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Socioeconomic Status, Academic Success, and Relationship with Parent/Guardian: Contributions to Marijuana Use in Teens

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Introduction

According to the 2014 National Survey on Drug Use and Health, illicit drug use in the United States has steadily risen since 2002 and is greater than the estimates from 2002 to 2013 (Center for Behavioral Health Statistics and Quality 2015). Marijuana accounts for a large percentage of the rise in illicit drug use. 22.2 million people ages 12 years and older use marijuana, with "use" in the survey being specified as the respondent having used marijuana in the last 30 days of when the survey was completed. Of these 22.2 million people, 1.8 million were adolescents (age 12 to 17), 6.8 million were young adults (age 18 to 25), and 13.5 million were adults 26 and older. The age range of 16-20 year olds is most important, as many significant life changes occur with the completion of high school and the transition to life after high school. The survey also found that prevalence of past month marijuana use among adolescents 12-17 years of age increased from 6.7% in 2006 to 7.1% in 2013 (Azofeifa 2016). Another key finding from the survey is the prevalence of past month marijuana use increased across the majority of selected demographic characteristics, hinting that increased marijuana use is affecting many different groups, not just a select few.

Marijuana use by all users has damaging effects on the brain including problems with attention and memory as well as effects on mood (Centers for Disease Control and Prevention 2017). However, marijuana use in teens is much more detrimental than older age groups. Unlike adults, whose brains have already fully developed, adolescent brains develop significantly in their teenage years and do not reach full development until their mid-20's (Centers for Disease Control and Prevention 2017). Because of this, the effects of marijuana use on the brain are more impactful and harmful to teens than adults, which is why it is important to do research focusing on teens. According to the Centers for Disease Control and Prevention (CDC), research shows

that adolescents that use marijuana can experience permanent effects on the brain, specifically related to reduced attention, learning, and memory functions as well as effects on decision making, coordination, and emotions (Centers for Disease Control and Prevention 2017). This is especially true for teens that use marijuana regularly or heavily. Frequent marijuana use by teens is also linked to higher school dropout rates and overall lower educational achievement. Chronic users may have underlying issues as well, which affect performance in school, jobs, and more broadly their life (Preston 2006:398). Studies like these have found and defined the effects marijuana can have on brain function in both teenagers and adults. However, there are still many things that are unknown about marijuana use, primarily because it is a Schedule I drug according to the Drug Enforcement Administration (DEA) and therefore is illegal in the United States (U.S. Drug Enforcement Administration n.d.).

Risk Factors for Marijuana Use

There are several groups who are more at risk, or more likely to engage in marijuana use. Results from the 2014 National Survey on Drug Use and Health, conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA), paint a national portrait of marijuana use by age groups. The results of the survey show that adolescents ages 12-17 and young adults ages 18-25 have much higher marijuana use rates in comparison to adults age 26 and older (Center for Behavioral Health Statistics and Quality 2015). About seven percent of adolescents (age 12-17) and about twenty percent of young adults (age 18-25) were current users of marijuana compared to only 6.6% of adults (age 26+). Given that younger populations experience greater health risks associated with marijuana use, their higher rates of use are even more troubling and require further study.

Race, gender, and education also help us to understand who uses marijuana. A previous study done by SAMHSA, the 2007 National Survey on Drug Use and Health, shows the differences in marijuana use by race, gender, and educational achievement for people who are age 12 and older. The study found that 44.9% of whites, 37.9% of blacks, 26.8% of Hispanics, and 16.0% of Asians have previously used marijuana (Substance Abuse and Mental Health Services Administration 2008). Whites make up the highest percent of the population in the United States and also have the highest usage rates out of all of the races surveyed. When looking at gender, the study found 44.9% of males and 36.1% of females have previously used marijuana; something that is to be expected as Svensson (2003) found evidence for higher rates of drug use among males. The study also found that there is a higher level of parental monitoring for females than males. Since males are monitored less, they are likely to have more contact with peers, some of whom may engage in deviant behaviors. The association with deviant peers contributes significantly to drug exposure and drug use, which affects males more than females because of the lack of parental monitoring.

Looking again at the 2007 National Survey on Drug Use and Health, education levels and exposure to different educational institutions also contributes drug use among teenagers. The survey found that 25% of individuals who have less than a high school education have used marijuana (Substance Abuse and Mental Health Services Administration 2008). About forty-two percent of individuals who have at most a high school diploma or GED have used marijuana, about fifty percent of individuals who have completed 1-3 years of college have used marijuana, and 45.5% of individuals who have completed 4 or more years of college have used marijuana. The survey findings show that as education level rises, more individuals are likely to engage in marijuana use. This could be for several reasons including exposure to marijuana through social

interactions and peer groups, being in environments where marijuana is more prevalent (i.e. college campuses), or using marijuana as a means to cope with educational stress (Bond 2007:357.e10).

Social environments also play a role in who is more likely to use marijuana. School is one of the main social environments children to young adults are engaged in, and it impacts individuals not only on an academic level, but also their health and well-being (Bond 2007:357.e10). In a social environment like school, there is the potential for students to lose interest due to negative experiences such as being bullied, negative experiences with teachers, stress, and low academic success. In a study published in *Journal of Adolescent Health*, researchers found if students become disengaged from school, they are more likely to engage in socially disruptive behaviors, fail to complete secondary school, and use drugs such as marijuana (Bond 2007:357.e10). The importance of the education institution is apparent, and the role it plays in shaping and developing individuals is significant. However, it is more than a learning environment. It is where adolescents make friends, engage with certain social groups, learn behaviors of these social groups and engage in behaviors that are viewed as positive to the social group to which they belong.

Another social institution that influences teenage behavior, including potential engagement in drug use, is the family. Families operate in many different ways, with situations varying across demographic characteristics. Some parents have a greater ability to supervise their children more than other parents, for example, two parent or multigenerational households versus single parent households (Deleire 2002). Social environments where parental figures are not present or are rarely present leave children unsupervised and unguided. Studies have found that when left unsupervised, there is a greater chance children will engage in delinquent behavior,

including experimentation with drugs (Lee 2016:661). This is a problem in the United States in particular, as roughly half of inmates housed in state and federal prisons are parents (Lee 2016:661). Their children experience both less oversight and are likely to be of lower socioeconomic status.

In several studies, parental incarceration has been shown to have adverse effects on children (Lee 2016:662). Likewise, children with parents who are present but engage in antisocial behaviors are much more likely to engage in delinquent and aggressive behaviors. In a study done by Lee and colleagues (2016), they found an adverse family environment in late adolescence was associated with greater marijuana use in emerging adulthood. They also found that young adults who engage in marijuana use are more likely to select a partner who also uses marijuana. If a young adult who engages in marijuana use has a partner who does not engage in marijuana use, there is an adverse relationship that occurs due to difficulty in interpersonal functioning (Lee 2016:666).

Overall, there are many social factors that influence adolescents, teens, and young adults to engage in marijuana use. Race, education, overall exposure to various social institutions, peer association and family life all affect the likelihood of an individual to engage in marijuana use. Across prior studies, we can see that males are much more likely to use marijuana than females, whites are more likely to use marijuana than any other racial group, and individuals with a college level education are more likely to use marijuana than those with just a high school diploma or less.

Previous Studies on Marijuana Use

Though research on illicit drug use – and more specifically marijuana use – is extensive and covers a wide range of variables related to the topic, there are gaps in the literature. Some articles focus on marijuana use among adolescents, and the influence it has on illicit drug use later on in adulthood (e.g. Lessem et al. 2006; Flory et al. 2004).Other articles focus specifically on teenage alcohol and tobacco use and the effects of these behaviors, a topic that has been popular in research for the past two decades. Many articles cover single variable relationships linked to marijuana use, and focus on demographic characteristics related to race, gender, and age. Other research looks at socioeconomic status, academic success, and parent-child relationship, but are lacking in several areas. For example, Humensky (2010) tests the relationship between adolescents with high socioeconomic status and the likelihood of engagement with use of alcohol and illicit drugs in early adulthood. The study does not address marijuana specifically, and places an emphasis on high socioeconomic status rather than the relationship between marijuana use and any socioeconomic status. In order to get a better understanding of what factors influence adolescents and teens to engage in marijuana use, multiple variables need to be analyzed with a direct focus on marijuana use specifically.

Academic success is also likely to matter for marijuana use, but prior studies have not focused on this variable. A study done by Bond and colleagues (2007) focuses on school connectedness as a predictor of late teenage substance abuse, but did not investigate academic performance. Because a student could have low social and school connectedness, but still have high academic success, it is valuable to study whether some aspects of adolescent and teenager status that have not been previously investigated contribute to marijuana use. Academic success may predict marijuana use in teens because of the large role that academics play in teenage life.

The pressures a teen may feel because of academic success, or lack of, could act as strain leading the individual to engage in deviant behavior to cope with the academic strain (Agnew 1992).

Parker and Benson (2004) study parental relations to adolescents and how it relates to drug use, but include self-esteem and delinquency variables, without connecting adolescent-parental relationship directly to adolescent engagement in marijuana use specifically (Parker and Benson 2004:519). Because they do not look at the influence of adolescent-parental relationships on marijuana use, there are several questions unanswered in the results of their study. Other studies, such as Andrews, Hops, and Duncan (1997) analyze adolescent-parental relationships and the effects on engagement in marijuana use. This study, like several others, is driven by Social Learning theory, and focuses on how an adolescent with a strong social bond with their parent can influence them to use or not use, depending on parent beliefs and behaviors (Andrews, Hops, and Duncan 1997). There is a lack of focus, if any at all, on the stress that a parental relationship can have on an adolescent and how that can affect their engagement in drug use.

Motive has also been a focus in the research on illicit drug use. There have been two motives established based on observations in various studies: social and coping (Bottorff 2009:2). Social motives are associated with recreational marijuana use and coping motives have been used to classify non-recreational marijuana users. Both motives have been researched and observed, supporting the motive framework. However, there is more literature on social motivations for using marijuana than there is for coping motivations. Research that focuses on social motives tends to look at motivations for recreational use, or using marijuana to experience the sensation of being "high". Less is known about coping motivations for using marijuana, although some studies suggest that youths age 16-24 who use marijuana as a coping mechanism

have higher psychopathology, lower mental health, and more life events that were stressful when compared to youths that do not use marijuana at all (Bottorff 2009:3). Studying marijuana use by looking at teens and even adults who feel that they need to use in order to cope with something is important, as it can offer insight as to what the user needs to cope from.

In the research that has been done previously, there is a lack of analyses driven by Robert Agnew's general strain theory, which suggests that engagement in deviant behavior by an individual is used as a mechanism for coping with stress. Most studies pertaining to the topic of teenage drug use are driven by Social Learning theory, Differential Association theory, and Social Control theory (Agnew 1992; Parker & Benson 2004). While it is important to look at the problem through these lenses, all approaches to the topic should be looked at and studied to gain a better understanding of what the causes are. Social Learning theory and Differential Association theory place emphasis on observation and direct instruction, which is helpful in studying how family and peer influence can contribute to the engagement in marijuana use. However, it ignores the social strain and pressures that an individual may feel, as well as the expectations of the society of which they are a part of. Social Control theory focuses on the internalization of moral codes that stem from relationships, values, norms, and commitments, which then tie them to society. Because of these ties, individuals may feel less compelled to engage in deviant behavior voluntarily. Just like Social Learning and Differential Association theories, Social Control does not take into account the strain that society puts on individuals. It also does not account for goals an individual may have, nor does it explain how individuals may cope with the strain of not being able to achieve those goals.

General Strain Theory

I draw on Robert Agnew's general strain theory for my analysis on teenage marijuana use and the affects that academic success, parent relationships, and socioeconomic status may have on marijuana use. Merton's 1938 article, "Social Structure and Anomie", started a period in which strain theory dominated research in the field of criminology and specifically deviance (Aseltine Jr. 2000:257). However, in the 1970's strain theory started to become less prevalent in research due to evidence from studies that found little to no associations between opportunity and goal differences and engagement in delinquent behavior. Agnew attempted to rejuvenate strain theory by establishing his general strain theory. His general strain theory (GST) is an extension of the classic strain theories and is much broader. First, some background on strain theory is needed.

Classic strain theory recognizes strain to be a result of the failure to achieve positively valued goals (Agnew 1992:48). It focuses only on negative relationships with others, for example a friendship where the individual feels they are not treated the way they would like to be treated. Strain theory also focuses on how relationships hinder and/or prevent an individual from achieving positively valued goals (Agnew 1992:49). When these negative relationships occur, individuals feel anger or related emotions in which they then engage in delinquent behavior caused by negative feelings towards the relationship. These delinquent behaviors include using illegitimate means to achieve goals, retraction or retaliation against the negative relationship, or engagement in drug use in order to manage their emotions of anger towards the negative relationship. The positively valued goals that strain theory recognizes are particularly associated with achieving monetary success or a higher class status than the one they currently hold.

Agnew's general strain theory recognizes that strain can result from a much broader array of factors (Agnew 1992:47). His theory focuses on the individual and the social environment that surrounds them, and argues that strain comes from the inability to achieve certain goals emphasized by the culture as positive (Agnew 1992:51). Like the classic strain theories, he argues that strain experienced by an individual can create pressure in which the individual responds with deviant behavior.

Although Agnew defines strain as "relationships in which others are not treating the individual as he or she would like to be treated", researchers have used the term in several different ways (Agnew 2001:320). Some have referred to strain as an objective event or condition, while others have referred to it as the emotional reaction to an event or condition. For this reason, Agnew revised his original definition of strain and categorized it. The first categorization is "objective" strain, which refers to events or conditions that are not liked by the majority of individuals in a given group. The other categorization is "subjective" strain. Subjective strain refers to events of conditions that are disliked by the individual experiencing them (Agnew 2001:321). Most research driven by general strain theory looks at objective strain, as subjective strain is harder to measure empirically. It requires the researcher to dive deeper into respondents' answers in order to classify the strain as subjective. Altogether recent studies do not focus on strain in teenage life and marijuana use as a coping mechanism. Therefore my focus is to address these gaps in the literature and get a better understanding of what stressors increase or decrease the likelihood of a teenager to engage in marijuana use.

My Study

The focus of my research in this study is to identify if gender, relationship with parents, academic success, or socioeconomic status influence marijuana use in teenagers and young adults ages 16-20. I draw on Agnew's general strain theory, specifically viewing the independent variables (relationship with parents, academic success, socioeconomic status) as sources of strain, and marijuana use as methods to cope with strain. General strain theory argues that individuals who feel strain use deviant behavior as a coping mechanism. In this study, the deviant behavior/coping mechanism is the dependent variable (marijuana use).

The data used for my analyses comes from the National Longitudinal Study of Youth-1997 (NLSY97). The NLSY97 is a nationally representative sample of approximately 9,000 adolescents who were 12 to 16 years old when the survey was first conducted in 1997 (U.S. Bureau of Labor Statistics n.d.). The first round of the survey consisted of hour-long personal interviews with both the eligible youth and one of their parents. Additionally, a two-part questionnaire was administered during the first round in order to gain an understanding of demographic information. After the first round, the respondents are interviewed every other year. According to the Bureau of Labor Statistics' website, the purpose of the NLSY97 is to "document the transition from school to work and into adulthood". This makes the survey a great data source as it covers a wide range of variables pertaining to respondents' lives.

For this study, my research question is "Does gender, socioeconomic status, academic success, or parent relationship influence marijuana use in teenagers?" My hypotheses are based on findings from previous studies related to the topic and are:

H1: Male teenagers use marijuana more than female teenagers.

H2: Teenagers with lower socioeconomic status use marijuana more than teenagers with higher socioeconomic status.

H3: Teenagers with lower academic success use marijuana more than teenagers with higher academic success.

H4: Teenagers with less involved parent/guardian use marijuana more than teenagers with highly involved parent/guardian.

Variables

Marijuana use is the dependent variable in this study. The NLSY97 survey question pertaining to marijuana use is stated as "On how many days have you used marijuana in the last 30 days?" and answers ranged from 0 to 30. I define a marijuana user as someone who has used marijuana one day or more in the last 30 days that the survey was conducted in year 2000.

Gender, socioeconomic status, academic success, and parent/guardian relationship are the independent variables in this study. The survey question related to gender from the NLSY97 simply stated: "Gender of youth", in which there were two answers: male or female. I define gender as the state of being male or female, just as the survey question defines it. I define socioeconomic status as a measure of economic and social position based on income. To analyze the socioeconomic variable, I used a question from the NLSY97 regarding household income to poverty ratios. The survey question from the NLSY97 is stated as: "Ratio of household income to poverty level in the previous year". I used prior survey years (1997-1999) to fill in missing values on income to poverty ratio due to the large amount of missing data. The academic success variable is measured by the respondent's self-reported grades from 8th grade. In the NLSY97 survey, the question is stated "Overall, what grades did you receive in 8th grade?" I combined the

same survey question from 1998 and 1999 in order to include respondents who did not answer the question in one of the two years due to their age. Grades received in 8th grade depict how academically successful respondents were before entering high school. The parent/guardian relationship variable is measured by the youth's response to the questions in the NLSY97 "Youth relationship with residential mom" and "Youth relationship with residential dad." The answers to these questions were based on a scale from 0 to 32, with a higher score indicating a more supportive relationship. Respondents rate parents' behavior.

Table 1 shows the descriptive statistics of all the variables used in the analysis. As the table shows, the sample consists of 51.19% male and 48.81% female identifying as 50.59% White, 25.99% Black, 21.16% Latino, and 0.92% Multiracial.

Table 1. Descriptive statistics for all variables

	Mean	Std. Dev.	Min	Max
Respondent characteristics				
Gender				
Male	51.19%			
Female	48.81%			
Race-ethnicity [ref = non-Latino, non-Black]	50.59%			
-Black	25.99%			
-Latino	21.16%			
-Multiracial	0.92%			
Parent Relationship				
Relationship with mom	25.07	4.82	2	32
Relationship with dad	24.49	5.57	0	32
Socioeconomic status				
Income to poverty ratio	283.18	270.14	0	1627
Academic Success				
Grades in 8th Grade	5.89	1.77	1	13

Logistic Regression

I use logistic regression as the method for analyzing the data in my study. A logistic regression is a predictive analysis and is the best regression analysis to use when the dependent variable is dichotomous, which only has two outcomes (Pampel 2000:1). In my study, the dichotomous dependent variable marijuana use has two outcomes: an individual has used marijuana in the last month or an individual has not used marijuana in the last month. A dichotomous variable is best

for this study because marijuana use measured over thirty days was skewed. Because my study uses a dichotomous dependent variable, logistic regression is the best method for analysis. Another aspect of a logistic regression is that the independent variables take the form of mean proportions. This is useful as they show the increase or decrease in the predicted probability of an event occurring due to a one-point change in the independent variable. The most straightforward way to interpret a logistic regression is to present the results as odds ratios. To interpret a logistic regression using odds ratios, coefficients above 1 reflect a percent increase in the likelihood to use marijuana. Coefficients below 1 reflect a percent decrease in the likelihood to use marijuana.

Results

For my analyses, I use four different models to predict marijuana use among teenagers ages 16-20. The sample size varies across models because of missing data or item nonresponse for some independent variables, particularly parental relationships.

Model 1 predicts frequency of marijuana use over a 30 day period, and is a test of H1. Looking at gender and race in the analyses, males are 45.7% more likely to use marijuana than females ($p<0.000$). When looking at race, Latino individuals are 26.6% less likely to use marijuana than white individuals ($p<0.000$). Black individuals are 38.5% less likely than white individuals to use marijuana ($p<0.000$). This model is based on a sample size of 8,069 people.

Model 2 predicts marijuana use in a 30 day period based on Model 1 variables plus household income to poverty ratio. This model is a test of H2. The model shows that males are 59.1% more likely to use marijuana than females ($p<0.000$). Latino individuals are 24.8% less likely to use marijuana than white individuals ($p<0.01$). Black individuals are 33.7% less likely

to use marijuana than white individuals (p<0.000). Household income to poverty ratio was nonsignificant in predicting marijuana use. The sample size of this model is 6,636 because of missing data on the household income to poverty ratio.

Model 3 predicts marijuana use in a 30 day period and adds 8th grade grades to Model 2. This model is a test of H3. Like the previous two models, males were 40.8% more likely to use marijuana than females (p<0.000). Latino individuals are 28.5% less likely to use marijuana than white individuals (p<0.000). Black individuals are 39.3% less likely to use marijuana than white individuals (p<0.000). I also found that a one-point increase in household income to poverty leads to a 0.03% increase in odds of using marijuana (p<0.01). I also found that a one-point increase in 8th grade grades leads to a 15.3% decrease in odds of using marijuana (p<0.000). The sample size of this model is 6,254.

Model 4 predicts marijuana use over a 30 day period and adds relationship with mom and relationship with dad to Model 1, which is a test of H4. In Model 4, males are 37.1% more likely to use marijuana than females (p<0.01). Latino individuals are 20.7% less likely to use marijuana than white individuals (p<0.10). Black individuals are 40.9% less likely to use marijuana than white individuals (p<0.000). I found that a one-point increase in mom support leads to a 2.5% decrease in odds of using marijuana (p<0.10). I also found that a one-point increase in dad support leads to a 2.5% decrease in odds of using marijuana (p<0.01). The model is based on a sample size of 3,529 people.

	Model 1		Model 2		Model 3		Model 4	
	(S.E.)		(S.E.)		(S.E.)		(S.E.)	
Explanatory Variables								
Gender (1=male)	1.46	***	1.59	**	1.41	**	1.37	**
	(0.09)		(0.10)		(0.10)		(0.13)	
Race/ethnicity (reference=white)								
Nonlatino black	0.62	***	0.66	***	0.61	***	0.59	***
	(0.05)		(0.06)		(0.05)		(0.08)	
Latino	0.73	***	0.75	**	0.72	***	0.79	*
	(0.06)		(0.07)		(0.07)		(0.09)	
Multiracial	1.17		0.97		0.99		0.96	
	(0.32)		(0.30)		(0.32)		(0.44)	
Mom Support							0.98	*
							(0.01)	
Dad Support							0.98	**
							(0.01)	
Income to Poverty Ratio			1.00		1.00	**		
			(0.00)		(0.00)			
Grades in 8th Grade					0.847	***		
					(0.02)			
Constant	0.21	***	0.19	**	0.51	**	0.661	
	(0.01)		(0.01)		(0.07)		(0.17)	

Discussion

This study looks at several factors that cause strain in youth lives, examining how these factors could affect an individual's chances of using marijuana as a coping mechanism to the strain. All four models show males are much more likely (37-59%) to use marijuana than females which supports the first hypothesis (H1). This also supports Svensson's (2003) study on drug use and the impact of gender differences. Males and females are raised differently and have differing rules and restrictions set by parents. Females have higher parental regulation, resulting in differences in freedom which impacts association with peers. Svensson (2003) argues that this results in higher drug use among males due to increased association with delinquent peers. However, the freedom that is associated with lower parental regulation can act as a stressor to which males feel they have to cope with.

Socioeconomic status, measured using household income to poverty ratios, was found to be less impactful in predicting marijuana use among teenagers. Although it was significant, I found that a one-point increase in household income to poverty ratio leads to a 0.03% increase in odds of using marijuana. This partially supports my second hypothesis (H2), but needs further study to indicate whether socioeconomic status acts a stressor that increases the likelihood for a teenager to use marijuana. Although statistically significant, the coefficient is so small in magnitude that it is not clear whether SES truly matters for marijuana use.

Though not included in my hypotheses, race was found to be significant in predicting marijuana use among teenagers. The impact was similar across all four models, with Latino and black individuals less likely to use marijuana than white individuals. Latino individuals are 20.7-28.5% less likely and black individuals are 33.7-40.9% less likely across all four models. These results are consistent with findings from previous surveys on race and marijuana use (Substance Abuse and Mental Health Services Administration 2008).

The most important finding from the study is the impact of academic success measured by respondents' 8th grade grades. In model 3, results show that a one-point increase in 8th grade grades leads to a 15.3% decrease in the likelihood of using marijuana. This result supports my third hypothesis (H3) and shows that academic success has a significant impact in predicting marijuana use. Agnew's General Strain theory can help us better understand why this may be the case. The education system is an extremely important institution in the United States, primarily because of the role it plays in shaping and developing individuals of all ages. It is in place to educate and socialize, placing an emphasis on high achievement and success. Emphasis on success can become detrimental when individuals feel strain or stress due to their inability to achieve what the society views as positive. In this case, the inability to achieve "good" grades or

high academic achievement can result in the individual feeling strain, and then engaging in delinquent behavior to cope with the strain. Because this study does not take into account the respondents' feelings towards academic success, this type of strain cannot be categorized as "objective" strain or "subjective" strain. This means that the strain may come from events and conditions not liked by a group or the majority of individuals (objective), or it could come from events and conditions not liked by the individuals experiencing them. This finding also shows that total education level is not as impactful in predicting marijuana use as the amount of achievement within a specific education level.

There is partial support found for the fourth hypothesis as well, however it is similar to the results of socioeconomic status in that it is less impactful in predicting teenage marijuana use. I found that a one-point increase in the relationship with a mother leads to a 2.5% decrease in the chances of a teenager using marijuana. The findings are exactly the same for the relationship with a father. From this we can conclude that relationship with parents as well as socioeconomic status produce some strain in teenagers' lives, but only predict small changes in the chances of a teenager actually engaging in marijuana use. Still, support was found for both hypotheses (H2 and H4).

Limitations

The study has a few limitations, primarily due to the method used to gather the data and the data itself. The data used in this study comes from surveys conducted from 1997-2000. In this time, marijuana has become legalized for recreational use in several states (Colorado in 2012; Oregon, Alaska, and Washington D.C. in 2014; Massachusetts, California, Nevada, and Maine in 2016) throughout the United States, making it more accessible to both those legally permitted to use as

well as underage and unpermitted youth, such as the ones examined in this study. Because marijuana is illegal for recreational use in the majority of states and the respondents in this study are underage in states permitting recreational marijuana use, survey responses may not be completely truthful. This could be deliberately because of legality issues, but also could be unintentional as marijuana users experience cognitive deficits that could affect memory recall. Regardless of marijuana use, recall over thirty days is difficult. However, using a dichotomous variable reduces this limitation as it only requires respondents to recall if they have used marijuana "at all" in the last month.

The sample size of each model is also a limitation, as not all models have the same sample size. This is due to respondents not answering all of the survey questions from the NLSY97 that pertain to each model analyzed. However, the NLSY97 data has approximately 9,000 respondents and is nationally representative. Another limitation is the age group being studied and the accuracy of their answers. The respondents were young in age at the time of the survey and may not have an accurate or fair sense of certain survey questions being asked. For example, teenagers may not know their parents' income and therefore may be unable to report it.

In conclusion, this study found that academic success has strong influence in teenagers' lives which results in strain, and it significantly impacts the chances of a teenager using marijuana. High academic success is associated with a decrease in the chances of a teenager using marijuana, supporting hypothesis 3. Males are much more likely to engage in marijuana use, supporting hypothesis one (H1). Future research should be done to further explore the impact that strain, caused by academic success, has in teenagers' lives and how marijuana acts a coping mechanism. In addition, research on the impacts of strain caused by socioeconomic status

and relationship with parents could help us better understand what causes teenagers to engage in drug use.

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