



HHS Public Access

Author manuscript

Subst Use Misuse. Author manuscript; available in PMC 2020 May 13.

Published in final edited form as:

Subst Use Misuse. 2017 July 29; 52(9): 1133–1138. doi:10.1080/10826084.2017.1298620.

Off-campus Residence as a Risk Factor for Heavy Drinking among College Students

Madeline B. Benz, MS^{a,c}, Angelo M. DiBello, PhD^{a,b}, Sara G. Balestrieri, MS^b, Mary Beth Miller, PhD^{a,b}, Jennifer E. Merrill, PhD^{a,b}, Ashley D. Lowery, MS^b, Kate B. Carey, PhD^{a,b}

^aBrown University Center for Alcohol and Addiction Studies, Providence, RI, United States.

^bBrown University School of Public Health, Providence, RI, United States.

^cClark University, Worcester, MA, United States

Abstract

Background: College student alcohol use is a public health problem.

Objectives: The aim of this study was to examine associations between residence and drinking behaviors among college students. We hypothesized that living off-campus independently or with peers would be associated with riskier drinking than living on-campus, and living with parents would be associated with less risky drinking than living on-campus.

Methods: We analyzed data from two separate studies conducted at two four-year universities in the Northeast. Study 1 examined data from 1286 students (57% female) attending a private university. In Study 2, analyses were replicated and extended with 2408 students (67% female) from a public university. We conducted regression analyses controlling for age, race, gender, and class year to determine if living off-campus without parents is a unique predictor of typical and peak drinking quantities, frequency of heavy drinking, and alcohol-related consequences.

Results: In both samples, students living off-campus without parents reported more frequent alcohol consumption, larger drinking quantities, more frequent heavy drinking, and a greater number of alcohol-related consequences than students living on-campus ($p < .001$). In Study 2, students living off-campus with their parents exhibited significantly fewer risky drinking behaviors than those living on-campus ($p < .001$).

Conclusions: Living off-campus – either independently or with peers – is a risk factor for heavy drinking and consequences. This group exhibits more risky drinking behaviors and alcohol-related consequences than students living on-campus, independent of age and class year. Therefore, students moving off-campus may be appropriate targets for alcohol misuse prevention programs.

Correspondence should be addressed to Madeline B. Benz, Clark University Psychology Department, 950 Main St., Worcester, MA, 10610, Madeline_Benz@alumni.brown.edu, (908) 727-0086.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

1. Background

Risky drinking behaviors are common among college students [1] and have been associated with negative consequences for drinkers and those around them [2, 3]. Heavy episodic drinking, defined as the consumption of four/five or more drinks for females/males on one occasion within the past two weeks, increases risk of death, injuries, and sexual assault [2].

In search of independence and autonomy, many young adults take advantage of opportunities to move off-campus; yet the literature regarding drinking patterns among this subgroup is limited and inconclusive. Several studies have found that living on-campus is associated with heavier drinking than living off-campus (with peers or at home with parents), although some patterns varied by gender and categorization of fraternity/sorority housing [4, 5]. Other studies have found that living independently off-campus and living in a fraternity/sorority house were associated with greater odds of heavy drinking than living on-campus [6, 7], and at least one national study [8] found no significant differences in rates of heavy drinking between those living on/off-campus. Thus, the association between residence and alcohol use remains unclear.

Previous research has been limited by lack of distinction and comparison between types of on/off-campus housing, failure to control for relevant demographic variables, and inadequate attention to alcohol-related consequences. Prior studies did not consistently make a distinction between students living off-campus independently, with peers, in Greek houses, or with parents. In current college culture, off-campus residence is often associated with living independently or with peers [9]. This type of residence may facilitate easier access to alcohol due to less adult monitoring [6–8]. Living within Greek housing may also promote hazardous drinking [4, 6, 7], while living at home with parents may serve as a protective factor [7, 10, 11]. Because each of these “off-campus” residences may have distinct influences on student drinking, it is necessary to ensure they are adequately differentiated.

National data reveal that, on today’s college campuses, as many students report living in off-campus housing as in dorms [12]. However, residence is often confounded with age and year in school, as off-campus living options are sometimes only available to students in their 3rd or 4th year [12]. Therefore, additional research is needed to account for contemporary housing options and to isolate the effect of residential status on drinking behaviors from confounding demographic variables. Moreover, few studies have analyzed alcohol-related consequences as a function of residence [13].

This study expands on previous research by examining associations between specific residences and drinking behaviors, in hopes of informing future research and intervention strategies for heavy-drinking college students. We utilized data from one public and one private university within the same state to identify the impact of residential status on multiple drinking outcomes. These two samples provide conceptual replication of primary hypotheses across institutions using different sampling and measurement strategies. We build upon previous studies by differentiating between various off-campus residences (i.e., with parents, without parents, fraternity/sorority) and examining between-group differences in alcohol-related problems.

2. Study 1

In Study 1, we compared drinking behaviors of students living on-campus in residence halls to those of students living off-campus without parents and students living in Greek housing. First, we hypothesized that students living (a) off-campus independently or with peers and (b) living in Greek housing would be more likely than on-campus students to report drinking in the past semester. Second, we hypothesized that drinkers living off-campus without parents would report higher-risk drinking (as measured by heavy episodic drinking, peak drinking quantity, and alcohol-related consequences) than those living (a) on-campus or (b) in Greek housing.

2.1 Methods

2.1.1 Participants and Procedures—Students enrolled in a mid-sized, private, residential university in the Northeast (undergraduate enrollment = 6264) were recruited to participate in an online survey investigating college student alcohol use and perceptions of drinking. All undergraduate students were invited to complete a voluntary, anonymous survey that was sent in two waves: one during the Fall 2011 semester and one during the Spring 2012 semester. There was a 50% response rate for the survey. Participants were representative of the student body in terms of age and year in school, while Whites were over-represented. Data for the current study was derived from students who consented to participate during the Spring 2012 semester, which allowed us to capture a pattern of behavior that was established in the Fall semester and maintained through the Spring. The sample included 627 students between the ages of 19 and 24 years. We excluded respondents with missing data on variables central to analyses (gender, residence) as well as those who were 1st and 2nd year students who are required to live in on-campus housing. We also excluded those who reported transgender sexual identity ($n = 3$), class year above 4th year ($n = 18$), living off-campus with their parents ($n = 11$), or ‘other’ residence ($n = 2$) because these numbers were too small to produce meaningful results. Because students living off-campus with their parents were removed from this sample, the designation of “off-campus” in Study 1 refers to students living off-campus independently or with their peers. The final sample included 627 students (55% female, 69% White) with a mean age of 21.13 years ($SD = 0.86$). The university’s Institutional Review Board approved the study.

2.1.2 Measures

Demographics.: Participants reported gender, age, race/ethnicity, and year in college.

Residence.: Participants responded to the question, “Where do you live while at school?” Response options included (a) residence hall/dorm room, (b) fraternity or sorority house, (c) off-campus housing/apartment/house, (d) with parents, and (e) other. Fraternity housing on this campus typically consists of dedicated spaces within on-campus residence halls, but was coded separately from on-campus housing.

Drinking Status.: Current alcohol use was assessed using an item from the Brief Drinkers Profile [14]. Options included (a) I have never tried alcohol; (b) I have tried alcohol but have not consumed alcohol during the past semester; as well as 4 other options describing

different levels of current drinking. A dichotomous variable was created, such that individuals endorsing current use were categorized as ‘drinkers’ (coded 1) and those denying past-semester alcohol use (a or b) were categorized as ‘non-drinkers’ (coded 0)

Heavy Episodic Drinking.: Heavy episodic drinking was measured using a single gender-specific item that read, “Think back over the last two weeks. How many times have you had 5 or more drinks (men)/ 4 or more drinks (women) within two hours?” A standard drink was defined as 12 oz. beer, 10 oz. wine cooler, 4 oz. wine, and 1 cocktail with 1 oz. of 100 proof liquor or 1¼ oz. of 80 proof liquor.

Peak drinking quantity.: Participants indicated the largest number of drinks they had consumed on any single day in the past three months using response options (a) never drank; (b) 1 or 2 drinks; (c) 3 or 4 drinks; (d) 5, 6, or 7 drinks; (e) at least 8 but less than 12 drinks; (f) 12 to 23 drinks in a single day; and (g) 24 or more drinks in a single day.

Consequences.: Alcohol-related consequences over the past 2 weeks were measured using the Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ) [15]. This questionnaire is a self-administered, 24-item (yes/no) assessment of problems related to drinking. Example items include saying embarrassing things and having a hangover. Scores were calculated by summing the 24 items ($\alpha = .85$).

2.1.3 Data Analysis Plan—Data analyses were conducted using SAS Version 9.4. We used logistic regression to test the association between residential status and alcohol use versus nonuse (Hypothesis 1). In order to characterize alcohol use among those who reported drinking, the 77 non-drinkers were then excluded from analyses, resulting in a reduced subsample of 550 drinkers. Bivariate correlations were used to examine the associations among predictor and criterion variables.

We utilized general linear models (GLM) to examine whether residence was associated with drinking behaviors or consequences (Hypothesis 2). Gender, age, race, and status as a 3rd or 4th year student were included as covariates in all regression models to control for their influence on drinking behaviors and associations with the residential status predictors. Two dummy-coded variables were created to reflect differences between (a) living on-campus or in a fraternity/sorority house and (b) living on-campus or in an off-campus apartment. Preliminary analyses indicated significant positive skew and kurtosis in the distributions of all three outcomes. Thus, bootstrapped GLMs were used to correct for non-normality. This approach has been used to address non-normality in college student alcohol outcomes (e.g. [16, 17]). The significance of predictors was evaluated using 95% confidence intervals (CIs) and a z-statistic with an accompanying p-value. Predictors were considered significant if the 95% CI did not include zero and the z-statistic was significant ($p < .05$).

2.2 Results

Table 1 presents demographics for the full sample and the subsample of drinkers by residence. Eighty-one percent of students reported alcohol use in the past semester. Consistent with Hypothesis 1, students living off-campus were more likely than those living on-campus to identify as drinkers, OR=4.34, CI[2.28, 8.28]; however, students living in

Greek housing were not more likely than those living on-campus to endorse alcohol use, $OR=1.98$, $CI[0.67, 5.85]$. Age, gender, and academic year did not significantly predict current alcohol use in the full sample.

We restricted regression analyses (Hypothesis 2) to include only participants who had consumed alcohol in the past semester ($N=550$; see Table 2).¹ Student drinkers living off-campus endorsed more frequent heavy drinking, greater peak drinking quantities, and more alcohol-related consequences than those living on-campus ($p < .001$). Compared to living on-campus, Greek housing was associated with heavier peak drinking quantities ($p < .001$), but not more frequent heavy drinking or a greater number of consequences ($p = .20$).

3. Study 2

Study 2 was a replication and extension of Study 1 using a sample of students attending a large, public university in the same state (undergraduate enrollment = 14,207). Again, we expected that (a) off-campus students living independently or with peers and (b) those living in Greek housing would be more likely than on-campus students to report drinking in the past semester (Hypothesis 1). We also expected that these off-campus students would report higher-risk drinking (heavy episodic drinking, peak drinking quantity, alcohol-related consequences) than on-campus students (Hypothesis 2). While students at this university are not required to live on-campus, 85% of 1st year students choose on-campus housing and 60% of 3rd/4th year students choose off-campus residence; therefore, students from all class years were included in the study 2 sample. Also in the study 2 sample, a sufficient number of students lived with parents to explore the association between living off-campus with parents and drinking behaviors. Because living with parents may serve as a protective factor against hazardous drinking [4, 8, 13], we hypothesized that students living off-campus with their parents would exhibit fewer risky drinking behaviors than students living on-campus (Hypothesis 3), even controlling for age, gender, and race.

3.1 Methods

3.1.1 Participants and Procedures—All undergraduate students at a public university in the Northeast were invited to complete a voluntary university-sponsored survey investigating college student substance use/health behaviors. The survey was sent three times in the Spring of 2014. The response rate for the survey was 18% ($N = 2566$), and participants were representative of the student body across age, race, and year in school. As in Study 1, respondents with missing data in the categories of gender and residence, indicating transgender ($n = 11$), listing residence of “other” ($n = 49$), endorsing class year above 4th year ($n = 23$), and those outside the ages of 18 to 24 years ($n = 88$) were removed from the sample. The final sample included 2380 students (67% female, 82% White) with a mean age of 19.97 years ($SD = 1.49$). The university’s Institutional Review Board approved all procedures.

¹We reran analyses on the full sample, coding drinking variables as 0 for non-drinkers, and significance of findings did not change.

3.1.2 Measures

Demographics.: Participants reported gender, age, race/ethnicity, and year in college.

Residence.: Participants were asked to describe their current place of residence as (a) residence hall; (b) apartment, house, condo (not with parents); (c) fraternity/sorority house; (d) with parents; or (e) other. At this university, Greek housing is located both on- and off-campus; however, both were coded as ‘Greek housing’.

Current Alcohol Use.: Participants indicated which of the following options best fit their use of alcohol: (a) never used, (b) have not used in past year, (c) have used at least once in the past year, or (d) have used at least once in the past month [18]. A dichotomous variable was created, such that individuals endorsing alcohol use within the past year were categorized as drinkers (coded as 1) as opposed to non-drinkers (0).

Heavy Episodic Drinking.: Participants indicated how many times in the past two weeks they had consumed 5 or more alcoholic drinks, from 0 to ‘more than 10’ times.

Peak drinking quantity.: Participants reported the greatest number of drinks they had consumed on one occasion in the past 30 days.

Consequences.: Alcohol-related consequences over the past 12 months were measured using 12 (yes/no) items from the National College Health Assessment [18]. Sample items include missing a class, having unprotected sex, and getting into trouble with the police. Scores were calculated by summing the 12 items ($\alpha = .71$).

3.1.3 Data Analysis Plan—We replicated the data analysis steps from Study 1. Based on responses to the question indicating current alcohol use, we excluded past year non-drinkers ($N = 261$) from the reduced sample. GLM analyses were then conducted to examine whether living on-campus predicted drinking behaviors relative to living off-campus independently or with peers, living in Greek housing, or living with parents. Three dummy coded variables were created to reflect differences between (a) living on-campus or in a fraternity/sorority house, (b) living on-campus or in an off-campus apartment, and (c) living on-campus or off-campus with parents.

3.2 Results

Table 3 presents demographics and drinking variables for the full sample and the subsample of student drinkers. Consistent with hypotheses, students living off-campus without parents ($OR=1.71$, $CI[1.09, 2.68]$) or in a Greek house ($OR=5.13$, $CI[1.24, 21.20]$) were more likely than those living on-campus to endorse current alcohol use. Students living with parents were less likely than those living on-campus to be drinkers ($OR=0.36$, $CI[0.26, 0.50]$).

Among only those students who reported alcohol use in the past year ($N = 2141$; see Table 4),² student drinkers living (a) off-campus without parents or (b) in Greek housing endorsed

²We reran analyses on the full sample, coding drinking variables as 0 for non-drinkers, and significance of findings did not change.

more frequent heavy drinking, greater peak drinking quantities, and more alcohol-related consequences than those living on-campus ($ps < .001$). In contrast, living with parents was associated with less frequent heavy episodic drinking ($p < .001$) and smaller peak drinking quantities ($p < .01$) than living on-campus. There was no significant difference in alcohol-related consequences between students living with their parents and those living on-campus ($p = .19$).

4. Discussion

This study sought to characterize drinking behaviors of students living on/off-campus in order to inform prevention and intervention strategies to reduce heavy drinking among college students. Findings were consistent across two independent samples obtained from a private and a public university. In both samples, students living off-campus without parents were more likely to report current drinking, drink heavily, and experience alcohol-related consequences than students living on-campus. Similar trends emerged for students living in Greek housing. In the second sample, living off-campus with parents was associated with less heavy drinking than living on-campus. Associations were maintained when controlling for correlates of living status (i.e., age and year in school). These findings reinforce the importance of living situation as a risk factor for heavy alcohol use among college students.

In both samples, students living off-campus without parents were more likely than those on-campus to report current alcohol use. While it is plausible that students who have reached legal drinking age are more likely to live off-campus independently or with peers, the associations between residence and drinking behavior remained significant even after controlling for age and year in school, suggesting that some other aspect of living off-campus without parents is associated with drinking as well as heavy drinking. At least two explanations can be offered for this finding. First, because living on-campus in a residence hall/dormitory is usually accompanied by a residence advisor and specific rules about alcohol use on the college campus [19, 20], living off-campus independently or with peers may simply remove these external barriers to drinking. With weaker social controls, it may be easier for students to host and attend parties where alcohol is supplied. Availability of alcohol is a well-known risk factor for consumption among emerging adults [21]. Second, because these data are cross-sectional, the association between off-campus housing and drinking may also be interpreted such that students who are drinking alcohol are more likely to move off-campus independently or with peers. Future research should explore the directionality of this association in order to inform alcohol use prevention and treatment for college students.

Relative to living on-campus or off-campus with parents, drinkers living off-campus without parents engaged in a riskier style of drinking: more frequent heavy episodic drinking, greater peak drinking quantities, and more alcohol-related consequences. Thus, students who reside off-campus independently or with peers are not only more likely to be drinkers, but those who drink are more likely to drink heavily and experience negative consequences. Taken together, these findings suggest that off-campus housing is an environmental risk factor for hazardous drinking (cf. Ward & Gryczynski, 2009). Again, however, the directionality of this association is unclear: students who are exhibiting risky drinking behaviors may be self-

selecting to live off-campus independently or with peers in order to allow for easier access to alcohol at parties, which are the most common venue for underage drinking [22]. On the other hand, it is possible that moving off-campus independently or with peers is promoting this type of risky drinking via increased opportunities to drink in “wetter” environments [23]. Additional research is needed to better understand the reasons for differences in heavy drinking between on-and off-campus students.

The current findings may inform both future research and prevention practice. First, living situation is an important factor to consider when examining college drinking behaviors. Off-campus housing without parents, in particular, seems to be a risk factor for heavy drinking that may serve as a target for college student drinking interventions. Specifically, our findings suggest that it may be useful to implement interventions designed to prevent alcohol misuse before students move into the off-campus environment. Many universities currently address alcohol use at high-risk times, such as freshman year [24] or when students violate campus alcohol policies [25]. Based on current data, the transition from dormitory living to off-campus housing may be another time for intervention.

This study contributes to the literature by distinguishing between students living off-campus with their parents and those living with their peers; controlling for confounding variables such as age, gender, and year in school; and replicating findings across samples and institutions with different residence requirements for first and second year students. Because we utilized data from the Spring semester for both studies, we are also confident that we are capturing a pattern of behavior related to residence, rather than acute adjustment to the off-campus lifestyle. However, we also acknowledge the limitations of this study. First, this study utilized cross-sectional data, so causal associations among these variables cannot be determined. A longitudinal design investigating drinking behaviors at multiple time points both before and after moving off-campus would be informative, to determine whether risky-drinking students are choosing to live off-campus or if risky drinking is a result of moving off-campus. Second, the data were collected from two schools in one state in the U.S., so findings may not be generalizable to all college populations. However, the use of data from both a private institution and a public university allows for more generalizability. Third, because we used campus surveys conducted for other reasons by the universities themselves, there are possibilities of biases due to sampling, self-report, and recall. Additionally, the question assessing heavy episodic drinking in Study 2 is not gender specific, which may have led to heavy episodic drinking being underestimated for women. Lastly, there was a large amount of missing data from both studies; however, the sample sizes remained robust.

5. Conclusions

Considering the public health issue of risky drinking among college students, it is important to develop and implement interventions that both prevent initiation of alcohol use and promote drinking safely and in moderation. In order to successfully change drinking behaviors among college students, it is essential to understand the factors that influence these behaviors. Thus, it is important to recognize the impact of residence on alcohol use and drinking behaviors. This study confirmed that living off-campus – either independently or with peers – is a risk factor for heavy drinking and consequences. Therefore, students

moving off-campus may be appropriate targets for alcohol misuse prevention programs. Future studies should investigate the efficacy of drinking interventions for this group in order to reduce the harms associated with risky drinking among college students.

Acknowledgements:

The authors would like to acknowledge Brown University for providing data from their National College Health Improvement Project survey. We would also like to acknowledge the University of Rhode Island Office of Substance Abuse Prevention Services and the Dean of Students Office for the use of their campus survey data.

Role of Funding Sources: This research was supported by grant number K01AA022938 (PI: Jennifer Merrill) and training grant number T32-AA007459 (PI: Peter Monti) from the National Institute on Alcohol Abuse and Alcoholism at the National Institutes of Health. NIH had no role in the study design, collection, analysis, or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication.

References

1. Johnston LD, et al., Monitoring the Future national survey results on drug use, 1975–2014: Volume II, college students and adults ages 19–55, I.f.S. Research, Editor. 2015, The University of Michigan: Ann Arbor p. 416.
2. Hingson R and White A, New Research Findings Since the 2007 Surgeon General's Call to Action to Prevent and Reduce Underage Drinking: A Review. *Journal of Studies on Alcohol and Drugs*, 2014 75(1): p. 158–169. [PubMed: 24411808]
3. White A and Hingson R, The Burden of Alcohol Use Excessive Alcohol Consumption and Related Consequences Among College Students. *Alcohol Research-Current Reviews*, 2014 35(2): p. 201–218.
4. Presley CA, Meilman PW, and Leichliter JS, College factors that influence drinking. *Journal of Studies on Alcohol, Supplement*, 2002(s14): p. 82–90.
5. Simons-Morton B, et al., The Effect of Residence, School Status, Work Status, and Social Influence on the Prevalence of Alcohol Use Among Emerging Adults. *Journal of Studies on Alcohol and Drugs*, 2016 77(1): p. 121–132. [PubMed: 26751362]
6. Ward BW and Gryczynski J, Social Learning Theory and the Effects of Living Arrangement on Heavy Alcohol Use: Results From a National Study of College Students. *Journal of Studies on Alcohol and Drugs*, 2009 70(3): p. 364–372. [PubMed: 19371487]
7. Wechsler H and Nelson TF, What we have learned from the Harvard School of Public Health College Alcohol Study: Focusing attention on college student alcohol consumption and the environmental conditions that promote it. *Journal of Studies on Alcohol and Drugs*, 2008 69(4): p. 481–490. [PubMed: 18612562]
8. Dawson DA, et al., Another look at heavy episodic drinking and alcohol use disorders among college and noncollege youth. *Journal of Studies on Alcohol*, 2004 65(4): p. 477–488. [PubMed: 15378804]
9. Carter AC, Brandon KO, and Goldman MS, The College and Noncollege Experience: A Review of the Factors That Influence Drinking Behavior in Young Adulthood. *Journal of Studies on Alcohol and Drugs*, 2010 71(5): p. 742–750. [PubMed: 20731981]
10. Bingham CR, Shope JT, and Tang X, Drinking Behavior from High School to Young Adulthood: Differences by College Education. *Alcoholism: Clinical and Experimental Research*, 2005 29(12): p. 2170–2180.
11. Cacciola EE and Nevid JS, Alcohol consumption in relation to residence status and ethnicity in college students. *Psychol Addict Behav*, 2014 28(4): p. 1278–83. [PubMed: 25437154]
12. American College Health Association-National College Health Assessment II: Undergraduate reference group executive summary Spring 2015 2015, American College Health Association: Hanover, MD.
13. Harford TC, Wechsler H, and Muthen BO, The impact of current residence and high school drinking on alcohol problems among college students. *Journal of Studies on Alcohol*, 2002 63(3): p. 271–279. [PubMed: 12086127]

14. Miller W and Marlatt G, Brief Drinker Profile. 1984, Odessa, Fla: Psychological Assessment Resources.
15. Kahler CW, Strong DR, and Read JP, Toward efficient and comprehensive measurement of the alcohol problems continuum in college students: The Brief Young Adult Alcohol Consequences Questionnaire. *Alcoholism: Clinical and Experimental Research*, 2005 29(7): p. 1180–1189.
16. Mastroleo NR, et al., Do coaches make a difference off the field? The examination of athletic coach influence on early college student drinking. *Addiction research & theory*, 2012 20(1): p. 64–71. [PubMed: 24639626]
17. Varvil-Weld L, et al., Maternal and peer influences on drinking among Latino college students. *Addictive Behaviors*, 2014 39(1): p. 246–252. [PubMed: 24157426]
18. American College Health Association-National College Health Assessment II: Undergraduate reference group executive summary Spring 2012. 2012, American College Health Association: Hanover, MD.
19. Occupational Employment Statistics. 2008; Available from: <http://www.bls.gov/oes/2008/may/oes399041.htm>.
20. Perkins HW, Social norms and the prevention of alcohol misuse in collegiate contexts. *J Stud Alcohol Suppl*, 2002(14): p. 164–72. [PubMed: 12022722]
21. Stone AL, et al., Review of risk and protective factors of substance use and problem use in emerging adulthood. *Addictive Behaviors*, 2012 37(7): p. 747–775. [PubMed: 22445418]
22. Wechsler H, et al., Underage college students' drinking behavior, access to alcohol, and the influence of deterrence policies. Findings from the Harvard School of Public Health College Alcohol Study. *Journal of American College Health*, 2002 50(5): p. 223–36. [PubMed: 11990980]
23. Weitzman ER, Nelson TF, and Wechsler H, Taking up binge drinking in college: the influences of person, social group, and environment. *J Adolesc Health*, 2003 32(1): p. 26–35. [PubMed: 12507798]
24. Scott-Sheldon LAJ, et al., Efficacy of Alcohol Interventions for First-Year College Students: A Meta-Analytic Review of Randomized Controlled Trials. *Journal of Consulting and Clinical Psychology*, 2014 82: p. 177–188. [PubMed: 24447002]
25. Carey KB, et al., Alcohol interventions for mandated college students: A meta-analytic review. *J Consult Clin Psychol*, 2016 84(7): p. 619–32. [PubMed: 27100126]

Table 1. Demographics and alcohol use across full and reduced (past semester drinkers only) samples in Study 1 (Spring 2012).

Variable	Full Sample (n = 627)			Reduced Sample (n = 550)		
	On-Campus (n = 284)	Off-Campus (n = 307)	Greek (n = 36)	On-Campus (n = 226)	Off-Campus (n = 292)	Greek (n = 32)
Age (SD)	20.88 (.88)	21.33 (0.79)	21 (0.72)	20.91 (.86)	21.35 (0.80)	21.03 (0.85)
Gender (%)						
Male	47%	43%	56%	47%	43%	56%
Female	53%	57%	44%	53%	57%	44%
Race/Ethnicity (%)						
Hispanic/Latino	10%	9%	25%	10%	9%	25%
White/Caucasian	62%	79%	88%	63%	80%	90%
Black/African Am.	4%	2%	0%	5%	1%	0%
Asian	26%	13%	9%	24%	13%	7%
Am. Indian/Al. Native	0%	0%	0%	0%	1%	0%
Native Hawaiian/Pac. Islander	0%	0%	0%	0%	0%	0%
Multiracial	7%	6%	3%	8%	6%	3%
Class Year (%)						
Junior	63%	22%	56%	64%	20%	53%
Senior	37%	78%	44%	36%	80%	47%
Alcohol Use (%)						
No use	20%	5%	11%	0%	0%	0%
Used past semester	70%	95%	89%	100%	100%	100%
Peak drinking quantity (3mo) (%)						
4 drinks	28%	22%	26%	9%	18%	16%
5–23 drinks	62%	72%	66%	78%	76%	74%
24+ drinks	10%	6%	9%	13%	6%	10%
Freq. binge drinking (2wk) (SD)	0.90 (1.56)	1.77 (2.23)	1.11 (1.57)	1.13 (1.67)	1.88 (2.25)	1.26 (1.61)
BYAACQ (2wk) (SD)	1.59 (2.70)	3.38 (3.79)	1.94 (3.14)	2.05 (2.91)	3.62 (3.81)	2.22 (3.27)

Note. SD indicates variables for which means and standard deviations are depicted; % percentage. All timeframes in parentheses indicate timeframe of retrospective report (mo = month; wk = week; y = year). Am = American. AI = Alaskan. BYAACQ = Brief Young Adult Alcohol Consequences Questionnaire. Freq = frequency. Pac = Pacific.

Table 2.

Study 1 Regression

Bootstrapped Regression	Estimate	BSE	Lower CI	Upper CI	Z	p
Outcome: Heavy Drinking Frequency						
Intercept	3.54	1.40	0.78	6.21	2.54	0.01
Age	-0.11	0.08	-0.26	0.05	-1.35	0.18
Female	-0.38	0.12	-0.61	-0.14	-3.13	<.001
White	0.22	0.13	-0.05	0.46	1.71	0.09
Academic Year	-0.05	0.10	-0.26	0.14	-0.53	0.60
Fraternity House vs. On-campus	0.85	0.28	0.30	1.40	3.00	<.001
Off-campus vs. On-campus	0.90	0.19	0.54	1.29	4.78	<.001
Outcome: Peak Number of Drinks						
Intercept	3.93	0.91	2.21	5.68	4.33	0.00
Age	-0.02	0.05	-0.11	0.08	-0.32	0.87
Female	-0.71	0.07	-0.84	-0.57	-10.12	<.001
White	0.21	0.08	0.04	0.38	2.47	0.01
Academic Year	-0.12	0.07	-0.25	0.01	-1.83	0.05
Fraternity House vs. On-campus	0.38	0.15	0.09	0.68	2.53	<.001
Off-campus vs. On-campus	0.49	0.11	0.28	0.70	4.60	<.001
Outcome: Consequences						
Intercept	6.55	2.73	1.22	11.94	2.40	0.02
Age	-0.21	0.15	-0.50	0.09	-1.34	0.18
Female	-0.23	0.23	-0.67	0.22	-1.02	0.31
White	0.41	0.25	-0.12	0.89	1.61	0.11
Academic Year	-0.09	0.19	-0.46	0.25	-0.50	0.62
Fraternity House vs. On-campus	0.69	0.54	-0.33	1.80	1.28	0.20
Off-campus vs. On-campus	1.73	0.34	1.06	2.40	5.10	<.001

Note. Bold font highlights significant effects within each model.

Table 3. Demographics and alcohol use across full and reduced (past year drinkers only) samples in Study 2 (Spring 2014).

Variable	Full Sample (n = 2380)			Reduced Sample (n = 2119)		
	On-Campus (n = 1173)	Off-Campus (n = 754)	Parents (n = 355)	On-Campus (n = 1024)	Off-Campus (n = 722)	Parents (n = 277)
Age (SD)	19.13 (1.01)	21.09 (1.12)	20.43 (1.07)	19.15 (1.10)	21.11 (1.11)	20.63 (1.68)
Gender (%)						
Male	33%	33%	34%	31%	33%	31%
Female	67%	67%	66%	69%	67%	69%
Race/Ethnicity (%)						
Hispanic/Latino	9%	6%	14%	9%	6%	17%
White/Caucasian	80%	88%	76%	81%	90%	76%
Black/African Am.	4%	2%	3%	4%	1%	3%
Asian	5%	3%	5%	4%	2%	4%
Am. Indian/Al. Native	0%	0%	1%	0%	0%	1%
Native Hawaiian/Pac. Islander	0%	0%	0%	0%	0%	0%
Multiracial	5%	5%	7%	5%	4%	8%
Class Year (%)						
Freshman	60%	2%	25%	60%	2%	22%
Sophomore	24%	15%	17%	24%	14%	15%
Junior	9%	30%	22%	9%	30%	22%
Senior	7%	53%	36%	7%	54%	41%
Alcohol Use (%)						
No use	13%	5%	23%	0%	0%	0%
Used past year	16%	7%	18%	100%	100%	100%
Used past month	71%	89%	59%	100%	100%	100%
Peak drinking quantity (3mo) (SD)	4.82 (4.28)	6.66 (4.93)	3.43 (4.01)	5.54 (4.15)	6.94 (4.84)	4.36 (4.06)
Freq. binge drinking (2wk) (SD)	1.23 (1.91)	1.93 (2.42)	0.58 (1.34)	1.41 (1.98)	2.02 (2.44)	0.75 (1.48)
Alcohol problems (1y) (SD)	1.70 (1.73)	2.35 (2.02)	1.36 (1.78)	1.71 (1.73)	2.36 (2.02)	1.38 (1.79)

Note. SD indicates variables for which means and standard deviations are depicted; % indicates sample size and percentage. All timeframes in parentheses indicate timeframe of retrospective report (mo = month; wk = week; y = year). Am = American. Al = Alaskan. BYAACQ = Brief Young Adult Alcohol Consequences Questionnaire. Freq = frequency. Pac = Pacific.)

Table 4.

Study 2 Regression

Bootstrapped Regression	Estimate	BSE	Lower CI	Upper CI	Z	p
Outcome: Heavy Drinking Frequency						
Intercept	3.64	1.04	1.59	5.75	3.49	<.001
Age	-0.09	0.06	-0.20	0.03	-1.46	0.14
Female	-0.79	0.11	-1.00	-0.58	-7.33	<.001
White	-0.08	0.24	-0.55	0.41	-0.34	0.73
Academic Year	-0.02	0.08	-0.18	0.13	-0.30	0.77
Parents vs. On-campus	-0.49	0.12	-0.72	-0.26	-4.15	<.001
Fraternity House vs. On-campus	1.33	0.29	0.78	1.92	4.58	<.001
Off-campus vs. On-campus	0.80	0.13	0.55	1.05	6.20	<.001
Outcome: Peak Number of Drinks						
Intercept	7.95	2.20	3.46	12.06	3.60	<.001
Age	0.00	0.13	-0.23	0.25	0.02	0.98
Female	-3.16	0.24	-3.62	-2.68	-13.02	<.001
White	-0.21	0.46	-1.06	0.73	-0.47	0.64
Academic Year	-0.18	0.16	-0.50	0.11	-1.13	0.26
Parents vs. On-campus	-0.94	0.30	-1.49	-0.35	-3.16	<.001
Fraternity House vs. On-campus	2.02	0.48	1.14	2.98	4.24	<.001
Off-campus vs. On-campus	1.65	0.27	1.11	2.18	6.03	<.001
Outcome: Consequences						
Intercept	0.57	0.41	-0.24	1.36	1.40	0.16
Age	-0.01	0.02	-0.05	0.04	-0.34	0.73
Female	0.01	0.04	-0.06	0.09	0.33	0.74
White	0.11	0.10	-0.07	0.32	1.09	0.28
Academic Year	-0.06	0.03	-0.12	0.00	-1.85	0.06
Parents vs. On-campus	0.03	0.06	-0.08	0.14	0.49	0.62
Fraternity House vs. On-campus	0.36	0.11	0.15	0.59	3.27	<.001
Off-campus vs. On-campus	0.29	0.06	0.18	0.41	5.04	<.001

Note. Bold font highlights significant effects within each model.