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## Where's the House Party? Hazardous Drinking Behaviors and Related Risk Factors

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### Abstract

The authors examined differences in drinking behaviors and related risk factors across campus housing at a women's liberal arts college. Participants ( $N = 362$ ) living in residence-style housing or house-style residences completed self-report questionnaires. Results showed that students in residence hall-style houses reported higher levels of hazardous alcohol use and perceived that their college, housemates or roommates, and close peers are more permissive of alcohol use than did students living in house-style residences. Findings highlight the role of the environmental structure of a college campus on students' perceptions of alcohol use and their drinking behaviors. The authors discuss implications for college housing and programming.

### Keywords

alcohol; college; social influences; student housing; undergraduates

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Alcohol use and alcohol-related problems that accompany such use are one of the most prevalent and important health issues facing college administrators and health care professionals today. Research has indicated a high prevalence of heavy alcohol use among women at single-sex colleges (Ham & Hope, 2003). For example, studies have found that between 1993 and 2001, frequent binge drinking more than doubled for women at single-sex colleges (Wechsler et al., 2002). Therefore, further studies are needed on heavy alcohol use among college women and the risk factors that contribute to their elevated use so that college personnel can effectively design and implement interventions to help decrease heavy college drinking.

Researchers have identified many risk correlates of alcohol use in college (e.g., drinking history, cognitions about the consequences of alcohol use). For example, drinking history is one risk factor that researchers have associated with college drinking (Dowdall & Wechsler, 2002). Research has found precollege use of alcohol to be predictive of college drinking behaviors (Yu & Shacket, 2001). Another risk factor entails an individual's thoughts about the effects of alcohol use. The concept of alcohol expectancies (i.e., anticipated effects of alcohol use) provides a theoretical framework for understanding an individual's motivation and decision to drink (Ham & Hope, 2003; Jones, Corbin, & Fromme, 2001; Oei & Morawska, 2004). In essence, individuals consume alcohol because they expect it to yield certain effects. Research has associated endorsement of positive (e.g., "I would be sociable") and negative (e.g., "I would feel dizzy") expectations about the effects of alcohol with elevated use or

reduced consumption, respectively, among college students (Fromme, Stroot, & Kaplan, 1993; Smith, Goldman, Greenbaum, & Christiansen, 1995; Valdivia & Stewart, 2005; Zamboanga, 2006; Zamboanga & Ham, 2008).

Research has shown that the role of drinking history and alcohol expectancies—in relation to drinking behaviors—provides important information regarding the understanding of alcohol use in college. However, studies on the role of environmental conditions associated with college drinking behaviors are limited (Boyd, McCabe, & d'Arcy, 2004). Added insight into the college living environment and its relevance to students' health and well-being—as it relates particularly to alcohol use—could provide useful information for college personnel and programmers. Thus, the primary purpose of the present study was to examine the sociocontextual correlates of alcohol use in college.

### **Broad Sociocontextual Factors: The College Environment**

The general features (e.g., drinking traditions, residential system, alcohol availability) of the collegiate environment serve as broad cultural and social influences on students' drinking behaviors. The college environment is an important factor to consider regarding students' alcohol consumption because of previous research that has shown that students'—particularly men's—drinking behaviors tend to increase from high school to college (Baer, Kivlahan, & Marlatt, 1995). Researchers have noted that in the college environment, there are few restraints to drinking and, oppositely, a supportive drinking climate exists, including social traditions involving alcohol use (Dowdall & Wechsler, 2002), which can place students at elevated risk of engaging in hazardous alcohol use (Ricciardelli & Williams, 1997). Among underage college students, easy access to alcohol has been associated with binge drinking and, thus, can be considered to be an environmental risk factor for hazardous alcohol use (Wechsler, Kuo, Lee, & Dowdall, 2000). These socioenvironmental characteristics and their influence on college drinking behaviors can be understood through the tenets of the social learning theory (SLT) of alcohol use (Maddux, 1999; Maisto, Carey, & Bradizza, 1999), which highlights the influence of environmental norms and group processes over individual behavior (Larimer, Anderson, Baer, & Marlatt, 2000). In accordance with the SLT of alcohol use, college environments in which group norms and peer systems provide a supportive drinking climate may heighten a student's risk for heavy alcohol use.

### **Proximal Sociocontextual Factors: The Student Housing Environment**

The broad cultural and social norms found in a collegiate environment can extend to a more proximal social context, specifically to residential settings. Social beliefs and attitudes toward alcohol use in residential settings can influence students' drinking cognitions and behaviors. Page and O'Hegarty (2006) argued that a college residence “provides an environment for socialization and a setting for alcohol consumption” (p. 16). Research has shown that college students' living arrangements are associated with drinking behaviors (Boyd et al., 2004; Wechsler, Lee, Nelson, & Lee, 2001; Weitzman, Nelson, & Wechsler, 2003). In accordance with the SLT of alcohol use, students may be influenced by their housemates' drinking behavior and normative perceptions about alcohol use (Larimer et al., 2000). The influence of these perceived social norms on students' behavior is noteworthy because previous researchers have found that these perceptions are often overestimates of actual normative behaviors (Martens, Page, et al., 2006).

College students' perceived norms of alcohol use and the influence of these norms on drinking behaviors may shed light on the role of the residential environment on drinking attitudes and behaviors. In particular, there may be risk factors (e.g., group or social norms that facilitate the heavy use of alcohol) that are specific to a certain type of residential structure and environment (e.g., Greek houses,<sup>1</sup> “party” residence halls in which residents commonly throw parties with

alcohol). Before entering college, students must decide where to live during the school year. They can elect to reside on or off campus, in an apartment or sorority house, or at home. Researchers have studied differences in drinking behaviors across these different types of college residences. For example, research on students living in Greek houses revealed that they consumed higher levels of alcohol and experienced more negative consequences associated with drinking than did students living in residence halls (Larimer et al., 2000). Further, perceived norms regarding the acceptability of alcohol use were more extreme among the expectations of students living in Greek houses compared with students living in other settings (Ricciardelli & Williams, 1997). Even expectations regarding the effects of alcohol among students living in Greek houses tended to differ (i.e., they endorsed high levels of enhanced sex and aggressive drinking expectancies) from students living in residence halls (Larimer et al.).

Alcohol use has also been found in other residential settings such as substance-free houses (Wechsler et al., 2001) and residence halls (Boyd et al., 2004). Boyd et al. argued, "Residence hall living appears to provide distinct socialization opportunities such as parties and drinking games, which, coupled with new freedoms, can lead to increased alcohol use and binge drinking" (p. 112). Consistent with this suggestion, researchers have found that compared with students living off campus, a higher proportion of residence hall students reported socializing with peers and endorsing parties as important college activities (Harford, Wechsler, & Muthén, 2002). Page and O'Hegarty (2006), in their cross-sectional study on college students, found that social normative perceptions regarding alcohol use (e.g., number of students drinking five or more drinks on one occasion during a week, mean number of drinks when partying) and actual levels of alcohol use differed across residence type (residence halls, apartment complexes, Greek houses).

Many other studies have examined the differential effect of type of residence on alcohol use levels and drinking-related problems (Baer, 1994; Boyd et al., 2004; Harford et al., 2002; Larimer et al., 2000; Page & O'Hegarty, 2006; Ricciardelli & Williams, 1997; Wechsler et al., 2000). For example, Boyd et al.'s cross-sectional study showed that compared with students living in substance-free housing and residence halls, a higher proportion of students living in Greek houses participated in drinking games. Moreover, students living in substance-free housing were less likely to report heavy alcohol use than were students living in Greek houses or residence halls. Students living in Greek houses and residence housing were four times more likely to indicate heavy alcohol use than were students in substance-free housing. A similar cross-sectional study revealed that the association between type of residence and alcohol-related problems remained significant even after controlling for other college lifestyle factors and precollege drinking behaviors (Harford et al.). In light of these studies, consideration is needed of residence type as a correlate of alcohol use and its related risk factors among college students.

## Study Aims

Previous researchers have suggested that the living situation of college students plays a role in their drinking behaviors and alcohol use attitudes and perceptions. These studies have focused primarily on college students' living situations regarding Greek houses and residential and off-campus housing. This is not surprising because these are the primary residential options at large 4-year colleges and universities characteristic of the study sites. In this study, we examined a unique college housing context in which 96% of students resided on campus and lived in residence-hall style accommodations. Students lived on campus for the duration of their college enrollment; only a few applied to live off campus.

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<sup>1</sup>For our purposes, Greek houses refer to social sorority houses.

## House-style

On-campus residences (with a capacity of 10–100 students) were built to resemble large homes found in the surrounding community, though the architecture and interior structure of each home was unique. In addition to having bedrooms, each house had multiple common areas on the ground floor (e.g., living room, study, TV room), dining hall or kitchenette, and a shared bathroom on each floor. Although these residences are called houses, they differ from Greek houses. Residence life personnel assign students to a house when they commit to enrollment in the college, with no pledge requirement, which is common among Greek house applicants. Consideration is given to the students' lifestyle preferences and preferred location on campus; however, students may not request a specific house. It is common for students to live in the same house for all 4 years of their college enrollment, but it is also possible for students to change houses.

## Residence-hall style

At the university where we conducted the present study, there is one isolated section of on-campus housing with larger, uniform buildings with long hallways. Although these residences are also called "houses," they more closely resemble traditional residence halls at U.S. colleges and universities. All of these more traditional residence hall-style settings can house more than 75 students and are connected to at least one other residence hall-style house, which facilitates access between each house and builds a larger residence hall-like community. Also, this residence hall-style setting, unlike the house-style setting is unique because it is designed with multiple entrances. In this specific area, there is a noticeably higher concentration of students (approximately one third of the total student body lives in these houses), whereas other larger houses at this college are evenly dispersed across the campus. It should be noted that the residence hall-style residences are not located near any academic classrooms, whereas the house-style residences are dispersed among academic buildings.

We tested whether there would be any systematic differences in problematic drinking behaviors and social and cognitive risk correlates of alcohol use between this campus's two different residential settings (house-style vs. residence hall-style). We focused on students attending a women's college because of Harford et al.'s (2002) contention that compared with men, the drinking patterns of women tend to be more heavily influenced by environmental factors (see Berkowitz & Perkins, 1986; Globetti, Stem, Marasco, & Haworth-Hoepfner, 1988). We examined distal (e.g., college norms regarding drinking, perceived access to alcohol) and proximal (e.g., perceived close peer and housemate approval of alcohol use) social influences on alcohol use, controlling for potential confounds such as high school drinking, athletic status, and age. Because of the residential structure across these two settings, we expected variations regarding problematic drinking behaviors and the risk correlates of alcohol use.

## Method

### Participants and Procedure

Participants were 362 college-aged students ( $M$  age = 19.08 years,  $SD$  = 1.18 years, range = 18–23 years) who were attending a women's liberal arts college in northeastern United States. Over the course of two academic years, we recruited undergraduate students enrolled in several large, survey psychology courses. Of participants, 52% were freshmen, 29% were sophomores, 10% were juniors, 9% were seniors; of all participants, 21% were intercollegiate athletes. Participants provided consent and then completed a 40-min self-report questionnaire. In general, participants completed the survey in the primary investigator's laboratory. In some courses, the primary investigator's research team administered questionnaires at the beginning of class and instructed participants to return completed surveys during the following class.

Participants received course credit for participation. The host college's institutional review board approved the study.

## Measures

**Type of residence**—Participants reported their current living status by indicating the name of their current residence. Because only a small percentage (< 5%) of students lived in on-campus apartments, in cooperative housing (which consisted of a small group of people living in one household), or off campus, we omitted these students from our analyses, restricting our study sample to participants living in the aforementioned college housing systems. In accordance with the study aims of the present article, we divided participants into two groups on the basis of the structure of their current residence. As previously discussed, one residential section on campus consisted of several residence hall-style houses (with large student populations) grouped together in a small secluded area at the edge of campus. We designated them (42%) as living in residence hall-style housing. We classified the remaining students (58%), living in the type of college housing unique to this institution, as living in house-style residence. Last, we restricted our sample to students who had remained in their current type of residence since enrolling at the college.

**Precollege drinking behaviors**—We asked participants to respond on a 7-point scale ranging from 0 (*never*) to 6 (*100 or more times*) regarding how often they used each of the following during the years that they were in high school: hard liquor, beer, wine, wine cooler, champagne, and cocktails or mixed drinks. This response scale is similar to the one used by the Centers for Disease Control (1997). To address the high skewness level of these items, we converted participants' responses to a 5-point scale ranging from 0 (*never*) to 4 (*20 or more times*). Bivariate correlation analyses revealed that these items were highly associated with one another ( $M r_s = .63$ , range = .43 to .81, all  $p_s < .001$ ); thus, for the use of alcohol during high school, we created from these items a composite score by calculating a mean score for each participant. Cronbach's alpha for the use of alcohol during high school composite variable was .91. Also, we asked participants to report how often they played drinking games during high school using a 7-point scale ranging from 0 (*I didn't play drinking games*) to 7 (*daily or nearly daily*). Again, to address the high skewness level of this item, we converted participants' responses to a 5-point scale ranging from 0 (*I didn't play drinking games*) to 4 (*once a week or more*). This response scale is similar to the one that Adams and Nagoshi (1999) used.

**College drinking behaviors**—We used participants' total score on the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) to measure hazardous alcohol use. In the present study, we found Cronbach's alpha to be .80. Participants indicated their frequency of alcohol use, amount of consumption in a particular day, frequency of alcohol-dependent behaviors, and problems that alcohol use caused. We derived AUDIT total scores by summing the specific values associated with each response. Participants scored high on the AUDIT if, for example, they drank infrequently but consumed high amounts of alcohol when they imbibed and experienced problems because of alcohol use. The psychometric properties of the AUDIT regarding its reliability and validity have been well established, including its use in college student samples (e.g., Kokotailo et al., 2004; Reinert & Allen, 2007; Zamboanga et al., 2007). For example, in their review, Reinert and Allen reported that the AUDIT had a median reliability of .83 (range = .75–.97).

Participants also reported their frequency of participation in drinking games in college on the previously mentioned 7-point scale used to report their participation in high school drinking games. Again, because of the high skewness level, we converted participants' responses on this item to the same 5-point scale used to measure participation in high school drinking games.

### **Perceived campus and house norms regarding alcohol use and availability—**

Responses to items on the perceived campus and house norms regarding alcohol use and availability were indicated using a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). We measured perceived campus norms by asking participants to indicate how much they disagreed or agreed with the following statements: “The college sponsors school social events that involve the use of alcohol for students 21 and older”; “The college has a tradition of holding social events that involve alcohol”; and “Alcohol is easily accessible on campus to any student regardless of age.” Similarly, we assessed perceived house norms regarding alcohol use by asking participants to indicate how much they disagreed or agreed with the following statements: “The people I live with approve of the use of alcohol”; “The people I live with would feel uncomfortable if they found out I have alcohol in my room”; “I feel comfortable drinking alcohol with the people I live with”; “I think the people I live with drink too much”; “My house has a tradition of holding social events that involve the use of alcohol”; and “My house sponsors school social events that involve the use of alcohol for students 21 and older.”

**Perceived peer norms regarding alcohol use—**To measure perceived peer norms regarding alcohol, we asked participants to report how many of their close friends drink alcohol, using a 5-point scale ranging from 0 (*none*) to 4 (*all*). We also asked participants to indicate how most of their close friends feel about students their age drinking alcohol, using a 5-point scale ranging from 0 (*very much against it*) to 4 (*very much for it*). In addition, we asked participants to indicate how much they agreed or disagreed with the statement “My closest friends at college approve of getting drunk” on a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

**Cognitions about alcohol use and its effects—**We used the Comprehensive Effects of Alcohol Use (CEOA) scale (Fromme et al. 1993) to measure participants’ positive (e.g., sociability, tension reduction, liquid courage, sexuality) and negative (e.g., cognitive and behavioral impairment, risk and aggression, negative self-perception) expectations about the effects of alcohol use and their evaluations of these outcomes. Participants indicated how much they agreed with each positive (e.g., enhanced sociability: “It would be easier to talk to people”) and negative (e.g., cognitive and behavioral impairment: “My senses would be dulled”) expectancy outcome using a 4-point scale ranging from 1 (*disagree*) to 4 (*agree*). Participants also indicated their evaluations of each positive and negative expected outcome by rating their perception of the effect of alcohol use, using a 5-point Likert-type scale ranging from 1 (*bad*) to 5 (*good*). We calculated a score for each expectancy dimension by summing across all items in each domain and dividing by the total number of items in that dimension. For our sample, Cronbach’s alpha for the positive expectancy outcome, negative expectancy outcome, positive expectancy valuation, and negative expectancy valuation were .91, .90, .93, and .88, respectively. Also, we measured participants’ thoughts regarding alcohol use in a convivial context by asking participants to indicate how much they agreed or disagreed with the statement “College parties are fun only if there is alcohol involved,” using a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

### **Data Analytic Approach**

We conducted data analyses using Stata (version 9.2). We conducted descriptive analyses to illustrate differences in drinking behaviors and known risk factors associated with alcohol use between students who live in residence hall-style houses and those who do not. To test whether residence type was associated with each outcome variables, we fit generalized estimating equation (GEE) regression models (Liang & Zeger, 1986; Zeger & Liang, 1986) with an exchangeable working correlation matrix and empirical variance estimator to account for clustering in housing units. Each model controlled for athletic status, age, and precollege

drinking behavior (high school alcohol use), because these factors were linked with elevated alcohol use among college students (Boyd et al., 2004; Martens, Dams-O'Connor, & Beck, 2006; Ozegovic, Bikos, & Szymanski, 2001; Yu & Shacket, 2001; Zamboanga, Rodriguez, & Horton, 2008). No adjustment was made for multiple comparisons.

## Results

Table 1 displays the means, standard deviations, and potential range stratified by housing type. Descriptive statistics indicated that students living in residence hall-style houses reported higher alcohol use and elevated levels of perceived college and peer norms regarding drinking, compared with those living in house-style residences. Also, students living in residence hall-style houses endorsed more positive expectations about the effects of alcohol and evaluated negative alcohol expectancies more favorably than did students living in house-style residences.

Table 2 presents the parameter estimates from the GEE models (mean differences between residence hall-style vs. house-style residence, as well as 95% confidence interval for this difference). Findings revealed that hazardous alcohol use, perceived accessibility of alcohol, perceived alcohol use approval among fellow housemates, feelings of discomfort drinking alcohol with housemates, feeling that housemates drink too much, house-sponsored social events that involve the use of alcohol, as well as peer approval of getting drunk and friends who imbibe were significantly different between the housing groups (all  $ps < .001$ ). Perceived college tradition of social events that involve the use of alcohol was significantly higher in the residence-hall type of houses ( $p < .01$ ). Frequency of participation in drinking games, perceived comfort drinking with housemates, peer approval of use, and positive expectations regarding the effects of alcohol use were modestly significant ( $p < .05$ ). In general, these parameter estimates were smaller than the observed mean differences, indicating that controlling for age, athletic involvement, and precollege drinking partially accounted for differences between the housing groups.

## Discussion

This preliminary study examined differences in drinking behaviors and known risk factors associated with alcohol use between college students living in residence hall-style houses and those living in house-style residences. Although several studies have examined alcohol use in college and normative perceptions across different types of residence, this is the first study to compare the drinking behaviors and social and cognitive perceptions about alcohol use among college women living in an alternative housing structure (house-style residence) and those living in typical residence hall-style houses. Findings revealed that relative to students living in house-style residences, students living in residence hall-style houses reported higher levels of hazardous alcohol use and viewed their college, the people they lived with, and their close peers as highly permissive of alcohol use. Furthermore, students living in residence-type houses endorsed more positive expectations about the effects of alcohol use (albeit marginally significant) compared with students living in house-style residences. These findings highlight the potential role of the environmental structure of a college campus on students' social and cognitive perceptions of alcohol use and their drinking behaviors.

One of the common points that researchers have raised in the literature on college residence and its association with alcohol use is the question of selection versus socialization (e.g., Boyd et al., 2004; Harford et al., 2002; Larimer et al., 2000). Specifically, are the differences highlighted in our findings a function of students selecting into a preferred residential area, or is the variation because of socialization effects of their residential environment? It is possible that students may have selected to live in residential environments for many reasons, including

their desire to be in a college environment that is permissive of alcohol use, because this may reflect their personal drinking history. Because precollege drinking behaviors are associated with alcohol use in college (Boyd et al.; Yu & Shacket, 2001), we controlled for high school drinking in our regression models. The larger differences in the precollege use of alcohol between those students living in residence hall-style houses and those living in house-style residences reported in Table 1, compared with Table 2, suggest that students' selection of these specific living situations may account for some of the variance in responses between the two groups. Although the magnitude of the differences was attenuated after controlling for the potential confounds, the large majority of differences remained statistically significant, despite controlling for precollege use. However, we acknowledge that there may be residual confounding because of unmeasured attributes related to selection.

Another point to consider regarding this issue of selection versus socialization has to do with the way in which students are assigned housing. At this particular institution, students were not allowed to request a specific house in which to live; however, students were allowed to request to live in a specific area of campus. This policy helped differentiate the type of housing situation described in the present study from that of Greek houses in which prospective fraternity and sorority members select their organization of choice and pledge to gain admission. However, it is also important to consider that students may have selected a particular residence for other reasons (e.g., single or double rooms, presence of friends, or random preference) independent of the preponderance of alcohol use and acceptability of drinking that is characteristic of the residence. In the present study, we found statistically significant group differences even after controlling for precollege use; thus, socialization factors may help explain the observed differences across residences regarding our outcome variables. It is clear that further longitudinal research is needed on the type of residential conditions that facilitate college drinking and the influence of socialization and selection processes on these behaviors.

Important health concerns that our findings highlight are the noticeably elevated level of hazardous alcohol use and higher frequency of participation in drinking games reported by residence hall-style residents. We measured hazardous alcohol use with the AUDIT, a commonly used instrument designed to identify problematic drinking behaviors (Reinert & Allen, 2002). Although scores range from 0 to 40, with 8 as a commonly used cutoff value for identifying hazardous users (Reinert & Allen, 2002; Saunders et al., 1993), researchers (Reinert & Allen, 2002, 2007) argued that this score may be too high, particularly for women in primary care populations; they suggested lowering the cutoff score to 5 or 6. Research among college students on the use of the AUDIT to assess lifetime alcohol problems (Kokotailo et al., 2004; Reinert & Allen, 2002) and drinking games involvement (Zamboanga et al., 2007) indicated that a cutoff score of 6 may be appropriate. In light of these studies, our findings show that students living in residence hall-style houses drank not only significantly more than their house-style peers (*M* AUDIT scores of 6.08 vs. 3.75) but also, on average, more hazardously.

Consistent with previous research, our findings revealed differences in perceived social norms regarding the use of alcohol as a function of residence type (Baer, 1994; Page & O'Hegarty, 2006). Specifically, we found that despite living on the same campus, students living in residence hall-style houses perceived the norms of the college to be more permissive of alcohol use and also perceived alcohol to be more easily accessible than did students in house-style residences. One explanation for this finding is that students may generalize the alcohol use norms that they perceived in their residence to be reflective of the broader campus drinking norms.

The present findings should be considered in light of the following limitations. First, the cross-sectional study design precludes any definitive inferences of causality among our study variables. Second, we used self-reports of alcohol use and drinking attitudes, so it is possible



that participants may have underreported or overreported their responses on these measures. In addition, we acknowledge the possible effects of impression management and social desirability biases regarding students' responses on these questions. Third, we recognize the limitations of using single-item questions (albeit with face value) to assess perceived social drinking norms. The use of standardized multi-item survey instruments is important for future studies. Fourth, we acknowledge that some effect sizes reported in the present investigation are modest; it is clear that other variables may account for more explained variance regarding the association between residence type and alcohol use and related attitudes. Last, we focused on students at an elite women's liberal arts college in the northeastern part of the United States. Although this student population warrants empirical attention, we acknowledge that our findings may not necessarily generalize to other groups of interest (e.g., male college students or female students at other institutions).

Despite the previously noted limitations, there are several prevention implications and programming strategies worth highlighting for residential life staff on college campuses. For example, our findings suggest that regardless of individual house capacity, the location of a residence hall in relation to other large houses may be more conducive to elevated alcohol use. Specifically, clustering of large houses may create a social environment that facilitates heavy alcohol use. Thus, college officials should consider dispersing college housing throughout the campus when building new residences because this could help buffer harmful drinking behaviors. Also, administrative staff should be mindful of the housing structures and total capacities when designing and assigning rooms in these buildings. However, we recognize that not all current building structures and locations can be easily changed, and, therefore, there are other courses of action that college officials can consider to address alcohol use in college. We recommend that administrators design preventative workshops and educational training to address the perceived social norms among students in different types of housing. For example, it is a common belief among students in residence hall-style houses that the people they live with approve of alcohol use. Normative campaigns that present accurate facts and information regarding alcohol use in college and related behaviors to those student populations may work to address normative perceptions of alcohol use on college campuses. In addition, we found that students living in residence hall-style houses reported higher alcohol consumption and frequency of participation in drinking games during high school. In light of this finding, along with previous research (Boyd et al., 2004; Yu & Shacket, 2001) that found a significant association between precollege drinking behaviors and alcohol use in college, we recommend that college administrators and personnel consider the potential use of precollege assessment efforts as one of many initiatives designed to help curb students' drinking problems when they arrive to campus.

In closing, the findings presented in this article shed light on the potential protective factors of alternative residences (i.e., house style residences but not Greek houses) in fostering a social environment that may be less conducive to elevated alcohol use. Because of the preliminary nature of the present study, it is not clear exactly what elements of house-style environments may help protect students against heavy alcohol use. We hope that the present study helps to spark a new line of research that examines the advantages of living in a house-style college residence.

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**Nicholas J. Horton** is an applied statistician in the Department of Mathematics and Statistics at Smith College. His research focuses on the development of methods for the analysis of longitudinal observational and randomized trials with incomplete observations, with applications to psychiatric epidemiology and substance abuse research.

**Elan C. McCollum** is now a PhD student in the combined program in education and psychology at the University of Michigan. Her research focuses on motivation, resilience, and educational outcomes.

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TABLE 1

## Descriptives for the Study Variables

Variable	Type of residence			Range
	Residence-hall style		House style	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
High school drinking behaviors				
Alcohol use	1.59	1.22	0.96	1.07
Frequency of drinking games participation	1.12	1.41	0.43	0.96
College drinking behaviors				
Hazardous alcohol use	6.08	4.30	3.75	4.94
Frequency of drinking games participation	1.36	1.43	0.70	1.10
Perceived campus norms regarding alcohol use and availability				
College sponsors social events that involve alcohol for those 21+	3.31	1.01	3.07	1.01
College has a tradition of holding social events that involve alcohol	2.92	0.99	2.55	1.00
Alcohol is easily accessible on campus to students regardless of age	3.26	0.81	2.91	0.86
Perceived house norms regarding alcohol use				
People I live with approve of alcohol use	3.55	0.66	3.01	0.86
People I live with would feel uncomfortable if they found out I have alcohol in my room	1.40	0.71	1.76	0.83
I feel comfortable drinking alcohol around the people I live with	3.27	1.05	2.88	1.06
I think the people I live with drink too much	2.11	1.04	1.80	0.91
My house/dorm at college sponsors school social events that involve the use of alcohol for students 21+	3.64	0.66	2.63	1.14
My house/dorm at college has a tradition of holding social events that involve the use of alcohol	3.43	0.83	2.36	1.08
Perceived peer norms regarding alcohol use				
My closest friends in college approve of getting drunk	3.21	0.92	2.59	1.06
Number of close friends who drink alcohol	2.76	0.97	2.18	1.11
Perceived peer approval of alcohol use	3.20	0.89	2.85	0.97
Cognitions about alcohol use and its effects				

Variable	Type of residence					
	Residence-hall style			House style		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
Colleges parties are fun only if there is alcohol involved	2.07	1.00	1-4	1.82	0.98	1-4
Positive expectancy outcomes	2.71	0.52	1-4	2.51	0.59	1-4
Negative expectancy outcomes	2.40	0.55	1-4	2.42	0.60	1-4
Positive expectancy valuations	3.37	0.65	1-5	3.29	0.87	1-5
Negative expectancy valuations	1.93	0.56	1-5	1.79	0.56	1-5

TABLE 2

Associations of Type of Residence With Drinking Behaviors, Perceived Norms, and Cognitions About Alcohol Use

Variable	Parameter	95% Confidence interval	
		Lower limit	Upper limit
College drinking behaviors			
Hazardous alcohol use	1.14 ***	0.61	1.67
Frequency of drinking games participation	0.38 *	0.07	0.69
Perceived campus norms regarding alcohol use and availability			
College sponsors social events that involve alcohol use for those 21+	0.19 †	-0.03	0.41
College has a tradition of holding social events that involve alcohol	0.32 **	0.08	0.55
Alcohol is easily accessible on campus to students regardless of age	0.36 ***	0.15	0.57
Perceived house norms regarding alcohol use			
People I live with approve alcohol use	0.49 ***	0.29	0.68
People I live with would feel uncomfortable if they found out I have alcohol in my room	-0.31 ***	-0.48	-0.13
I feel comfortable drinking alcohol around the people I live with	0.24 *	0.02	0.46
I think the people I live with drink too much	0.40 ***	0.21	0.59
My house/dorm at college sponsors school social events that involve the use of alcohol for students 21+	1.02 ***	0.75	1.30
My house/dorm at college has a tradition of holding social events that involve the use of alcohol	1.07 ***	0.79	1.35
Perceived peer norms regarding alcohol use			
My closest friends in college approve of getting drunk	0.43 ***	0.24	0.61
Number of friends who drink alcohol	0.35 ***	0.14	0.57
Perceived peer approval of alcohol use	0.21 *	0.02	0.39
Cognitions about alcohol use and its effects			
College parties are fun only if there is alcohol involved	0.11	-0.09	0.31
Positive expectancy outcomes	0.13 †	-0.01	0.26
Negative expectancy outcomes	0.04	0.01	0.09
Positive expectancy valuations	-0.01	-0.15	0.14
Negative expectancy valuations	0.09	-0.02	0.19

Note. Parameter denotes the model-based estimate of the mean difference in outcome of types of residence (residence-hall or house style).

†  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .