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Adolescent Transitions from Licit to Illicit Drug Use: Impacts of Protective and Risk Factors

By

Jenna R. Harrison¹

ABSTRACT. This study examined how transitions from licit to illicit drug use by adolescents were influenced by risk and preventative factors in their lives. Survey data, from approximately 2000 twelfth grade students surveyed in the 2013 Monitoring the Future: A Continuing Study of American Youth study, supplemented with feedback from eight professionals knowledgeable about youth drug use, were used. A sequential regression analysis found that licit drug usage significantly increased the possibility that a youth will transition to illicit drugs. That peer drug culture increased the risk of both types drug usage was predicted using Sutherland's Differential Association theory (1939). However, family support and academic engagement, as per Social Supportive Control theory (Hirschi 1969) directly decreased the likelihood of licit drug use and only indirectly illicit drug usage. Results from this mixed methods research contributed to the existing body of research on the gateway perspectives in adolescent drug use scholarship and has practical implications for developing youth drug deterrence programs.

INTRODUCTION

Adolescent substance usage, because of both the impressionable age of the users and the negative long consequences of drugs, has drawn the attention of scholars, educators, policy experts, and the media. Of course, not all youth are drug users. Neither is youth drug use a new phenomenon. Adolescents have been experimenting with and using drugs for generations. While the drugs of choice may have changed over time, youth still use both illicit and licit drugs. However, there are both the obvious users and those who use drugs undetected. Using a variety of definitions of drug use and different scales for measuring prevalence, frequency or just usage, scholars have studied the risk and protective factors involved in not only adolescent drug use but different types of drug use as well.

In a search for potential pathways to illicit drug use among adolescents, this study used a mixed methods approach to explore the roles that critical institutions have played in the presence (or absence as the case might be) of drugs, both licit drugs, as gateway drugs, and illicit drugs, in the lives of adolescents. The primary purpose of socializing institutions, like the family and schools, is to protect youth from drug use and other related risky behaviors. Others, such as peer cultures, place youth at risk for drug use. Parental social capital, family support, and

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student academic engagement were some of the protective sources considered in this analysis. But, peer drug culture and accessibility of drugs were expected to raise the drug risk level for adolescents. High School seniors, the focus of this research, are on the verge of adulthood; identifying the risks of and predictors of drug use can be utilized to develop high school drug programs to help them transition smoothly into adulthood. At risk students can be targeted with appropriate programming to deter them from drug usage by strengthening protective sources and minimizing risk factors.

LITERATURE REVIEW

Scholars in the extant literature have identified a set of critical factors in adolescent use of drugs, particularly illicit drugs. They include adolescent responsibility or agency in drug use, family protection against drug use, and the community context of illicit drug use.

Gateway Drugs to Illicit Drug Use

The story of illicit drug use by adolescents is not restricted to only one drug nor is it just dependence on that one drug. Neither is illicit drug use the starting point of one's drug use history. Licit drugs often precede or become the gateway, the entry, into the world of illicit drugs. For example, in a study of 2,019 American 10th graders, Maldonado-Molina and Lanza (2010) defined a gateway drug as a drug that preceded the second drug and, most importantly, increased the probability that an adolescent would use that second drug. Ward, Stogner, Gibson and Akers also found that the frequency of gateway substance (cigarettes or alcohol) use increased the likelihood that a youth will move towards a harder substance like marijuana in a sample of 1,116 11th and 12th graders in mid-western U.S. The timing between when the original drug was introduced and the harder drug was first tried was crucial to identify in order to fully understand the relationship (Maldonado-Molina & Lanza 2010).

There is a large body of work on why adolescents use drugs, either licit or illicit drugs. But, not much is known about the life circumstances surrounding adolescent transitions from the licit to illicit drug world. Besides, what is known about the gateway theory has come from studying adults. Often studies, like the one done by Morojele and Brook (2001), focused on transitions in adulthood that were triggered by experiences like drug experimentation as an adolescent. After studying 686 individuals in upstate New York for twenty years, they found that youth deviance (including drug use) increased the likelihood of transitioning to illicit drug use in adulthood. Adults who were frequent abusers of illicit drugs were heavy licit drug users in their adolescence. Likewise in a longitude study of 1,256 New Zealanders, marijuana users in their youth had increased levels of use, abuse, and diversity of use of illicit drugs (Fergusson, Boden & Horwood 2006). However the strength of the relationship between youth and adult drug use declined over time; youth drug use had a larger impact on use in early adulthood than when they got older. While these works confirmed the gateway theory, they overlooked youth who transition to illicit drug use before they even reach adulthood.

Who are Adolescent Illicit Drug Users?

Researchers who sought to identify demographic and other profiles of youth illicit drug users have settled on both decisions made by the adolescents as well as environmental triggers. Speaking to adolescent's agency or decisions, Wright, Bobashev and Folsom's analyses of the

1999 NHSDA (National Household Survey on Drug Abuse) data showed that seventy-nine percent of why a youth used illicit drugs was a function of the individual youth independent of any outside factors (2007). Older, than younger, adolescents were more likely to use drugs (Myers 2013). Male youth were also more likely to use drugs than their female counterparts (Connell, Gilreath, Aklin & Brex 2010; Krohn, Hall & Lizotte 2009; Hammond, Ahmed, Yang, Brukhalter & Leatherdale 2011; Newcomb, Birkett, Corliss & Mustanski 2014). Further, being a sexual minority was an additional risk for drug use; being on the fringe, these students were hypothesized to have turned to drugs to escape the isolation (Newcomb et al. 2014).

These demographic characteristics have been theorized to be proxies for social dynamics that can impact the agency or responsibility that youth have to withstand or succumb to the appeal of drugs. For example, male adolescents, when contrasted with females, had less exposure to protective factors in the community (Kim, Oesterle, Hawkins & Shapiro 2015); the differential protection received by female youth enabled them to withstand the allure of drugs. Connell and his colleagues found that negative beliefs about drug use (a more direct indicator of agency) protected adolescents against use. On the other hand, positive drug views exposed them to drug risks; these students were open to using various types of drugs.

Family: Protection or Risk for Youth against Illicit Drug Use?

Families, as critical early socializing agents, are posited to be important players in the lives of adolescents. Families are the first social networks that youth know. Familial relationships that exist, or do not exist, are an important part of all adolescent's environment. It is, therefore, not surprising that a parent's disapproval of drug use or close supervision of their child decreased the likelihood that their child used drugs (Myers 2013; Connell et al. 2010). The rules and limits parents set for their child diminished their exposure to illicit drug use by sheltering them from certain risky locations, be they geographic or social (Connell et al. 2010). In other words, the supportive relationships nurtured between the parent and their children played a vital part in the protection against drug use. When youth felt that they were accepted by their parents, they were less likely to initiate, leave alone continue, drug use; this was the case especially so when they had positive relationship with a father figure (Myers 2013).

While strong, positive familial relations protect adolescents against risks, other family dynamics might put an adolescent at risk of using drugs. Some examples: A family member who used illegal drugs not only exposed the youth to drugs but also placed the youth at risk for using illicit drugs (Myers 2013²; Nuño-Gutiérrez, Rodríguez-Cerda & Álvarez-Nemegyei 2006³). An adolescent looks to family members for examples of acceptable behavior and if they see drug usage, it might change how the adolescent views drug usage. Regular alcohol usage by a parent increased the acceptance of drug use by children in a study of 451 high risk (namely, children of alcoholics) adolescents (Hussong, Huang, Serrano, Curran & Chassin 2012).

Fortunately, stable relationships fostered between family members and their children were more salient than alcoholic or drug use by family members (Krohn et al. 2009). Youth were more at risk for drug use and other problem behaviors if there was not a stable relationship between parent and child, regardless of how many guardians there were in the household. Another aspect of family stability was residential mobility. Lee found that Latino families (2,621 Latino youth aged 12-17) who moved frequently had less family stability and higher levels of youth illicit

² The authors utilized Family Connections data from 1,043 African American students in the rural south.

³ Sample was comprised of 60 drug using teenagers.

drug use when using studying (2007). Their children were not only unable to create positive student peer relationships they also struggled with parental relationships.

As for the protections or risks offered by a family's socioeconomic resources, the evidence has been mixed. When studying Canadian youth (9,288 7th to 12th graders surveyed in the Ontario Student Drug Use and Health Survey) Hamilton, von der Mass, Boak and Mann found that adolescents whose parents had less than a college degree had higher probabilities of drug use (2013). But, education and family income were by no means certain to protect children from drugs. For example, for 781 student surveyed at state universities in Ankara, Turkey, parents with higher levels of education increased the odds of their children using drugs. Not only did the privileged children have more access to economic resources, but parenting by educated parents was more permissive and they were often not home to monitor their children (Ayvasik and Sümer 2010). Similarly, 20,745 U.S. students in grades 7-12 from high income families were also found to have higher rates of illicit drug use (Humensky 2010). On balance, it is not necessarily how well resourced a family is (or not) that is critical in protecting their children from drugs. Rather, it is the socialization, supervision, and positive role modeling that are the buffers against drug use by children.

Schools and Academics as another Site for the Adolescent Drug Story

In addition to the youth's family, schools and their academic lives are another critical context in which the story of adolescent drug use (or not) has played out. When academics outweighed deviant peers in the children's lives, youth ability to perform well in school protected them against drug use. Connell et al. found that a commitment to school and good grades received by the students decreased the likelihood of an adolescent using both illicit and licit drugs (2010). But, in Wilson and Widom's (2008) longitudinal study of around 1,500 children, school problems precipitated the onset of regular continued drug use among adolescents; these students saw drugs as an escape from academic troubles.

The Community Context of Drug Use

The community of adolescents includes their peers, neighborhoods, and the broader community. As each adolescent spends more time at school and less time at home with their families, peers become a larger influence on behavior. Neighborhoods and the surrounding areas in which students live offer additional risks for and protection from drugs.

Peer Cultures. As children grow up, the first and most active part of their community is their peers. They spend a large portion of their youth with their peers, be it at school or in their neighborhoods. Consequently, peer pressure can play a major role in protecting or creating risk for adolescent actions. For example, two hundred and ninety-one adolescents in South Africa noted peer pressure for using drugs; peers were part of their socialization networks and they worried about being isolated if they did not participate in group activities (Hendericks, Savahl & Florence 2015), even if it included drug use. Some attempted to gain their peers approval and attention by engaging in drug use in order to solidify their group membership.

Neighborhoods and Broader Communities. Extending outside the family, schools, and peers is the broader neighborhood and other communities in which youth live. The unique features, cultural, economic, and political, of communities percolate down to adolescents. For example, there have been different rates of adolescent alcohol and drug noted across the major areas of

Canada; these patterns followed the regional patterns of adult drug use (Hammond et al. 2011). The study cited potential regional differences, as in different access laws for each substance in the various regions and the differences in youth education. Closer to home, living in an urban and disadvantaged community can lead to an increased risk of drug use as was found by Swahn & Bossarte (2009) when they compared data from students in urban areas to a national survey data. Living in an urban and disadvantaged community increased the prevalence of involvement or exposure to risky behavior.

Against such overwhelming evidence of drug risks in the youth's communities, can, and if so how, can communities protect their children against the risks of drug use? With these goals in mind, 24 communities across 7 states participated in a program called "Communities That Care" (CTC). They received training in how to implement drug prevention programs. As a first step, the CTC program provided communities with a structure in order to address community specific needs. They were trained to assess levels of risk and protective factors in the community before using this knowledge to teach skills that allowed students to resist peer drug cultures. These small towns' strategies were highly effective with middle school students but the preventative factor was lost among high school students (Kim et al. 2015). Part of the explanation was that the programming was not continued for students as they moved into high school, showing that the skills were not maintained without the programs.

Youth Agency

There is also growing recognition in the scholarly and applied communities that it is not only the system (be it the family, schools, and peers) that important to consider, youth agency (or responsibility) in how they respond to the risks for or protection from drug use are equally vital. When youth perceived drugs as easily accessible in the community, they were more likely to use drugs (Connell et al. 2010). In other words, when over 10,000 high school seniors were studied nationally, drugs were perceived by adolescents to be more accessible, disapproval levels were down and in turn increased the likelihood that they used drugs (Duncan, Palamar and Williams 2014).

Summary of Extant Research and Future Directions

Adolescent lives are made up of a variety of experiences that range from those within their control (youth agency) to those in broader community settings in which they live. Some experiences protect adolescents against licit and illicit drugs while others elevate the risks. For example, male youth and sexual minorities were at elevated drug risks. And youth who perceived drugs to be accessible were more likely to be users. Moving outside the purview of youth agency, having a supportive family protected against drug use while a dysfunctional family increased the likelihood that youth used drugs. In the school setting, adolescents who were academically engaged were also less likely to use drugs. However, academic peers posed drug risks for the adolescents. Beyond school, living in an urban and disadvantaged community increased drug use.

In short, while much is known about adolescent drug use, gateway drug use among adolescents is a relatively unexplored topic. No doubt, prior use of cigarettes or alcohol (youth agency) increased the likelihood that youth transitioned to marijuana use. But, not much is known about other licit drugs, like prescription drugs, as starter drugs. Prescription drugs, often as easily accessible as the bathroom cabinet, can become the first drug of choice by youth. It is crucial to

identify multiple pathways to adolescent drug use to find ways to prevent starter drug abuse before youth transition into harder drugs. This research, with its singular focus on adolescents, can offer valuable information for youth drug prevention programs.

RESEARCH QUESTION

What are the sources of risks for, and prevention of, illicit drug use among youth? Specifically, the following risks were considered: licit drug use, accessibility of drugs, peer drug culture and pro-drug use youth opinions. Academic engagement, family support and parental social capital were the preventative sources chosen. To test the gateway paradigm among adolescents, illicit drug use was first tested against licit drug use, net of risks and preventative sources. These analyses not only offered a test of the gateway model but also made compared reasons for illicit versus licit drug use. Economic resources (to account for variations in drug purchase options) and gender were controlled.

THEORIES AND RELATED HYPOTHESES

Theoretically speaking, why are youth drawn to drugs and other delinquent activities? Could it be that the daily stressors or strains become so overwhelming that they turn to deviant behaviors as a way of coping with the strains? For example, an adolescent who has disengaged or failed in school or whose family environment is dysfunctional or abusive might turn to drugs in order to escape the strained reality. Drugs might also be a way to rebel against the perceived social constraints exercised by parents and schools. From the perspective of Strain Theory (Agnew 1992), drugs offer adolescents ways of coping with the strains they face.

However not all adolescents who experience strain turn to licit or for that matter illicit drugs. Primary social institutions, like empathic families and supportive academic environments, can help youth resist the lure of drugs. As studies have found, families are often the first protective defense for children. Early in a child's life, parents, as they effectively socialize their children, instill socially appropriate values and behaviors. Parents, through a variety of supportive and corrective social control mechanisms, help children develop a strong sense of self. The Iowa School of self-concept theorized that as the children blossom into adolescence and even adulthood, their strong core self-concept would remain a positive guide in choices and decisions to stay away from drugs and other destructive behaviors (Kuhn and McPartland 1954).

No doubt, like all things, dysfunctional families can add to the normal strains in a child's life. Without proper parental guidance and controls, these children might develop weaker self-concepts, and be easily steered towards delinquent actions like drug use, to cope with or as reactions to family strain. Additionally, parents who themselves are part of dysfunctional or even abusive cultures expose their children to abusive behaviors, drugs, and other socially destructive actions.

As children grow older and spend more time outside the home and at school, peers become their main socializing agents. Peer interactions might solidify the child's core self-concept or alternatively might shake and even fundamentally reshape it. It stands to reason that the youth core self will remain the most influential force in their lives, if the youth and their significant peers have similar positive pro-social values. In contrast, interactions with deviant peers, like drug users, expose youth to values and behaviors contrary to the pro-social norms learned in the home. As per the Differential Association theory (Cressey 1954), socialization within deviant

peer communities offers youth alternative, deviant, options that counter or differ from the social norms inculcated by the family.

However, even if their peers live destructive lifestyles of drugs and school disengagement, those with parents who continue to remain engaged in their children's lives, through social control and supportive presence, can protect their children. Supportive school environments that promote and encourage academic engagement can similarly strengthen the child's protective boundaries. On the other hand, if parents are disengaged from their children's lives or if the school environment is not as supportive, the child might succumb to influential anti-social peers' values rendering their self-concept more fluid (Chicago School of Self Concept; Mead 1913). In short, parents, schools, and peers are theorized to be primary influences in the social or deviant choices that children make.

The set of hypotheses and empirical analyses about youth drug proposed below were guided by a broad theoretical framework that linked youth self-concept to the social control/support, strains, and peer differential associations in adolescent lives. More specifically, youth drug use was conceptualized as a response to the strains and peer influences that rendered adolescent self-concept more fluid. On the other hand, a strong core self-concept, a byproduct of support and social controls exercised by family and academic systems, was expected to protect against adolescent drug use, both with starter and later drugs. However, if the protective mechanisms fail the adolescents, licit drugs were predicted to be adolescent gateways to illicit drugs.

Hypothesis One: Licit Drugs the Gateway to Illicit Drugs

The more licit drugs adolescents used, the more likely they would be to use illicit drugs, after controlling for risk (accessibility of drugs) and protective (academic engagement and family support and social capital) influences, net of economic resources and sex (Gateway paradigm). In other words, use of licit drugs raised adolescent chances of transitioning to illicit drugs. And, once adolescents used licit drugs, their family and academic supports would become less relevant and risks of drugs enhanced.

Hypothesis Two: Risk Factors

The risks adolescents faced (accessibility of drugs, peer drug culture, pro soft and hard drug opinions) increased the likelihood of using licit and illicit drugs, net of the protective factors, age, economic resources and region (Cressey's Differential Association Theory).

Hypothesis Three: Protective Factors

On the other hand, the more social protection youth had in their lives (academic engagement, family support, parental social capital), the less likely they would be to use licit and illicit drugs, net of risk factors, age, economic resources, and region (Aker's Social Control Theory).

METHODOLOGY

This research relied on a sequential mixed methods approach for the data analysis. First the hypotheses were tested using the 2013 Monitoring the Future survey data. Then interviews with eight professionals in the drug counseling field were used to expand on the survey findings.

Secondary Survey Data

The 2013 Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey) study was conducted by Lloyd D. Johnston, Jerald G. Bachman, Patrick M. O'Malley, and John

E. Schulenberg⁴. This survey focused on about 2100 12th graders, their lives and specifically their drug use. In the original study, each student was randomly assigned to take one of six forms; each form contained a core set of questions regarding drug use and demographics as well as a variety of questions about values, lifestyle and behavior. I chose to use data from Form One as it included all of the variables relevant to this research⁵.

Among the high school seniors in this analysis (Appendix A), 51.4 percent were female and the remainder were male (48.6%). As indicated in the literature review male and female adolescents have different life trajectories. A plurality of 12th graders in the study did not receive money from a job (45.2%) or other sources (47.0%). However, many more (a majority) obtained money from either work or allowances or both. Work income was reported by ten percent to be over 175 dollars a week; another 14.9 percent received between 76 and 125 dollars. Those who received allowances made less than those who worked: about sixteen percent (15.6%) received between 11 and 20 dollars a week and 9.7 percent between 21-35 dollars. I chose to look at economic resources (whether wages or allowances) earned by youth because of their potential impact on their ability to purchase drugs. These factors were controlled for in the multivariate analyses.

Primary Qualitative Data

To lend an applied perspective to the survey findings, eight drug counselors who work primarily with youth were interviewed for their insights. The first interviewee is a retired counselor (Retired Counselor) who worked with children through a private healthcare company for over twenty years. He continues to volunteer his time as a counselor at a local non-profit for troubled youth. The second interviewee is a practicing psychologist (General Practicing Psychologist) who specializes in drug counseling with both youth and adults. Interviewee #3 is also a practicing psychologist, but is specialized in counseling youth (Youth Practicing Psychologist). Interviewee #4 is the director of a residential counseling program for youth between the ages of 15-20 (Director of a Residential Counseling Program). Both Interviewees #5 and #6 were the residential substance abuse counselor at different institutions for troubled youth, with Interviewee #5 working in a public institution and Interviewee #6 a private institution. Each interview lasted about twenty minutes: One interview was done in person (Interviewee #1); the rest were conducted over the phone (Interviewees #2 to #8). The consent form and interview protocol can be found in Appendix B.

DATA ANALYSES: SURVEY AND QUALITATIVE INSIGHTS

Three levels of analysis, univariate, bivariate and multivariate were used to explore the answers to the research question. In keeping with the sequential mixed methods design, comments from the eight interviews were used to elaborate on the survey findings.

⁴ The MTF study was funded by the United States Department of Health and Human Service, National Institute of Health and National Institute on Drug Abuse.

⁵ The original collector of the data, or ICPSR, or the relevant funding agencies bear no responsibility for the use of the data or for the interpretations or inferences based on such uses.

Operationalization and Descriptive (or Univariate) Analyses

Illicit Drug Use

Illicit drug use, the primary research focus, was created by combining each student's use of a variety of criminalized drugs in the 30 days prior to the survey (Table 1.A). The specific drugs considered were LSD, other hallucinogens, amphetamines, crack cocaine, other forms of cocaine and heroin. All of these drugs are illegal nationwide.

**TABLE 1.A. Illicit Drug Use (n=2013-2093)
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013**

Concept	Variables	Values and Responses	Statistics
Illicit Drug Use during last 30 days from interview	V1286. On how many occasions (if any) have you used LSD?	0 = 0 occasions	98.8%
		1 = 1-2x	0.7
		2-6 = 3-5x To 40+	0.5
	V1318. Occasions (if any) have you taken hallucinogens other than LSD?	0 = 0 occasions	98.5%
		1 = 1-2x	1.3
		2 = 3-5x	0.1
	V1331. Occasions (if any) have you taken amphetamines on your own—that is, without a doctor telling you to take them?	0 = 0 occasions	97.4%
		1 = 1-2x	1.4
2-6 = 3-5x To 40+ occasions		1.2	
V1758. Occasions (if any) have you taken “crack: (cocaine in chunk or rock form)?	0 = 0 occasions	99.6%	
	1 = 1-2x	0.2	
	2 = 3-5x	0.0	
V1761. Occasions (if any) used cocaine in any form?	3 = 6-9x	0.1	
	0 = 0 occasions	99.3%	
	1 = 1-2x	0.5	
		2 = 3-5x	0.1
		V1523. Occasions (if any) have you taken heroin?	0 = 0 occasions
		1 = 1-2x	0.2
	Index of Illicit Drug Use ¹	\bar{x} (s)	0.09 (.58)
		Range	0 – 36

¹Index of Illicit Drug Use = V1286(LSD) + V1318(Hallucinogens) + V1331(Amphetamines) + V1758 (Crack) + V1761 (Cocaine) + V1523; Correlations among the variables ranged from 0.08^{***} to 0.80^{***}; ^{***}p <= .001.

As shown in Table 1.A, the majority of 12th graders reported that they did not, in the prior 30 days, use any of the illicit drugs listed (0.09 on a range of 0 to 36 on the index). For example, 97.4 percent of all students had never used amphetamines; only 1.4 percent had used it once or twice and even fewer (0.1 percent) used amphetamines 20-39 times or more than 40 times. This pattern of low illicit drug use was duplicated with hallucinogens; 98.8 percent of students were never-users, and the rest (.02 percent) used once or twice.

Sources of Risk for Adolescents

Scholars of drug use have identified several factors that place youth at increased risk of drug use. Some of the risk factors lay in the realm of youth agency (licit drug use and pro-drug opinions), and others were in their environment (accessibility of drugs and peer drug use).

Youth Agency: Licit Drug Use. Licit drugs, the first risk concept, measured life-time use of non-criminalized drugs used by high school seniors in contravention of the original prescription or did not have a prescription and obtained them illegally (Table 1.B).

**TABLE 1.B. Licit Drug Use (n=2030-2130)
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013**

Concept	Variables	Values and Responses	Statistics
Licit Drug Use in life-time of youth: On how many occasions (if any) have you:	V1252. Used marijuana?	0 = 0 occasions	53.8%
		1 = 1-2x	9.8
		2 = 3-5x	6.8
		3 = 6-9x	4.2
		4 = 10-19x	4.5
		5 = 20-39x	4.1
		6 = 40+ occasions	16.9
	V1710. Taken such non-prescription diet pills?	0 = 0 occasions	92.1%
1 = 1-2x		3.2	
2-6 = 3-5x To 40+ occasions		4.5	
V1713. Taken non- prescription stay-awake pills in your lifetime?	0 = 0 occasions	94.9%	
	1 = 1-2x	2.1	
	2 – 6 = 3-5x To 40+ occasions	3.0	
V1716. Other than diet pills and stay-awake pills you already told us about, taken other non-prescriptions stimulants or pep pills?	0 = 0 occasions	97.2%	
	1 = 1-2x	1.3	
	2-6 = 3-5x To 40+ occasions	1.5	
V1383. Taken sedatives on your own-that is, without a doctor telling you to take them in your lifetime?	0 = 0 occasions	94.7%	
	1 = 1-2x	2.2	
	2 = 3-5x	1.1	
	3 - 6 = 6-9x TO 40+ occasions	2.0	
V1430. Taken tranquilizers on your own – that is, without a doctor telling you to take them?	0 = 0 occasions	93.7%	
	1 = 1-2x	2.6	
	2-6 = 3-5x TO 40+ occasions	3.7	
Index of Licit Drug Use ¹	\bar{x} /(s)	2.33 (3.65)	
	Range	0-36	

¹Index of Licit Drug Use = V1252 (Marijuana) + V1710 (Diet Pills) + V1713 (Stay-Wake Pills) + V1716 (Stimulant/Pep Pills) + V1383 (Sedatives) + V1430 (Tranquilizers); Correlations among the variables ranged from .17*** to .53***; *** p <= .001.

Like with illicit drugs, the majority of 12th grade students had never used most of the licit drugs (Table 1.B). The only exception was marijuana; heavily used by 16.9% of the students. With the

rest of the drugs, most students had never used them. However there was a small group, under 3 percent, that had used some licit drugs such as non-prescription diet pills, non-prescription stay awake pills, and sedatives one or twice. Overall, reports of licit drug usage by adolescents were also low (2.33 on a range of 0-36). A small percentage of students either used marijuana a few times or other licit drugs like sedatives or non-prescription stay awake pills once or twice.

Youth Agency: Pro- Drug Usage opinion (Tables 1.C.a. and b.). A second risk factor was the adolescents' opinions about soft drugs and on marijuana specifically. The twelfth graders were strongly against regular marijuana use but did not disapprove of experimental or occasional usage; this is reflected in the mean of 6.35 (on an index range of 3-9). Similarly, the average 12th graders disapproved of all hard drug usage. However, they did not strongly disapprove of all types of usage as evidenced by the index mean of 8.19 (range 6-18).

**TABLE 1.C.a. Youth Agency: Pro-Drug Use Opinions (n=1792-1799)
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013**

Concept	Variables	Values and Responses	Statistics
Pro Soft Drug Opinions	Do YOU disapprove of people (who are 18 or older) doing each of the following:		
	V1992 - Trying marijuana once or twice?	1 = Strongly Disapprove 2 = Disapprove 3 = Don't Disapprove	22.5% 23.8 53.7
	V1793- smoking marijuana occasionally	1 = Strongly Disapprove 2 = Disapprove 3 = Don't Disapprove	30.1% 25.8 44.1
	V1794 - smoking marijuana regularly	1 = Strongly Disapprove 2 = Disapprove 3 = Don't Disapprove	41.2% 28.2 30.6
	Index on Opinion on Soft Drugs ¹	$\bar{x}/(s)$ Range	6.35 (2.35) 3-9

¹ Index of Opinion of Soft Drugs = V1792 + V1793 + V1794; r of V192 and V193 = .85***; r of V1792 and V1794 = .70***; r of V1793 and V1794 = .83***

**TABLE 1.C.b. Youth Agency: Pro-Drug Use Opinions (n=1792-1799)
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013**

Concept	Variables	Values and Responses	Statistics
Pro-Hard Drug Opinions	Do YOU disapprove of people (who are 18 or older) doing each of the following:		
	V1795- trying cocaine in powder form once or twice	1 = Strongly Disapprove 2 = Disapprove 3 = Don't Disapprove	64.7% 23.3 12.1
	V1796 - taking cocaine powder occasionally	1 = Strongly Disapprove 2 = Disapprove 3 = Don't Disapprove	71.3% 19.4 9.3
	V1797 - taking cocaine powder regularly	1 = Strongly Disapprove 2 = Disapprove 3 = Don't Disapprove	76.6% 15.0 8.4
	V1798 - trying "crack" cocaine once or twice	1 = Strongly Disapprove 2 = Disapprove 3 = Don't Disapprove	70.3% 19.9 9.9
	V1799 - taking "crack" cocaine occasionally	1 = Strongly Disapprove 2 = Disapprove 3 = Don't Disapprove	75.1% 16.5 8.4
	V1800 - taking "crack" cocaine regularly	1 = Strongly Disapprove 2 = Disapprove 3 = Don't Disapprove	77.2% 14.6 8.2
	Index on Opinion on Hard Drugs ¹	\bar{x} (s) Range	8.19(3.63) 6-18

¹ Index of Opinion of Hard Drugs = V1795 + V1796 + V1797 + V1798 + V1799 + V1800; Correlations among the variables ranged from .76^{***} to .95^{***}; *** p <= .001

Social Environmental Risks: Accessibility of Drugs. A risk factor in the social environment of the youth was accessibility of drugs. Accessibility of drugs measured by how difficult the students believed it would be to get drugs, such as crack cocaine, cocaine powder and marijuana⁶.

Most students thought that illicit drugs (crack and cocaine) were at least fairly difficult to get a hold of (Table 1.D). However, that was not the case with marijuana; over sixty percent of students reported that it would be very easy to get marijuana if they wanted to. In the end, the ease of obtaining marijuana was balanced out by the difficulty of obtaining illicit drugs (Index Mean of 9.9 on a range of 3-15).

⁶These questions were asked at the time of the survey placing it within the same time as the dependent concept.

TABLE 1.D. Social Environment: Accessibility of Drugs
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013

Concept	Dimensions	Variables	Values and Responses	Statistics
Accessibility of Drugs		How difficult do you think it would be for you to get each of the following types of drugs if you wanted some?		(n=2144 - 2150)
	Illicit Drugs:	V1781. "Crack" Cocaine	1 = Probably Impossible 2 = Very Difficult 3 = Fairly Difficult 4 = Fairly Easy 5 = Very Easy	17.5% 23.0 32.6 17.3 9.6
		V1782. Cocaine Powder	1 = Probably Impossible 2 = Very Difficult 3 = Fairly Difficult 4 = Fairly Easy 5 = Very Easy	18.6 22.8 29.0 18.2 11.4
	Licit Drugs:	V1780. Marijuana	1 = Probably Impossible 2 = Very Difficult 3 = Fairly Difficult 4 = Fairly Easy 5 = Very Easy	5.2% 4.1 5.8 24.4 60.5
		Index of Accessibility of Drugs ¹	\bar{x} (s) Range	9.9(3.06) 3-15

¹ Index of Accessibility of Drugs = V1781 + V1782 + V1780; Correlations among the variables ranged from .47^{***} to .87^{***}; ^{***} p <= .001.

Social Environmental Risks: Peer Drug Use. Peer drug use, another environmental risk factor measured use of drugs by their peers (Table 1.E). Marijuana was the most commonly used drug; 82.2 percent of 12th graders report that at least a few of their friends used marijuana. On the other hand, hard drug use was less prevalent among the peers. A good minority reported that at least a few of their friends took crack cocaine (15.4 percent) and cocaine powder (18.3). In short, while most 12th graders and their friends did not use most illicit drugs, marijuana was an exception (Peer Drug Culture Index mean of 5.13, range of 3-15).

TABLE 1.E. Social Environment: Peer Drug Usage
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013

Concept	Dimensions	Variables	Values and Responses	Statistics (n=2032-2058)
Peer Drug Usage	Licit Drugs	V1786. How many of your friends would you estimate smoke marijuana or has hashish?	1 = None	17.8%
			2 = A Few	25.7
			3 = Some	28.0
	Illicit Drugs	V1787. How many of your friends would you estimate take "crack cocaine"?	4 = Most	24.6
			5 = All	3.9
			1 = None	84.6%
	V1788. How many of your friends would you estimate take cocaine powder?	2 = A Few	12.3	
		3 = Some	2.5	
		4 = Most	0.2	
			5 = All	0.3
		Index of Peer Drug Usage ¹	\bar{x} (s) Range	81.7% 14.9 2.6 0.4 0.3 5.13(1.72) 3-15

¹ Index of Peer Drug Usage = V1786 + V1787 + V1788; Correlations among the variables ranged from .33*** to .76***; ***p <= .001.

Protective Factors

The second type of influences takes into account the resources available to youth that can potentially protect them from drugs. Like the risks, protective sources can be found within the control of the youth (academic engagement) and in their families (family support, and parental social capital).

Academic Engagement. Academic Engagement represented the individual student's academic capacity and their self-evaluation of their academic skills. Students were asked to rate themselves on intelligence and ability as well as reporting their average grades. The number of school days skipped and individual classes skipped were included in order to academic delinquency. Lastly, the students were asked about the type of high school they attended. A strong commitment to academics was considered a protective factor.

As seen in Table 1.F, 12th graders evaluated themselves as academically engaged. The majority attended an Academic or College prep high school (58.1%). About three quarters had never skipped whole school days and never skipped a class they were not supposed to.

TABLE 1.F. Academic Engagement
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013

Concept	Variables	Values and Responses	Statistics (n=1178 - 1989)
Academic Engagement	V1172. Which of the following best describes your present high school program?	1 = Vocational, technical or commercial	4.6%
		2 = General	37.4
		3 = Academic or College Prep	58.1
	V1178. During the last Four weeks, how often have you gone to school but skipped a class when you weren't supposed to?	1 = 21 + days	0.9%
		2 = 11-20 days	0.9
		3 = 6-10 days	2.0
		4 = 3-5 days	5.0
		5 = 1-2 days	15.9
		6 = None	75.5
	V1176. During the last four weeks, how many whole days of school you missed because you skipped or "cut"	1 = 11+ Days	1.1%
		2 = 6-10 days	1.0
		3 = 4-5 days	3.1
		4 = 3 days	4.1
		5 = 2 days	6.3
		6 = 1 days	11.8
		7 = None	72.7
	V1173. Compared to others your age throughout the country, how do you rate yourself on school ability?	1 = Far below average	1.5%
		2 = Below Average	2.2
		3 = Slightly Below Average	4.5
		4 = Average	31.1
		5 = Slightly Above Average	24.7
		6 = Above Average	29.0
		7 = Far Above Average	7.0
	V1174. How intelligent do you think you are compared to others your age?	1 = Far below average	1.5%
		2 = Below Average	1.5
		3 = Slightly Below Average	5.6
		4 = Average	27.7
5 = Slightly Above Average		23.8	
6 = Above Average		31.1	
7 = Far Above Average		8.7	
V1179. Which of the following describes your average grade so far in high school?	1 = D (69 or below)	0.9%	
	2 = C- (70-72)	2.8	
	3 = C (73-76)	4.0	
	4 = C+ (77-79)	8.1	
	5 = B- (80-82)	11.1	
	6 = B (83-86)	16.8	
	7 = B+ (87-89)	18.5	
	8 = A- (90-92)	21.0	
	9 = A (93-100)	17.0	
Index of Academic Self ¹	\bar{x} (s)	72.6(22.2)	
	Range	16-108	

¹Index of Illicit Drug Use = V1172 (HS) * (V1178 (Skip Class) + V1176 (Skip School) + V1173(School Ability) + V1174 (Intelligence) + V1179 (Grades)); Correlations among the variables ranged from .047 to .752 ; * p <= .001; p <= .05

Besides, very few students believed that they were slightly below average or lower in their school ability (8.2%). Instead, most stated they were either average (31.1%), slightly above average (24.7%) or above average (29%). Students' view of their own intelligence followed a similar pattern with the most students rating themselves as average (27.7%), slightly above average (23.8%) or above average (31.1%). In contrast, the students self-reported average grades were fairly spread out; a fifth of students (21.0%) stated that their average was an A-. The mean of the academic engagement index was a 73.6 on a range of 16-108. The 12th graders, on average, did not skip classes and believed that they had above average intelligence.

Family Support. The second protective factor goes beyond the 12th grader and took into account their relationships with their parents (Table 1.G). The students were asked if they had either a male and/or female parent or guardian living at home. The students then rated their satisfaction with the way they get along with their parents.

TABLE 1.G. Family Support
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013

Concept	Dimensions	Variables	Values and Responses	Statistics (n=2057-2191)
Family Support	Family Structure	V1155. Which people live in the same household with you? Father (or male guardian)	0 = No 1 = Yes	25.6% 74.4
		V1156. Which of the following people live in the same household with you? Mother (or female guardian)	0 = No 1 = Yes	10.7% 89.3
	Family Relations	V1647. How satisfied are you with the way you get along with your parents	1 = Completely Disagree 2 = - 3 = - 4 = Neutral 5 = - 6 = - 7 = Completely Satisfied	3.4% 3.7 6.7 15.3 13.8 24.6 32.5
		Index of Family Support ¹	\bar{x} /(s) Range	8.98(4.33) 0-14.00

¹ Index of Family Support = (V1155 + V1156) * V1647; Correlations among the variables ranged from .135 to .212^{**}; p <= .01.

About three-quarters of students had a male guardian or parent living at home (74.4%); but more (89.3%) indicated that they lived with female guardian. Only 13.8% students were not satisfied with the way that they get along with their parents. There were an equal proportion of students (15.3%) who were neutral. The rest were satisfied to some degree with their relationship with their parent(s). Lastly, almost a third (32.5%) of students was completely

satisfied with their relationship with their parents. The mean of the parent support index was a 7.99 on a scale of 2-12; the average student was neutral about the support they received from their guardians.

Parental Social Capital. This protective factor measured the social capital that parents, through their education, offered their adolescents. Educated parents expose their children to various social networks that benefit the adolescent both indirectly and directly. For example, parental social capital can get a student into a highly ranked college, a sought after job or be looked upon favorably by a school administration.

In the MTF sample of adolescents (Table 1.H), fathers of 12th graders were either high school graduate (28.9%) or college graduate (23.3%). Mothers, in contrast, were more likely to be college graduates (30.1%) or high school graduates (25.2%). The average 12th grader's mother and father had attended at least some college (Index mean of 7.99, range of 2-12).

TABLE 1.H. Parental Social Capital
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013

Concepts	Dimensions	Variables	Values and Responses	Statistics (n=1879-1944)
Parental Social Capital	Father	V1163. What is the highest level of schooling you father completed?	1 = Grade School 2 = Some High School 3 = High School Graduate 4 = Some College 5 = College Graduate 6 = Graduate School	4.4% 11.1 28.9 19.4 23.3 12.9
	Mother	V1164. What is the highest level of schooling your mother completed?	1 = Grade School 2 = Some High School 3 = High School Graduate 4 = Some College 5 = College Graduate 6 = Graduate School	3.7% 8.4 25.2 21.3 30.1 11.3
		Index of Parental Social Capital ¹	$\bar{x}/(s)$ Range	7.99 (2.44) 2-12

¹ Index of Parental Social Capital = V1163 + V1164 ($r=.536^{**}$); $***p \leq .001$.

Summary Profile of the MTF 12th Grader

Overall, the vast majority of student respondents did not use illicit drugs and if they used them, it was rare. The students also did not use licit drugs that often, with the exception of marijuana. While they generally disapproved of drugs, their social environment posed some drug risks to them. For example, drugs, particularly marijuana, were relatively easy to obtain if they wanted to purchase them. As for the protections available to adolescents, most students were academically engaged; they were confident in their intelligence and were not skipping classes. And their parents created another level of expected protection from drug use.

Bivariate Analyses

Bivariate analysis was used to explore the connections between drug use, both illicit and licit drugs, with the risk and preventative factors in adolescents' lives.⁷ The preliminary correlational analyses (Table 2 in Appendix C) indicated a variety of interesting patterns in factors that increased the risk of drug use as well as those that reduced usage of drugs. First, adolescents who used licit drugs were more likely to use illicit drugs ($r=.39^{***}$). Environmental risks, like drug availability, did encourage adolescent drug use, but they posed much greater risks for licit ($r=.30^{***}$) than illicit ($r=.13^{***}$) drug use. Similarly, being surrounded by peers and their drug culture also increased the risk of illicit drug use ($r=.23^{***}$) but more so licit drug use ($r=.41^{***}$).

Further, adolescents were their own best protectors. The more they disapproved of hard drugs, the less likely they were to use both licit ($r=.16^{**}$) and illicit ($r=.13^{**}$) drugs. However, the more a student disapproved of hard drugs the less likely they were to use licit drugs ($r=-.47^{**}$). Protection offered by parents was important, but not as effective, in reducing drug use. When adolescents had family support ($r=-.08^{**}$) and access to parental social capital ($r=-.07^{**}$), they were somewhat less likely to use licit drugs. Academic engagement ($r=-.07^{**}$), family support ($r=-.07^{**}$) and parental social capital ($r=-.05^{*}$) protected adolescents from illicit drugs, albeit to a small extent. The robustness of the relevance of protective and risk factors for licit and illicit drug use will be tested in multivariate analysis.

Linear Regression Analyses and Qualitative Insights

In the final analytical step, the robustness of the effects of risk and protective factors on both licit and illicit drugs was tested using a sequential multivariate analysis (Table 3). In the first step, licit drug use was regressed on the protective and risk indices and other socio-demographic variables (Model 1). Then, in order to test the Gateway Theory, the effects of risks, including licit drugs, and protective factors on illicit drug use were estimated (Model 2). "Thick" descriptions of the regression findings were provided using the experiences of the professional interviewees.

On balance, as seen in Model 2, licit drug use was the strongest predictor of illicit drug use ($\beta = .39^{***}$). As predicted in Hypothesis One, once adolescents started using licit drugs, the likelihood that an adolescent would use illicit drugs also increased. This gateway effect held irrespective of how accessible drugs were to the youth, how academically engaged they were, how much family support and parental social capital they had, their sex and economic resources (wages and other).

The professionals interviewed for this research (Interviewees #1 to #8) confirmed, while also offering more nuanced takes on, the gateway theory. The Substance Abuse Counselor (Interviewee #2) and the Youth Counselor (Interviewee #3) concurred that an adolescent who will ultimately use illicit drugs starts with licit drugs first. The Rehab Director (Interviewee #4) also found truth behind the gateway theory; in his experience most people started with a licit drug which makes illicit drugs seem less taboo. However, this professional did not believe that using licit drugs was the cause; rather adolescents who have a desire to use illicit drugs choose to start with licit drugs first. The Retired Counselor (Interviewee #1) also expressed doubts with the illicit to licit drugs gateway. He believed that the idea of gateway drugs is misinterpreted;

⁷ Only substantive and significant correlations (above $r=.05$) will be discussed in this section.

adolescents do not automatically transition from licit to illicit drugs. Rather the transition is the result of a multitude of other social supports and risk factors considered in this study.

Table 3
Regression Analyses of the Relative Effects on Licit and Illicit Drug Use¹
Monitoring the Future: A Continuing Study of American Youth (12 Grade Survey), 2013

	Model 1: Licit Drug Use Beta (β)	Model 2: Illicit Drug Use Beta (β)
<u>Sources of Risks:</u>		
Licit Drug Use	—	.39***
Accessibility of Drugs	0.07*	0.04
Peer Drug Culture	0.21***	0.16***
Pro-Soft Drug Opinions	0.35**	-0.12**
Pro-Hard Drugs Opinions	-0.01	0.09**
<u>Protective Sources:</u>		
Academic Engagement	-0.09**	0.05
Family Support	-0.13***	0.04
Parental Social Capital	-0.01	-0.05
<u>Socio-Demography:</u>		
Gender	0.02	-0.03
Economic Resources – Wages	0.09**	-0.06
Economic Resources – Other	0.02	-0.02
Constant (a)	3.36***	5.22***
Adjusted R ²	.324***	.193***
DF 1 & 2	10 & 1019	11 & 979

¹Illicit Drug Use: 1286 + V1318 + V1331 + V1758 + V1761 + V1523; range=6 (none) – 42;
Licit Drug Use: V1252 + V1710 + V1713 + V1716) + V1383 + V1430 6 (none) – 42;
Index of Accessibility of Drugs: V1781 + V1782 + V1780 range=3 (Very Difficult) -15 (Very Easy);
Peer Drug Culture: V1786 + V1787 + V1788; 3 (none) – 15 (All);
Pro Soft Drug Opinion: V1792 + V1793 + 1794; 3 (Disapprove) – 9 (Don't disapprove);
Pro Hard Drug Opinion: V1795 + V1796 + V1797 + V1798 + V1799 + V1800; 6 (Disapprove) – 18 (Don't disapprove);
Academic Engagement: V1172 *(V1178+V1176+V1173+V1174+V1179); range= 6(low) – 42 (high);
Index of Family Support: (V1155 + V1156) * V1647; range= 0(none) -14;
Parental Social Capital: V1163 + V1164; range = 2(low)-12(high);
Gender: 0 = female, 1 = male.

In addition, sources of drug risks, but not the supportive contexts, were important in illicit drug use (Model 2). Being surrounded by peer drug culture raised the probability of illicit drug use ($\beta = .16^{***}$); when one's peers used drugs, an adolescent was more likely to use illicit drugs, all things being equal as predicted in Hypothesis Two. The Youth Counselor (Interviewee #3) held that peer drug culture was among the strongest reasons for adolescent drug use; they want to fit in with their peers. She also noted that if peers are using drugs, it becomes easy for an adolescent to experiment, since the drugs are accessible. Interestingly, adolescents were quite nuanced in translating their opinions about drugs into using drugs. Those who approved of hard drugs were more prone to use hard drugs ($\beta = .09^{**}$). However, adolescents who approved of soft drug usage were less likely to use harder drugs ($\beta = -.12^{**}$). The Youth Substance Abuse Counselor (Interviewee #7) explained this apparent contradiction thusly: He thought that adolescents who approved of soft drug usage, but did not use hard drugs, were drawing a line between types of drugs; they view hard drugs as more severe and dangerous.

Unlike illicit drug use, both risk and protective factors had significant effects on licit drug use (Model 1). Of the risk factors, peer drug culture was the most potent. When adolescents' peers used drugs, that increased the likelihood of licit drug use, net of academic engagement, family support, parental social capital, age, location and economic resources ($\beta = .21^{***}$). Accessibility of drugs somewhat increased the risk of licit drug usage ($\beta = .07^*$) and only indirectly illicit drug use; the Family Counselor's (Interviewee #8) concurred that adolescents are much more likely to experiment if the opportunity presents itself instead of actively seeking out drugs. When adolescents approved of licit drug use they were more likely to do licit drugs ($\beta = .35^{***}$).

As for the connection of protective factors with licit drug use, family support protected adolescents from licit drug use ($\beta = -.13^{***}$). The Substance Abuse Counselor (Interviewee #2) confirmed the crucial role a family plays in a youth's ability to access and use drugs. She stated that parental behavior sets the stage for how the youth is expected to act. As for academics, engagement only slightly decreased licit drug use ($\beta = -.09^{***}$). In the collective experiences of all the professional interviewees (#1- #8), they have seen all types of students, ranging from the top of the class to those who failed out, in their offices. In fact, when the students started using drugs, they were likely to start underperforming at school. But, the more wages an adolescent earned, the more likely they were to use licit drugs ($\beta = .09^{**}$).

At first glance, it appeared that protective factors did not curtail illicit drug use like the risk factors enhanced it. However, family support and student academic engagement indirectly decreased the likelihood of illicit drug use. That is, when an adolescent did not use licit drugs because of support from his/her family or was academically engaged, they were indirectly more likely to stay away from illicit drugs also. For example, a youth was less inclined to use licit drugs when they felt they had a strong family support system ($\beta = -.13^{***}$). This in turn reduced the possibility of a youth transitioning into illicit drug use as it was less likely for them to use licit drugs ($\beta = .39^{***}$) in the first place.

CONCLUDING REMARKS

Empirical and Applied Implications

The most important finding in this research was that the risk factors directly increased illicit drug use, while protective factors only indirectly influenced illicit drugs by reducing licit drug use. In other words, until an adolescent used a licit drug for the first time,

protective factors played a crucial role in guiding the adolescent's future path in which drug use was not a consideration. Risk factors were also important prior to any drug use; however once an adolescent gave into the risks and used a licit drug, illicit drugs seemed to follow.

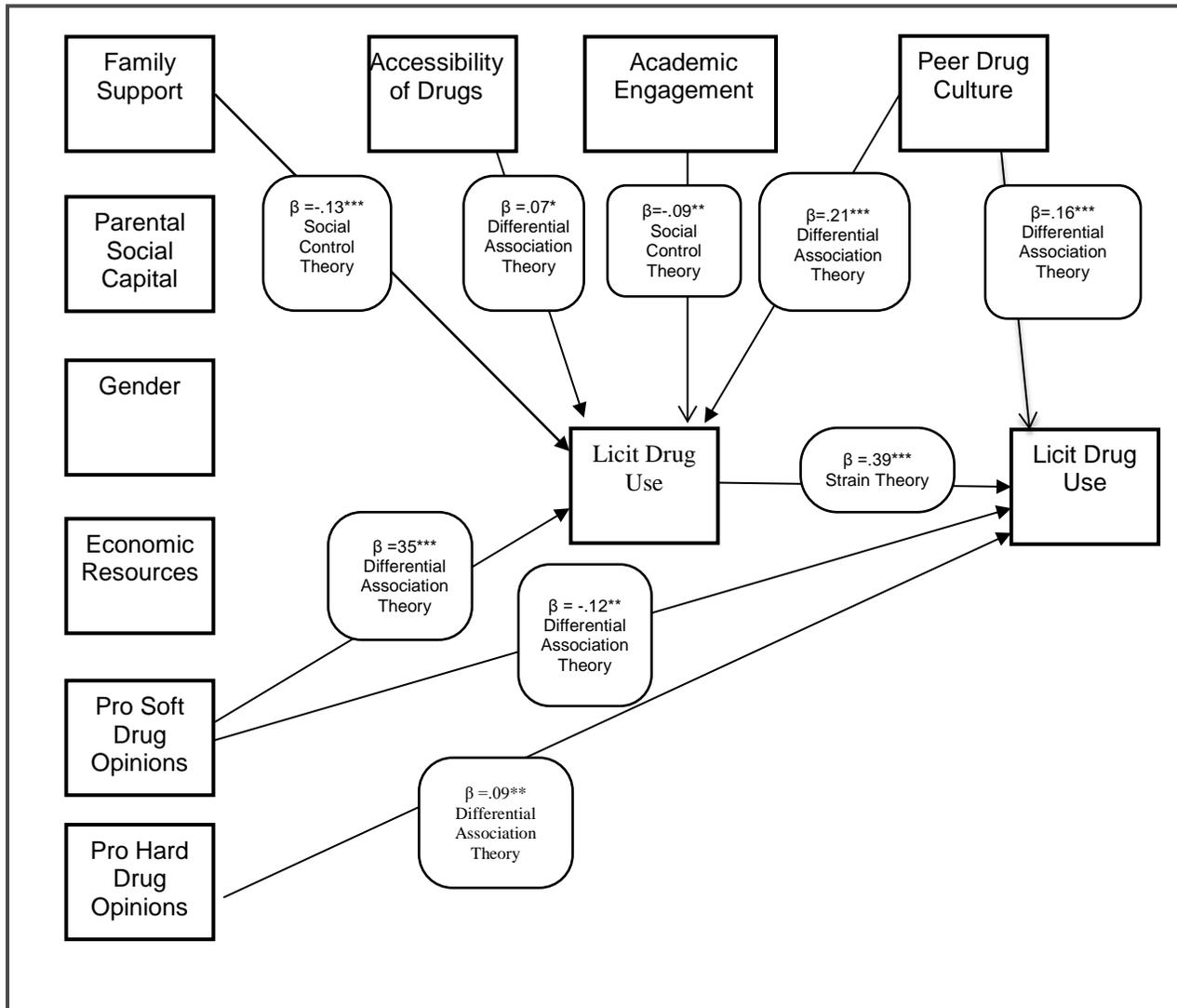
This research added to the scholarly and programmatic conversations about youth drug use by offering a test of the gateway drug model among adolescents. Most of the prior research had focused on adults or studied alcohol and cigarettes as the gateway drugs for adolescents. However with the increase in adolescent prescription drug abuse, it is important to study other gateways to illicit drugs. Because a youth who has used a licit drug is very likely to transition to an illicit drug, it is very important to stop drug use before it starts. As the Institutional Drug Counselor (Interviewee #5) commented, drug use is taboo until adolescents begin to experiment. However, once they have started, many transition to illicit drugs in order to maintain the same high they received the first time. On the other hand, when working with those who have already starting using drugs, it is crucial to manage the risk factors, like stopping licit drug use as well as working to change an adolescent's views on drugs. Drug programming needs to be tailored to the two different groups of adolescents. For example, when working with younger students, it is important to focus on the protective factors. Programs should cultivate negative views of all drugs while incorporating parental support and academics. For older students, or known drug users, programs do not need to focus on the protective factors. Instead they should work to change the population's view on drug usage by being realistic about the consequences and potentially connecting the youth with a convicted illicit drug user.

Theoretical Implications

Theoretically speaking, strain, in key aspects of an adolescent's life, proved to have strong direct and indirect effects on drug use (Figure 1). In keeping with Agnew's concept of Strain, adolescents who were faced with strains, like poor parental support, limited academic engagement, and peer drug use, were more likely to use licit drugs possibly in order to escape that strain. Even licit drug use became a strain which led to adolescents transitioning to illicit drug use.

Like strain theory, both Chicago and Iowa schools of core self-concept were statistically endorsed in this research. Parents who were able to successfully instill a strong core self- concept in their children (Kuhn and McPartland's Iowa School of Self Concept) and who continued to stay involved were able to keep their children away from licit drugs. However, if the social norms are not strongly entrenched in the adolescent's self-concept they can succumb to the influence of their deviant drug using peers. For example, the core self-concept adolescents, who may have had a similar positive upbringing but gave into the lures of their peer drug users, were most likely altered and shifted to rationalizing licit, and in turn illicit, drug use (fluid self-concept as in Mead's Chicago School of Self-Concept). Socialization in deviant drug communities present adolescents options that counter the social norms they grew up with (Cressey's Differential Association).

Figure 2
Theoretical Model of the Relative Effects of Risks and Protective Sources
on Licit and Illicit Drug Use¹
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013



¹ Refer to Table 3 for Index coding.

Limitations and Suggestions for Future Research

Despite the important findings that have both practical and theoretical implications, this research captured only 32 percent of variability in youth licit drug use (Adjusted $R^2 = .32^{***}$) and 19 percent of illicit drug use (Adjusted $R^2 = .19^{***}$). The models left unexplained the majority of both licit and illicit drug use by adolescents. One of the study limitations was that the survey data was self-reported by high schoolers. If they are using illicit drugs, there was a possibility that they did not report that due to concerns about the information being passed to authority figures, be they at school or in the family. If they believed a teacher or administrator would see the results, that would have been a large incentive not to be truthful. Another potential problem was with the

multiple questionnaire forms that all included different information and which made it necessary to choose only one that had all the available indicators. A longitudinal study with the same questions asked of the same students over their lifetime would increase the accuracy of the time line of the Gateway model.

Future researchers should continue to distinguish between licit and illicit drug use. However, future research could also benefit from examining the gateway drug concept by looking at the direct relationships between specific drugs instead of grouping them by type, say licit drugs. For example, researchers should separate the unique effects each type of prescription drug has on a specific illicit drug. For example, how do prescription sedatives, pep pills or diet pills use affect an adolescent's likelihood of using heroin? The Rehab Director (Interviewee #4) and Family Counselor (Interviewee #8) also suggested trauma (abuse, witness to violence) as a major reason for adolescent drug use. In their experiences, abuse and violence places an uncontrollable amount of strain on an adolescent. While trauma was not taken into account within this paper, it should be an important focus in the future. Do they use drugs for pleasure and/or for self-medication? These are important questions to answer if effective programs are to be developed to curtail licit drugs as well as to disrupt their transition to illicit drugs. These questions also have important theoretical implications.

APPENDICIES

Appendix A

Socio-Demographic Factors Monitoring the Future:

A Continuing Study of American Youth (12th Grade Survey), 2013

Concepts	Variables	Values and Responses	Statistics
Gender	V1150: What is your sex?	0 = female 1 = male	51.4% 48.6 (2030)
Economic Resources – Wages	V1192. During an average week, how much money did you get from a job or other work?	1 = None 2 = \$1-5 3 = 6-0 4 = 11-20 5 = 21-35 6 = 36-50 7 = 51-75 8 = 76-125 9 = 126-175 10 = 175+ (n)	45.2% 0.4 2.7 2.5 3.0 4.5 7.0 14.9 9.6 10.2 (1891)
Economic Resources – Other	V1193. During an average week, how much money did you get from other sources (allowances, etc.)?	1 = None 2 = \$1-5 3 = 6-0 4 = 11-20 5 = 21-35 6 = 36-50 7 = 51-75 8 = 76-125 9 = 126-175 10 = 175+ (n)	47.0% 4.6 6.9 15.6 9.7 6.8 3.4 2.2 1.0 2.7 (1874)

Appendix B

Consent Form and Interview Protocol

Letter of Consent

Dear _____:

I am a Sociology Senior working on my Research Capstone Paper under the direction of Professor Marilyn Fernandez in the Department of Sociology at Santa Clara University. I am conducting my research on adolescent drug use.

You were selected for this interview, because of your knowledge of and experience working in the area of adolescent drug use.

I am requesting your participation, which will involve responding to questions about the factors influencing drug use and will last about 20 minutes. Your participation in this study is voluntary. You have the right to choose to not participate or to withdraw from the interview at any time. The results of the research study may be presented at SCU's Annual Anthropology/Sociology Undergraduate Research Conference and published (in a Sociology department publication). Pseudonyms will be used in lieu of your name and the name of your organization in the written paper. You will also not be asked (nor recorded) questions about your specific characteristics, such as age, race, sex, religion.

If you have any questions concerning the research study, please call/email me at (707) 495-6956 or jharrison@scu.edu or Dr. Fernandez at (408)-554-4432 or mfernandez@scu.edu

Sincerely,

Jenna Harrison

By signing below you are giving consent to participate in the above study. (If the interviewee was contacted by email or phone, request an electronic message denoting consent).

Signature

Printed Name

Date

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Committee, through Office of Research Compliance and Integrity at (408) 554-5591.

Interview Schedule for Supplemental Qualitative Interviews, Fall2015-Winter 2016

Interview Date and Time: _____

Respondent ID#: ___ (1, 2, 3...)

1. What is the TYPE Agency/Organization/Association/Institution (**NO NAME**, please) where you learned about (and/or worked) with this issue:
2. What is your position in this organization?
3. How long have you been in this position and in this organization?
4. Based on what you know of adolescent drug use, how common is this problem (issue or concern)?
5. In your opinion, what are some reasons that contribute to this problem (issue or concern)? (PROBE with: Could you expand a bit more?).
6. [If the respondent does not bring up your independent concepts as potential causes), PROBE:
 - a. How about the gateway drug use? Do you find that youths will move to harder drugs if they use licit ones first:
 - b. How about the accessibility of drugs in their area?
 - c. How about family factors, like support or social capital?
 - d. How about academics and the school setting?
7. Is there anything else about this issue/topic I should know more about?

Thank you very much for your time. If you wish to see a copy of my final paper, I would be glad to share it with you at the end of the winter quarter. If you have any further questions or comments for me, I can be contacted at jharrison@scu.edu. Or if you wish to speak to my faculty advisor, Dr. Marilyn Fernandez, she can be reached at mfernandez@scu.edu.

Appendix C
Table 2. Correlation Matrix
Illicit Drug Use, Risk Factors, Protective Factors, Age, Location and Economic Resources
(n=2542-2687)
Monitoring the Future: A Continuing Study of American Youth (12th Grade Survey), 2013

	A	B	C	D	E	F	G	H	I	J	K	L
A. Illicit Drug Use	1.0	.40***	.13***	.23***	.16***	.13***	-.07***	-.07***	-.05 [†]	-0.03	0.02	0.03
B. Licit Drug Use		1.0	.26***	.41***	.47***	.16***	-.20***	-.21***	-.09**	-0.04	.12***	0.03
C. Accessibility of Drug			1.0	.35***	.22***	.10***	-0.04	-.08***	-.07**	0.02	.10***	0.03
D. Peer Drug Culture				1.0	.33***	.13***	-.10***	-.11***	-.08***	-0.03	0.05	.05 [†]
E. Pro Soft Drug Opinion					1.0	.42***	-.18***	-.12**	-.05 [†]	-.11***	.05*	0.03
F. Pro Hard Drug Opinion						1.0	-.19***	-.12***	-.10***	-.10***	-0.04	0.03
G. Academic Engagement							1.0	.18***	.29***	.08**	-.06 [†]	-0.01
H. Family Support								1.0	.19***	-.06 [†]	0.02	0.00
I. Parental Social Capital									1.0	-0.03	-0.01	.07**
J. Gender										1.0	-0.04	-.06**
K. Economic Resources – Wages											1.0	-.11***
L. Econ Resources – Other												1.0

*** p <= .001; ** p <= .01; * p <= .05

[†] Illicit Drug Use: 1286 + V1318 + V1331 + V1758 + V1761 + V1523; range=6 (none) – 42;

Licit Drug Use: V1252 + V1710 + V1713 + V1716) + V1383 + V1430 6 (none) – 42;

Index of Accessibility of Drugs: V1781 + V1782 + V1780 range=3 (Very Difficult) -15 (Very Easy);

Peer Drug Culture: V1786 + V1787 + V1788; 3 (none) – 15 (All)

Pro Soft Drug Opinion: V1792 + V1793 + V1794; 3 (Disapprove) – 9 (Don't disapprove)

Pro Hard Drug Opinion: V1795 + V1796 + V1797 + V1798 + V1799 + V1800; 6 (Disapprove) – 18 (Don't disapprove)

Academic Engagement: V1172 * (V1178 + V1176 + V1173 + V1174 + V1179); range= 6(low) – 42 (high);

Index of Family Support: (V1155 + V1156) * V1647; range= 0(none) -14;

Parental Social Capital: V1163 + V1164; range = 2(low)-12(high);

Gender: 0 = female, 1 = male

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Interviewee #4 (Rehab Director). March 2, 2016. Youth Rehab Director.

Interviewee #5 (Institutional Drug Counselor). March 11, 2016. Youth Substance Abuse Counselor at Detention Center.

Interviewee #6 (Private Drug Counselor). March 12, 2016. Private Youth Substance Abuse Counselor.

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