Published in final edited form as:
Addict Behav. 2014 January ; 39(1): 302–307.

Prevalence of Marijuana Use at College Entry and Risk Factors for Initiation During Freshman Year

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Abstract

Background—Marijuana is currently the most commonly used drug on college campuses. Marijuana use among college students is increasing, and many students begin using marijuana during college. The goal of this study was to investigate predictors of lifetime marijuana use at college entry and initiation during freshman year.

Methods—We used responses from the first two semesters of a longitudinal study of 3,146 students from 11 colleges in North Carolina and Virginia. Random-effects logistic regression models were constructed to identify factors that predict lifetime marijuana use at college entry and initiation during freshman year.

Results—Nearly 30% of students reported ever having used marijuana at college entry. Among students who had never used marijuana prior to college, 8.5% initiated use during freshman year. In multivariable logistic regression models, having at least $100 per month in spending money; attending church rarely or never; current use of cigarettes, alcohol, and hookah tobacco; lifetime use of other illicit drugs; and a higher propensity toward sensation seeking were associated with a higher likelihood of having used marijuana at least once at college entry. Hispanic ethnicity, living

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Contributors

Cynthia Suerken wrote the first draft of the manuscript and conducted the literature search and statistical analyses. Beth Reboussin oversaw the statistical analyses. Beth Reboussin, Erin Sutfin, Kimberly Wagoner, John Spangler, and Mark Wolfson contributed to the study design. All authors reviewed and edited drafts of the manuscript and approved of the final version.

Conflict of Interest

All authors declare that they have no conflicts of interest.

on campus, and current use of cigarettes and alcohol were associated with a higher likelihood of initiating marijuana use during freshman year.

Conclusion—These results have implications for targeting substance abuse prevention programs on college campuses.

Keywords

Marijuana; College students; College freshmen; Initiation; Drugs

1. Introduction

Marijuana is the most prevalent illicit drug on college campuses today (Johnston, O'Malley, Bachman, & Schulenberg, 2012). A recent national study estimates that 46.6% of college students have used marijuana in their lifetime, and 19.4% report marijuana use within the past 30 days (Johnston et al., 2012). Marijuana initiation typically begins before or during high school, with 57.7% of recent marijuana initiates reporting having used marijuana for the first time prior to turning 18 (Substance Abuse and Mental Health Services Administration, 2012). However, many students use marijuana for the first time in college, and the prevalence of marijuana use among college students has risen within the past few years (Johnston et al., 2012). Pinchevsky and colleagues (2012) report a 25% marijuana initiation rate among students that had not used marijuana prior to attending college. Mohler-Kuo, Lee, and Wechsler (2003) estimate that among college students who report marijuana use within the past year, 20% report having initiated use after the age of 18.

While students who attend college are less likely to use marijuana prior to age 18 than their peers who do not attend college, the prevalence of marijuana use among 18–21 year old college students increases at a higher rate than the prevalence of marijuana use among 18–21 year olds who do not attend college (White, Labouvie, & Papadaratsakis, 2005). The increased autonomy from parents, the college social environment—including peers who may have already initiated marijuana use, and widespread availability may make first year college students especially susceptible to trying illicit drugs such as marijuana. Beck and colleagues (2009) found that college students often use marijuana to heighten sociability and ease emotional distress from personal and academic problems.

Marijuana use can have a particularly negative impact on the lives of college students. Among college students, marijuana use has been shown to be associated with lower grade point averages, spending less time studying (Bell, Wechsler, & Johnston, 1997), disruptions to enrollment in college (Arria et al., 2013), reduced rates of degree completion (Fergusson, Horwood, & Beautrais, 2003; Fergusson & Boden, 2008), cognitive impairment (Pope & Yurgelun-Todd, 1996), difficulty concentrating, missing classes, and putting oneself in physical danger (Caldeira, Arria, O'Grady, Vincent, & Wish, 2008). Cigarette use, binge drinking, and other illicit drug use also have been shown to be associated with marijuana use in college students (Bell et al., 1997; Mohler-Kuo et al., 2003).

Cross-sectional studies have found that college students who are male, white, or single are more likely to be marijuana users than students who are female, nonwhite, or married (Bell

et al., 1997). Several studies have shown that athletes are less likely to use marijuana during college than non-athletes (Buckman, Yusko, Farris, White, & Pandina, 2011; Wechsler, Davenport, Dowdall, Grossman, & Zanakos, 1997; Yusko, Buckman, White, & Pandina, 2008) and members of sororities and fraternities are more likely to use marijuana than students not involved in sororities and fraternities (Bell et al., 1997; McCabe et al., 2005). College students who believe that religion is important are less likely to use marijuana than students who are less religious (Bell et al., 1997).

While many studies have identified predictors of current marijuana use in college students, little is known about predictors of marijuana use at entry to college and initiation during the first year of college. Most studies on marijuana initiation focus on adolescents or the general population (Brook, Kessler, & Cohen, 1999; Gfroerer, Wu, & Penne, 2002; Kandel & Faust, 1975; Kosterman, Hawkins, Guo, Catalano, & Abbott, 2000; Tang & Orwin, 2009). One study on college students found that peer marijuana use and sensation seeking predict marijuana initiation, but the sample only included students from one college, and the study tracked marijuana initiation over the entire college career (Pinchevsky et al., 2012). Despite a high prevalence of marijuana use, college students rarely recognize that they have a problem or seek treatment (Caldeira et al., 2009). Determining what factors predict marijuana use before college and marijuana initiation during the first year of college could help colleges in targeting marijuana prevention and treatment programs. It is especially important to identify predictors of marijuana initiation early in students' college careers in order to target interventions and prevention programs that ensure college success. The purpose of this study is to identify these factors.

2. Methods

2.1 Study Design

This analysis uses data from the Smokeless Tobacco Use in College Students study (Wolfson, et al. 2013). The goal of the overall study is to assess trajectories and correlates of smokeless tobacco use among a cohort of college students by surveying them each semester beginning in their freshman year and continuing through the fall of their senior year. Environmental assessments are also conducted in order to measure smokeless tobacco availability, advertising, and promotion in tobacco retailers on campus and in surrounding communities. Students at 11 colleges and universities participated in the study. Seven of the colleges are located in North Carolina, and four are located in Virginia. Ten colleges are public schools, and the other college is a private school. Five colleges reside in rural areas, four are located in suburban areas, and two are located in urban areas. Undergraduate enrollment ranges from approximately 4,000–24,000 students.

Based on enrollment lists provided by each school, all freshmen at these 11 schools were invited to participate in a short web-based screener survey during the fall semester of 2010 in order to determine eligibility for the study. Thirty-six percent (10,528) of eligible students participated in the screener survey. Two weeks after the screener survey, a random sample of participants was selected and invited to participate in the longitudinal cohort study. Students were selected within each school with a goal of 285 completions per school. Assuming a 20% attrition rate, 285 completions per school were required in order to have

sufficient power to detect differences in smokeless tobacco use for various predictors in the parent study. In order to measure precise estimates of smokeless tobacco use, students at higher risk for using smokeless tobacco were oversampled, including lifetime smokeless tobacco users, current cigarette smokers, and males. Data are collected at each semester of the students' freshman and sophomore year, and during the fall of the students' junior and senior years. Data from the first two surveys administered during the fall and spring semesters of the freshman year were used in this analysis. Among the 4,190 students who were invited to participate, 3,146 eligible students completed the fall semester survey, for a 64% response rate. Eighty percent (2,520) of eligible students completed the first follow-up survey during the spring semester of their freshman year. Students received a $15 incentive for completing the fall semester survey. The incentive increases by $5 for participation in each subsequent survey. The study protocol was approved by the Wake Forest School of Medicine Institutional Review Board. Additional privacy protection was secured by the issuance of a Certificate of Confidentiality by the Department of Health and Human Services.

2.2 Measures

2.2.1 Marijuana Use—Students were classified as lifetime marijuana users at entry into college if they reported using marijuana at least once in their lifetime as of the fall semester of their freshman year. Marijuana initiation was defined as never having used marijuana in a student's lifetime as of the fall semester of the freshman year and having used marijuana in the past six months as of the spring semester of the freshman year.

2.2.2 Demographics—Demographic characteristics were measured at baseline and included gender, race (white and non-white), ethnicity (Hispanic and non-Hispanic), mother's and father's education (4 year college degree or higher vs. less than a 4 year college degree), and spending money available in a typical month (at least $100 per month vs. less than $100 per month).

2.2.3 Social characteristics—Social characteristics were measured at baseline and included participation in varsity athletics, club sports, and intramural sports, being a member or pledge of a sorority or fraternity, participation in religious activities (at least twice per month vs. less than twice per month), residence (on campus vs. off campus), and relationship status (married or single with a steady boyfriend or girlfriend vs. any other relationship status).

2.2.4 Other substance use—Current cigarette, alcohol, and hookah tobacco use were defined as having used these substances within the past 30 days at baseline. Students were classified as lifetime other illicit drug users if, at baseline, they reported having used cocaine, methamphetamines, hallucinogens, rohypnol, ecstasy, heroin, or opioids at least once during their lifetime.

2.2.5 Mental health and psychological factors—Sensation seeking was measured during the fall semester of the students' first year of college using the Brief Sensation Seeking Scale (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002). The scale

consists of eight five-point Likert scale items (1 = strongly disagree to 5 = strongly agree). Total sensation seeking scores were calculated from the average of all items for individuals who answered a minimum of five questions on the scale. Cronbach's alpha for the Brief Sensation Seeking Scale was .81.

Depressive symptoms were measured during the spring semester of the students' first year of college using the Center for Epidemiological Studies Depression Iowa Short Form (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). The scale includes 11 items with response options ranging from 1 = rarely or none of the time (less than 1 day) to 4 = Most or all of the time (5–7 days). Scores were calculated by summing the items, reverse coding items where appropriate. If one or two items were missing responses, the mean of the other items was substituted in place of the missing item. Cronbach's alpha for the CES-D was 0.84.

Stress was measured using the 10-item Perceived Stress Scale (Cohen & Williamson, 1988) during the spring semester of the students' first year of college. Each item measures the frequency of feelings about stress on a scale from 0 = never to 4 = very often. Scores were calculated by summing the items, reverse coding items where appropriate. If one or two items were missing responses, the mean of the other items was substituted in place of the missing item. Cronbach's alpha for the Perceived Stress Scale was 0.84.

2.3 Statistical Analysis

To account for the oversampling of some groups of students, all analyses were performed using weights. Sampling weights were calculated independently for each school and reflect the inverse probability of selection from the screener survey. A non-response adjustment was applied, and weights were then scaled using the approach of Pfefferman, Skinner, Holmes, Goldstein, and Rasbash (1998) to account for the students-within-schools design. All analyses incorporate the clustering effect of the school.

Percentages and standard errors are presented for all categorical predictors. The means and standard deviations of all scale scores were calculated. All descriptive statistics were calculated overall, for marijuana users at entry into college, and for marijuana initiators and only include students with complete data for all variables used in the analyses. Descriptive statistics for the demographic and social characteristics are not weighted to provide a reflection of the obtained sample. Prevalence estimates of marijuana and other substance use behaviors, scale score means, and regression estimates are weighted to represent the entire screened population of freshman students. Random-effects logistic regression models were developed to identify predictors of marijuana use at entry into college and marijuana initiation during the first year of college. Since stress and depressive symptoms were only measured during the spring semester, these scores are only included as predictors in the model for marijuana initiation. Univariate models were first estimated for each outcome and predictor. All predictors that were significant at the 10% level were included in a multivariable model for each outcome. This significance level was used as a screening criterion in selecting covariates for the multivariable models. Sometimes variables that are weakly associated with the outcome in a univariate model can be a significant predictor when taken together with other variables (Hosmer & Lemeshow, 1989). Therefore, we used

a threshold that was slightly above the standard 5% significance level to allow for these variables to be included in the multivariable model while at the same time not using too liberal of a screening criterion that would include variables of questionable importance. Both multivariable models were estimated with and without multiple imputation of missing values to assess sensitivity of the results to missing data. There were no differences in significance between models estimated with and without imputation, so only non-imputed models are presented. Odds ratios and 95% confidence intervals are presented for each univariate model, and adjusted odds ratios and 95% confidence intervals are presented for each multivariable model. All descriptive statistics were computed using SAS version 9.3. All models were estimated using the GLLAMM procedure, and imputations were performed using the ICE procedure in Stata version 10.

3. Results

About half of the students in the sample were female (Table 1). Eighty-six percent were white, and 94% were non-Hispanic. Sixty-two percent of students' mothers and sixty-five percent of students' fathers had obtained at least a four year college degree. At entry into college, 57% of the sample had at least $100 per month in spending money. Five percent of students participated in varsity athletics, 14% participated in club sports, and 22% participated in intramural sports. Eight percent of our sample were members or pledges of fraternities or sororities, and just over 40% report attending religious services at least twice per month. Almost all (94%) students lived on campus, and 35% report being in a committed relationship.

An estimated 29.5%$_{wt}$ of college students had used marijuana at least once in their lifetime at entry into college. Among students who had not tried marijuana prior to college, 8.5%$_{wt}$ initiated marijuana use during their freshman year. Fourteen percent$_{wt}$, 54%$_{wt}$, and 13%$_{wt}$ of students reported using cigarettes, alcohol, and hookah tobacco within the past month, respectively. Six percent$_{wt}$ of students reported using illicit drugs other than marijuana at least once in their lifetime. Mean sensation seeking, depression, and stress scores were 3.1$_{wt}$, 6.5$_{wt}$, and 15.2$_{wt}$, respectively (Table 2).

3.1 Predictors of lifetime marijuana use at college entry

Univariate logistic regression analyses revealed several predictors that were associated with lifetime marijuana use at college entry (Table 3). Students who were female (OR=0.7; CI: 0.6, 0.9), nonwhite (OR=0.7; CI: 0.5, 0.9), or participated frequently in religious activities (OR=0.4; CI: 0.3, 0.5) were less likely to have reported lifetime marijuana use at entry into college than students who were male, white, or did not participate frequently in religious activities. Students who had more spending money (OR=1.5; CI: 1.2, 1.8), were members or pledges of sororities or fraternities (OR=2.9; CI: 1.7, 4.9), or reported higher levels of sensation seeking (OR=3.3; CI: 2.7, 4.1) were more likely to have used marijuana at least once before college than students who had less spending money, were not members or pledges of sororities or fraternities, or reported lower levels of sensation seeking. Current cigarette (OR=11.9; CI: 8.2, 17.3), alcohol (OR=12.1; CI: 7.8, 18.6), and hookah tobacco (OR=8.0; CI: 5.2, 12.3) users and lifetime users of illicit drugs other than marijuana

(OR=31.6; CI: 14.3, 70.1) were also more likely to report having used marijuana at least once before college.

In the multiple logistic regression model (Table 3), spending money (AOR=1.4; CI: 1.02, 1.8), religious participation (AOR=0.5; CI: 0.3, 0.7), current cigarette use (AOR=3.9; CI: 2.2, 6.8), current alcohol use (AOR=6.2; CI: 3.9, 9.8), current hookah tobacco use (AOR=2.5; CI: 1.4, 4.4), lifetime other illicit drug use (AOR=11.8; CI: 4.2, 33.1), and sensation seeking (AOR=2.0; CI: 1.5, 2.5) remained significantly associated with lifetime marijuana use at college entry. Gender, race, and affiliation with a sorority or fraternity were no longer statistically significant, possibly due to significant bivariate associations with many of the other significant covariates in the model.

3.2 Marijuana initiation

Several predictors were associated with marijuana initiation. Univariate regression models established that students who were Hispanic (AOR= 4.9; CI: 2.6, 9.3), lived on campus (AOR= 4.2; CI: 1.02, 17.6), and reported recent use of cigarettes (AOR= 7.6; CI: 4.0, 14.3), alcohol (AOR= 4.3; CI: 2.2, 8.3), or hookah tobacco (AOR= 4.0; CI: 2.0, 7.8), or lifetime use of other illicit drugs (AOR= 4.0; CI: 1.0007, 16.0) were more likely to initiate marijuana use during the freshman year of college. Students who reported higher levels of sensation seeking (AOR= 1.6; CI: 1.3, 1.9) and depressive symptoms (AOR= 1.03; CI: 1.01, 1.05) were also more likely to use marijuana for the first time during their freshman year than students who exhibited lower levels of sensation seeking and depressive symptoms.

In the multivariable logistic regression model, Hispanic ethnicity (AOR= 5.3; CI: 2.5, 11.4), living on campus (AOR= 5.0; CI: 1.3, 18.4), current cigarette use (AOR= 4.3; CI: 1.4, 13.6), and current alcohol use (AOR= 3.5; CI: 1.5, 7.8) remained significantly associated with marijuana initiation during freshman year. Current hookah tobacco use, lifetime other illicit drug use, sensation seeking, and depressive symptoms were no longer associated with initiation.

4. Discussion

We estimate that almost 30%$_{wt}$ of our study population of students at 11 colleges had used marijuana at least once at the time of college entry. This estimate is slightly lower than Pinchevsky and colleagues' finding (2012) that 38% of students at one mid-Atlantic college had used marijuana before college. Pinchevsky and colleagues (2012) also found that 25% of students initiated marijuana use after starting college. This rate is much higher than the initiation rate of 8.5% in our study, though our study included more colleges and was restricted to initiation during freshman year, rather than initiation during the entire course of college.

Students who had at least $100 per month in spending money were 1.4 times more likely to have used marijuana at least once at entry into college that students who had less than $100 per month in spending money. This finding is consistent with those of Luthar and D'Avanzo (1999) and Ramo, Delucchi, Hall, Liu, and Prochaska (2013), which suggests that affluent adolescents and young adults are more likely to use marijuana. Affluent students have

access to more financial resources to buy marijuana, are less exposed to the consequences of drug use, experience higher levels of anxiety, and are subjected to more pressure to achieve than their less affluent peers. All of these factors may lead to being more at risk for using marijuana.

Recent use of cigarettes, alcohol, and hookah tobacco, as well as lifetime use of other illicit drugs, were also associated with lifetime marijuana use at college entry. These associations have been previously reported in other studies on students already enrolled in college (Bell et al., 1997; Mohler-Kuo et al., 2003). Students who use one substance are more likely to use other substances.

Lifetime marijuana use at college entry and a disposition toward sensation seeking were also found to be associated. These findings are consistent with other studies on students already enrolled in college (Buckman et al., 2011; Satinder & Black, 1984; Simons, Gaher, Correia, & Bush, 2005). This relationship may be due to the fact that sensation seekers pursue activities that involve danger, risk taking, new experiences, and a disregard for conformity and social norms (Satinder & Black, 1984).

Students who attend religious services more frequently are 50% less likely to have used marijuana at least once at college entry than students who attend religious services rarely or not at all. This result supports Bell and colleagues' finding that college students who claim that religion is not important to them are 4.6 times more likely to use marijuana than students who believe that religion is very important to them (1997). These findings could be the result of religious institutions providing exposure to positive role models and social support systems, while also being associated with stress reduction and health-promoting behaviors (Sinha, Cnaan, & Gelles, 2007).

Though Hispanic students were not significantly more likely to have used marijuana at least once at college entry, they were almost 5 times more likely to initiate marijuana during the first year of college. Latino college students often experience acculturative stress due to the conflicting values of the culture that they were raised in and the culture of their peers, which can lead to anxiety and depression (Crockett et al., 2007). While little is known about the role of acculturation in marijuana use among first-year college students, our findings are consistent with research on other segments of the Hispanic population. Many studies have demonstrated a relationship between acculturation and substance abuse in Hispanic children and adults (Blanco et al., 2013; Epstein, Botvin, & Diaz, 2001; Unger, Ritt-Olson, Wagner, Soto, & Baezconde-Garbanati, 2009).

We also found that first-year students who lived on campus were 5 times more likely to initiate marijuana use than students who lived off campus. This result is consistent with Bell and colleagues' findings that students who attend commuter colleges are less likely to use marijuana and that students who reside in co-educational dormitories are more likely to use marijuana (1997). Marijuana use is social in nature (Bell et al., 1997), and students who live with peers as a result may be more susceptible to substance use (Boot, Rosiers, Meijman, & Van Hal, 2010; Harford, Wechsler, & Muthén, 2002).

Using multivariable regression, we found that current cigarette and alcohol use predicted marijuana initiation, but that lifetime other illicit drug use did not. We caution the reader that our cross-sectional data do not enable us to determine whether use of cigarettes and/or alcohol was initiated prior to use of marijuana. While our findings support an association between cigarette, alcohol and marijuana use among young people, they cannot provide evidence for or against a progression from alcohol and cigarette use to marijuana use as hypothesized by gateway theory (Kandel & Faust, 1975),

We recognize limitations to this study. Our sample only included college students attending four year institutions in two states, so our findings are not generalizable to college students in other parts of the country or to students attending community colleges. In addition, an assumption of random-effects modeling is that the random-effect (or cluster variable) and model predictors are independent. The sample in our analysis is clustered by college, and some covariates in the regression models may vary significantly across different colleges. In this situation, the association between the clustering variable (college) and model covariates has the potential to introduce bias into the results of the association between the predictor variable and the outcome of interest. Sensitivity analyses in which we removed the clustering variable from our models did not significantly affect the magnitude of the results for individual covariates. Another potential limitation is that students at higher risk for using smokeless tobacco were oversampled in order to provide sufficient power for this low prevalence behavior in the parent study. However, sampling weights were applied to correct any resulting bias. Also, the cohort survey was initiated about six weeks after the beginning of each semester, with each student being given a month to complete the survey. Students who initiated during the first six weeks of college may have been classified as lifetime users prior to entry into college, rather than initiators during their first year of college. If early responders to the second semester survey initiated marijuana use after completing the survey but before the end of their freshman year, we did not capture this information, and these students would not have been classified as marijuana initiators during their first year of college. Finally, it is important to note that the data we analyzed are based on students' self-reports of drug use, which may be subject to some underreporting bias (Akinci, Tarter, & Kirisci, 2001; Delaney-Black, et al., 2010; Gruenwald & Johnson, 2006; Wagenaar, Komro, McGovern, Williams, & Perry, 1993). However, it is also possible that, as described by Kandel and colleagues (2006), asking students questions about drug use in a school or research setting may elicit more truthful responses than asking them at home thereby minimizing the degree of underestimation in our study.

Nevertheless, this study is one of the first involving multiple colleges to investigate predictors of lifetime marijuana use at college entry, as well as marijuana initiation during the first year of college. Freshmen who had at least $100 in spending money; attended religious services less frequently or not at all; reported higher levels of sensation seeking; used cigarettes, alcohol, or hookah tobacco within the past month; or reported lifetime use of other illicit drugs were more likely to have used marijuana at least once prior to college. First-year students who are Hispanic, live on campus, and currently use cigarettes or alcohol are at greater risk for initiating marijuana during the first year of college. These results have important implications for targeting substance abuse interventions and prevention programs

on college campuses. Future research should investigate whether these associations remain over the course of students' college years.

Acknowledgments

Role of Funding Source

This research was supported by Award Number R01CA141643 from the National Cancer Institute. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Cancer Institute or the National Institutes of Health.

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Highlights

- The study included responses from 3,146 students from 11 colleges in NC and VA.
- Nearly 30% of students reported lifetime use of marijuana at college entry.
- We observed a marijuana initiation rate of 8.5% during freshman year.
- We identified several predictors of marijuana use at entry into college.
- We identified several predictors of marijuana initiation over freshman year.

Table 1

Sample Characteristics and Substance Use Estimates

		Overall N = 2464	Lifetime Marijuana Users N = 1004	Marijuana Initiators N = 120
Characteristics		**N (%)**	**N (%)**	**N (%)**
Demographics[1]	Female	1249 (50.7)	498 (49.6)	51 (42.5)
	Nonwhite	348 (14.1)	105 (10.5)	18 (15.0)
	Hispanic	147 (6.0)	63 (6.3)	19 (15.8)
	Mother - four year college degree	1529 (62.1)	633 (63.0)	77 (64.2)
	Father - four year college degree	1604 (65.1)	654 (65.1)	73 (60.8)
	Spending money >= $100 per month	1391 (56.5)	621 (61.9)	61 (50.8)
Social Characteristics[1]	Varsity athlete	127 (5.2)	43 (4.3)	9 (7.5)
	Club sports	351 (14.2)	149 (14.8)	14 (11.7)
	Intramural sports	530 (21.5)	219 (21.8)	30 (25.0)
	Member or pledge of a sorority or fraternity	190 (7.7)	114 (11.4)	10 (8.3)
	Attends religious services at least twice per month	1025 (41.6)	290 (28.9)	50 (41.7)
	Lives on campus	2326 (94.4)	955 (95.1)	116 (96.7)
	In a relationship	862 (35.0)	339 (33.8)	39 (32.5)
Other Substance Use[2]	Current cigarette use	646 (13.5)	510 (35.2)	35 (16.9)
	Current alcohol use	1511 (53.9)	901 (87.7)	89 (71.1)
	Current hookah tobacco use	534 (13.4)	416 (32.1)	26 (15.2)
	Lifetime other illicit drug use	269 (5.9)	254 (18.3)	4 (1.4)

[1]Unweighted estimates

[2]Weighted estimates

Table 2

Mental Health and Psychological Factors

	Overall	Lifetime Marijuana Users	Marijuana Initiators
Score	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
Sensation Seeking	3.1 (0.8)	3.5 (0.6)	3.5 (0.6)
Depression	6.5 (5.8)	7.4 (4.8)	7.3 (5.5)
Stress	15.2 (7.0)	15.8 (5.8)	15.9 (6.7)

All means are weighted.

Table 3

Odds ratios and adjusted odds ratios for predictors of marijuana use at entry into college and marijuana initiation among NC and VA college freshmen

		Lifetime Marijuana Use Before College		Marijuana Initiation During the First Year of College	
	Predictor	**Odds Ratio**	**Adjusted Odds Ratio**	**Odds Ratio**	**Adjusted Odds Ratio**
Demographics	Female	**0.7 (0.6, 0.9)**	1.1 (0.8, 1.3)	0.7 (0.5, 1.1)	
	Nonwhite	**0.7 (0.5, 0.9)**	1.0 (0.6, 1.6)	0.8 (0.4, 1.4)	
	Hispanic	1.6 (0.96, 2.6)	1.5 (0.9, 2.5)	**4.9 (2.6, 9.3)**	**5.3 (2.5, 11.4)**
	Mother – four year college degree	1.1 (0.9, 1.4)		1.2 (0.7, 2.0)	
	Father – four year college degree	1.0 (0.8, 1.4)		0.7 (0.4, 1.3)	
	Spending money >= $100 per month	**1.5 (1.2, 1.8)**	**1.4 (1.0, 1.8)**	0.7 (0.4, 1.5)	
Social Characteristics	Varsity athlete	1.1 (0.7, 1.6)		1.2 (0.6, 2.1)	
	Club sports	1.0 (0.7, 1.4)		0.9 (0.4, 1.8)	
	Intramural sports	1.0 (0.8, 1.3)		1.2 (0.6, 2.2)	
	Member or pledge or sorority or fraternity	**2.9 (1.7, 4.9)**	1.7 (0.9, 3.2)	1.2 (0.4, 3.4)	
	Attends religious services at least twice per month	**0.4 (0.3, 0.5)**	**0.5 (0.3, 0.7)**	0.7 (0.4, 1.01)	0.8 (0.5, 1.2)
	Lives on campus	1.4 (0.6, 2.8)		**4.2 (1.02, 17.6)**	**5.0 (1.3, 18.4)**
	In a relationship	1.0 (0.8, 1.3)		0.6 (0.3, 1.3)	
Other Substance Use	Past month cigarette use	**11.9 (8.2, 17.3)**	**3.9 (2.2, 6.8)**	**7.6 (4.0, 14.3)**	**4.3 (1.4, 13.6)**
	Past month alcohol consumption	**12.1 (7.8, 18.6)**	**6.2 (3.9, 9.8)**	**4.3 (2.2, 8.3)**	**3.5 (1.5, 7.8)**
	Past month hookah tobacco use	**8.0 (5.2, 12.3)**	**2.5 (1.4, 4.4)**	**4.0 (2.0, 7.8)**	1.8 (0.5, 6.3)
	Lifetime other illicit drug use	**31.6 (14.3, 70.1)**	**11.8 (4.2, 33.1)**	**4.0 (1.0007, 16.0)**	1.5 (0.5, 4.4)
Mental Health and Psychological Factors	Sensation seeking	**3.3 (2.7, 4.1)**	**2.0 (1.5, 2.5)**	**1.6 (1.3, 1.9)**	1.1 (0.9, 1.5)
	Depressive symptoms			**1.03 (1.01, 1.05)**	1.0 (0.99, 1.1)
	Stress score			1.02 (0.99, 1.06)	