every effort was made to ensure that only survey items that could reasonably be used to respond to the research questions were utilized. The approach employed to handle missing data in the study was to use pairwise deletion in the regression analyses and no data imputation techniques were used. Due to the extremely large sample size, even with the pairwise deletion of missing data, there was still an abundantly large sample that provided adequate power to satisfactorily run the analyses. To prevent over-fitting of the model, a hold-out technique was used. This technique required multiple models to be built and tested several times – using the training, validation, and test datasets. While there were some findings that were consistent across all models tested, there was also some variability in the findings observed across models. The lack of complete consistency of results across each of the datasets may indicate that there was a lack of robustness among the relationships across datasets. This lack of robustness across datasets may indicate that the findings had more to do with the characteristics of each dataset rather than reflect relationships in the overall dataset. To address this limitation building an even more parsimonious model may improve the consistency and robustness of the findings across datasets. Another factor that may be considered a limitation is the absence of survey items and corresponding data regarding quality of the structured activities. According to the PYD approach, outcomes demonstrated by youth participants are greatly impacted by the quality of the structured activity. High quality, structured activities are typically associated with more

positive outcomes among participants. Therefore, additional information regarding dosage, frequency and duration of participation in the structured activities as well as type of activities, interactions, and competencies garnered as part of engaging in the structured activity are all crucial elements to measure. While the null results of sports participation in the current study were not entirely surprising given the mixed results for sports reflected in the literature, the lack of specific data collected related to sports type (e.g., football, golf, tennis, lacrosse, etc.) and quality may help explain the null results. The literature cites mixed findings for sports participation, with some authors noting positive academic benefits of sports engagement and others citing negative findings related to alcohol use among athletes (Barber, Eccles & Stone, 2001). For instance, the finding for sports and alcohol use has been associated with the social networks some athletes maintain which typically have more friends who report drinking regularly (Barber, Eccles & Stone, 2001). In the current study sports was captured as one homogenous group so it was not possible to disentangle the potentially different effects of participating in different types of sports – golf compared to football or tennis compared to lacrosse. Given the peer influence research, it is likely that different types of sports would attract specific types of youth who may be similarly oriented towards academics, alcohol and other drug use (Eccles & Barber, 1999).

Future Directions

The current study identified the effects of peer influence, direct peers and social norms, on youth engagement in prosocial activities (e.g., participating in structured activities) as well as risky behaviors (e.g., use of alcohol and marijuana). While this study examined the main effects of variables such as age, gender, race, and SES it is important for future studies to investigate what factors might moderate or mediate the relationship between peer influence and reported

youth outcomes. Understanding the role that peer influence plays on impacting an adolescent's behaviors, attitudes, and values is an important area of scholarship particularly given the reliance that adolescents place on their close friends and other peers for social support, counsel, and decision-making. Conducting longitudinal studies to follow youth over time and determine how the effects of peer influence change over the course of development would be beneficial and would greatly add to the literature. There should also be a focus on collecting more detail rich data regarding key features of structured activities including quality, dosage, and programming content to better understand how these components contribute to positive developmental outcomes among youth participants. Translational research will continue to play a critical role in gathering this type of data and then putting it into practice to strengthen the quality of structured activities and positive youth development programs.

Implications of Findings

Adolescence is a time of developmental growth, identity exploration, and competency building. The contexts in which these activities take place and the people present in these settings each exert unique influences on the developmental outcomes of youth. The goal of the present study was to assess the benefits of participating in structured afterschool activities by examining the association between youth participation in structured afterschool activities and reported differences in alcohol and marijuana use. In addition, the role of peer influence, direct peer influence and social norms, was studied to assess how the perceptions of close friends (direct peer influence) as well as other peers (social norms) impact youth's use of alcohol and marijuana as well as participation in structured afterschool activities. As the present study demonstrates, understanding the interdependencies of contextual experiences is further deepened by using Bronfenbrenner's Ecological Systems Theory to examine how structured afterschool settings and

peers can each contribute a distinctive influence on youth's decision-making, values, and behaviors. The findings in the study integrate these factors and assess their impact on a specific population of Arizona youth. Overall, the study's results demonstrate that youth who participate in structured afterschool activities such as performing arts and volunteering report using less alcohol and marijuana respectively, compared to youth who do not participate in structured afterschool activities. In addition, direct peer influence and social norms each influence youth behavior in both positive and negative ways.

The understanding and implications of these findings may be further deepened by examining the outcomes viewed through the Ecological System Theory lens. In this framework, close friends serve as a more direct influence on socialization, behavior, and attitudes due to their proximal placement within a youth's microsystem. While social norms in this study still play an important role in influencing behavior among respondents, the effects of social norms may be less pronounced due to their placement in the more distal macrosystem which includes perceptions, beliefs, and values. Participation in structured activities also appeared to serve as a protective factor by influencing reduced use of alcohol and marijuana among youth in the study. Given that adolescents often spend increased amounts of time with their peers understanding the substantial influence that these interactions, direct peers and social norms, impart is essential to understand. Moreover, this knowledge needs to be applied into practice to: (1) address the multiple contexts that youth navigate through; (2) understand and leverage the influence that peers play in impacting youth's decision-making, identify formation, values, and behaviors; and (3) develop customized, high quality structured activity programming that fosters the positive development of youth in a holistic manner. Equipped with a deeper understanding of how youth integrate their experiences in various contexts and with different social networks of peers will

allow practitioners in the field of positive youth development to harness the positive developmental potential of youth and support adolescents as they continue to successfully transition to adulthood.

APPENDIX A: 2012 Arizona Youth Survey

ARIZONA YOUTH SURVEY

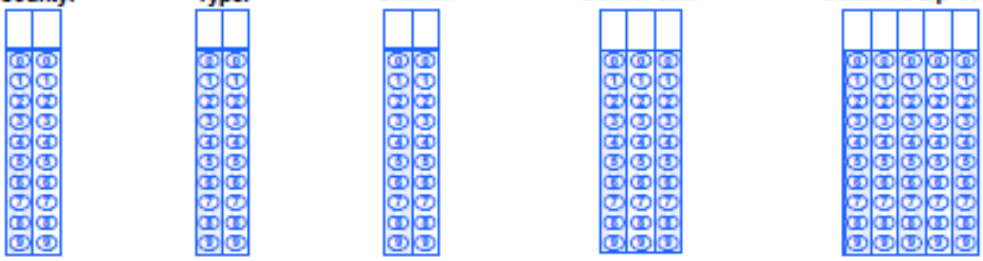
1. Thank you for agreeing to participate in this survey. The purpose of this survey is to learn how students in our schools feel about their community, family, peers, and school. The survey also asks about health behaviors.
2. **The survey is completely voluntary and anonymous. DO NOT put your name on the questionnaire.**
3. This is not a test, so there are no right or wrong answers. We would like you to work quickly so you can finish.
4. All of the questions should be answered by completely filling in one of the answer spaces. If you do not find an answer that fits exactly, use the one that comes closest. If any question does not apply to you, or you are not sure what it means, just leave it blank. You can skip any question that you do not wish to answer.
5. For questions that have the following answers: **NO! no yes YES!**
   Mark (the BIG) **NO!** if you think the statement is **DEFINITELY NOT TRUE** for you.
   Mark (the little) **no** if you think the statement is **MOSTLY NOT TRUE** for you.
   Mark (the little) **yes** if you think the statement is **MOSTLY TRUE** for you.
   Mark (the BIG) **YES!** if you think the statement is **DEFINITELY TRUE** for you.

   Example: Chocolate is the best ice cream flavor.
   ○ NO! ○ no ● yes ○ YES!

   In the example above, the student marked "yes" because he or she thinks the statement is mostly true.
6. **Please mark only one answer for each question by completely filling in the circle with a #2 pencil.**

Please fill in the following information with the help of your teacher/survey assistant.

County: Type: District: District Site: Student's Zip Code:



1. **Are you:** ○ MALE ○ FEMALE

2. **How old are you?**
   ○ 10 or younger ○ 12 ○ 14 ○ 16 ○ 18
   ○ 11 ○ 13 ○ 15 ○ 17 ○ 19 or older

3. **What grade are you in?**
   ○ 6th ○ 7th ○ 8th ○ 9th ○ 10th ○ 11th ○ 12th

4. **Do you get a free or reduced cost lunch at school?**
   ○ Free lunch ○ Reduced cost lunch ○ Neither

5. **What is your race? (Mark all that apply.)**
   ○ American Indian or Alaska Native
   ○ Asian
   ○ Black or African American
   ○ Hawaiian or Other Pacific Islander
   ○ White

6. **Are you Hispanic or Latino?** ○ Yes ○ No

7. **What is the language you use most often at home?**
   ○ English ○ Spanish ○ Another language

8. **Where were you and your parents born?**
   ○ I was born outside of the United States
   ○ I was born in the United States, but one or both of my parents were not
   ○ My parents and I were all born in the United States

9. **Think of where you live most of the time. Which of the following people live there with you? (Mark all that apply.)**
   ○ Mother
   ○ Stepmother
   ○ Father
   ○ Stepfather
   ○ Foster Parent(s)
   ○ Grandparent(s)
   ○ Aunt
   ○ Uncle
   ○ Other Adult(s)
   ○ Brother(s)
   ○ Stepbrother(s)
   ○ Sister(s)
   ○ Stepsister(s)
   ○ Other Children

10. **What is the highest level of education completed by your mother?**
    ○ 8th grade or less
    ○ Some high school
    ○ Completed high school or GED
    ○ Some college
    ○ Completed community college or technical school
    ○ Completed 4 year college (Bachelor's Degree)
    ○ Graduate or Professional (e.g., Master's, Ph.D., M.D., Ed.D., J.D)
    ○ Don't know

11. What, if any, is the current military status of your parent(s)? (Mark all that apply)

- ○ Neither of my parents have ever been in the military
- ○ Active Duty
  - ○ In country
  - ○ Overseas – not in a combat zone
  - ○ Overseas – in a combat zone
- ○ Reserve
  - ○ Not Deployed
  - ○ In country
  - ○ Overseas – not in a combat zone
  - ○ Overseas – in a combat zone
- ○ Former military
- ○ Died while serving in the military

The next section asks about your experiences at school.

	NO!	no	yes	YES!
12. In my school, students have lots of chances to help decide things like class activities and rules.	○	○	○	○
13. Teachers ask me to work on special classroom projects.	○	○	○	○
14. My teachers notice when I am doing a good job and let me know about it.	○	○	○	○
15. There are lots of chances for students in my school to get involved in sports, clubs, and other school activities outside of class.	○	○	○	○
16. There are lots of chances for students in my school to talk with a teacher one-on-one.	○	○	○	○
17. I feel safe at my school.	○	○	○	○
18. The school lets my parents know when I have done something well.	○	○	○	○
19. My teachers praise me when I work hard in school.	○	○	○	○
20. Are your school grades better than the grades of most students in your class?	○	○	○	○
21. I have lots of chances to be part of class discussions or activities.	○	○	○	○

22. Which school-sponsored activities are you involved in during after-school hours? (Mark all that apply)

- ○ Sports
- ○ Performing arts (such as band, dance, drama, chorus)
- ○ Academic clubs (such as language, math, and science clubs)
- ○ Volunteering, service, or mentoring
- ○ Student government or student council
- ○ Newspaper or yearbook
- ○ Homework help or tutoring to help your grades
- ○ Other school group or club
- ○ I do not participate in an organized activity at school

23. Which after-school activities, that are not school-sponsored, are you involved in? (Mark all that apply)

- ○ Sports
- ○ Performing arts (such as band, dance, drama, chorus)
- ○ Volunteering or service
- ○ Scouts/Campfire
- ○ Boys & Girls Clubs/Junior Achievement/YMCA
- ○ 4-H/FFA (Future Farmers of America)
- ○ Big Brothers Big Sisters or another mentoring program
- ○ Other after school activity
- ○ I do not participate in an organized activity after school

24. Now thinking back over the past year in school, how often did you:

	Never	Seldom	Sometimes	Often	Almost always
a. enjoy being in school?	○	○	○	○	○
b. hate being in school?	○	○	○	○	○
c. try to do your best work?	○	○	○	○	○
25. How often do you feel that the school work you are assigned is meaningful and important?	○	○	○	○	○

26. Putting them all together, what were your grades like last year?

- ○ Mostly F's
- ○ Mostly D's
- ○ Mostly C's
- ○ Mostly B's
- ○ Mostly A's

27. How important do you think the things you are learning in school are going to be for you later in life?

- ○ Very important
- ○ Quite important
- ○ Fairly important
- ○ Slightly important
- ○ Not at all important

28. How interesting are most of your courses to you?

- ○ Very interesting
- ○ Quite interesting
- ○ Fairly interesting
- ○ Slightly interesting
- ○ Not at all interesting

29. During the LAST FOUR WEEKS how many whole days of school have you missed because you skipped or "cut"?

- ○ None
- ○ 1 day
- ○ 2 days
- ○ 3 days
- ○ 4-5 days
- ○ 6-10 days
- ○ 11 or more days

30. During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club ON SCHOOL PROPERTY?

- ○ 0 times
- ○ 1 time
- ○ 2-3 times
- ○ 4-5 times
- ○ 6-7 times
- ○ 8-9 times
- ○ 10-11 times
- ○ 12 or more times

31. During the past 12 months, how many times were you in a physical fight ON SCHOOL PROPERTY?

- ○ 0 times
- ○ 1 time
- ○ 2-3 times
- ○ 4-5 times
- ○ 6-7 times
- ○ 8-9 times
- ○ 10-11 times
- ○ 12 or more times

32. During the past 12 months, how often have you been picked on or bullied by a student ON SCHOOL PROPERTY?

- ○ 0 times
- ○ 1 time
- ○ 2-3 times
- ○ 4-5 times
- ○ 6-7 times
- ○ 8-9 times
- ○ 10-11 times
- ○ 12 or more times

33. During the past 12 months, how many times have you been harassed, mistreated, or made fun of by another person while on-line or through a cell phone or other electronic device?

- ○ 0 times
- ○ 1 time
- ○ 2-3 times
- ○ 4-5 times
- ○ 6-7 times
- ○ 8-9 times
- ○ 10-11 times
- ○ 12 or more times

34. During the past 30 days, on how many days did you NOT go to school because you felt you would be unsafe at school or on the way to or from school?

- ○ 0 days
- ○ 1 day
- ○ 2 or 3 days
- ○ 4 or 5 days
- ○ 6 or more days

35. During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club ON SCHOOL PROPERTY?

- ○ 0 days
- ○ 1 day
- ○ 2 or 3 days
- ○ 4 or 5 days
- ○ 6 or more days

36. What are the chances you would be seen as cool if you:

	No or very little chance	Little chance	Some chance	Pretty good chance	Very good chance
a. smoked cigarettes?	○	○	○	○	○
b. worked hard at school?	○	○	○	○	○
c. began drinking alcoholic beverages regularly, that is, at least once or twice a month?	○	○	○	○	○
d. defended someone who was being verbally abused at school?	○	○	○	○	○
e. smoked marijuana?	○	○	○	○	○
f. carried a handgun?	○	○	○	○	○
g. regularly volunteered to do community service?	○	○	○	○	○

37. How old were you when you first:

	Never	8 or younger	9	10	11	12	13	14	15	16	17	18	19 or older
a. smoked marijuana?	○	○	○	○	○	○	○	○	○	○	○	○	○
b. smoked a cigarette, even just a puff?	○	○	○	○	○	○	○	○	○	○	○	○	○
c. had more than a sip or two of beer, wine or hard liquor (for example, vodka, whiskey, or gin)?	○	○	○	○	○	○	○	○	○	○	○	○	○
d. began drinking alcoholic beverages regularly, that is, at least once or twice a month?	○	○	○	○	○	○	○	○	○	○	○	○	○
e. used methamphetamines (meth, crystal)?	○	○	○	○	○	○	○	○	○	○	○	○	○
f. got suspended from school?	○	○	○	○	○	○	○	○	○	○	○	○	○
g. got arrested?	○	○	○	○	○	○	○	○	○	○	○	○	○
h. carried a handgun?	○	○	○	○	○	○	○	○	○	○	○	○	○
i. attacked someone with the idea of seriously hurting them?	○	○	○	○	○	○	○	○	○	○	○	○	○
j. belonged to a gang?	○	○	○	○	○	○	○	○	○	○	○	○	○
k. gambled or bet on anything (cards, lottery,sports, bingo, dice, raffles, casino, internet or video games, etc.)?	○	○	○	○	○	○	○	○	○	○	○	○	○
l. used prescription drugs without a doctor telling you to take them?	○	○	○	○	○	○	○	○	○	○	○	○	○

38. How wrong do you think it is for someone your age to:

	Very wrong	Wrong	A little bit wrong	Not wrong at all
a. take a handgun to school?	○	○	○	○
b. steal anything worth more than $5?	○	○	○	○
c. pick a fight with someone?	○	○	○	○
d. attack someone with the idea of seriously hurting them?	○	○	○	○
e. stay away from school all day when their parents think they are at school?	○	○	○	○
f. drink beer, wine or hard liquor (for example, vodka, whiskey, or gin) regularly?	○	○	○	○
g. smoke cigarettes?	○	○	○	○
h. smoke marijuana?	○	○	○	○
i. use LSD, cocaine, amphetamines or another illegal drug?	○	○	○	○
j. use prescription drugs without a doctor telling them to take them?	○	○	○	○

39. How many times in the past year (12 months) have you:

	Never	1 to 2 times	3 to 5 times	6 to 9 times	10 to 19 times	20 to 29 times	30 to 39 times	40+ times
a. been suspended from school?	○	○	○	○	○	○	○	○
b. carried a handgun?	○	○	○	○	○	○	○	○
c. sold illegal drugs?	○	○	○	○	○	○	○	○
d. stolen or tried to steal a motor vehicle such as a car or motorcycle?	○	○	○	○	○	○	○	○
e. participated in clubs, organizations or activities at school?	○	○	○	○	○	○	○	○
f. been arrested?	○	○	○	○	○	○	○	○
g. done extra work on your own for school?	○	○	○	○	○	○	○	○
h. attacked someone with the idea of seriously hurting them?	○	○	○	○	○	○	○	○
i. been drunk or high at school?	○	○	○	○	○	○	○	○
j. volunteered to do community service?	○	○	○	○	○	○	○	○
k. taken a handgun to school?	○	○	○	○	○	○	○	○
l. been hit, slapped, pushed, shoved, kicked or any other way physically assaulted by your boyfriend or girlfriend?	○	○	○	○	○	○	○	○
m. seen someone punched with a fist, kicked, choked, or beaten up?	○	○	○	○	○	○	○	○
n. seen someone attacked with a weapon, other than a gun, such as a knife, bat, bottle, or chain?	○	○	○	○	○	○	○	○
o. seen someone shot or shot at?	○	○	○	○	○	○	○	○

40. How often have you done the following for money, possessions, or anything of value:

	Never	Before, but not in the past 12 months	At least once in the past 12 months	Once or twice a month	Once or twice a week	Almost every day
a. Played a slot machine, poker machine or other gambling machine?	○	○	○	○	○	○
b. Played the lottery or scratch off tickets?	○	○	○	○	○	○
c. Bet on sports?	○	○	○	○	○	○
d. Played cards?	○	○	○	○	○	○
e. Bought a raffle ticket?	○	○	○	○	○	○
f. Played bingo?	○	○	○	○	○	○
g. Gambled on the internet?	○	○	○	○	○	○
h. Played a dice game?	○	○	○	○	○	○
i. Bet on a game of personal skill such as pool or a video game?	○	○	○	○	○	○
j. Bet on a horse or other animal race?	○	○	○	○	○	○

41. Think of your four best friends (the friends you feel closest to). In the past year (12 months), how many of your best friends have:

	Number of friends				
	0	1	2	3	4
a. participated in clubs, organizations or activities at school?	○	○	○	○	○
b. smoked cigarettes?	○	○	○	○	○
c. tried beer, wine or hard liquor (for example, vodka, whiskey, or gin) when their parents didn't know about it?	○	○	○	○	○
d. made a commitment to stay drug-free?	○	○	○	○	○
e. used marijuana?	○	○	○	○	○
f. tried to do well in school?	○	○	○	○	○
g. used LSD, cocaine, amphetamines, or other illegal drugs?	○	○	○	○	○
h. been suspended from school?	○	○	○	○	○
i. liked school?	○	○	○	○	○
j. carried a handgun?	○	○	○	○	○
k. sold illegal drugs?	○	○	○	○	○
l. stolen or tried to steal a motor vehicle such as a car or motorcycle?	○	○	○	○	○
m. been arrested?	○	○	○	○	○
n. dropped out of school?	○	○	○	○	○
o. been members of a gang?	○	○	○	○	○

42. I ignore rules that get in my way.

○ Very False ○ Somewhat True
○ Somewhat False ○ Very True

43. I do the opposite of what people tell me, just to get them mad.

○ Very False ○ Somewhat True
○ Somewhat False ○ Very True

44. I like to see how much I can get away with.

○ Very False ○ Somewhat True
○ Somewhat False ○ Very True

	NO!	no	yes	YES!
45. I think sometimes it's okay to cheat at school.	○	○	○	○
46. It is all right to beat up people if they start the fight.	○	○	○	○
47. I think it is okay to take something without asking if you can get away with it.	○	○	○	○

48. During the past 30 days, how many times did you RIDE in a car or other vehicle driven by someone who had been drinking alcohol?

○ 0 times ○ 2 or 3 times ○ 6 or more times
○ 1 time ○ 4 or 5 times

49. During the past 30 days, how many times did you DRIVE a car or other vehicle when you had been drinking alcohol?

○ 0 times ○ 2 or 3 times ○ 6 or more times
○ 1 time ○ 4 or 5 times

50. Think back over the LAST TWO WEEKS. How many times have you had five or more alcoholic drinks in a row?

○ None ○ Twice ○ 6-9 times
○ Once ○ 3-5 times ○ 10 or more times

51. Have you ever smoked cigarettes?

○ Never ○ Regularly in the past
○ Once or twice ○ Regularly now
○ Once in a while but not regularly

52. During the past 30 days, on how many days did you smoke cigarettes?

○ 0 days ○ 6 to 9 days ○ All 30 days
○ 1 or 2 days ○ 10 to 19 days
○ 3 to 5 days ○ 20 to 29 days

53. Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, or chewing tobacco)?

○ Never ○ Regularly in the past
○ Once or twice ○ Regularly now
○ Once in a while but not regularly

54. How frequently have you used smokeless tobacco during the past 30 days?

○ 0 days ○ 6 to 9 days ○ All 30 days
○ 1 or 2 days ○ 10 to 19 days
○ 3 to 5 days ○ 20 to 29 days

55. In the last 30 days, about how many times were you offered:

	Never	Once	2-3 times	4-6 times	7-10 times	More than 10 times
a. alcohol?	○	○	○	○	○	○
b. cigarettes?	○	○	○	○	○	○
c. marijuana?	○	○	○	○	○	○
d. other drugs?	○	○	○	○	○	○

56. In the last 30 days, how often have you *avoided* people or places because you might be offered alcohol, cigarettes, marijuana, or other drugs?

○ ○ ○ ○ ○ ○

On how many occasions (if any) have you: OCCASIONS :	0	1-2	3-5	6-9	10-19	20-39	40+	
57. had alcoholic beverages (beer, wine or hard liquor) to drink in your **lifetime** – more than just a few sips?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
58. had beer, wine or hard liquor to drink during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
59. used marijuana in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
60. used marijuana during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
61. used LSD or other hallucinogens in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
62. used LSD or other hallucinogens during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
63. used cocaine or crack in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
64. used cocaine or crack during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
65. sniffed glue, breathed the contents of an aerosol spray can, or inhaled other gases or sprays, in order to get high in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
66. sniffed glue, breathed the contents of an aerosol spray can, or inhaled other gases or sprays, in order to get high during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
67. used phenoxydine (pox, px, breeze) in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
68. used phenoxydine (pox, px, breeze) during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
69. used methamphetamines (meth, crystal meth) in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
70. used methamphetamines (meth, crystal meth) in the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
71. used heroin in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
72. used heroin during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
73. used Ecstasy ('X', 'E', or MDMA) in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
74. used Ecstasy ('X', 'E', or MDMA) in the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
75. used other "club" drugs (such as Special K, Roofies, GHB, or Rohypnol) in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
76. used other "club" drugs (such as Special K, Roofies, GHB, or Rohypnol) in the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
77. used steroids or anabolic steroids (such as Anadrol, Oxandrin, Durabolin, Equipoise or Depotesterone) in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
78. used steroids or anabolic steroids (such as Anadrol, Oxandrin, Durabolin, Equipoise or Depotesterone) in the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
79. used prescription pain relievers (such as Vicodin, Oxycontin, Percocet, or Codeine) without a doctor telling you to take them in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
80. used prescription pain relievers (such as Vicodin, Oxycontin, Percocet, or Codeine) without a doctor telling you to take them during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
81. used prescription stimulants (such as Ritalin, Adderal, or Dexedrine) without a doctor telling you to take them in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
82. used prescription stimulants (such as Ritalin, Adderal, or Dexedrine) without a doctor telling you to take them during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
83. used prescription sedatives (tranquilizers, such as Valium or Xanax, barbiturates, or sleeping pills) without a doctor telling you to take them in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
84. used prescription sedatives (tranquilizers, such as Valium or Xanax, barbiturates, or sleeping pills) without a doctor telling you to take them during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
85. used over the counter drugs (such as cough syrup, cold medicine, or diet pills) for the purposes of getting high in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
86. used over the counter drugs (such as cough syrup, cold medicine, or diet pills) for the purposes of getting high during the **past 30 days**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[
87. On how many occasions (if any) have you used synthetic drugs (such as Bath Salts like Ivory Wave or White Lighting or herbal incense products like K2, Spice, or Gold) in your **lifetime**?	⬭	⬭	⬭	⬭	⬭	⬭	⬭	[

88. On how many occasions (if any) have you used synthetic drugs (such as Bath Salts like Ivory Wave or White Lighting or herbal incense products like K2, Spice, or Gold) during the **past 30 days**?

- ○ 0 occasions
- ○ 1-2 occasions
- ○ 3-5 occasions
- ○ 6-9 occasions
- ○ 10-19 occasions
- ○ 20-39 occasions
- ○ 40 or more occasions

89. If during the past 30 days you used marijuana, how did you get it? (Mark all that apply.)

- ○ I did not use marijuana during the past 30 days
- ○ I got it from someone with a Medical Marijuana Card
- ○ Friends
- ○ Family/Relatives
- ○ Parties
- ○ Home
- ○ School
- ○ Other

90. In the last 30 days, how often did you respond in the following ways when alcohol, cigarettes, marijuana or other drugs were offered to you? (Fill in an answer for each way of responding)

	I never got offers	Four or more times	Three times	Twice	Once	Never
a. say "No" without giving a reason why.	○	○	○	○	○	○
b. give an explanation or excuse to turn down the offer.	○	○	○	○	○	○
c. decide to leave the situation without accepting the offer.	○	○	○	○	○	○
d. use some other way to not accept the alcohol or drugs.	○	○	○	○	○	○

91. How much do you think people risk harming themselves (physically or in other ways) if they:

	Great risk	Moderate risk	Slight risk	No risk
a. smoke one or more packs of cigarettes per day?	○	○	○	○
b. try marijuana once or twice?	○	○	○	○
c. smoke marijuana regularly?	○	○	○	○
d. take one or two drinks of an alcoholic beverage (beer, wine, liquor) nearly every day?	○	○	○	○
e. have five or more drinks of an alcoholic beverage in a row once or twice a week?	○	○	○	○
f. use prescription drugs without a doctor telling them to take them?	○	○	○	○

92. If during the past 30 days you drank alcohol, how did you get it? (Mark all that apply.)

- ○ I did not drink alcohol in the past 30 days
- ○ I bought it in a store such as a liquor store, convenience store, supermarket, discount store, or gas station
- ○ I bought it at a restaurant, bar, or club
- ○ I bought it at a public event such as a concert or sporting event
- ○ I gave someone else money to buy it for me
- ○ My parent or guardian gave it to me
- ○ Another family member who is 21 or older gave it to me
- ○ Someone not related to me who is 21 or older gave it to me
- ○ Someone under the age of 21 gave it to me
- ○ I got it at a party
- ○ I took it from home
- ○ I took it from a store or someone else's home
- ○ I got it some other way

93. If you have ever used prescription drugs in order to get high, not for a medical reason, how did you get them? (Mark all that apply.)

- ○ I've never used prescription drugs to get high
- ○ Friends
- ○ Family/Relatives
- ○ Parties
- ○ Home (e.g., Medicine Cabinet)
- ○ Doctor/Pharmacy
- ○ School
- ○ Other
- ○ Over the Internet
- ○ Outside the United States (e.g., Mexico, Canada)

94. If you used alcohol, tobacco, or other drugs in the past 30 days, please tell us about some of your reasons for using (Mark all that apply):

- ○ To fit in with my friends
- ○ To try something new or exciting
- ○ To get back at my parents or to get my parent's attention
- ○ To help me lose weight
- ○ To keep from feeling sad or down
- ○ I was bored and needed something to do
- ○ To get a high or to have a good feeling
- ○ To help me feel normal
- ○ To help me stay focused or think better
- ○ To have fun
- ○ To be like an actor or musician/band that I admire
- ○ To feel more grown up or prove that I am grown up
- ○ I needed it, craved it, or am addicted
- ○ To deal with the stress in my life (Please mark all areas of stress that were related to your substance use below)
  - ○ Parents/family
  - ○ Peers/Friends (e.g., fighting with friends, getting bullied, dealing with rumors, etc...)
  - ○ School
  - ○ Community
- ○ Other (Please tell us other reasons you had for using substances in the space provided) _____

95. If you did not use alcohol, tobacco, or other drugs in the past 30 days, please tell us about some of the reasons for not using (Mark all that apply):

- ○ I'm not interested in using drugs
- ○ It can harm my body
- ○ My parents would be disappointed in me
- ○ My parents would take away my privileges if they found out
- ○ My teachers/mentors/other adults in my life would be disappointed in me
- ○ I might get kicked out of school or extracurricular activities (e.g., sports, cheerleading, drama club/plays)
- ○ My friends would stop talking to me or hanging out with me
- ○ I would get a bad reputation with peers
- ○ I wanted to, but I couldn't get it or wasn't offered it
- ○ It's illegal – I could get arrested
- ○ I've tried them before and I don't like them
- ○ It's morally wrong
- ○ It's against my religious or spiritual beliefs

These questions ask about the neighborhood and community where you live

96. About how many adults (over 21) have you known personally who in the past year have:

	0 adults	1	2	3	4	5 or more adults
a. used marijuana, crack, cocaine, or other drugs?	○	○	○	○	○	○
b. sold or dealt drugs?	○	○	○	○	○	○
c. done other things that could get them in trouble with the police, like stealing, selling stolen goods, mugging or assaulting others, etc?	○	○	○	○	○	○
d. gotten drunk or high?	○	○	○	○	○	○

	Very hard	Sort of hard	Sort of easy	Very easy
97. If you wanted to get some cigarettes, how easy would it be for you to get some?	○	○	○	○
98. If you wanted to get some beer, wine or hard liquor (for example, vodka, whiskey, or gin), how easy would it be for you to get some?	○	○	○	○
99. If you wanted to get some marijuana, how easy would it be for you to get some?	○	○	○	○
100. If you wanted to get a drug like cocaine, LSD, or amphetamines, how easy would it be for you to get some?	○	○	○	○
101. If you wanted to get a handgun, how easy would it be for you to get one?	○	○	○	○

	NO!	no	yes	YES!
102. If a kid smoked marijuana in your neighborhood would he or she be caught by the police?	○	○	○	○
103. If a kid drank some beer, wine or hard liquor (for example, vodka, whiskey, or gin) in your neighborhood would he or she be caught by the police?	○	○	○	○
104. If a kid carried a handgun in your neighborhood would he or she be caught by the police?	○	○	○	○

105. Have you ever belonged to a gang?

○ No ○ Yes, belong now
○ No, but would like to ○ Yes, but would like to get out
○ Yes, in the past

106. If you have ever belonged to a gang, what was the one major reason you joined?

○ Protection/safety ○ Make money
○ Friendship ○ Other
○ Parent(s) are in a gang ○ I have never belonged to a gang
○ Sibling(s) are in a gang

107. If you have ever belonged to a gang, did the gang have a name?

○ I have never belonged to a gang ○ No ○ Yes

108. How wrong would most adults (over 21) in your neighborhood think it is for kids your age:

	Very wrong	Wrong	A little bit wrong	Not wrong at all
a. to use marijuana?	○	○	○	○
b. to drink alcohol?	○	○	○	○
c. to smoke cigarettes?	○	○	○	○

109. During the past 12 months, do you recall hearing, reading, or watching an advertisement about the prevention of substance use?

○ No ○ Yes

	NO!	no	yes	YES!
110. If I had to move, I would miss the neighborhood I now live in.	○	○	○	○
111. My neighbors notice when I am doing a good job and let me know about it.	○	○	○	○
112. I like my neighborhood.	○	○	○	○
113. There are lots of adults in my neighborhood I could talk to about something important.	○	○	○	○
114. I'd like to get out of my neighborhood.	○	○	○	○
115. There are people in my neighborhood who are proud of me when I do something well.	○	○	○	○
116. There are people in my neighborhood who encourage me to do my best.	○	○	○	○
117. I feel safe in my neighborhood.	○	○	○	○

118. During a typical week, how many days do all or most of your family eat at least one meal together?

Number of days: ○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7

119. During the past 12 months, have you talked with at least one of your parents about the dangers of tobacco, alcohol, or drug use? By parents, we mean your biological parents, adoptive parents, stepparents, or adult guardians – whether or not they live with you. (Mark all that apply)

○ No, I did not talk with my parents about the dangers of tobacco, alcohol, or drug use.
○ Yes, I talked with my parents about the dangers of tobacco use.
○ Yes, I talked with my parents about the dangers of alcohol use.
○ Yes, I talked with my parents about the dangers of drug use.

120. Which of the following people do you feel comfortable going to for help when things go wrong or when you need someone to talk to about your problems? (Mark all that apply)

○ Parents/Step-parents
○ Grandparents
○ Siblings
○ Other relatives
○ Friends
○ Teachers
○ Coaches/Instructors
○ Mentors
○ Tutors
○ Counselors
○ Other adults
○ I have no one I can talk to or go to for help

121. Have any of your brothers or sisters ever:

	No	Yes	I don't have any brothers or sisters
a. drunk beer, wine or hard liquor (for example, vodka, whiskey or gin)?	○	○	○
b. smoked marijuana?	○	○	○
c. smoked cigarettes?	○	○	○
d. taken a handgun to school?	○	○	○
e. been suspended or expelled from school?	○	○	○

122. How wrong do your parents feel it would be for YOU to:

	Not wrong at all	A little bit wrong	Wrong	Very wrong
a. drink beer, wine or hard liquor (for example, vodka, whiskey or gin) regularly?	○	○	○	○
b. smoke cigarettes?	○	○	○	○
c. smoke marijuana?	○	○	○	○
d. steal something worth more than $5?	○	○	○	○
e. draw graffiti, write things, or draw pictures on buildings or other property (without the owner's permission)?	○	○	○	○
f. pick a fight with someone?	○	○	○	○
g. use prescription drugs without a doctor telling you to take them?	○	○	○	○

	NO!	no	yes	YES!
123. The rules in my family are clear.	○	○	○	○
124. People in my family often insult or yell at each other.	○	○	○	○
125. When I am not at home, one of my parents knows where I am and who I am with.	○	○	○	○
126. We argue about the same things in my family over and over.	○	○	○	○
127. If you drank some beer, wine or liquor (for example, vodka, whiskey, or gin) without your parents' permission, would you be caught by your parents?	○	○	○	○
128. My family has clear rules about alcohol and drug use.	○	○	○	○
129. If you carried a handgun without your parents' permission, would you be caught by your parents?	○	○	○	○
130. If you skipped school would you be caught by your parents?	○	○	○	○
131. My parents ask me what I think before most family decisions affecting me are made.	○	○	○	○
132. Do you feel very close to your mother?	○	○	○	○
133. Do you feel very close to your father?	○	○	○	○
134. Do you share your thoughts and feelings with your mother?	○	○	○	○
135. Do you share your thoughts and feelings with your father?	○	○	○	○
136. Do you enjoy spending time with your mother?	○	○	○	○

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	NO!	no	yes	YES!
137. Do you enjoy spending time with your father?	○	○	○	○
138. If I had a personal problem, I could ask my mom or dad for help.	○	○	○	○
139. My parents give me lots of chances to do fun things with them.	○	○	○	○
140. My parents ask if I've gotten my homework done.	○	○	○	○
141. People in my family have serious arguments.	○	○	○	○
142. Would your parents know if you did not come home on time?	○	○	○	○
143. It is important to be honest with your parents, even if they become upset or you get	○	○	○	○

144. Has anyone in your family ever had severe alcohol or drug problems?
○ No ○ Yes

145. My parents notice when I am doing a good job and let me know about it.
○ Never or Almost Never ○ Often
○ Sometimes ○ All the Time

146. How often do your parents tell you they're proud of you for something you've done?
○ Never or Almost Never ○ Often
○ Sometimes ○ All the Time

147. In a normal school week, how many days are you home after school for at least one hour without an adult there?
○ Never or Almost Never ○ 3 days
○ 1 day ○ 4 day
○ 2 days ○ 5 days

148. Have any of your relatives previously been in prison or jail? (Mark all that apply)
○ No one has been in prison or jail
○ Mother
○ Stepmother ○ Other Adult(s)
○ Father ○ Brother(s)
○ Stepfather ○ Stepbrother(s)
○ Grandparent(s) ○ Sister(s)
○ Aunt ○ Stepsister(s)
○ Uncle ○ Other Children

149. Are any of your relatives currently in prison or jail? (Mark all that apply)
○ No one has been in prison or jail
○ Mother
○ Stepmother ○ Other Adult(s)
○ Father ○ Brother(s)
○ Stepfather ○ Stepbrother(s)
○ Grandparent(s) ○ Sister(s)
○ Aunt ○ Stepsister(s)
○ Uncle ○ Other Children

Thank you for completing the survey

APPENDIX B: Correlations

Correlations

Correlations

		Gender	Age_MeanCentered	SocioEconomic Status	Race_White_Clean	Race_AmericanIndian_Clean	Race_Black_Clean	Race_Asian_Clean	Race_PacificIslander_Clean	Race_Multiple	Ethnicity	Mother's highest level of education
Gender	Pearson Correlation	1	.038**	-.005	-.008*	.009*	.017**	.002	.015**	.001	-.008*	-.019**
	Sig. (1-tailed)		.000	.149	.049	.027	.000	.370	.001	.440	.044	.000
	N	46532	46532	45395	46532	46532	46532	46532	46532	46532	43831	34057
Age_MeanCentered	Pearson Correlation	.038**	1	-.128**	.032**	-.011**	-.013**	-.003	.001	-.006	-.074**	.005
	Sig. (1-tailed)	.000		.000	.000	.009	.002	.231	.412	.083	.000	.168
	N	46532	47698	46512	47698	47698	47698	47698	47698	47698	44875	34859
SocioEconomic Status	Pearson Correlation	-.005	-.128**	1	-.300**	.144**	.065**	-.047**	.014**	-.023**	.359**	.317**
	Sig. (1-tailed)	.149	.000		.000	.000	.000	.000	.002	.000	.000	.000
	N	45395	46512	46512	46512	46512	46512	46512	46512	46512	44047	34183
Race_White_Clean	Pearson Correlation	-.008*	.032**	-.300**	1	-.254**	-.236**	-.184**	-.102**	-.279**	-.414**	-.187**

	Sig. (1-tailed)	.049	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	46532	47698	46512	47698	47698	47698	47698	47698	47698	44875	34859
Race_AmericanIndian_Clean	Pearson Correlation	.009*	-.011**	.144**	-.254**	1	-.053**	-.041**	-.023**	-.063**	-.009*	.055**
	Sig. (1-tailed)	.027	.009	.000	.000		.000	.000	.000	.000	.029	.000
	N	46532	47698	46512	47698	47698	47698	47698	47698	47698	44875	34859
Race_Black_Clean	Pearson Correlation	.017**	-.013**	.065**	-.236**	-.053**	1	-.038**	-.021**	-.058**	-.064**	-.026**
	Sig. (1-tailed)	.000	.002	.000	.000	.000		.000	.000	.000	.000	.000
	N	46532	47698	46512	47698	47698	47698	47698	47698	47698	44875	34859
Race_Asian_Clean	Pearson Correlation	.002	-.003	-.047**	-.184**	-.041**	-.038**	1	-.017**	-.045**	-.097**	-.034**
	Sig. (1-tailed)	.370	.231	.000	.000	.000	.000		.000	.000	.000	.000
	N	46532	47698	46512	47698	47698	47698	47698	47698	47698	44875	34859
Race_PacificIslander_Clean	Pearson Correlation	.015**	.001	.014**	-.102**	-.023**	-.021**	-.017**	1	-.025**	.006	-.004
	Sig. (1-tailed)	.001	.412	.002	.000	.000	.000	.000		.000	.118	.202
	N	46532	47698	46512	47698	47698	47698	47698	47698	47698	44875	34859

Race_Multiple	Pearson Correlation	.001	-.006	-.023**	-.279**	-.063**	-.058**	-.045**	-.025**	1	-.054**	-.039**
	Sig. (1-tailed)	.440	.083	.000	.000	.000	.000	.000	.000		.000	.000
	N	46532	47698	46512	47698	47698	47698	47698	47698	47698	44875	34859
Ethnicity	Pearson Correlation	-.008*	-.074**	.359**	-.414**	-.009*	-.064**	-.097**	.006	-.054**	1	.299**
	Sig. (1-tailed)	.044	.000	.000	.000	.029	.000	.000	.118	.000		.000
	N	43831	44875	44047	44875	44875	44875	44875	44875	44875	44875	33039
Mother's highest level of education	Pearson Correlation	-.019**	.005	.317**	-.187**	.055**	-.026**	-.034**	-.004	-.039**	.299**	1
	Sig. (1-tailed)	.000	.168	.000	.000	.000	.000	.000	.202	.000	.000	
	N	34057	34859	34183	34859	34859	34859	34859	34859	34859	33039	34859
SA_Sports	Pearson Correlation	.102**	-.040**	-.109**	.042**	-.020**	.042**	-.028**	.016**	.014**	-.051**	-.134**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000
	N	45768	46865	45753	46865	46865	46865	46865	46865	46865	44179	34409
SA_PerformingArts	Pearson Correlation	-.192**	-.033**	-.108**	.067**	-.040**	-.017**	.040**	-.003	.042**	-.105**	-.115**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.281	.000	.000	.000

	N	45768	46865	45753	46865	46865	46865	46865	46865	46865	44179	34409
SA_Volunteering	Pearson Correlation	-.155**	.046**	-.149**	.066**	-.043**	-.029**	.057**	.001	.020**	-.099**	-.148**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.445	.000	.000	.000
	N	45768	46865	45753	46865	46865	46865	46865	46865	46865	44179	34409
SA_Clubs	Pearson Correlation	.028**	-.020**	-.037**	.027**	.000	-.003	.031**	.011**	.017**	-.057**	-.075**
	Sig. (1-tailed)	.000	.000	.000	.000	.495	.254	.000	.008	.000	.000	.000
	N	45768	46865	45753	46865	46865	46865	46865	46865	46865	44179	34409
SA_Other	Pearson Correlation	-.082**	.052**	-.077**	.045**	-.020**	-.019**	.036**	.000	.017**	-.075**	-.078**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.497	.000	.000	.000
	N	45768	46865	45753	46865	46865	46865	46865	46865	46865	44179	34409
SA_None	Pearson Correlation	.014**	-.007	.167**	-.091**	.048**	-.018**	-.013**	-.010*	-.023**	.116**	.188**
	Sig. (1-tailed)	.002	.066	.000	.000	.000	.000	.003	.017	.000	.000	.000
	N	45768	46865	45753	46865	46865	46865	46865	46865	46865	44179	34409
SS_Activities_StudentGov	Pearson Correlation	-.072**	-.055**	-.021**	.012**	-.014**	.001	.010*	.000	.011**	.000	-.032**

	Sig. (1-tailed)	.000	.000	.000	.006	.002	.454	.015	.478	.008	.473	.000
	N	45482	46567	45466	46567	46567	46567	46567	46567	46567	43911	34215
SS_Activities_Newspaper	Pearson Correlation	-.097**	-.054**	-.013**	.010*	-.002	-.002	.003	.000	.009*	-.008*	-.024**
	Sig. (1-tailed)	.000	.000	.002	.014	.307	.305	.234	.491	.024	.048	.000
	N	45482	46567	45466	46567	46567	46567	46567	46567	46567	43911	34215
SS_Activities_Tutoring	Pearson Correlation	-.058**	.000	.053**	-.043**	.047**	.007	.005	-.002	.013**	.040**	.003
	Sig. (1-tailed)	.000	.464	.000	.000	.000	.060	.156	.360	.002	.000	.315
	N	45482	46567	45466	46567	46567	46567	46567	46567	46567	43911	34215
Social_Norm_Influence_Alcohol	Pearson Correlation	-.072**	.184**	-.058**	.026**	-.037**	-.002	-.046**	.005	.031**	.002	.008
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.320	.000	.133	.000	.350	.066
	N	45315	46415	45322	46415	46415	46415	46415	46415	46415	43752	34126
Social_Norm_Influence_Marijuana	Pearson Correlation	-.018**	.162**	-.007	-.014**	-.001	.026**	-.055**	-.004	.039**	.023**	.036**
	Sig. (1-tailed)	.000	.000	.079	.002	.455	.000	.000	.221	.000	.000	.000
	N	45387	46475	45379	46475	46475	46475	46475	46475	46475	43809	34159

Social_Norm_Influence_Volunteer	Pearson Correlation	-.096**	.046**	-.052**	.030**	-.015**	-.002	.040**	.012**	.004	-.065**	-.080**
	Sig. (1-tailed)	.000	.000	.000	.000	.001	.337	.000	.004	.220	.000	.000
	N	45372	46463	45367	46463	46463	46463	46463	46463	46463	43812	34155
Direct_Peer_Influence_SchoolActivities	Pearson Correlation	-.062**	.038**	-.158**	.077**	-.047**	.015**	.036**	.006	.014**	-.116**	-.174**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.001	.000	.092	.001	.000	.000
	N	44603	45678	44618	45678	45678	45678	45678	45678	45678	43075	33652
Direct_Peer_Influence_Alcohol	Pearson Correlation	-.056**	.260**	.049**	-.059**	.021**	.022**	-.063**	.011**	.013**	.109**	.109**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.009	.002	.000	.000
	N	44601	45673	44615	45673	45673	45673	45673	45673	45673	43067	33645
Direct_Peer_Influence_Marijuana	Pearson Correlation	.041**	.246**	.079**	-.088**	.070**	.037**	-.055**	.014**	.021**	.099**	.120**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.002	.000	.000	.000
	N	44481	45545	44496	45545	45545	45545	45545	45545	45545	42959	33577
Alcohol_Use_DV	Pearson Correlation	-.040**	.218**	.051**	-.059**	.012**	.000	-.049**	.000	.020**	.108**	.112**
	Sig. (1-tailed)	.000	.000	.000	.000	.007	.497	.000	.469	.000	.000	.000

	N	44156	45212	44156	45212	45212	45212	45212	45212	45212	42632	33352
Marijuana_Use_DV	Pearson Correlation	.037**	.228**	.070**	-.064**	.073**	.021**	-.049**	.008*	.022**	.068**	.112**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.049	.000	.000	.000
	N	43936	44985	43930	44985	44985	44985	44985	44985	44985	42426	33202

Correlations

		SA_Sports	SA_PerformingArts	SA_Volunteering	SA_Clubs	SA_Other	SA_None	SS_Activities_StudentGov	SS_Activities_Newspaper	SS_Activities_Tutoring	Social_Norm_Influence_Alcohol	Social_Norm_Influence_Marijuana
Gender	Pearson Correlation	.102**	-.192**	-.155**	.028**	-.082**	.014**	-.072**	-.097**	-.058**	-.072**	-.018**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.002	.000	.000	.000	.000	.000
	N	45768	45768	45768	45768	45768	45768	45482	45482	45482	45315	45387
Age_MeanCentered	Pearson Correlation	-.040**	-.033**	.046**	-.020**	.052**	-.007	-.055**	-.054**	.000	.184**	.162**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.066	.000	.000	.464	.000	.000
	N	46865	46865	46865	46865	46865	46865	46567	46567	46567	46415	46475
SocioEconomic Status	Pearson Correlation	-.109**	-.108**	-.149**	-.037**	-.077**	.167**	-.021**	-.013**	.053**	-.058**	-.007

	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.002	.000	.000	.079
	N	45753	45753	45753	45753	45753	45753	45466	45466	45466	45322	45379
Race_White_Clean	Pearson Correlation	.042**	.067**	.066**	.027**	.045**	-.091**	.012**	.010*	-.043**	.026**	-.014**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.006	.014	.000	.000	.002
	N	46865	46865	46865	46865	46865	46865	46567	46567	46567	46415	46475
Race_AmericanIndian_Clean	Pearson Correlation	-.020**	-.040**	-.043**	.000	-.020**	.048**	-.014**	-.002	.047**	-.037**	-.001
	Sig. (1-tailed)	.000	.000	.000	.495	.000	.000	.002	.307	.000	.000	.455
	N	46865	46865	46865	46865	46865	46865	46567	46567	46567	46415	46475
Race_Black_Clean	Pearson Correlation	.042**	-.017**	-.029**	-.003	-.019**	-.018**	.001	-.002	.007	-.002	.026**
	Sig. (1-tailed)	.000	.000	.000	.254	.000	.000	.454	.305	.060	.320	.000
	N	46865	46865	46865	46865	46865	46865	46567	46567	46567	46415	46475
Race_Asian_Clean	Pearson Correlation	-.028**	.040**	.057**	.031**	.036**	-.013**	.010*	.003	.005	-.046**	-.055**

	Sig. (1-tailed)	.000	.000	.000	.000	.000	.003	.015	.234	.156	.000	.000
	N	46865	46865	46865	46865	46865	46865	46567	46567	46567	46415	46475
Race_PacificIslander_Clean	Pearson Correlation	.016**	-.003	.001	.011**	.000	-.010*	.000	.000	-.002	.005	-.004
	Sig. (1-tailed)	.000	.281	.445	.008	.497	.017	.478	.491	.360	.133	.221
	N	46865	46865	46865	46865	46865	46865	46567	46567	46567	46415	46475
Race_Multiple	Pearson Correlation	.014**	.042**	.020**	.017**	.017**	-.023**	.011**	.009*	.013**	.031**	.039**
	Sig. (1-tailed)	.001	.000	.000	.000	.000	.000	.008	.024	.002	.000	.000
	N	46865	46865	46865	46865	46865	46865	46567	46567	46567	46415	46475
Ethnicity	Pearson Correlation	-.051**	-.105**	-.099**	-.057**	-.075**	.116**	.000	-.008*	.040**	.002	.023**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.473	.048	.000	.350	.000
	N	44179	44179	44179	44179	44179	44179	43911	43911	43911	43752	43809
Mother's highest level of education	Pearson Correlation	-.134**	-.115**	-.148**	-.075**	-.078**	.188**	-.032**	-.024**	.003	.008	.036**

	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.315	.066	.000
	N	34409	34409	34409	34409	34409	34409	34215	34215	34215	34126	34159
SA_Sports	Pearson Correlation	1	.002	.140**	.107**	.042**	-.626**	.083**	.039**	.043**	.019**	-.020**
	Sig. (1-tailed)		.369	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	46865	46865	46865	46865	46865	46865	46564	46564	46564	46030	46089
SA_PerformingArts	Pearson Correlation	.002	1	.225**	.178**	.145**	-.322**	.082**	.080**	.052**	-.005	-.032**
	Sig. (1-tailed)	.369		.000	.000	.000	.000	.000	.000	.000	.148	.000
	N	46865	46865	46865	46865	46865	46865	46564	46564	46564	46030	46089
SA_Volunteering	Pearson Correlation	.140**	.225**	1	.248**	.254**	-.300**	.145**	.118**	.105**	.030**	-.014**
	Sig. (1-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000	.001
	N	46865	46865	46865	46865	46865	46865	46564	46564	46564	46030	46089
SA_Clubs	Pearson Correlation	.107**	.178**	.248**	1	.160**	-.242**	.104**	.073**	.096**	-.023**	-.033**

	Sig. (1-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	46865	46865	46865	46865	46865	46865	46564	46564	46564	46030	46089
SA_Other	Pearson Correlation	.042**	.145**	.254**	.160**	1	-.309**	.093**	.062**	.070**	.016**	-.015**
	Sig. (1-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000	.001
	N	46865	46865	46865	46865	46865	46865	46564	46564	46564	46030	46089
SA_None	Pearson Correlation	-.626**	-.322**	-.300**	-.242**	-.309**	1	-.087**	-.067**	-.053**	-.021**	.031**
	Sig. (1-tailed)	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	46865	46865	46865	46865	46865	46865	46564	46564	46564	46030	46089
SS_Activities_StudentGov	Pearson Correlation	.083**	.082**	.145**	.104**	.093**	-.087**	1	.155**	.071**	.005	-.013**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000		.000	.000	.167	.003
	N	46564	46564	46564	46564	46564	46564	46567	46567	46567	45749	45812
SS_Activities_Newspaper	Pearson Correlation	.039**	.080**	.118**	.073**	.062**	-.067**	.155**	1	.074**	.002	-.007

	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.359	.067
	N	46564	46564	46564	46564	46564	46564	46567	46567	46567	45749	45812
SS_Activities_Tutoring	Pearson Correlation	.043**	.052**	.105**	.096**	.070**	-.053**	.071**	.074**	1	.007	-.002
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.068	.342
	N	46564	46564	46564	46564	46564	46564	46567	46567	46567	45749	45812
Social_Norm_Influence_Alcohol	Pearson Correlation	.019**	-.005	.030**	-.023**	.016**	-.021**	.005	.002	.007	1	.748**
	Sig. (1-tailed)	.000	.148	.000	.000	.000	.000	.167	.359	.068		.000
	N	46030	46030	46030	46030	46030	46030	45749	45749	45749	46415	46231
Social_Norm_Influence_Marijuana	Pearson Correlation	-.020**	-.032**	-.014**	-.033**	-.015**	.031**	-.013**	-.007	-.002	.748**	1
	Sig. (1-tailed)	.000	.000	.001	.000	.001	.000	.003	.067	.342	.000	
	N	46089	46089	46089	46089	46089	46089	45812	45812	45812	46231	46475
Social_Norm_Influence_Volunteer	Pearson Correlation	.053**	.096**	.167**	.085**	.108**	-.124**	.049**	.036**	.045**	-.171**	-.211**

	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	46078	46078	46078	46078	46078	46078	45796	45796	45796	46157	46241
Direct_Peer_Influence_SchoolActivities	Pearson Correlation	.275**	.157**	.208**	.122**	.144**	-.336**	.104**	.056**	.038**	-.008*	-.069**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.046	.000
	N	45223	45223	45223	45223	45223	45223	44955	44955	44955	45032	45101
Direct_Peer_Influence_Alcohol	Pearson Correlation	-.001	-.086**	-.051**	-.068**	-.032**	.051**	-.018**	-.028**	.013**	.380**	.371**
	Sig. (1-tailed)	.436	.000	.000	.000	.000	.000	.000	.000	.002	.000	.000
	N	45217	45217	45217	45217	45217	45217	44949	44949	44949	45027	45102
Direct_Peer_Influence_Marijuana	Pearson Correlation	-.036**	-.101**	-.088**	-.065**	-.052**	.099**	-.038**	-.034**	.004	.308**	.423**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.220	.000	.000
	N	45095	45095	45095	45095	45095	45095	44826	44826	44826	44910	44987
Alcohol_Use_DV	Pearson Correlation	-.016**	-.067**	-.054**	-.075**	-.025**	.057**	-.026**	-.029**	.011*	.335**	.331**

	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.012	.000	.000
	N	44739	44739	44739	44739	44739	44739	44470	44470	44470	44523	44596
Marijuana_Use_DV	Pearson Correlation	-.039**	-.084**	-.080**	-.063**	-.043**	.088**	-.041**	-.033**	-.009*	.261**	.387**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.028	.000	.000
	N	44522	44522	44522	44522	44522	44522	44257	44257	44257	44307	44384

Correlations

		Social_Norm_Influence_Volunteer	Direct_Peer_Influence_SchoolActivities	Direct_Peer_Influence_Alcohol	Direct_Peer_Influence_Marijuana	Alcohol_Use_DV	Marijuana_Use_DV
Gender	Pearson Correlation	-.096**	-.062**	-.056**	.041**	-.040**	.037**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	45372	44603	44601	44481	44156	43936
Age_MeanCentered	Pearson Correlation	.046**	.038**	.260**	.246**	.218**	.228**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	46463	45678	45673	45545	45212	44985

SocioEconomic Status	Pearson Correlation	-.052**	-.158**	.049**	.079**	.051**	.070**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	45367	44618	44615	44496	44156	43930
Race_White_Clean	Pearson Correlation	.030**	.077**	-.059**	-.088**	-.059**	-.064**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	46463	45678	45673	45545	45212	44985
Race_AmericanIndian_Clean	Pearson Correlation	-.015**	-.047**	.021**	.070**	.012**	.073**
	Sig. (1-tailed)	.001	.000	.000	.000	.007	.000
	N	46463	45678	45673	45545	45212	44985
Race_Black_Clean	Pearson Correlation	-.002	.015**	.022**	.037**	.000	.021**
	Sig. (1-tailed)	.337	.001	.000	.000	.497	.000
	N	46463	45678	45673	45545	45212	44985
Race_Asian_Clean	Pearson Correlation	.040**	.036**	-.063**	-.055**	-.049**	-.049**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000

	N	46463	45678	45673	45545	45212	44985
Race_PacificIslander_Clean	Pearson Correlation	.012**	.006	.011**	.014**	.000	.008*
	Sig. (1-tailed)	.004	.092	.009	.002	.469	.049
	N	46463	45678	45673	45545	45212	44985
Race_Multiple	Pearson Correlation	.004	.014**	.013**	.021**	.020**	.022**
	Sig. (1-tailed)	.220	.001	.002	.000	.000	.000
	N	46463	45678	45673	45545	45212	44985
Ethnicity	Pearson Correlation	-.065**	-.116**	.109**	.099**	.108**	.068**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	43812	43075	43067	42959	42632	42426
Mother's highest level of education	Pearson Correlation	-.080**	-.174**	.109**	.120**	.112**	.112**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	34155	33652	33645	33577	33352	33202
SA_Sports	Pearson Correlation	.053**	.275**	-.001	-.036**	-.016**	-.039**

	Sig. (1-tailed)	.000	.000	.436	.000	.000	.000
	N	46078	45223	45217	45095	44739	44522
SA_PerformingArts	Pearson Correlation	.096**	.157**	-.086**	-.101**	-.067**	-.084**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	46078	45223	45217	45095	44739	44522
SA_Volunteering	Pearson Correlation	.167**	.208**	-.051**	-.088**	-.054**	-.080**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	46078	45223	45217	45095	44739	44522
SA_Clubs	Pearson Correlation	.085**	.122**	-.068**	-.065**	-.075**	-.063**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	46078	45223	45217	45095	44739	44522
SA_Other	Pearson Correlation	.108**	.144**	-.032**	-.052**	-.025**	-.043**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	46078	45223	45217	45095	44739	44522

SA_None	Pearson Correlation	-.124**	-.336**	.051**	.099**	.057**	.088**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	46078	45223	45217	45095	44739	44522
SS_Activities_StudentGov	Pearson Correlation	.049**	.104**	-.018**	-.038**	-.026**	-.041**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	45796	44955	44949	44826	44470	44257
SS_Activities_Newspaper	Pearson Correlation	.036**	.056**	-.028**	-.034**	-.029**	-.033**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	45796	44955	44949	44826	44470	44257
SS_Activities_Tutoring	Pearson Correlation	.045**	.038**	.013**	.004	.011*	-.009*
	Sig. (1-tailed)	.000	.000	.002	.220	.012	.028
	N	45796	44955	44949	44826	44470	44257
Social_Norm_Influence_Alcohol	Pearson Correlation	-.171**	-.008*	.380**	.308**	.335**	.261**
	Sig. (1-tailed)	.000	.046	.000	.000	.000	.000

	N	46157	45032	45027	44910	44523	44307
Social_Norm_Influence_Marijuana	Pearson Correlation	-.211**	-.069**	.371**	.423**	.331**	.387**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000
	N	46241	45101	45102	44987	44596	44384
Social_Norm_Influence_Volunteer	Pearson Correlation	1	.180**	-.112**	-.126**	-.110**	-.094**
	Sig. (1-tailed)		.000	.000	.000	.000	.000
	N	46463	45098	45094	44979	44580	44364
Direct_Peer_Influence_SchoolActivities	Pearson Correlation	.180**	1	-.046**	-.117**	-.083**	-.125**
	Sig. (1-tailed)	.000		.000	.000	.000	.000
	N	45098	45678	45333	45199	44596	44395
Direct_Peer_Influence_Alcohol	Pearson Correlation	-.112**	-.046**	1	.696**	.566**	.481**
	Sig. (1-tailed)	.000	.000		.000	.000	.000
	N	45094	45333	45673	45309	44626	44423
Direct_Peer_Influence_Marijuana	Pearson Correlation	-.126**	-.117**	.696**	1	.464**	.633**

	Sig. (1-tailed)	.000	.000	.000		.000	.000
	N	44979	45199	45309	45545	44510	44317
Alcohol_Use_DV	Pearson Correlation	-.110**	-.083**	.566**	.464**	1	.489**
	Sig. (1-tailed)	.000	.000	.000	.000		.000
	N	44580	44596	44626	44510	45212	44927
Marijuana_Use_DV	Pearson Correlation	-.094**	-.125**	.481**	.633**	.489**	1
	Sig. (1-tailed)	.000	.000	.000	.000	.000	
	N	44364	44395	44423	44317	44927	44985

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Correlations

Notes

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Syntax		CORRELATIONS /VARIABLES=Gender_Clean Age_MeanCentered SES_Coded Race_White_Clean Race_AmericanIndian_Clean Race_Black_Clean Race_Asian_Clean Race_PacificIslander_Clean Race_Multiple Ethnicity_Clean MotherEducation_Coded SA_Sports SA_PerformingArts SA_Volunteering SA_Clubs SA_Other SA_None SS_Activities_StudentGov SS_Activities_Newspaper SS_Activities_Tutoring Social_Norm_Influence_Alcohol Social_Norm_Influence_Marijuana Social_Norm_Influence_Volunteer Direct_Peer_Influence_SchoolActivities Direct_Peer_Influence_Alcohol Direct_Peer_Influence_Marijuana Alcohol_Use_DV Marijuana_Use_DV /PRINT=ONETAIL NOSIG /MISSING=PAIRWISE.
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Correlations

		Gender	Age_MeanCentered	SocioEconomicStatus	Race_White_Clean	Race_AmericanIndian_Clean	Race_Black_Clean	Race_Asian_Clean	Race_PacificIslander_Clean	Race_Multiple	Ethnicity	Mother's highest level of education	SA_Sports	SA_PerformingArts	SA_Volunteering	SA_Clubs
Gender	Pearson Correlation	1	.033**	-.004	-.019**	.014*	.021**	-.006	.026**	-.007	-.016**	-.020**	.114**	-.187**	-.157**	.038**
	Sig. (1-tailed)		.000	.261	.006	.034	.003	.229	.000	.186	.008	.004	.000	.000	.000	.000
	N	23262	23262	22680	17113	17113	17113	17113	17113	17113	21933	17047	22881	22881	22881	22881

Age_MeanCentered	Pearson Correlation	.033**	1	-.126**	.033**	-.024**	-.024**	.000	.000	-.009	-.081**	-.002	-.038**	-.035**	.049**	-.022**
	Sig. (1-tailed)	.000		.000	.000	.001	.001	.486	.483	.105	.000	.417	.000	.000	.000	.000
	N	23262	23849	23242	17490	17490	17490	17490	17490	17490	22462	17443	23431	23431	23431	23431
SocioEconomic Status	Pearson Correlation	-.004	-.126**	1	-.215**	.226**	.121**	-.021**	.040**	.026**	.361**	.320**	-.111**	-.111**	-.153**	-.046**
	Sig. (1-tailed)	.261	.000		.000	.000	.000	.003	.000	.000	.000	.000	.000	.000	.000	.000
	N	22680	23242	23242	17203	17203	17203	17203	17203	17203	22026	17100	22859	22859	22859	22859
Race_White_Clean	Pearson Correlation	-.019**	.033**	-.215**	1	-.454**	-.420**	-.333**	-.184**	-.496**	-.078**	-.055**	.003	.019**	.024**	-.011
	Sig. (1-tailed)	.006	.000	.000		.000	.000	.000	.000	.000	.000	.000	.363	.007	.001	.067
	N	17113	17490	17203	17490	17490	17490	17490	17490	17490	16719	13158	17250	17250	17250	17250
Race_AmericanIndian_Clean	Pearson Correlation	.014*	-.024**	.226**	-.454**	1	-.074**	-.058**	-.032**	-.087**	.089**	.099**	-.041**	-.058**	-.065**	-.006
	Sig. (1-tailed)	.034	.001	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.231
	N	17113	17490	17203	17490	17490	17490	17490	17490	17490	16719	13158	17250	17250	17250	17250

Race_Black_Clean	Pearson Correlation	.021**	-.024**	.121**	-.420**	-.074**	1	-.054**	-.030**	-.081**	.005	.008	.052**	-.033**	-.038**	-.013*
	Sig. (1-tailed)	.003	.001	.000	.000	.000		.000	.000	.000	.247	.178	.000	.000	.000	.050
	N	17113	17490	17203	17490	17490	17490	17490	17490	17490	16719	13158	17250	17250	17250	17250
Race_Asian_Clean	Pearson Correlation	-.006	.000	-.021**	-.333**	-.058**	-.054**	1	-.024**	-.064**	-.063**	-.016*	-.033**	.035**	.067**	.030**
	Sig. (1-tailed)	.229	.486	.003	.000	.000	.000		.001	.000	.000	.032	.000	.000	.000	.000
	N	17113	17490	17203	17490	17490	17490	17490	17490	17490	16719	13158	17250	17250	17250	17250
Race_PacificIslander_Clean	Pearson Correlation	.026**	.000	.040**	-.184**	-.032**	-.030**	-.024**	1	-.035**	.055**	.002	.014*	-.014*	-.006	.004
	Sig. (1-tailed)	.000	.483	.000	.000	.000	.000	.001		.000	.000	.401	.033	.029	.206	.321
	N	17113	17490	17203	17490	17490	17490	17490	17490	17490	16719	13158	17250	17250	17250	17250
Race_Multiple	Pearson Correlation	-.007	-.009	.026**	-.496**	-.087**	-.081**	-.064**	-.035**	1	.058**	.003	.006	.034**	.010	.012
	Sig. (1-tailed)	.186	.105	.000	.000	.000	.000	.000	.000		.000	.377	.203	.000	.084	.063
	N	17113	17490	17203	17490	17490	17490	17490	17490	17490	16719	13158	17250	17250	17250	17250

Ethnicity	Pearson Correlation	-.016**	-.081**	.361**	-.078**	.089**	.005	-.063**	.055**	.058**	1	.304**	-.051**	-.107**	-.109**	-.059**
	Sig. (1-tailed)	.008	.000	.000	.000	.000	.247	.000	.000	.000		.000	.000	.000	.000	.000
	N	21933	22462	22026	16719	16719	16719	16719	16719	16719	22462	16535	22109	22109	22109	22109
Mother's highest level of education	Pearson Correlation	-.020**	-.002	.320**	-.055**	.099**	.008	-.016*	.002	.003	.304**	1	-.135**	-.117**	-.157**	-.076**
	Sig. (1-tailed)	.004	.417	.000	.000	.000	.178	.032	.401	.377	.000		.000	.000	.000	.000
	N	17047	17443	17100	13158	13158	13158	13158	13158	13158	16535	17443	17220	17220	17220	17220
SA_Sports	Pearson Correlation	.114**	-.038**	-.111**	.003	-.041**	.052**	-.033**	.014*	.006	-.051**	-.135**	1	-.004	.138**	.107**
	Sig. (1-tailed)	.000	.000	.000	.363	.000	.000	.000	.033	.203	.000	.000		.279	.000	.000
	N	22881	23431	22859	17250	17250	17250	17250	17250	17250	22109	17220	23431	23431	23431	23431
SA_PerformingArts	Pearson Correlation	-.187**	-.035**	-.111**	.019**	-.058**	-.033**	.035**	-.014*	.034**	-.107**	-.117**	-.004	1	.231**	.178**
	Sig. (1-tailed)	.000	.000	.000	.007	.000	.000	.000	.029	.000	.000	.000	.279		.000	.000
	N	22881	23431	22859	17250	17250	17250	17250	17250	17250	22109	17220	23431	23431	23431	23431

SA_Volunteering	Pearson Correlation	-.157**	.049**	-.153**	.024**	-.065**	-.038**	.067**	-.006	.010	-.109**	-.157**	.138**	.231**	1	.259**
	Sig. (1-tailed)	.000	.000	.000	.001	.000	.000	.000	.206	.084	.000	.000	.000	.000		.000
	N	22881	23431	22859	17250	17250	17250	17250	17250	17250	22109	17220	23431	23431	23431	23431
SA_Clubs	Pearson Correlation	.038**	-.022**	-.046**	-.011	-.006	-.013*	.030**	.004	.012	-.059**	-.076**	.107**	.178**	.259**	1
	Sig. (1-tailed)	.000	.000	.000	.067	.231	.050	.000	.321	.063	.000	.000	.000	.000	.000	
	N	22881	23431	22859	17250	17250	17250	17250	17250	17250	22109	17220	23431	23431	23431	23431
SA_Other	Pearson Correlation	-.081**	.053**	-.082**	.016*	-.032**	-.031**	.033**	-.003	.009	-.073**	-.082**	.042**	.150**	.263**	.168**
	Sig. (1-tailed)	.000	.000	.000	.016	.000	.000	.000	.328	.125	.000	.000	.000	.000	.000	.000
	N	22881	23431	22859	17250	17250	17250	17250	17250	17250	22109	17220	23431	23431	23431	23431
SA_None	Pearson Correlation	.007	-.008	.174**	-.039**	.089**	-.008	-.009	-.002	-.007	.115**	.196**	-.628**	-.320**	-.301**	-.243**
	Sig. (1-tailed)	.133	.124	.000	.000	.000	.138	.115	.383	.176	.000	.000	.000	.000	.000	.000
	N	22881	23431	22859	17250	17250	17250	17250	17250	17250	22109	17220	23431	23431	23431	23431

SS_Activities_StudentGov	Pearson Correlation	-.072**	-.055**	-.030**	.000	-.022**	.002	.007	.002	.014*	-.011	-.043**	.087**	.085**	.162**	.111**
	Sig. (1-tailed)	.000	.000	.000	.487	.002	.397	.170	.385	.038	.058	.000	.000	.000	.000	.000
	N	22749	23291	22725	17163	17163	17163	17163	17163	17163	21984	17132	23291	23291	23291	23291
SS_Activities_Newspaper	Pearson Correlation	-.097**	-.058**	-.012*	-.002	.002	-.007	.002	-.007	.008	.001	-.019**	.033**	.074**	.120**	.066**
	Sig. (1-tailed)	.000	.000	.039	.421	.393	.188	.396	.195	.162	.446	.007	.000	.000	.000	.000
	N	22749	23291	22725	17163	17163	17163	17163	17163	17163	21984	17132	23291	23291	23291	23291
SS_Activities_Tutoring	Pearson Correlation	-.060**	-.006	.058**	-.056**	.069**	.011	.008	-.001	.011	.045**	.002	.048**	.051**	.114**	.104**
	Sig. (1-tailed)	.000	.187	.000	.000	.000	.078	.161	.462	.082	.000	.391	.000	.000	.000	.000
	N	22749	23291	22725	17163	17163	17163	17163	17163	17163	21984	17132	23291	23291	23291	23291
Social_Norm_Influence_Alcohol	Pearson Correlation	-.069**	.191**	-.054**	.023**	-.042**	.009	-.056**	.002	.032**	.004	.001	.027**	-.011*	.028**	-.018**
	Sig. (1-tailed)	.000	.000	.000	.001	.000	.121	.000	.389	.000	.262	.429	.000	.043	.000	.004
	N	22647	23203	22639	17073	17073	17073	17073	17073	17073	21884	17066	23006	23006	23006	23006

Social_Norm_Influence_Marijuana	Pearson Correlation	-.016**	.167**	-.001	-.026**	.010	.039**	-.070**	-.010	.050**	.022**	.031**	-.010	-.032**	-.015*	-.029**
	Sig. (1-tailed)	.007	.000	.456	.000	.085	.000	.000	.102	.000	.000	.000	.070	.000	.012	.000
	N	22681	23230	22666	17099	17099	17099	17099	17099	17099	21918	17084	23035	23035	23035	23035
Social_Norm_Influence_Volunteer	Pearson Correlation	-.100**	.044**	-.050**	.005	-.022**	-.017*	.043**	.009	-.007	-.066**	-.071**	.056**	.097**	.163**	.078**
	Sig. (1-tailed)	.000	.000	.000	.242	.002	.014	.000	.126	.166	.000	.000	.000	.000	.000	.000
	N	22673	23225	22663	17087	17087	17087	17087	17087	17087	21921	17087	23032	23032	23032	23032
Direct_Peer_Influence_SchoolActivities	Pearson Correlation	-.057**	.045**	-.162**	.029**	-.077**	.003	.037**	.002	-.005	-.116**	-.186**	.269**	.157**	.210**	.123**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.367	.000	.416	.251	.000	.000	.000	.000	.000	.000
	N	22292	22835	22294	16816	16816	16816	16816	16816	16816	21559	16856	22619	22619	22619	22619
Direct_Peer_Influence_Alcohol	Pearson Correlation	-.054**	.261**	.046**	-.037**	.035**	.039**	-.067**	.020**	.032**	.106**	.106**	-.006	-.090**	-.060**	-.072**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.005	.000	.000	.000	.199	.000	.000	.000
	N	22288	22832	22292	16817	16817	16817	16817	16817	16817	21557	16851	22612	22612	22612	22612

Direct_Peer_Influence_Marijuana	Pearson Correlation	.041**	.246**	.073**	-.090**	.098**	.048**	-.059**	.022**	.044**	.092**	.115**	-.037**	-.102**	-.092**	-.066**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000	.002	.000	.000	.000	.000	.000	.000	.000
	N	22221	22757	22221	16771	16771	16771	16771	16771	16771	21496	16813	22537	22537	22537	22537
Alcohol_Use_DV	Pearson Correlation	-.041**	.217**	.050**	-.027**	.024**	.020**	-.048**	-.003	.037**	.114**	.113**	-.017**	-.070**	-.060**	-.077**
	Sig. (1-tailed)	.000	.000	.000	.000	.001	.004	.000	.364	.000	.000	.000	.005	.000	.000	.000
	N	22053	22584	22046	16652	16652	16652	16652	16652	16652	21319	16689	22353	22353	22353	22353
Marijuana_Use_DV	Pearson Correlation	.035**	.228**	.074**	-.075**	.104**	.025**	-.055**	.007	.039**	.070**	.116**	-.038**	-.090**	-.083**	-.067**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.001	.000	.189	.000	.000	.000	.000	.000	.000	.000
	N	21940	22468	21928	16578	16578	16578	16578	16578	16578	21210	16621	22239	22239	22239	22239

Correlations

		SA_Other	SA_None	SS_Activities_StudentGov	SS_Activities_Newspaper	SS_Activities_Tutoring	Social_Norm_Influence_Alcohol	Social_Norm_Influence_Marijuana	Social_Norm_Influence_Volunteer	Direct_Peer_Influence_SchoolActivities	Direct_Peer_Influence_Alcohol	Direct_Peer_Influence_Marijuana	Alcohol_Use_DV	Marijuana_Use_DV
Gender	Pearson Correlation	-.081**	.007	-.072**	-.097**	-.060**	-.069**	-.016**	-.100**	-.057**	-.054**	.041**	-.041**	.035**
	Sig. (1-tailed)	.000	.133	.000	.000	.000	.000	.007	.000	.000	.000	.000	.000	.000

	N	22881	22881	22749	22749	22749	22647	22681	22673	22292	22288	22221	22053	21940
Age_MeanCentered	Pearson Correlation	.053**	-.008	-.055**	-.058**	-.006	.191**	.167**	.044**	.045**	.261**	.246**	.217**	.228**
	Sig. (1-tailed)	.000	.124	.000	.000	.187	.000	.000	.000	.000	.000	.000	.000	.000
	N	23431	23431	23291	23291	23291	23203	23230	23225	22835	22832	22757	22584	22468
SocioEconomic Status	Pearson Correlation	-.082**	.174**	-.030**	-.012*	.058**	-.054**	-.001	-.050**	-.162**	.046**	.073**	.050**	.074**
	Sig. (1-tailed)	.000	.000	.000	.039	.000	.000	.456	.000	.000	.000	.000	.000	.000
	N	22859	22859	22725	22725	22725	22639	22666	22663	22294	22292	22221	22046	21928
Race_White_Clean	Pearson Correlation	.016*	-.039**	.000	-.002	-.056**	.023**	-.026**	.005	.029**	-.037**	-.090**	-.027**	-.075**
	Sig. (1-tailed)	.016	.000	.487	.421	.000	.001	.000	.242	.000	.000	.000	.000	.000
	N	17250	17250	17163	17163	17163	17073	17099	17087	16816	16817	16771	16652	16578
Race_AmericanIndian_Clean	Pearson Correlation	-.032**	.089**	-.022**	.002	.069**	-.042**	.010	-.022**	-.077**	.035**	.098**	.024**	.104**
	Sig. (1-tailed)	.000	.000	.002	.393	.000	.000	.085	.002	.000	.000	.000	.001	.000
	N	17250	17250	17163	17163	17163	17073	17099	17087	16816	16817	16771	16652	16578
Race_Black_Clean	Pearson Correlation	-.031**	-.008	.002	-.007	.011	.009	.039**	-.017*	.003	.039**	.048**	.020**	.025**
	Sig. (1-tailed)	.000	.138	.397	.188	.078	.121	.000	.014	.367	.000	.000	.004	.001
	N	17250	17250	17163	17163	17163	17073	17099	17087	16816	16817	16771	16652	16578
Race_Asian_Clean	Pearson Correlation	.033**	-.009	.007	.002	.008	-.056**	-.070**	.043**	.037**	-.067**	-.059**	-.048**	-.055**
	Sig. (1-tailed)	.000	.115	.170	.396	.161	.000	.000	.000	.000	.000	.000	.000	.000
	N	17250	17250	17163	17163	17163	17073	17099	17087	16816	16817	16771	16652	16578

Race_PacificIslander_Clean	Pearson Correlation	-.003	-.002	.002	-.007	-.001	.002	-.010	.009	.002	.020**	.022**	-.003	.007
	Sig. (1-tailed)	.328	.383	.385	.195	.462	.389	.102	.126	.416	.005	.002	.364	.189
	N	17250	17250	17163	17163	17163	17073	17099	17087	16816	16817	16771	16652	16578
Race_Multiple	Pearson Correlation	.009	-.007	.014*	.008	.011	.032**	.050**	-.007	-.005	.032**	.044**	.037**	.039**
	Sig. (1-tailed)	.125	.176	.038	.162	.082	.000	.000	.166	.251	.000	.000	.000	.000
	N	17250	17250	17163	17163	17163	17073	17099	17087	16816	16817	16771	16652	16578
Ethnicity	Pearson Correlation	-.073**	.115**	-.011	.001	.045**	.004	.022**	-.066**	-.116**	.106**	.092**	.114**	.070**
	Sig. (1-tailed)	.000	.000	.058	.446	.000	.262	.000	.000	.000	.000	.000	.000	.000
	N	22109	22109	21984	21984	21984	21884	21918	21921	21559	21557	21496	21319	21210
Mother's highest level of education	Pearson Correlation	-.082**	.196**	-.043**	-.019**	.002	.001	.031**	-.071**	-.186**	.106**	.115**	.113**	.116**
	Sig. (1-tailed)	.000	.000	.000	.007	.391	.429	.000	.000	.000	.000	.000	.000	.000
	N	17220	17220	17132	17132	17132	17066	17084	17087	16856	16851	16813	16689	16621
SA_Sports	Pearson Correlation	.042**	-.628**	.087**	.033**	.048**	.027**	-.010	.056**	.269**	-.006	-.037**	-.017**	-.038**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.070	.000	.000	.199	.000	.005	.000
	N	23431	23431	23291	23291	23291	23006	23035	23032	22619	22612	22537	22353	22239
SA_PerformingArts	Pearson Correlation	.150**	-.320**	.085**	.074**	.051**	-.011*	-.032**	.097**	.157**	-.090**	-.102**	-.070**	-.090**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.043	.000	.000	.000	.000	.000	.000	.000
	N	23431	23431	23291	23291	23291	23006	23035	23032	22619	22612	22537	22353	22239
SA_Volunteering	Pearson Correlation	.263**	-.301**	.162**	.120**	.114**	.028**	-.015*	.163**	.210**	-.060**	-.092**	-.060**	-.083**

	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.012	.000	.000	.000	.000	.000	.000
	N	23431	23431	23291	23291	23291	23006	23035	23032	22619	22612	22537	22353	22239
SA_Clubs	Pearson Correlation	.168**	-.243**	.111**	.066**	.104**	-.018**	-.029**	.078**	.123**	-.072**	-.066**	-.077**	-.067**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.004	.000	.000	.000	.000	.000	.000	.000
	N	23431	23431	23291	23291	23291	23006	23035	23032	22619	22612	22537	22353	22239
SA_Other	Pearson Correlation	1	-.309**	.103**	.058**	.075**	.020**	-.011*	.104**	.151**	-.036**	-.054**	-.024**	-.045**
	Sig. (1-tailed)		.000	.000	.000	.000	.002	.041	.000	.000	.000	.000	.000	.000
	N	23431	23431	23291	23291	23291	23006	23035	23032	22619	22612	22537	22353	22239
SA_None	Pearson Correlation	-.309**	1	-.095**	-.071**	-.056**	-.028**	.025**	-.118**	-.336**	.053**	.101**	.056**	.094**
	Sig. (1-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	23431	23431	23291	23291	23291	23006	23035	23032	22619	22612	22537	22353	22239
SS_Activities_StudentGov	Pearson Correlation	.103**	-.095**	1	.160**	.078**	.002	-.015**	.061**	.110**	-.017**	-.036**	-.025**	-.037**
	Sig. (1-tailed)	.000	.000		.000	.000	.381	.010	.000	.000	.004	.000	.000	.000
	N	23291	23291	23291	23291	23291	22872	22901	22898	22489	22484	22408	22224	22112
SS_Activities_Newspaper	Pearson Correlation	.058**	-.071**	.160**	1	.072**	.004	-.001	.033**	.057**	-.023**	-.034**	-.022**	-.032**
	Sig. (1-tailed)	.000	.000	.000		.000	.280	.430	.000	.000	.000	.000	.000	.000
	N	23291	23291	23291	23291	23291	22872	22901	22898	22489	22484	22408	22224	22112
SS_Activities_Tutoring	Pearson Correlation	.075**	-.056**	.078**	.072**	1	.009	.000	.044**	.046**	.013*	.004	.009	-.011*
	Sig. (1-tailed)	.000	.000	.000	.000		.097	.483	.000	.000	.028	.257	.100	.044
	N	23291	23291	23291	23291	23291	22872	22901	22898	22489	22484	22408	22224	22112

Social_Norm_Influence_Alcohol	Pearson Correlation	.020**	-.028**	.002	.004	.009	1	.747**	-.166**	.003	.380**	.315**	.328**	.259**
	Sig. (1-tailed)	.002	.000	.381	.280	.097		.000	.000	.317	.000	.000	.000	.000
	N	23006	23006	22872	22872	22872	23203	23104	23071	22509	22508	22437	22241	22131
Social_Norm_Influence_Marijuana	Pearson Correlation	-.011*	.025**	-.015**	-.001	.000	.747**	1	-.210**	-.057**	.370**	.423**	.325**	.387**
	Sig. (1-tailed)	.041	.000	.010	.430	.483	.000		.000	.000	.000	.000	.000	.000
	N	23035	23035	22901	22901	22901	23104	23230	23114	22544	22543	22476	22275	22162
Social_Norm_Influence_Volunteer	Pearson Correlation	.104**	-.118**	.061**	.033**	.044**	-.166**	-.210**	1	.183**	-.110**	-.125**	-.113**	-.092**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	23032	23032	22898	22898	22898	23071	23114	23225	22546	22541	22473	22266	22156
Direct_Peer_Influence_SchoolActivities	Pearson Correlation	.151**	-.336**	.110**	.057**	.046**	.003	-.057**	.183**	1	-.047**	-.117**	-.080**	-.123**
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.317	.000	.000		.000	.000	.000	.000
	N	22619	22619	22489	22489	22489	22509	22544	22546	22835	22672	22598	22281	22175
Direct_Peer_Influence_Alcohol	Pearson Correlation	-.036**	.053**	-.017**	-.023**	.013*	.380**	.370**	-.110**	-.047**	1	.698**	.566**	.484**
	Sig. (1-tailed)	.000	.000	.004	.000	.028	.000	.000	.000	.000		.000	.000	.000
	N	22612	22612	22484	22484	22484	22508	22543	22541	22672	22832	22641	22294	22185
Direct_Peer_Influence_Marijuana	Pearson Correlation	-.054**	.101**	-.036**	-.034**	.004	.315**	.423**	-.125**	-.117**	.698**	1	.465**	.632**
	Sig. (1-tailed)	.000	.000	.000	.000	.257	.000	.000	.000	.000	.000		.000	.000
	N	22537	22537	22408	22408	22408	22437	22476	22473	22598	22641	22757	22227	22126
Alcohol_Use_DV	Pearson Correlation	-.024**	.056**	-.025**	-.022**	.009	.328**	.325**	-.113**	-.080**	.566**	.465**	1	.491**

	Sig. (1-tailed)	.000	.000	.000	.000	.100	.000	.000	.000	.000	.000	.000		.000
	N	22353	22353	22224	22224	22224	22241	22275	22266	22281	22294	22227	22584	22439
Marijuana_Use_DV	Pearson Correlation	-.045**	.094**	-.037**	-.032**	-.011*	.259**	.387**	-.092**	-.123**	.484**	.632**	.491**	1
	Sig. (1-tailed)	.000	.000	.000	.000	.044	.000	.000	.000	.000	.000	.000	.000	
	N	22239	22239	22112	22112	22112	22131	22162	22156	22175	22185	22126	22439	22468

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

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