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Extracurricular Activities and Substance Use Among Adolescents: A Test of Social Control and Social Learning Theory

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EXTRACURRICULAR ACTIVITIES AND SUBSTANCE USE AMONG ADOLESCENTS: A

TEST OF SOCIAL CONTROL AND SOCIAL LEARNING THEORY

by

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ABSTRACT

The current research examines correlates of adolescent substance use with a focus on extracurricular activities. Given that marijuana is the most widely used illicit drug, and binge drinking can have an early onset the examinations of these two substances were important. Many studies have researched the correlation between substance use and sports, but have not included other extracurricular activities such as academic and fine art clubs. The current research fills this gap in the literature by using the National Longitudinal Study of Adolescent Health (Add Health) and by testing Hirschi's (1969) Social Control Theory and Aker's (1985) Social Learning Theory. The current research identified fine art and academic clubs as protective factors for adolescent substance use. There is limited research on the link between adolescent substance use and extracurricular activities and based on my findings that academic and fine arts clubs can decrease the likelihood of substance use, continued research is needed to better identify users, causes for risk and preventative factors, short and long term ramifications, and the theoretical correlations of use.

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CHAPTER 1: INTRODUCTION

Adolescent substance use in the United States has shown to be rapidly changing and is in constant need of assessments (Johnston et al., 2014). According to the Monitoring the Future Study (MTF), a long-term study of American adolescents, illicit drug use has not declined in the past decade (MTF, 2014). Marijuana use among adolescents has been on the rise since the mid-2000s, and usage rates are statistically higher in states that have passed medical marijuana laws (Hasin et al., 2015). The MTF study (2014) states that marijuana has been the most widely used illicit drug throughout the 40-year study. According to the MTF Study, binge drinking among 12th graders has been declining since the 2000s, with binge drinking hitting a record low for high school students in 2014 (MTF, 2014).

Given the relatively high prevalence of substance use among adolescents, researchers have examined risk and protective factors for use. Extracurricular activities among adolescents has been associated with positive outcomes in academics, emotional health, behavior, self-discipline, teamwork, group identification, socialization, interpersonal development, and leadership skills (Guvermont et al., 2014; Moore & Werch, 2004; Cooley et al., 2001; Holland & Andre, 1987). Not only do schools, educators, community leaders, and parents promote extracurricular activity participation as a means of increasing an adolescent's physical activity and overall health; it is also promoted as a way to decrease the chances of adolescent substance use and as a way to prevent adolescents from engaging in risky behaviors (Farrel & Barnes, 2000; Moore & Werch, 2004; Barnes et al., 2006; Kwan et al., 2014). There is a consensus among parents that if adolescents have too much unsupervised time, they can become involved in deviant behavior (Farrel & Barnes, 2000).

However, there is also a documented correlation in the literature that links extracurricular activities, specifically sport participation in adolescents, with substance use such as alcohol, marijuana use and non-medical prescription drug use (Moore & Werch, 2004; Kwan et al., 2014). Many studies have been conducted on sport participation and substance use, but there is a lack of literature on extracurricular activities such as academic and fine arts clubs; and it is important to explore if these particular extracurricular activities are a protective or risk factor for substance use. The current study will address this gap in the literature by examining the relationship between extracurricular activities and substance use in adolescents using the National Longitudinal Study of Adolescent Health (Add Health) 1994-2002.

The theoretical framework for the current research examines Hirschi's (1969) Social Control Theory and Aker's (1985) Social Learning Theory. It is important to use these theories to explain adolescent substance use for several reasons. Social Control and Social Learning theories have been two of the most widely used theoretical explanations for deviance (Norman & Ford, 2015). Hirschi argued that strong social bonds are essential in the development of conformity and social norms in society, and recent research indicated that the weakening of social bonds are linked to substance use (Norman & Ford, 2015; Ford & Ong, 2014; Ford, 2008; Brenner et al., 2011; Kelly et al., 2011; Perra et al., 2012). These social bonds can be made my adolescents who participate in extracurricular activities and can potentially prevent adolescents from engaging in substance use or it can put adolescents at risk for substance use (Brenner et al., 2011). Akers (1985) believed that individuals can learn to be deviant through interpersonal interactions with primary group members (e.g., family, peers, social intuitions), which can arise in extracurricular activities. This occurs by individuals being rewarded for deviant behavior by

primary group members (Akers, 1985). To my knowledge there are no studies that have used

nationally representative data to specifically examine the link between extracurricular activities

using these two theoretical models.

CHAPTER 2: LITERATURE REVIEW

Adolescent risk behavior literature highlights extracurricular activities as a protective factor against adolescent use of cigarettes, alcohol, and marijuana (Elder at al., 2000; Chi et al., 2009; Keyes et al., 2011). However; many studies have shown that participation in sports can increase the chance of adolescent substance use (Veliz et al., 2015; Diehl et al., 2012; Kwan et al., 2014; Lisha and Sussman, 2010; Mays et al., 2011). Previous research suggests that extracurricular activities can increase social bonding and can decrease deviant behavior (Elder et al., 2000; Chi et al., 2009; Keyes et al., 2011). Literature has also found that participating in extracurricular activities during adolescence can exemplify good morals, positive experiences, and opportunities, and can help adolescents feel a sense of belonging and acceptance (Thorlindsson & Bernburg. 2006; Barkto & Eccle, 2003; Dworkin et al., 2003). In addition, extracurricular activities can foster valuable cognitive, social, and emotional skill sets that are important in the development of identities in adolescents (Thorlindsson & Bernberg, 2006; Dworkin et al., 2003).

Despite the large body of research that suggests that extracurricular activities are a protective factor against substance use, many studies conducted on sport participation and adolescent substance use have found that participating in sports during adolescents can increase the chance of substance use (Veliz et al., 2015; Diehl et al., 2012; Kwan et al., 2014; Lisha and Sussman, 2010; Mays et al., 2011). Specifically, previous studies suggest that participating in sports can lead to binge drinking (Moore & Werch, 2004; Veliz et al., 2013). The majority of the literature has focused on athletics, and there is a lack of empirical research on risk and preventative factors of other extracurricular activities such as academic clubs and fine arts.

2.1   Adolescent Binge Drinking / Marijuana Use

In most western countries alcohol use begins at adolescence (Kunstsche et al, 2011). Jester et al. (2014) found that the onset of binge drinking in adolescents is associated with childhood alcohol expectancies which are one of the strongest predictors of alcohol use amongst adolescents (Jester et al, 2014, Goldman, 1999). Adolescence is a sensitive development stage where decision making can be risky; a study conducted by Jones et al. (2016) found that abnormities in the brain in adolescents may cause poor decision making which may lead to binge drinking. In regards to trends in adolescent binge drinking, results from the Monitoring the Future (2015) study found that binge drinking has gradually declined in the adolescents in the past decade, and the 2015 results held the lowest levels of binge drinking in adolescents ever record in the study that has been conducted every year since 1975. However; rates of marijuana use in adolescents have remained steady (MTF, 2015).

Adolescence is an important time period for vital neurological development (Blakemore, 2012), which subsequently puts adolescents at risk of experimenting with drugs such as marijuana (Eaton et al., 2012). Marijuana is the most widely used illicit drug in the United States (Bechtold et al., 2015); and with the legalization of medical marijuana in 24 states marijuana use has become a widely debated topic. According to the MTF (2015) study adolescent attitudes towards marijuana use have continued to move toward greater acceptance. The 2015 MTF results recorded the lowest levels of perceived risk in adolescents towards marijuana use ever recorded in the study (MTF, 2015). The prevalence rates of marijuana use among adolescents remained unchanged from the previous year and showed no significant incline or decline (MTF, 2015). Evidence from large scale cross sectional studies suggests that adolescents who use marijuana

significantly may develop health and mental health issues in adulthood (Behtold et al., 2015; Degehardt et al., 2003; Moore et al., 2007). However, there is a lack of longitudinal studies that have examined the long term medical effects of marijuana use during adolescents (Bechtold et al., 2015).

<div align="center">2.2   Adolescent Sports Participation and Substance Use</div>

The link between adolescent participation in sports and substance use has been widely debated for many years (Veliz et al., 2015; Coakley 2014; Rees, 1994). On one side of the spectrum, parents, teachers, principals, and community leaders encourage adolescents to engage in sports in order to promote healthy lifestyles and prevent substance use (Veliz et al., 2015; Crosnoe, 2002; McNeal, 1995; Marash, 1992). However, it is widely published in past cross-sectional and longitudinal studies that adolescent sport participation can increase risk of alcohol use and binge drinking (Veliz et al., 2015; Diehl et al., 2012; Kwan et al., 2014; Lisha and Sussman, 2010; Mays et al., 2011).

Furthermore, researchers debate that adolescent sport involvement is a distraction from academics (Veliz et al., 2015). Studies have shown that participation in sports and physical activities by adolescents has been generally linked to illicit drug use, alcohol use, binge drinking, and smokeless tobacco use (Moore & Werch, 2004; Veliz et al., 2013). However, sport participation has been linked to a decrease in cigarette use, marijuana use, and cocaine use (Moore & Werch, 2004; Gary & Morrissey, 2000). There is also a link between sport participation and nonmedical use of opioid medications among adolescents. In a study conducted

<div align="center">6</div>

by Veliz et al. (2013), findings suggest that high injury sports such as football and wrestling may increase the risk of nonmedical use of prescription opioids in adolescents.

2.3 School and Adolescent Substance Use

Besides the family, school is one of the most influential outlets for adolescent development (Andrade, 2014; Meece & Schaefer, 2010). Schools foster positive environments for students to excel in academics and engage in extracurricular activities (Andrade, 2014). However, schools also expose adolescents to at risk behaviors such as violence, gangs, bullying, sex, and substance use (Andrade, 2014). Academics and substance use go hand in hand; as substance use increases, academic performance declines (Andrade, 2014); and on the opposite side if adolescents have good academic performance they might be less likely to engage in substance use (Andrade, 2014; Bachman et al., 2008; Brook, Stimmel, Zhang, & Brook, 2008; Crosnoe, 2006; Newcomb & Bentler, 1986). Thus, good academic performance or achievement of participating in academic honor societies can act as a preventative factor for adolescent substance use. This makes the findings of this study unique to previous research studies because I will be able to identify which extracurricular activities can act as a preventative or risk factor for substance use in adolescents by exploring survey results from the Add Health.

2.4 Current Study

Given that substance use among adolescents is prevalent in our society, the current research is important because it will allow for further empirical findings that may link extracurricular activities and adolescent substance use. There is an abundance of research on sport involvement and substance use (Veliz et al., 2015), but there is a gap in the literature on extracurricular

activities and adolescent substance use. Furthermore, this study will address this gap using Hirchi's Social Control Theory and Akers Social Learning Theory. These two theories have been used in past deviant behavior research and can be beneficial in this study for identifying why adolescents choose to partake in substance use. Both theories discuss how social controls and social bonds can affect adolescent deviant behavior, such as substance use. The theories identify social bonds created with peers and social controls such as parental bonds as stressors that may lead adolescents to become deviant. The current study will use data from the ADD Health Wave I in order to identify if any specific extracurricular activity can prevent adolescent substance use or put adolescents at risk. Identifying if there is a connection between extracurricular activities and adolescent substance use is important because, in doing so, effective prevention and intervention programs can be created.

CHAPTER 3: THEORETICAL FRAMEWORK

3.1   <u>Social Control Theory</u>

Hirchi's (1969) Social Control Theory argues that deviant behaviors such as substance use occur when social controls are lacking. Social control is important in society because it promotes conformity (Norman & Ford, 2015). Hirchi's theory argues that when social bonds become weak individuals are at risk for engaging in deviant behaviors such as substance use. Hirschi's (1969) Social Control Theory has four social bonding elements: 1) attachment, 2) involvement, 3) commitment, and 4) belief.

Attachment refers to interpersonal relationships, such as an adolescent's bond to their parents, peers, or social institutions like school. According to Hirschi (1969) the more attached individuals are through social bonds, the less likely they are to engage in deviant behavior. Similarly, Hirschi argues that involvement influences the likelihood of engaging in deviant behavior, for example, the more involved individuals are in extracurricular activities the less time we have to engage in deviant behaviors such as substance use. According to Hirschi, commitment is an individual's bond to social institutions such as one's family, school, and religion. Therefore, the more committed an individual is to these institutions such as extracurricular activities the less likely individuals are to engage in deviant behavior. The last element in Hirchi's Social Control Theory is belief. The stronger an individual believes in societal values and normative behaviors, the less likely they are to break social bonds and engage in deviant behavior. Overall, social control theory argues that the more invested people are in being functional members of society that adhere to societal norms, the less likely the individual will stray from societal norms and become deviant.

This study proposes that social bonds are also connected to conventional society by extracurricular activities. This is theorized due to the need to be involved in conventional activities by society, to develop social bonds (Barnes et al., 2006).

According to Hirschi, "a person may be simply too busy doing conventional things to find time to engage in deviant behaviors" (Hirschi, 1969). Hirschi's theory discusses how academics and family bonds are protective and preventative factors for deviant behavior (e.g., substance use) in adolescents. Therefore, this study theorizes that Hirschi's social control theory can be applied to the link between extracurricular activities and substance use by adolescents. Extracurricular activities can be preventative factors for substance use in adolescents. Furthermore, Hirschi says that "leisure time" activities (e.g. hanging out with peers) is linked to delinquency in adolescents. This goes hand in hand with previous research studies that suggest that too much unsupervised time in adolescence can lead to substance use and delinquency (Barnes et al., 2006; Kwan et al., 2014).

3.2   Social Learning Theory

Akers Social Learning Theory highlights the correlation between socialization and normative influences of social bonds between peers and family members. Akers social learning theory is derived from Sutherland's (1947) classic theory of differential association and also incorporates behavioral psychology theories from B.F Skinner (1953). Burgess and Akers collaborated in 1966 to revise Sutherland's differential association theory of crime. They suggested that criminal behavior is activated by descriptive cues (Burgess & Akers, 1966). Sutherland originally had nine propositions of descriptive cues (Sutherland, 1947). Burgess and

Akers remodeled the propositions into seven descriptive cues (Burgess & Akers, 1966). The main purpose of Burgess & Akers theory suggested that a person will learn behavior from others and then the behavior may be reinforced (Burgess & Akers, 1966). The difference between Sutherland and Akers was that Sutherland believed individuals learn crime during adolescence from family and peers, while Akers believed positive reward and the avoidance of punishment help reinforce crime (Sutherland, 1946; Akers 1966).

According to Aker's Social Learning Theory, deviant behavior can be explained by the connections, socializations, and bonds a person makes with primary group members (e.g., family & peers). These primary group members can expose individual to deviant behaviors like substance abuse. Akers (1953) states that there are four main categories for social learning theory: differential association, imitation, definitions, and deferential reinforcement.

Akers (1985) refers to differential association as the face to- face interactions that people have with primary group members and how we use these interactions to distinguish norms. Primary groups are influential in the development and learning of deviant behaviors and serve as both social and reference groups. According to the theory individuals are exposed to deviant behaviors at an early state of life (priority) by primary group members. These exposures can occur often (frequency), for long periods of time (duration), and are measured by the impact of exposure to deviant behavior (intensity). The premise of differential association is that exposure to norms and values are exemplified through interactions with others. According to the theory, adolescents who interact with peers who use substances are more likely to report substance use than an adolescent who is not exposed to interactions with peers who use substances.

Imitation is the second concept in Akers (1985) social learning theory, Akers refers to this concept as the modeling of other's behaviors. During interactions with primary group members, individuals observe rewards and punishments for certain behaviors and are more likely to imitate behaviors that are rewarded (Akers, 1985). Therefore, adolescents who observe primary group member's rewards for substance use are more likely to also imitate and engage in substance use.

Akers (1984) states that definitions are attitudes and meanings people associate with behaviors. This means that an individual has favorable or unfavorable associations with different deviant behaviors. If an individual predominantly associates a deviant behavior with favorable outcomes, the individual is more likely to engage in said behavior. Therefore, if adolescents define substance use as favorable, they are more likely to use substances as opposed to an adolescent that defines substance use as unfavorable.

Lastly, Akers Social Learning Theory uses the concept of differential reinforcement to explain deviant behavior. According to the theory, rewarded behavior is attributed to positive reinforcement and punishment is attributed to negative reinforcement (Akers, 1984). According to Social Learning Theory, individuals lean to be deviant when rewards outweigh punishments for deviant behavior, especially if this occurs frequently. Based on this theory, adolescents who receive or expect rewards from substance use are more likely to engage in substance use.

The current study examines the measures of Hirchi's Social Control Theory and Aker's Social Learning Theory in relation to adolescent substance use. The purpose of this research is to determine how social control and social learning theories correlate with adolescent substance use in specific extracurricular activities. To my knowledge no other empirical studies have used a

nationally representative data to examine the relationship between social control and social learning theories, substance use and extracurricular activities. The current research examines the relationship between extracurricular activities and substance use in adolescents, using the National Longitudinal Study of Adolescent Health (Add Health) 1994-2002. Given that previous studies have found links between sport participation and substance use in adolescents, it is important to explore if there is a correlation between other extracurricular activities and substance use in this population. In addition, it is important that I identify any potential extracurricular activities that may serve as a preventative factor for substance use in adolescents.

This research is important because empirical findings have indicated that substance use in adolescents can have very negative outcomes, therefor it is crucial to identify if there are any preventative and risk factors in specific extracurricular activities. Based on social control theory I hypothesize that involvement in extracurricular activities may be related to substance use, and based on social learning theory I hypothesize that if adolescents are exposed to peers who use substances they are at risk of engaging in substance use.

CHAPTER 4: METHODOLOGY

4.1   Data

The current study will use data from the National Longitudinal Study of Adolescent

Health (Add Health). The Add Health is a comprehensive longitudinal study of a nationally

representative sample of U.S. adolescents in the grades 7th-12th (N=90,118) and includes both

in-school and in-home interviews. The initial wave of data collection interviewed students at 132

different schools in 1994-95 and consisted of 45-60 min survey sessions. The sample consisted

of high schools and their feeder schools. The Add Health is appropriate for this research because

it uses national representative data from adolescents and asks in depth questions on drugs, peer

associations, and social bonds.

The current study uses data from Wave I of the public use version of the Add Health (N =

6,504). The public use dataset contains all the data from the in-home interview portion of the

study, but only releases a smaller sample. The Add Health sample design is unique, a sample of

80 high schools and 52 middle schools from the United States was selected with unequal

probability of selection. Incorporating systematic sampling methods and implicit stratification

into the Add Health study design ensured this sample is representative of United States schools

with respect to region of country, urbanity, school size, school type, and ethnicity. The Add

Health releases only a small sample of for public use to limit deductive disclosure risk.

4.2   Measures: Dependent Variables

For this study, two dependent measures will be used to measure adolescent substance use.

Binge Drinking was measured using the following survey question: Over the past 12 months on

how many days did you drink 5 or more drinks in a row? This was coded 0 = all respondents that binge drank once a month or less, and 1 = all respondents who binge drank once a month or more. *Marijuana Use* was measured in the past 30 days and coded 0 = No, 1 = Yes

<center>4.3   Measures: Independent Variables</center>

Extracurricular Activities- The independent variable of interest for this study was involvement and interest in extracurricular activities at the time of the survey, coded 0 = No and 1 = Yes. The Add Health has detailed survey questions about adolescent extracurricular activity participation. The first item used the measure: Are you participating/Do you plan to participate in the following clubs, organizations and teams: French Club, German Club, Latin Club, Spanish Club, Book Club, Computer Club, Debate Team, Drama Club, History Club, Math Club, Science Club, Newspaper, Honor Society, and Student Council. This independent variable was classified as strictly academic clubs. The respondents answered yes if they had participated in one or more of these clubs, and no if they had not participated in any.

The second item used responses from the following measure: "Are you participating/Do you plan to participate in the following clubs, organizations and teams (check all that apply): Band, Chorus/Choir, and Orchestra. This independent variable was classified as strictly fine arts clubs. The respondents answered yes if they had participated in one or more of these clubs, and no if they had not participated in any.

The third item used responses from the following measure: Are you participating/Do you plan to participate in the following clubs, organizations and teams (check all that apply): Baseball/Softball, Cheerleading/Dance Team, Basketball, Field Hockey, Football, Ice Hockey,

Soccer, Swimming, Tennis, Track, Volleyball, and Wrestling. This independent variable was classified as strictly sports clubs. The respondents answered yes if they had participated in one or more of these clubs, and no if they had not participated in any.

Social Control Theory: Based on social control theory, five scales were created to measure social bonds. The first scale measured School Attachment and consisted of four items: feel close to people at school, feel like I am part of this school, happy to be at this school, and teachers treat students fairly. All items used to create this scale had a Likert-type response of 1= Strongly Agree to 5=Strongly Disagree. The second social control scale was Grades, which included four items: English, Math, Social Studies, and Science. All items used to create this scale had the following responses: 1= A, 2 = B, 3 = C, 4 = D. The third social control scale was Parental Attachment and included four items: close to biological mother and close to biological father (1 = not close at all, 5 = extremely close); and Mother cares about you and Father cares about you (1 = not at all, 5 = very much). The fourth social control scale was Parental Supervision and consisted of six items: mom at home when you leave for school, dad at home when you leave for school, mom at home when you come home from school, dad at home have you come home from school, mom at home when you go to bed, and dad at home when you go to bed. All items used to create this scale had Likert-type responses ranging from 1 = Always to 5 = Never. Lastly, the fifth scale included nineteen items to measure Parental Involvement. Each measure included survey items asking adolescents if they participated in the following activities with their parents: shopping, played a sport, religious services, talked about life, went to a movie, discuss personal problems, argued about behavior, talked about school grades, and talked about school. These

items were coded 0=No, and 1= Yes and then added together. All social control measures were coded so that a higher score reflected a stronger social bond.

Social Learning Theory: In order to measure Social Learning Theory's *differential association* and *differential reinforcement* three items were used. The first measured drinking among the respondents best friends, while the second measured marijuana use among best friends. Both of these items were coded 0 = no friends use, 1 = one friend uses, 2 = two friends use, 3 = three friends use. The final item asked respondents how much time they hung out with friends during the past week and was coded 0 = not at all, 1 = one or two times, 2 = three or four times, 3 = five or more times.

4.4   Control Variable

Demographic characteristics are used as control variables in this study. These variables included Age (11-21), Gender (0 = female, 1 = male), Race (0 = nonwhite, 1 = white), and SES (0 = no forms of public assistance, 1 = family received public assistance).

4.5   Analytic Strategy

The current research examined if involvement in extracurricular activities was significantly related to substance use and if this relationship was accounted for by variables related to Hirschi's (1969) social control theory or Aker's (1985) social learning theory. Several logistic regression models were be used. Model 1, or the baseline model, included the measures associated with extracurricular activities and controls. Model 2 added the social control measures

to the baseline model. The third model added the social learning measures to the baseline model.

The final model included all measures.

CHAPTER 5: RESULTS

Table 1 shows the sample characteristics for all measures in the analysis (N = 4,751). Approximately 11% of the sample reported binge drinking at least once a month and nearly 13% of the sample reported marijuana use. In regards to extracurricular activities, 33% of the sample participated in academic clubs, 36% participated in fine art clubs, and 56% participated in a sport. Results from the social control measures showed that respondents had strong bonds to both their school and parents. In addition, the social learning measures showed that adolescents spend a lot of time with their friends, and some respondents reported substance use from their best friends. The mean age of the sample was approximately 16 years old, 48% were male, 66% were white, and 9% of their families received some form of public assistance.

Table 5.1: Sample Characteristics

	Range	Mean	Standard Deviation
Substance Use			
Binge Drinking	0,1	0.11	0.32
Marijuana Use	0,1	0.13	0.34
Extracurricular Activities			
Academic	0,1	0.33	0.47
Performing Arts	0,1	0.36	0.48
Sports	0,1	0.56	0.50
Demographics			
Age	11,21	15.53	1.78
Gender (male)	0,1	0.48	0.50
Race (white	01	0.66	0.47
SES (public assistance)	0,1	0.09	0.29
Social Control			
School Attachment	1,5	3.68	0.80
Grades in School	1,4	2.84	0.75
Parental Attachment	1,5	4.61	0.54
Parental Supervision	1,5	3.73	0.63
Parental Involvement	0,27	8.87	5.02
Social Learning			
Time with Friends	0,3	1.97	1.01
Friends drink	0,3	1.11	1.17
Friends use marijuana	0,3	0.58	0.97

Table 2 includes the findings of four logistic regression models that examined the

association between involvement in extracurricular activities and binge drinking. In Model 1 the

arts variable was significant, respondents who participated in extracurricular activities related to

fine arts were less likely to binge drink. In Model 2, involvement in fine arts clubs remained a significant correlate of binge drinking. In addition, two of the social control measures were significantly related to binge drinking, as students with better grades or stronger attachments to parents were less likely to engage in binge drinking. The arts measure also remained a significant correlate of binge drinking in Model 3. Also, both social learning measures were significantly related to binge drinking. This indicated that respondents who spent a lot of time with friends, and were exposed to friends who binge drink were more likely to engage in binge drinking. In the final model, Model 4, involvement in the arts was no longer significantly related to binge drinking. The findings showed a negative relationship between grades in school and binge drinking. Both social learning variables were significant and had positive relationships. These findings indicated that adolescents who spend more time with friends or those who reported binge drinking among their best friends were more likely to engage in binge drinking. Furthermore, a significant negative relationship was found with the gender, race, and age variables. This indicated that older adolescents, males, and whites were more likely to engage in binge drinking.

Table 5.2: Involvement in Extracurricular Activities and Binge Drinking

	Model 1	Model 2	Model 3	Model 4
Academic	.99 (.76, 1.28)	1.30 (0.88, 1.91)	1.12 (0.84, 1.48)	1.48 (0.96, 2.27)
Arts	0.70* (0.53, 0.92)	0.66 * (0.44, 0.99)	0.72 * (0.54, 0.97)	0.68 (0.42,1.06)
Sports	1.11 (0.89, 1.38)	1.15 (0.82,1.61)	0.92 (0.73, 1.18)	0.81 (0.56, 1.18)
Age	1.42*** (1.33, 1.52)	1.46 *** (1.31, 1.62)	1.18 *** (1.09, 1.27)	1.17 ** (1.04, 1.32)
Gender	1.65 *** (1.32, 2.07)	1.54 ** (1.09, 2.17)	1.71 *** (1.33, 2.20)	1.66 ** (1.13, 2.43)
Race	2.28 *** (1.75, 2.97)	3.08 *** (1.94, 4.88)	1.71 *** (1.29, 2.27)	2.25 *** (1.38, 3.68)
SES	1.55 * (1.06, 2.25)	1.41 (0.61,3.27)	1.43 (0.94, 2.19)	1.83 (0.71, 4.73)
School Attachment		0.87 (0.70, 1.09)		0.941 (0.73, 1.21)
School Grades		0.65 *** (0.51, 0.82)		0.76 * (0.58, 0.99)
Parental Attachment		0.72 * (0.54,0.97)		0.85 (0.61,1.17)
Parental Supervision		0.88 (0.68, 1.15)		0.96 (0.72, 1.28
Parental Involvement		1.00 (0.97, 1.04)		1.00 (0.96, 1.04)
Time with Friends			1.37 *** (1.20, 1.56)	1.40 *** (1.14, 1.71)
Friend Drink			2.95 *** (2.62, 3.31)	3.36 *** (2.78, 4.07)

I have listed the Odds Ratio with the 95% confidence interval in parenthesis (* $p < .05$, ** $p < .01$, *** $p < .001$)

Table 3 included the results of adolescent involvement in extracurricular activities and marijuana use. Model 1, the baseline model, showed a negative relationship between involvement in academic clubs and marijuana use, suggesting that adolescents who participated in academic clubs were less likely to use marijuana. Once the social control measures were added in Model 2, there was no longer a significant relationship between involvement in academic clubs and marijuana use. Two social control measures, parental attachment and supervision, were significantly related to marijuana use. Adolescents who had strong attachment to parents and those who were more closely supervised by their parents were less likely to engage in marijuana use. In Model 3, none of the extracurricular involvement measures were statistically significant. However, the social learning measures hanging with friends and friends who smoke marijuana were significantly related to marijuana use, this indicates that if adolescents spend a lot of time with friends, or had friends who used marijuana they were at risk for becoming users. Lastly in Model 4, the full model, extracurricular involvement was not significantly related to marijuana use. However, there was one social control variable that was significant, parental attachment. This indicated that adolescents who formed strong social bonds with parents were less likely to use marijuana. The social learning measures were significantly related in this model, and showed a positive relationship. These results indicated that time spent with friends and use among friends puts adolescents at risk for marijuana use. In addition, this model showed that older adolescents were more likely to engage in marijuana use.

Table5.3: Involvement in Extracurricular Activities and Marijuana Use

	Model 1	Model 2	Model 3	Model 4
Academic	0.77* (0.61,0.98)	0.71 (0.48, 1.04)	0.92 (0.68, 1.25)	0.70 (0.43, 1.13)
Arts	0.98 (0.77,1.24)	1.20 (0.82, 1.75)	1.16 (0.86, 1.56)	1.54 (0.96, 2.46)
Sports	0.97 (0.79,1.18)	1.33 (0.96, 1.85)	0.93 (0.72, 1.19)	1.13 (0.75, 1.72)
Age	1.27 *** (1.19, 1.34)	1.32 *** (1.20, 1.46)	1.15 *** (1.06, 1.24)	1.21 *** (1.06, 1.38)
Gender	1.11 (0.91, 1.37)	1.23 (0.88, 1.72)	1.07 (0.83, 1.40)	1.33 (0.87, 2.02)
Race	1.24* (1.00, 1.53)	1.34 (0.93, 1.93)	1.24 (0.94, 1.63)	1.23 (0.77, 1.96)
SES	1.39 (0.99, 1.95)	0.85 (0.33, 2.18)	1.09 (0.71, 1.68)	0.45 (0.15, 1.37)
School Attachment		0.72 (0.58, 0.88)		0.83 (0.63, 1.08)
School Grades		0.70 (0.56, 0.89)		0.86 (0.64, 1.16)
Parental Attachment		0.58*** (0.45, 0.76)		0.68* (0.48, 0.97)
Parental Supervision		0.75 * (0.58, 0.96)		0.95 (0.70, 1.30)
Parental Involvement		1.02 (0.98, 1.05)		1.01 (0.97, 1.06)
Time with Friends			1.55 *** (1.35, 1.77)	1.69 *** (1.35, 2.12)
Friend Use Marijuana			4.60 *** (4.11, 5.15)	4.97 *** (4.14, 5.96)

I have listed the Odds Ratio with the 95% confidence interval in parenthesis (* $p < .05$, ** $p < .01$, *** $p < .001$)

5.1   Discussion and Conclusion

This research was important as marijuana use and binge drinking are prevalent among adolescents. While it is commonly believed that involvement in extracurricular activities is a protective factor, there is little research in this area outside of studies that focus on sports participation. The current research added to the existing body of research by including fine arts and academic clubs. Furthermore, the current research fills an important gap in this literature by assessing theoretical explanations for these relationships. To that end, Hirschi's Social Control Theory and Aker's Social Learning Theory were included in analytical models to determine if these theories explained the relationship between involvement in extracurricular activities and adolescent marijuana use and binge drinking.

Findings from the current study indicated that extracurricular activities such as academic and fine art clubs can be protective factors for adolescent substance use, this is supportive of previous research that suggests extracurricular activities can reduce the likelihood of substance use (Andrade, 2014; Bachman et al., 2008; Brook, Stimmel, Zhang, & Brook, 2008; Crosnoe, 2006; Newcomb & Bentler, 1986). In addition, despite previous findings that suggested adolescent substance use is linked to sport involvement (Veliz et al., 2015; Diehl et al., 2012; Kwan et al., 2014; Lisha and Sussman, 2010; Mays et al., 2011), the current study did not find any correlation in the binge drinking or marijuana use model. The sports variable may have not been significant in my analysis due to the association between sports and drug use is based on gender, or driven by specific sports, for example football. The results from the analysis with binge drinking showed significant findings in the academic club variable in three out of the four regression models go hand in hand with previous research that suggests that academics can be a

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protective factor for adolescent substance use (Andrade, 2014; Bachman et al., 2008; Brook, Stimmel, Zhang, & Brook, 2008; Crosnoe, 2006; Newcomb & Bentler, 1986). The results from the marijuana model that showed academic clubs to be significant indicates that fine art clubs can be a protective factor for substance use, this correlates with past findings that suggest that extracurricular activities can reduce the likelihood of adolescent substance use and prevent deviant behavior (Elder et al., 2000; Chi et al., 2009; Keyes et al., 2011). Academic and fine art clubs may be protective factors for adolescent substance use due to the type of involvement in these type of activities, for example academic clubs and fine art clubs can foster focus on academics, discipline, leadership, creativity, and social skills that can be protective factors for substance use.

The current study identified important measures of social control, for example the parental attachment was significantly associated with the dependent variable binge drinking. Adolescents who had strong parental attachments were found to be less likely to engage in binge drinking. Also, the social control variable grades were significantly associated with binge drinking, this finding suggests that adolescents who do well in academically and have good grades are less likely to binge drink, this is consistent with previous empirical studies (Andrade, 2014; Bachman et al., 2008; Brook, Stimmel, Zhang, & Brook, 2008; Crosnoe, 2006; Newcomb & Bentler, 1986). Furthermore, the social control variables parental supervision and attachment were significantly associated with the dependent variable marijuana use. Adolescents who had higher levels of parental supervision and stronger attachments to their parents were found to be at a decreased likelihood of engaging in marijuana use. These findings, add a theoretical explanation to adolescent binge drinking literature from a social control perspective. Based on

Social Control Theory substance use is caused when social controls are lacking, this study showed that strong social controls can prevent substance use; which is consistent with previous studies (Thorlindsson & Bernburg. 2006; Barkto & Eccle, 2003; Dworkin et al., 2003' Andrade, 2014; Meece & Schaefer, 2010).

The current research identified important measures of social learning variables that are linked to substance use, for example the independent variable time spent with friends was significantly related with both dependent variables binge drinking and marijuana use. This finding suggests that if adolescents spend a significant amount of time with friends they are at an increase likelihood of engaging in binge drinking and marijuana use, this correlates with the element of social learning theory that states that deviant behavior can be explained by the social bonds a person makes with primary group members (Akers, 1966). In addition, the social learning variable friends who smoke marijuana and friends who binge drink were significantly related to both dependent variables marijuana use and binge drinking. This suggests that peer association with substance users can increase the likelihood of marijuana use and binge drinking, which goes hand in hand with social learning theory's element of peer association predicting deviant behavior. These findings are consistent with previous literature that have found peers to be one of the most influential predictors of substance use (Norman & Ford, 2015; Ford, 2008; Regan et al., 2014; Vito et al., 2014). This is also consistent with findings that suggest that adolescents who have too much unsupervised time with friends can be at risk of substance use (Barnes et al., 2006; Kwan et al., 2014). Furthermore, findings are consistent to the main point of social learning theory, exposure to the values and norms of peers; which findings indicate that

the more peers an adolescent associate with that use drugs the more likely they are to become users as well.

The current research found significant analytical support for both social control and social learning theory. The impact of social learning variables and social control variables were evident in my results. For example, in the binge drinking table, the arts variable was significant in the baseline model (O.R= 0.70), and both social control (O.R= 0.66) and social learning theory (O.R= 0.72) models. However, the arts variable became non-significant in model 4 (O.R=0.68) the regression model that adds both social control and social learning theory. Once, social control and social learning measures were added, involvement in extracurricular activities were no longer important. In the marijuana use table, the academic variable (O.R= 0.77) was significant in Model 1 the baseline model; however, it became non-significant once social control (O.R= 0.71) and social learning (O.R= 0.92) measures were added to the regressions. In addition, the academic variable remained non significant in the fourth model that included both social control and social learning measures (O.R= 0.70), this suggests that once social control and social learning measures were added to the regression involvement in extracurricular activities was no longer important. Overall, the findings of this study were consistent with previous studies that suggest that extracurricular activities can be a protective factor of deviant behavior such as substance use (Andrade, 2014; Bachman et al., 2008; Brook, Stimmel, Zhang, & Brook, 2008; Crosnoe, 2006; Newcomb & Bentler, 1986). In addition, this study found support for both social learning and social control theory for the explanation of why adolescents engage in substance use this was also consistent with previous studies (Norman & Ford, 2015;

Ford, 2008; Regan et al., 2014; Vito et al., 2014), and adds to a limited existing body of literature that compares theoretical predictors of substance use for adolescents.

Previous studies have found that social learning theory as a theoretical explanation for substance use (Norman& Ford, 2015; Ford, 2008; Raganetal et al., 2014; Jackson, 2013; Mounts, 2002). However, the current study found that both social control and social learning theory variables were good measures for explain the link between adolescent substance use and extracurricular activities. This is due to finding significant variables in both the social learning and social control model, support was evident for both theories.

Lastly, the current study identified important significances in demographics. The variable gender was found to be significantly related across all four models with the dependent variable binge drinking, suggesting males were more likely to engage in binge drinking this is consistent with previous substance use studies (MTF, 2015, Kunstsche et al, 2011; Jester et al, 2014, Goldman, 1999). In addition, the variable age was significantly related to the dependent variables binge drinking and marijuana use. These findings indicated that older participants were more likely to engage in binge drinking and marijuana use than younger participants. This is consistent with previous studies that have analyzed the relationship between age and substance use (Norman & Ford 2015, Schroeder&Ford, 2007; Martins et al., 2007; Akers and Lee, 1999). Lastly, the variable race was also significantly related to both dependent variables binge drinking and marijuana use. These findings indicated that whites were more likely to binge drink, this is consistent with previous studies that have found whites to be more likely to binge drink (Chaunhan et al., 2016; Kerr et al., 2011; Zapolski et al., 2014).

5.2   Limitations

A limitation of this study was that responses from the Add Health were self-reported, which brings issues of validity. It is common for adolescents to underreport substance use (Johnson & Fendrich, 2005), adolescents may underreport due to fear of repercussions (Norman &Ford, 2015). However, previous studies have demonstrated that self-report survey data can accurately measure patterns of substance use (Del Boca & Bakers, 2003; Harrell, 1997). In addition, the Add Health had limitations in sample coverage, this is due to the usage of in-school and in-home surveys. The Add Health excluded adolescent substance users in juvenile detention facilitates, boarding schools, and the homeless. In addition, this study was limited to a cross-sectional analysis, and did not look at the relationship of extra-curricular activities and substance use over time.

5.3   Implications for Future Research

The findings of the current study suggest several important implications for future research. Given the scarcity of research on the link between involvement in extracurricular activities and substance use, my findings suggest that academic and fine arts clubs can decrease the likelihood of substance use, continued research is needed to better identify users, causes for risk and preventative factors, short and long term ramifications, and the theoretical correlations of use. This implication is imperative for adolescents, parents, and school officials to be accurately informed of the consequences of substance use in order for proper prevention programs to be implemented. In addition, significances in gender and race were important findings of this study, it is imperative to further research should examine the relationship

between involvement in extracurricular activities and substance use to see if there are differences between adolescent boys and girls. In addition, future research should look at the relationship between involvement in extracurricular activities and substance use between whites and non whites.

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