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Patterns of Alcohol Use and Marijuana Use Among Students at 2- and 4-Year Institutions

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Abstract

Objective: The objective of this study was to understand substance use patterns of alcohol, marijuana, and simultaneous alcohol and marijuana use (SAM) among 2- and 4-year college students.

Participants: Participants were 526 young adults aged 18–23 ($n = 355$ 4-year students; $n = 171$ 2-year students) recruited from February 2015 to January 2016 who were participating in a larger longitudinal study.

Methods: Latent class analysis was used to identify past-month classes of alcohol, marijuana, and SAM use.

Results: Among both 2- and 4-year students, a four-class solution yielded the best-fitting model, with 2-year classes tending to include greater marijuana use and less alcohol use and 4-year classes tending to include heavy alcohol use. Demographic characteristics were largely similar across classes.

Conclusions: Classes of alcohol, marijuana, and SAM use differed by education status. Screening and prevention efforts for 4-year students may need to be tailored for the needs of 2-year students.

Keywords

Alcohol; Marijuana; Simultaneous alcohol and marijuana use; 4-year students; community college

Substance use is a problem of great concern among college students. There are 17.2 million undergraduate students in the United States, 10.7 million (62%) of whom attend 4-year institutions and 6.2 million (36%) of whom attend 2-year institutions¹. Most undergraduate students (62%) report past-month alcohol use, and these students consume a greater quantity of alcohol and report more alcohol-related problems than non-college-age peers^{2–5}. Large, nationally-representative data indicates that 13% of college students endorse consuming 10 or more drinks in a row and 5% endorse consuming 15 or more drinks in a row in the prior two weeks³. These rates are concerning, given that heavy alcohol consumption is associated with negative consequences including impaired academic performance, blackouts, injuries, and death⁶.

In addition to these high rates of drinking, recent estimates suggest that 21% of college students report past-month marijuana use with 4.6% reporting daily use³. Additionally, many students consume alcohol and marijuana simultaneously⁷⁻⁹. It has been estimated 15% of young adults have engaged in simultaneous alcohol and marijuana (SAM) use in the past year⁹. Relative to alcohol use alone, SAM use has been associated with increased odds of interpersonal problems and impairment when driving⁹⁻¹⁰.

Although most research on college student substance use has examined students at 4-year institutions, evidence suggests that there are differences in alcohol use and consequences between students at 2- and 4-year institutions. Velazquez and colleagues¹¹ examined alcohol use among 13,700 college students from seven 2-year institutions and eleven 4-year institutions. Findings indicated that students at 4-year institutions were more likely to engage in binge drinking (consuming 5+ drinks for men, 4+ for women) and report more alcohol-related consequences than their peers at 2-year institutions. Similarly, males at 4-year institutions were more likely to have a higher average blood alcohol concentration (BAC) in the past year and have a higher prevalence of past-year alcohol use compared to males at 2-year institutions. Chen and Jacobson¹² analyzed data from the National Longitudinal Study of Adolescent Health and compared longitudinal relationships between Caucasian and African-American students. They found that Caucasian students who attended 4-year colleges evidenced greater increases in heavy drinking through their teens and smaller decreases after age 20 than those who attended 2-year institutions. These differences were not apparent among African Americans.

Although students at 4-year institutions engage in heavier alcohol use than their peers at 2-year institutions¹³⁻¹⁵, many students at 2-year institutions do consume alcohol. Estimates of past-month binge drinking among 2-year students range from 25% to 41%, with many students reporting alcohol-related problems related to relationships, school, employment, or the law^{11,15,16}. Despite this evidence for differences in alcohol use patterns between students at 2- and 4-year institutions, no research to knowledge has compared rates of substance use between students at 2- and 4-year institutions to examine how patterns of use tend to coalesce within these separate populations.

By comparing users to non-users, research on substance use often assumes that individuals who use a given substance are a homogenous group. Increasingly, latent class analysis (LCA¹⁷) has been used as a person-centered strategy to test this assumption. Indeed, evidence from studies using LCA suggests that young adult alcohol and marijuana users do not represent a homogenous group, but instead, can be classified into subgroups with distinct characteristics. Such research is needed to understand whether efforts to reduce substance use in these populations can treat substance users as a homogenous group, or whether research testing tailored approaches may be needed. Cleveland and colleagues have published two LCA studies looking at whether groups of drinkers were similar in various populations: 4-year college students and young adults between the ages of 18-22 with a high school education or less^{18, 19}. They found relative consistency between 4-year students and non-college students, however a daily drinker class emerged in the non-student sample, suggesting there are differences in alcohol behavior among various groups of young adults. Pearson and colleagues²⁰ examined classes of marijuana use among 4-year college students

who reported past-month marijuana use. They found one class of infrequent light marijuana users, and the remaining three classes each reflecting incremental increases in their frequency of marijuana use and consequences, suggesting differences in marijuana use behavior. However, to our knowledge, no studies have examined classes of alcohol, marijuana, and SAM use, in addition to assessing how classes of substance use differ between students in 2- and 4-year institutions.

Identifying demographic differences in subgroups of substance users within 2-year and 4-year institutions are important to understand who is most at risk of problematic use, and thus, how to target screening and tailored interventions in these distinct settings.

Demographic characteristics, such as male gender, may distinguish alcohol and marijuana use classes as males are at risk for increased alcohol use, marijuana use, and substance-related consequences^{21–22}.

Current Study

To our knowledge, no study has examined patterns of use of both alcohol and marijuana, including SAM use, among both 2-year and 4-year students to understand similarities and differences between these populations. Although they comprise nearly half of the US undergraduate population and evidence high rates of substance use^{11,15,16}, students at 2-year institutions are often overlooked in research, especially with regard to their marijuana use. Thus, these students are critical targets for research and intervention. In particular, research comparing patterns of use is needed to understand whether alcohol and marijuana interventions designed for 4-year college students are also appropriate for students at 2-year institutions. Therefore, the current study extends previous research to examine alcohol and marijuana use patterns across two distinct educational levels: 4-year college students and 2-year college students. Our primary study aims were to examine differences in rates of past-month alcohol, marijuana, and SAM use among 2- and 4- year students (aim 1) and using latent class analysis, examine how patterns of use tend to coalesce together within these unique populations (aim 2). We also examined demographic characteristics associated with class membership (e.g., age; sex). We made no predictions on the exact number of classes; however, we expected to find different classes among 2- compared to 4-year students. We anticipated finding heavier drinking classes among 4-year students compared to 2-year students. We also expected male sex to distinguish heavier substance using classes from lighter-using and non-using classes.

Methods

Participants and Procedures

Participants were a subsample of young adults from *Project Transitions* ($N=779$, ages 18–23 at recruitment), which was a longitudinal study of 24 monthly assessments examining social role transitions and substance use during young adulthood. Participants were recruited from a state in the Northwest United States in which recreational marijuana is legal for individuals 21 and over. The present analyses utilized baseline data and included 526 young adults who reported being currently enrolled in post-secondary education at a 2- or 4-year institution.

Participants were asked to indicate their current educational status. For the current analyses, participants reporting they were a “2-year or community-college student” ($n=163$) or “Trade or vocational school student” ($n=8$) were categorized as 2-year students ($n=171$).

Participants reporting they were a “4-year college or university student” were categorized as 4-year students ($n=355$). Of the 2-year students, the mean age was 20.31 ($SD=1.66$), 49.7% were female, and most were Caucasian (57.1%) or Asian (11.3%) and heterosexual (63.2%). Of the 4-year students, the mean age was 20.10 ($SD=1.56$), 57.2% were female, and most were Caucasian (55.0%) or Asian (23.8%) and heterosexual (87.3%). Additional descriptive information is shown in Table 1.

Inclusion criteria included being 18–23 years old at recruitment, residing within 60 miles of the study offices, having a valid email address, drinking alcohol at least once in the last year, and willing to come to the study office for an initial appointment. At this appointment, age was verified by driver’s license or photo ID, consent was obtained, and a baseline assessment was completed. All procedures were approved by the local University Institutional Review Board and a federal Certificate of Confidentiality was obtained.

Measures

Dichotomous *past month alcohol outcomes* were assessed with the following item from the National Institute on Alcohol Abuse and Alcoholism (NIAAA)²³: “During the past month, how often did you usually have any kind of drink containing alcohol?” (original response options were 0=Never, 1=Once a month, 2=2 to 3 days a month, 3=1 day a week, 4=2 days a week, 5=3 to 4 days a week, 6= 5 to 6 days a week, 7=Every day, were then dichotomized to 0=never, 1=at least once a month) and “During the past month, how often did you have 5 or more (males) or 4 or more (females) drinks containing any kind of alcohol within a two-hour period?” (Original response options were 0=Never, 1=1 day, 2=2 to 3 days, 3=1 day a week, 4=2 days a week, 5=3 to 4 days a week, 6= 5 to 6 days a week, 7=Every day were then dichotomized to 0=never, 1=at least 1 day). A dichotomous item of estimated peak past-month BAC greater than or equal to .08 was also calculated using a standard formula based on sex, weight, number of drinks consumed, and number of hours consuming alcohol (0=peak estimated BAC <.08, 1=peak estimated BAC $\geq$ .08). The Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ²⁴) consists of 24 dichotomous items used to assess alcohol-related problems during the past month. One dichotomous alcohol-related problems item was then created based on the sum of the items (0=no problems endorsed; 1=at least 1 problem endorsed).

Dichotomous *past month marijuana outcomes* were assessed with the following items: “In the past 30 days, how many days did you use marijuana?” (Original responses consisted of an integer between 0 – 30 and were dichotomized to 0=0 days used; 1=at least 1 day used), “In the past month, on a typical day when you use marijuana, how many times per day do you use?” (Original responses consisted of an integer greater than 0 and were dichotomized to 0=use 1 time a day; 1=use more than 1 time a day); and “How many days during the past 30 days did you get high?” (Original responses consisted of an integer between 0 – 30 and were dichotomized to 0=less than 15 days; 1=15 or more days).

A dichotomous *past month SAM outcome* was assessed with the item “How many of the times when you used marijuana or hashish during the last month did you use it at the same time as alcohol?” (Original response options ranged from 0=Not at all, 1=A few of the times, 2=Some of the times, 3=Most of the times, 4=Every time, and were dichotomized to 0=not at all; 1= “a few of the times” or more).

Dichotomous *demographic items* included sex (0=female; 1=male) and age 21 or over (0=less than 21 years old; 1=21 years or older).

Analytic Procedure

For Aim 1, chi-square tests were used to examine differences in rates of past-month alcohol, marijuana, and SAM use between 2- and 4- year students.

For Aim 2, latent class analysis was used to categorized individuals into different groups (known as “classes”) based on similar characteristics. This analytic approach enables researchers to examine how indicators coalesce together within unique populations. Eight dichotomous indicators were used to assess past-month alcohol, marijuana, and SAM use: (1) any alcohol use, (2) binge drinking, (3) peak estimated BAC $\geq .08$, (4) ≥ 1 alcohol-related problem, (5) any SAM use, (6) any marijuana use, (7) marijuana use more than once a day, and (8) being high ≥ 15 days a month.

The fit of five models (one- to five-class solutions) were assessed. The optimal class solution was selected after evaluating fit indices including Akaike Information Criterion (AIC); Bayesian Information Criterion (BIC²⁵), entropy²⁶, the Vuong-Lo-Mendell-Rubin (VLMR) likelihood difference test, and model parsimony and interpretability of the classes²⁷. AIC and BIC are goodness of fit indices where lower values indicate better fit. Entropy values, a measure of how accurately individuals are classified, range from 0 to 1 with high values indicating better fit²⁸. The VLMR is used to assess the fit between two solutions that differ by one class and the Parametric Bootstrap Likelihood Validation Test is used to confirm the final class solution, testing if the solution provides a better fit than previous solution with one less class (i.e., comparing a 4-class solution with a 3-class solution). To account for missing data, maximum likelihood estimation was used^{29–30}. LCA with covariates was then used to determine whether latent classes of drinking and marijuana behaviors were associated with demographic characteristics. A series of LCA models were examined to determine if values on the dichotomous predictors differentiated odds of membership in the remaining three classes compared to the odds of membership in the reference class. Analyses were conducted using MPlus version 7.0²⁸.

Results

Aim 1. Descriptive Information and Differences Between Institutions

Past month endorsement rates for alcohol, marijuana, and SAM among 2- and 4-year students are shown in Table 1. Relative to students at 2-year institutions, students at 4-year institutions were more likely to report past month alcohol use, report greater rates of binge drinking, have a peak estimated BAC greater than or equal to .08, and endorse at least one alcohol-related problem in the past month (p 's $< .01$). Although 2- and 4-year students did

not differ in terms of whether they had used marijuana or SAM in the past month, students at 2-year institutions were more likely to use marijuana more than once a day and be high for more than half the days a month than students at 4-year institutions (p 's <.01).

Aim 2. Identification and Description of Classes

4-year institutions.—The 4-class solution was determined to be the best fitting solution based on BIC, entropy, parsimony, and overall interpretability (Table 2). Item-response probability for the 4-class solutions is shown in Table 4. A total of 9% of 4-year students belonged to the non-users class. Probabilities ranged from zero to very low that students engaged in any alcohol or marijuana use in the past month. The light-drinking-only class (26%) consumed alcohol in the past month and had a moderate probability of endorsing an alcohol-related problem; however, they were unlikely to report binge drinking or an elevated BAC in the past month. It was very unlikely for them to engage in any marijuana use and, consequently, they did not engage in SAM use. One-third of students (32%) belonged to the heavy drinking/light marijuana/SAM use class. These students were defined by a high probability of binge drinking, having an elevated BAC ($\geq .08$), and endorsing alcohol-related problems. They engaged in marijuana use and SAM use; however, they were light marijuana users in that they were unlikely to use marijuana more than once a day and were unlikely to use marijuana more than 15 days a month. The final third of students were characterized as a heavy-drinking-only class (33%). These students were defined by binge drinking, having an elevated BAC ($\geq .08$), and endorsing alcohol-related problems. It was very unlikely for them to engage in marijuana use and they did not engage in SAM use.

2-year institutions.—The 4-class solution was determined to be the best fitting solution based on BIC, adjusted BIC, VLMR, entropy, and overall interpretability (Table 3). Item-response probability for the 4-class solution is shown in Table 5. Nearly a quarter (26%) of students belonged to the non-users class. Students in this class had a low probability of consuming any alcohol in the past month and a very low probability of marijuana use. The light-drinkers-only class (39%) consumed alcohol in the past month and had a high probability of endorsing an alcohol-related problem. It was unlikely for them to engage in binge drinking or having an elevated BAC, and it was extremely unlikely for them to engage in marijuana use. The heavy drinking/heavy marijuana/SAM use class (27%) was characterized by a high probability of binge drinking, having an elevated BAC, endorsing alcohol-related problems, using marijuana more than once a day, and engaging in SAM use. They had a moderate probability of being high for at least 15 days a month. The light drinking/heavy marijuana class (8%) consumed alcohol within the past month, however did not binge drink, have an elevated BAC, or report alcohol-related problems. They were likely to use marijuana more than once a day and to be high for at least 15 days a month, but were unlikely to engage in SAM use.

Predictors of Class Membership

Sex and age were entered as dichotomous predictors of class membership.

4-year institutions.—Pairwise comparisons revealed that males had 302% higher odds of belonging to the heavy-drinking-only class than the non-drinkers/non-marijuana class ($OR = 4.019$, $CI = 1.803–8.957$). There was no significant effect for age among the classes.

2-year institutions.—Pairwise comparisons revealed that students 21 years or older had 243% higher odds of belonging to the light-drinkers-only class than the non-drinkers/non-marijuana class ($OR = 3.434$, $CI = 1.433–8.228$). There was no significant effect for sex among the classes.

Comment

Research has primarily focused on alcohol use among 4-year students^{31–32}, which could obscure differences in substance use patterns across populations of students seeking higher education. This gap in the literature is particularly notable with regard to marijuana use, as no studies to knowledge have assessed patterns of marijuana use and SAM use in 2-year institutions. Latent class analysis has been increasingly used as a strategy to understand patterns of alcohol and marijuana use in college students and young adults generally, but this is the first study to knowledge that tests differences in rates of past-month alcohol, marijuana, and SAM use among 2- and 4- year students, and examines how patterns of use tend to coalesce together within these unique population. A 4-class solution best fit the data for both the 2- and 4-year students, but several differences emerged in classes between 2- and 4-year students. Results indicate that there were more 2-year students (a total of 65%) belonging to a relatively low-risk class (i.e., non-users or light-alcohol only) as compared to 4-year students (a total of 35%). Results also indicate that, although 2-year students are at relatively lower risk, they tend to use marijuana heavily (often in addition to heavy drinking), whereas 4-year students are at high risk of heavy drinking.

Consistent with past research^{13–15}, 4-year students were particularly likely to engage in heavy alcohol use. Heavy alcohol use classes were mostly found among 4-year students (i.e., a total of 65% of 4-year students belonged to a heavy drinking class compared to 27% of 2-year students). Notably, the heavy drinking classes were distinguished by level of marijuana use. Among 4-year students, two heavy drinking classes emerged; one characterized by SAM use but light marijuana use (32%), and another characterized by no marijuana use (33%). In contrast, among 2-year students, the majority of students in the heavy drinking class used marijuana more than once a day. This suggests that interventions aimed to reduce alcohol misuse among 2-year students should also consider the assessment of problematic levels of marijuana use that could also be targeted for intervention. It is possible that 4-year students are more likely than 2-year students to live on campus (or in a sorority or fraternity), resulting in an environment that promotes heavy alcohol use³³.

Heavy marijuana use classes were particularly found among 2-year students, as a total of 35% of students belonged to a class defined by heavy marijuana use (i.e., heavy drinking/heavy marijuana/SAM users class and the light drinking/heavy marijuana class). These findings suggest that among 2-year students, those who use marijuana do so heavily, with many also engaging in heavy alcohol use. Among 4-year students, no class was defined by

heavy marijuana use. In fact, there was only one 4-year class that was likely to use any marijuana use in the past month.

Campus norms regarding alcohol and marijuana use may differ between college settings of 2- and 4-year institutions, resulting in differences in use. Further, motivations for use may also differ as a function of setting. Future research could examine if motives for using marijuana (e.g., using to cope with negative affect, using to fit in with others, using for enjoyment) differ between students at 2- and 4-year institutions. For example, those at 2-year institutions taking on more social roles (e.g., a parent working full-time and also going to class) may use marijuana for different reasons than someone at a 4-year institution who lives in an on-campus residence hall. It is also possible that contextual differences related to use for 2- and 4- year students explain the difference in marijuana use. For example, differences in norms regarding marijuana use and drinking between these types of institutions, as well as the settings in which use occurs, may affect use, and future research should elucidate these differences.

This study provides some of the first evidence for the importance of understanding SAM use in different populations of college students. Among both 2- and 4-year students, only one class for each group was likely to engage in SAM use. Students endorsing SAM use in the past month were categorized into the heavy drinking/light marijuana class for 4-year students or the heavy drinking/heavy marijuana class for 2-year students. As SAM use among both college settings was associated with hazardous alcohol use, these students may be at increased risk of negative problems and increased impairment. Recent findings suggest that SAM users perceive greater negative acute physiological and cognitive effects compared to when they engage in alcohol or marijuana only³⁴ and SAM use has been associated with serious negative harms including greater rates of drunk driving^{7,9,10}.

Surprisingly, alcohol and marijuana classes among both 2- and 4-year students were only minimally distinguished by demographic predictors. As expected, males at 4-year institutions had higher odds of belonging to the heavy-drinking-only class relative to the non-users class; however, no other sex differences between classes were found, and there were no significant effects for sex among 2-year students. These findings are surprising, as male sex is a risk factor for increased alcohol and marijuana use²¹. Classes may be distinguished by additional factors that should be assessed in future research, including year in school, income, motivations for use, peer influences, cost of use, and the environment where students engage in substance use.

Limitations

There are several limitations to this study. Participants were recruited based on having consumed alcohol at least once in the prior year, so the study likely underestimates the proportion of low-risk students in both settings. They were also recruited from a legal recreational marijuana state for individuals 21 and over, which may limit generalizability to other students in higher education. Data for the LCA analyses were cross-sectional and show substance use patterns within the past month, which limits inferences regarding causality and stability over time. We also did not test whether other potentially-important variables

differentiated the classes, such as the use of other substances, income, or settings of substance use.

Conclusions

Our findings suggest that assessment and prevention efforts may need to be tailored to reflect the unique needs of students in 2- and 4-year institutions. As patterns of use differ between 2- and 4-year students, we encourage providers to assess for problematic use of these substances. Campus health centers could engage in more thorough practice of screening for alcohol use, marijuana use, and SAM use. In 2-year settings, alcohol screening may need to be supplemented by additional attention placed on marijuana. In sum, the current study is the first to assess patterns of alcohol use, marijuana use, and SAM use in 2-year and 4-year college students. Findings have important implications for prevention/intervention efforts for students in higher education.

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Table 1

Percent of Students Endorsing Items by Education Status

	2-year students	4-year students
Female	49.7%	57.2%
Age 21 or older	42.1%	57.2%
Any drink in past month	84.2%	91.0%
Binge drink in past month	31.6%	59.8%
Peak eBAC $\geq .08$ in past month	38.2%	61.3%
Alcohol problems in past month	59.3%	78.0%
SAM use in past month	23.5%	25.5%
Marijuana use in past month	43.8%	42.7%
Marijuana use > 1 time/day in past month	23.7%	11.3%
High ≥ 15 days in past month	28.8%	9.6%

Note. $n=171$ students at 2-year institutions and $n=355$ students at 4-year institutions; **Bold** = significant difference ($p < .01$) between groups

Table 2

Model fit indices for LCA models with 1 to 6 latent classes for students at 4-year institutions

Model	AIC	BIC	Adj BIC	VLMRp	Entropy
1 class solution	2856.997	2887.974	2862.594	-	-
2 class solution	2394.287	2460.113	2406.181	< 0.01	0.889
3 class solution	2143.768	2244.443	2161.959	< 0.01	0.886
4 class solution	2105.324	2240.848	2129.813	< 0.01	0.922
5 class solution	2079.748	2250.121	2110.534	< 0.01	0.905
6 class solution	2072.399	2277.621	2109.482	< 0.01	0.911

Note.. AIC = Akaike information criterion; BIC = Bayesian information criterion; VLMRp = Vuong-Lo-Mendell-Rubin likelihood difference test. The optimal class solution is in **bold**.

Table 3

Model fit indices for LCA models with 1 to 6 latent classes for students at 2-year institutions

Model	AIC	BIC	Adj BIC	VLMRp	Entropy
1 class solution	1557.511	1582.645	1557.313	-	-
2 class solution	1287.556	1340.964	1287.135	< 0.01	0.945
3 class solution	1206.697	1288.381	1206.054	< 0.01	0.887
4 class solution	1180.188	1290.147	1179.322	< 0.01	0.907
5 class solution	1176.406	1314.639	1175.316	0.10	0.888
6 class solution	1181.440	1347.948	1180.127	0.49	0.933

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; VLMRp = Vuong-Lo-Mendell-Rubin likelihood difference test. The optimal class solution is in **bold**.

Table 4

Item-response probability and class prevalence rates for students at 4-year institutions

Past Month Alcohol and Marijuana Indicators	Latent Class			
	Non-users (9%)	Light-drinking-only (26%)	Heavy drinking/light marijuana/SAM use (32%)	Heavy-drinking-only (33%)
Any drinking	0.000	1.000	1.000	1.000
Binge drink	0.000	0.067	0.789	1.000
Peak eBAC $\geq .08$	0.000	0.172	0.824	0.946
Alcohol problems	0.000	0.632	0.947	0.952
SAM use	0.000	0.000	0.888	0.000
Marijuana use	0.094	0.155	1.000	0.191
Marijuana use > 1 time/day	0.031	0.000	0.346	0.000
Marijuana use of getting high ≥ 15 days	0.000	0.009	0.294	0.000

Note. All indicators assessed alcohol and marijuana use in the past month; *eBAC* = estimated blood alcohol concentration; *SAM* = simultaneous alcohol and marijuana use; **Bold** = class-defining probabilities

Table 5

Item-response probability and class prevalence rates for students at 2-year institutions

Past Month Alcohol and Marijuana Indicators	Latent Class			
	Non-users (26%)	Light-drinking-only (39%)	Heavy drinking/heavy marijuana/SAM use (27%)	Light drinking/heavy marijuana (8%)
Any drink	0.416	1.000	1.000	1.000
Binge drink	0.000	0.305	0.701	0.000
Peak eBAC $\geq .08$	0.000	0.378	0.797	0.067
Alcohol problems	0.000	0.796	0.950	0.000
SAM use	0.000	0.000	0.842	0.212
Marijuana use	0.132	0.107	1.000	1.000
Marijuana use > 1 time/day	0.000	0.000	0.645	0.669
Marijuana use of getting high $\geq$ 15 days	0.000	0.000	0.518	0.811

Note. All indicators assessed alcohol and marijuana use in the past month; eBAC = estimated blood alcohol concentration; SAM = simultaneous alcohol and marijuana use; **Bold** = class-defining probabilities