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## Deconstructing Contexts of Binge Drinking Among College Students

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### ABSTRACT

This paper examines the contextual characteristics common to binge drinking occasions reported by college students. In addition, the study examines the influence of such contextual characteristics on alcohol-related problems experienced by students. Using random sampling and telephone interview methodology, 401 college students attending a large southern California university were surveyed by trained research staff. The interview protocol was based on the Core Survey and included context of use questions from the College Risk Assessment Guide. Results of stepwise multiple logistic regressions indicate that drinking with friends and events with food available protect against alcohol problems, while drinking events in which illicit drugs are available present higher risk for problems. Implications for future research and prevention are discussed.

*Key Words.* Binge drinking; College students; Contexts of use; Problems

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## INTRODUCTION

Binge drinking among college students is a major public health concern. Recent studies indicate that the prevalence of binge drinking among college students in the United States is moderately high (1, 2). Wechsler and associates (1) reported that 44% of all college students in their sample were binge drinkers. Wechsler and associates (3) reported that this rate dropped to 42.7% in their most recent survey. Similarly, 37.5% of the students in the national study by Presley et al. (2) reported engaging in binge drinking. As one might expect, both Wechsler et al. (1) and Presley et al. (2) reported that the frequency of binge drinking was associated positively with self-reported alcohol problems. Although these and other epidemiological studies detail binge drinking and its antecedent and consequential correlates, relatively little research has examined the contexts in which college students engage in binge drinking. Contextual variables related to alcohol consumption and alcohol problems have long been important to researchers concerned with alcohol use and its related problems (4, 5). The relation of the drinking context to alcohol problems is also important from a public health, preventive perspective. As Ashley and Rankin (6) note: "Under certain circumstances, relatively low levels of consumption on isolated occasions may result in damage to the individual drinker" (p. 232). When consumption is high, contextual risk or protective factors might be even more important. The identification of such characteristics has potential utility for developing prevention policies and programs. Although the contextual issues related to heavy alcohol drinking have import to alcohol prevention work, this is an area that has been underresearched for nearly 30 years, especially among heavy drinking college students.

### **Binge Drinking**

Binge drinking has been defined as drinking five or more drinks in a single setting (2) or as drinking five or more drinks in a single setting for men and four or more drinks in a single setting for women (7). As noted above, such drinking behavior increases the risk for a host of negative consequences, including hangovers, fights, driving while intoxicated, vandalism, and being the victim or perpetrator of sexual violence (1, 2, 8).

Beyond being problematic for individual drinkers, binge drinking adversely affects students who do not drink heavily. Wechsler et al. (9) reported that abstainers and nonheavy drinkers often experience adverse consequences related to someone else's drinking, including disruption of sleep and studying, fights, and the like. In addition to being at higher risk for experiencing their own alcohol-

related problems, sporadic (infrequent heavy) and habitual (frequent) heavy drinkers also regularly experience problems related to other drinkers. Such problems included fights, interruptions of sleep and academic work, and the like (9).

Previous research has found a number of demographic and social variables to be predictive of binge drinking. Both Wechsler et al. (1) and Presley et al. (2) found that men engaged in binge drinking more often than women. Other risk factors include being white, being single, having a parent who drank, or using marijuana and tobacco (7). Protective characteristics include being religious and being African-American or Asian. In addition, students' social activities and beliefs are often associated with increased binge drinking. For instance, students' perceived importance of parties (1) and living in a fraternity or sorority both contribute to binge drinking (10, 11).

### Drinking Contexts

Although there is no standard definition for drinking contexts, it can be conceptualized as where one drinks, with whom one is drinking, and when one drinks (4). Others (12) have suggested adding, "why one drinks" to this definition. An underlying assumption of research into drinking contexts was postulated by Harford (13):

The antecedents of alcohol consumption are to be found in the interactions between the individual and his [sic] environment . . . the consumption of alcoholic beverages is situationally specific, rather than a trans-situational property of specific individuals. (p. 289)

To this end, recent research has explored the relationship between motivations for drinking and social context (14), perceived norms and drinking contexts (15), and alcohol expectancies and contexts (16). Other studies have focused more on the environmental settings in which drinking occurs (5, 17, 18). Yet others examined situation-specific factors related to context, including day of the week, duration or event, type and number of companions, location and occasion (13, 19). Thus, as Jessor (20) suggested, the five major ways of exploring drinking contexts include location of the drinking event, demographic/descriptive characteristics of the event and its participants, the meanings associated with drinking contexts, abstract dimensions of events such as social controls and norms, and personal perceptions associated with the context.

In a national study of drinking contexts, Hilton (21) reported that, across all alcohol consumption patterns (i.e., abstainer, light, moderate, heavy), contexts that included the presence of coworkers, close friends, and neighbors tended to be "wetter." Demographically, men, more educated respondents, Catholics, and

respondents residing in heavy drinking areas were more likely to report drinking heavily across drinking contexts. Similarly, Hilton (17) reported that men drank more than women did in both public (bars, restaurants, etc.) and private (parties and homes) contexts. In addition, Hilton reported that drinking in public and the interaction between drinking in public and education each correlated with alcohol problems.

Researchers have paid little attention to drinking contexts frequented by college students. In an early study, Kraft (22) examined alcohol consumption patterns, related problems, and contexts of drinking at one East Coast university in the late 1970s. He reported that respondents tended to drink with friends, on weekends, and at parties most frequently. The heaviest drinkers often patronized bars as well. With the increase in frequency of attendance at parties or bars, there was also an increase in the frequency of self-reported problem behaviors, such as driving drunk, academic problems, belligerence, job-related problems, vandalism, and trouble with authorities. In a study of drinking contexts frequented by college females, Hunter (23) reported that female college students drank more often at parties and in bars than in any other contexts.

During the past decade, alcohol research has focused largely on expectancies and perceptions related to alcohol use (14, 16). This research has identified that the use of alcohol increased among respondents who reported having expectations that the use of alcohol would result in a reduction of tension or increased social assertiveness (16), fun, or social facilitation (14). Although this work is important, the alcohol research literature has neglected environmental issues related to drinking contexts in recent years.

Thus, similar to research on the general population, the limited literature concerning college student drinking contexts suggests bars and parties appear to be popular drinking contexts among them. The purpose of the drinking occasion also contributes to the amount of alcohol consumed. Despite these findings, little research has examined the characteristics associated with binge drinking events. Based on the literature discussed above, this paper examines this issue in greater detail.

This paper addresses this void in the literature and examines the contexts of binge drinking reported by college students at a large, public university in California. Specifically, this study addresses the following research questions:

1. What are the physical, social, and temporal contexts of binge drinking among college students?
2. How do specific characteristics of binge drinking contexts relate to alcohol-related problems?
3. Are there unique protective or risk factors for binge drinking based on context or gender?

## METHODS

This exploratory, relational study uses survey data collected in 1998 at a large urban university in southern California to address the research questions of interest. A university-based social science research laboratory administered the survey using a random sample and telephone interview methodology. The sampling frame consisted of undergraduate students enrolled at the same university during the spring semester of 1998. Students were selected randomly to construct a study sample. Trained interviewers conducted the phone interviews and professional research staff monitored random interviews to ensure data quality. Research staff conducted interviews with 401 students. Students refusing to participate were replaced randomly. The average interview took 16 (SD = 5.15) minutes to complete. The refusal rate for this study was 12%.

This methodology is appropriate for the questions of interest. Babbie (24) suggested that telephone interviews might actually yield more valid results than face-to-face interviews when assessing sensitive items. Also, given that the study relies on self-reports of alcohol or other drug (AOD) use and problems, it is important to note that the validity of self-reports of AOD use have been established by other investigators (25).

Table 1 presents the demographic characteristics of the study sample. As indicated in the table, the sample is generally consistent with the characteristics of the undergraduate population.

Table 1. Demographic Characteristics of the Sample and Population

Variable	Sample ( <i>N</i> = 401)		Population ( <i>N</i> = 23,772)	
	<i>N</i>	%	<i>N</i>	%
Age				
Mean (SD)	24.0	(6.75)	24.0	(6.27)
Median	22.0		22.3	
Race ethnicity				
African-American	20	5.0	1293	5.4
Hispanic	76	19.0	4755	20.0
Asian/Pacific Islander	59	14.8	3606	15.2
White	218	54.5	10,681	44.9
Other	27	6.8	3185	13.4
Gender				
Male	178	44.2	10,715	45.1
Female	225	55.8	13,057	54.9

### **Instrument**

The short form of the Core Survey was used as the primary instrument for the present study. The Core Survey is a self-administered questionnaire designed to measure AOD use and related problems among college students (2). The short form of the Core includes items on AOD use, AOD problems, perceptions of normative use, and demographic items. Presley et al. (10) reported adequate test-retest and interitem reliability coefficients for the Core. In addition, Presley and associates established the content validity for the Core. Our principal investigator modified the Core from a self-administered format to develop an interview schedule. In addition to the standard questions on the Core, a series of questions concerning contexts of binge drinking were added to the survey. Several of these items were included in the College Risk Assessment Guide (26).

### **Measures**

For this study, we defined binge drinking as five or more drinks at a single setting within the last 2 weeks. Of the 401 interviews, 335 respondents reported using alcohol at least once in the past year, with approximately one-third meeting criteria of reporting binge drinking during the past 14 days ( $N = 110$ ). To assess contextual factors associated with binge drinking events, respondents were asked to answer a series of detailed questions concerning the last binge drinking event they engaged in within the past 2 weeks. Questions included in this series focused on the following:

1. The total number of drinks consumed during the occasion.
2. The day of the week of the occasion and the starting and ending time for the event (duration of event).
3. The social purpose of the event (party, date/socializing).
4. The number of the people at the event.
5. The composition of the drinking group (partner, roommates, college friends, noncollege friends, family members, and coworkers).
6. The geographic location of the event (bar/restaurant, private home)
7. Risk factors associated with the event (played drinking games, illicit drugs available, alcohol served to all, several people intoxicated).
8. Protective factors associated with the event (food served, nonalcoholic beverages available, bartender served drinks).

For the purposes of analysis, several dichotomous problem indicators were combined into a single dummy-coded variable (problem reported = 1). The problem indicators included in this variable are as follows: got into a fight, drove drunk, rode with a drunk driver, got physically injured, had a hangover the next day, vomited or got nauseous. Percentages of respondents reporting these problems ranged from 0.9 (fighting) to 37.6 (hangover).

In addition to these variables, we included a dummy-coded gender variable (male = 1), a series of dummy-coded race/ethnicity variables (African-American = 1, Hispanic = 1, white = 1, Asian = 1, other = referent), and a dummy-coded age variable (<21 = 0) in the analyses.

### Analyses

Univariate and bivariate descriptive statistics are reported to address research question 1. Specifically, given the binary nature of the variables, we report odds ratios (ORs), phi coefficients, and percentages. To address research questions 2 and 3, we employed a series of stepwise multiple logistic regression analyses, including models for main effects, gender, and the physical context of the event. This procedure allows for the risk for problems associated with each predictor variable to be assessed (in the form of odds ratios), net of the influence of other variables in the model (27, 28). The main effects regression models included the full set of predictor variables outlined above. The stratified models included all of these variables as well, save the stratification variable. Except for the number of drinks consumed per hour, all of the variables are dichotomous dummy variables. We selected this strategy given the dichotomous nature of the criterion and most of the predictor variables, the exploratory nature of the study, and the relatively large number of potential predictor variables (27). Stratified models were selected based on the most plausible interaction effects (1, 17, 21).

## RESULTS

Table 2 presents the descriptive characteristics of the binge drinking events reported by respondents. Respondents reported that, typically, their last binge drinking event was large, lasted slightly over 5 hours, and was on a weekend. On average, students reported drinking slightly over eight drinks at the last binge drinking event. Males (55.5%) tended to report more binge drinking events than females (44.5%).

Table 2. Descriptive Characteristics of Binge Drinking Events ( $N = 110$ )

Variable	Median	Mean	Range	SD
Total drinks consumed	7.0	8.12	15	3.0
Number of people drinking	10.0	73.1	997	194.1
Number of people at event	10.0	69.7	996	174.5
Duration of event (hours)	5.0	5.4	17.5	2.8
Variable	<i>N</i>	%		
<b>Gender of drinker</b>				
Male	61	55.5		
Female	49	44.5		
<b>Day of event</b>				
Monday	2	2.8		
Tuesday	5	4.6		
Wednesday	8	7.3		
Thursday	6	5.5		
Friday	27	24.8		
Saturday	53	48.6		
Sunday	7	6.4		
<b>Occasion</b>				
Party	23	21.1		
Date/socializing	76	69.7		
Other	10	9.2		
<b>Physical location</b>				
Private home/residence	47	43.1		
Bar/club/restaurant	46	42.2		
Other	16	14.7		
<b>People at event<sup>a</sup></b>				
<b>Partner/spouse</b>				
Yes	44	40.7		
No	64	59.3		
<b>Roommates</b>				
Yes	32	29.6		
No	76	70.4		
<b>Frat/sorority members</b>				
Yes	13	12.0		
No	95	88.0		
<b>School friends</b>				
Yes	60	55.6		
No	48	44.4		
<b>Nonschool friends</b>				
Yes	80	74.1		
No	28	25.9		
<b>Coworkers</b>				
Yes	24	22.2		
No	84	77.8		
<b>Family members</b>				
Yes	16	14.8		
No	92	85.2		

Table 2. Continued

Variable	<i>N</i>	%
Problems experienced <sup>b</sup>		
Yes	52	47.3
No	58	52.7
Protective factors		
Food available		
Yes	78	71.6
No	31	28.4
Nonalcoholic beverages		
Yes	93	85.3
No	14	12.8
Bartender served alcohol		
Yes	44	40.4
No	65	59.6
Risk factors		
Illegal drugs available		
Yes	30	27.5
No	76	69.7
Many people were intoxicated		
Yes	76	69.7
No	30	27.5
Alcohol was provided to all		
Yes	31	28.7
No	77	71.3
Played drinking games		
Yes	16	14.8
No	92	85.2

<sup>a</sup> One respondent reported drinking alone.

<sup>b</sup> "Problem" is a dummy variable that includes the following dichotomous items: Got into a physical fight, drove drunk, rode with a drunk driver, got physically injured, got sick, had a hangover the next day. Values were summed for each case, then dummy coded.

Students reported that parties and dates/socializing were the most common occasions associated with their last heavy drinking event. These events were almost evenly split between public (42.2% bars and restaurants) and private (43.1% homes) contexts. In their most recent binge drinking event, students most often drank with friends (either from school or not) and their partner/spouse. Most events had food and nonalcoholic beverages available, and over a quarter of the events had illicit drugs available. Slightly less than half (47.3%) of the events resulted in some self-reported problem to the drinker.

As indicated in Table 3, males and females differed little in duration of event and total drinks consumed by location of event. Men tended to drink slightly more drinks per hour than women in both public and private contexts; however,

Table 3. Means and Standard Deviations for Total Drinks Consumed, Duration of Event, and Drinks Per Hour by Public and Private Context Variables and Gender

Variable	Males		Females	
	Mean	s	Mean	s
<b>Bar/restaurant</b>				
Drinks per hour	2.2	1.4	1.7	.82
Duration of event (hours)	5.3	3.2	5.4	2.2
Total drinks consumed	8.4	2.4	8.1	3.5
<b>Home/private residence</b>				
Drinks per hour	2.5	2.4	1.6	.58
Duration of event (hours)	4.8	2.3	5.1	3.3
Total drinks consumed	8.4	2.7	7.1	2.4

these differences were not statistically significant. Overall, public and private contexts seemed to be equally "wet," with females drinking slightly more in public settings than they do in private settings.

Table 4 presents the bivariate relationships between contextual variables and alcohol-related problems. As indicated in the table, having food available was a significant and strongly protective factor against experiencing alcohol-related problems. Those who had food available were nearly two-thirds less likely to experience problems compared to those without food. Similarly significant protective factors included having college friends (OR = .32) or roommates (OR = 0.32) present at the event, both quite strong protective factors for alcohol problems. However, those who reported illicit drugs were available were three times more likely to report the occurrence of alcohol-related problems.

The results of the forward stepwise multiple logistic regression models for problem events are presented in Table 5. Only variables remaining in the final model are reported here. In the main effects model, having friends from college present and food available were both strong and significant protective factors related to problems at events. Those reporting having friends or food were about two-thirds less likely to report alcohol problems compared to those without the friends or food. The availability of illicit drugs at the drinking event was a significant risk factor for problems in that those reporting illicit drugs were available were three and one-half times more likely to report problems compared to those without illicit drugs.

For males, playing drinking games significantly increased the likelihood of experiencing a problem fivefold. One protective factor for males was having food present. Men who had food present were nine-tenths less likely to report alcohol problems compared to men without food. In contrast, the model for women indicated that having college friends present at the event (OR = 0.17) or having

Table 4. Bivariate Relationships for Contextual Variables and Alcohol Problems

Variable	Problem		Phi	Odds ratio	95% CI
	Yes (%)	No (%)			
Setting					
Location was bar	54.3	45.6	n.s.		
Location was home	46.8	53.2			
Purpose					
Party	52.2	47.8	n.s.		
Date/socializing	48.7	51.3			
Protective factors					
Food available	41.0	59.0 <sup>a</sup>	-.21 <sup>a</sup>	.38	.16-.91
Nonalcoholic drinks available	47.3	52.7			
Bartender served drinks	47.7	53.3			
Event was BYOB	40.6	59.4			
Risk factors					
Many people were intoxicated	50.0	50.0			
Illegal drugs were available	66.7	33.3 <sup>b</sup>	.245 <sup>b</sup>	3.1	1.2-7.5
Alcohol was provided to all	45.2	54.8			
Played drinking games	43.7	56.3			
Group composition					
Partner/spouse present	52.3	47.7			
Roommates present	28.1	71.9 <sup>b</sup>	-.25 <sup>b</sup>	.317	.13-.77
College friends present	35.0	65.0 <sup>b</sup>	-.27 <sup>b</sup>	.32	.15-.71
Noncollege friends present	50.0	50.0			
Coworkers present	45.8	54.2			
Family members present	56.3	47.7			
Individual characteristics					
Gender					
Males	41.0	59.0			
Females	44.9	55.1	n.s.		
Age					
<21	42.4	57.6			
≥21	49.4	50.6	n.s.		
Race ethnicity					
White	48.5	51.5			
African-American	NA	NA	n.s.		
Asian/Pacific Islander	50.0	50.0			
Hispanic	44.4	55.6			
Other	NA	NA			

<sup>a</sup>  $p \leq .05$ .<sup>b</sup>  $p \leq .01$ .

n.s. = not significant.

Table 5. Results of Stepwise Logistic Regression Analyses: Main Effect Model, Gender Models, and Public-Private Context Models Predicting Alcohol Problems

Model	Odds ratio (95% CI)	R (Probability)
Main effects <sup>a</sup>		
Friends from college present	.34 (.14-.84)	-.16 (.02)
Food was available	.36 (.14-.97)	-.13 (.04)
Illegal drugs were available	3.5 (1.3-9.3)	.17 (.01)
Males <sup>b</sup>		
Played drinking games	5.0 (1.0-24.5)	.16 (.05)
Food was available	.10 (.02-.44)	-.32 (.002)
Females <sup>c</sup>		
Roommates were present	.08 (.01-.53)	-.28 (.009)
Friends from college were present	.17 (.04-.87)	-.20 (.03)
Bar/restaurant setting <sup>d</sup>		
Friends from college present	.17 (.03-1.03)	-.18 (.05)
Food was available	.10 (.02-.62)	-.28 (.01)
Alcohol was served by bartender	.03 (.002-.55)	-.26 (.02)
House or home setting <sup>e</sup>		
Illegal drugs present	10.5 (2.3-47.3)	.35 (.002)

<sup>a</sup> Model:  $\chi^2 = 16.97$ ,  $df = 3$ ,  $p < .001$ ; Nagelkerke  $R^2 = .22$ .

<sup>b</sup> Model:  $\chi^2 = 12.03$ ,  $df = 3$ ,  $p < .001$ ; Nagelkerke  $R^2 = .28$ .

<sup>c</sup> Model:  $\chi^2 = 22.97$ ,  $df = 3$ ,  $p < .0001$ ; Nagelkerke  $R^2 = .54$ .

<sup>d</sup> Model:  $\chi^2 = 14.23$ ,  $df = 3$ ,  $p < .01$ ; Nagelkerke  $R^2 = .41$ .

<sup>e</sup> Model:  $\chi^2 = 11.45$ ,  $df = 3$ ,  $p < .001$ ; Nagelkerke  $R^2 = .31$ .

roommates present (OR = 0.08) strongly protected against problems. So, women with friends or roommates present were strongly protected from experiencing alcohol-related problems, as much as nine-tenths less likely compared to women without such supports.

In public settings, having food present (OR = 0.10), college friends present (OR = 0.17), or a bartender serve all alcohol (OR = 0.03) strongly protected against alcohol-related problems. Finally, similar to the main effects model, having illicit drugs available in private settings was associated strongly with increased problems (OR = 10.5), resulting in a 10-fold increase in the likelihood of experiencing a problem.

Given the small sample size and the high likelihood of respondents reporting a problem, it is important to note that all of the regression models were statistically significant, with Nagelkerke  $R^2$  values ranging from .22 to .54. Similar to  $R^2$  in linear multiple regression analysis, the Nagelkerke value provides an estimate of the variance explained in the dependent measure by the multivariate combination of the predictor variables in the model (see "logistic regression" on line at

www.spss.com; accessed November 23, 1998). These values indicate that the predictor variable sets account for between 22% and 54% of the variation in the dependent measure, suggesting acceptable "goodness of fit" between these data and the models.

## DISCUSSION

### Limitations

This paper presents descriptive and relational data concerning binge drinking events among a group of college students from a large urban university in southern California. As noted earlier, relatively little research has examined drinking contexts among college students, especially contexts specific to binge drinking events. As such, the present study is exploratory, and the results should be viewed as such. A key limitation is the small sample size. In addition, although representative of the population from which the sample was drawn, these data are limited to a unique university and region. Future research into college drinking contexts would benefit from a nationally representative sample.

A final consideration is the unit of analysis for this study. Given the research questions of interest, both contextual and individual characteristics are important. At the contextual level, group composition, event size, environmental setting, and the presence and absence of protective and risk factors are important. At the individual level, characteristics such as gender, age, and amount of alcohol consumed, among other variables, might all be conceptually relevant. However, it is the interplay of contextual and individual factors as they relate to problem drinking that is of the most interest. Thus, it becomes necessary to describe drinking events (contextual unit of analysis) prior to examining individual drinking (individual unit of analysis). Diez-Roux (29) notes that such problems are common to epidemiological studies and present potential problems with confounding and multicollinearity. On the other hand, without the inclusion of group level or environmental variables in studies examining individual problems, researchers run the risk of excluding important etiological variables (29) and making specification errors in multivariate analyses.

### Strengths

Despite these limitations, the present study did identify important findings with meaningful utility to prevention specialists working with college students. First, these findings strongly support that the traditional prevention strategies, such as providing food with alcohol, might be effective means of reducing or

protecting against alcohol-related problems. In contrast, other commonly espoused strategies like providing nonalcoholic beverages did not appear to have an impact on problems.

Another important finding is the powerful, protective nature of drinking with friends. Although previous research (21, 22) found that drinking with friends led to an increase in alcohol consumption, friends might be more inclined to look after their drinking companions than strangers or more casual acquaintances might be. These findings lend support for the preventive strategies of "party monitors," "sober sisters," and the like in that they may be having the desired effect, particularly for female drinkers. It is interesting that, although our males and females did not differ significantly in the bivariate analyses, we would identify very different models for them on a multivariate level.

Another strong protective factor found in this study was the report of the alcoholic drinks being served by a bartender. Attention by alcohol prevention professionals on server training and "responsible hospitality" might account for this finding. College prevention professionals traditionally have neglected such strategies.

Along similar lines, the presence of illicit drugs appears to be a strong risk factor for the manifestation of problems, particularly in private settings. This finding is consistent with the conventional wisdom put forth by prevention professionals. That is, the risk associated with substance use increases with polysubstance use and the use of illicit drugs. On the other hand, without more detailed information, it is not possible to tease out the independent effects of illicit drug use and alcohol as they relate to problems. Future research would benefit from a more detailed examination of this issue.

Future research is also needed to understand better the contextual issues related to alcohol problems for males and for those who drink in private settings. The Nagelkerke  $R^2$  was lower for these models using our data. Therefore, there are variables at play that we did not query to explain sufficiently the variance for these groups.

In addition, future research on drinking contexts might benefit from combining expectancy and perceptual variables related to contexts with environmental variables. Finally, future studies might examine the relationship between specific types of alcohol or illicit drugs and problems.

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