

College Students and Alcohol Abuse: A Test of Social Learning, Strain, and Acculturation Theories

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This article uses an original data set to explore the utility of three classic sociological theories to test patterns of college student alcohol consumption: social learning, strain, and acculturation. The survey data indicate that the first two theories are supported. Acculturation, however, does not appear to explain variations in drinking habits of Latino students in our sample.

Introduction

Alcohol use and abuse by college students has been a subject of enormous interest to scholars, university administrators, and other interested observers since before Straus and Bacon's (1953) landmark contribution to our understanding. Several research teams (Johnston, O'Malley, Bachman, & Schulenberg, 2011; Knight et al., 2002; Wechsler & Austin, 1998) reported that 40 percent of college students engage in "heavy episodic drinking," which is defined as five or more drinks in one sitting by men and four by women. Alcohol consumption and experimentation is often considered an integral part of the college experience; for example, college students appear to be heavier drinkers than their same-age peers who do not attend college (O'Malley & Johnston, 2002) and college students drink more heavily than high school seniors (Johnston et al., 2011). Such drinking behavior is associated with a number of negative outcomes. Hingson, Heeren, Winter, and Henry (2005) report that 31.4 percent of college students (or 2.8 million) admit to driving under the influence of alcohol. Heavy episodic drinking may fuel fatal traffic crashes, assaults, unintentional injuries, academic problems, relationship conflicts, and alcohol problems later in life. Consistent with these possible negative outcomes, alcohol-related unintentional deaths, assaults, and rapes increased between 1998 and 2005 (Hingson, Zha, & Weitzman, 2009).

The purpose of this research is to assess the explanatory value of three prominent sociological theories for understanding patterns of alcohol use among college students: social learning, general strain, and acculturation. We hope to

contribute to the existing literature by assessing the relative strength of three prominent theories with an original data set. While each of these explanations of human behavior has been studied previously, few scholars have attempted to combine them in a single explanatory framework in a single research effort. Using survey data collected from a state university in the southwestern United States, this article provides new insight into the factors that shape students' proclivities for alcohol use and abuse. Although there has been much research on alcohol use and abuse by college students our focus is narrow and refined. We are interested in understanding the drinking behavior of college students in their formative college years. Thus, our focus is on first (freshman) and second (sophomore) year students. Research into alcohol consumption clearly has continuing theoretical and scholarly significance, but the practical necessity for improving our understanding of alcohol abuse by examining these theories is evidently the first step in designing policy measures and strategies for ameliorating this serious campus problem. This study generates useful implications for campus-level policy in ameliorating college alcohol abuse, particularly for those who have recently entered college.

Background

Social Learning Theory

The first of the three theories of interest is social learning theory (SLT). This theoretical framework has a lineage that can be traced to George Herbert Mead and that was extended, first by Sutherland (1939) and then by Akers (1992, 1998). Scholars who have used SLT to improve our understanding of alcohol use include Neighbors, Brown, DiBello, Rodriguez, and Foster (2013); Ward and Gryczynski (2009); Varvil-Weld, Mallett, Turrisi, Cleveland, and Abar (2013); and Wood, Sher, Erickson, and DeBord (1997). Social learning theory contends that peer groups help to create social norms. Bandura (1977) identifies four integral components of SLT: (1) vicarious learning by observing the behavior of others; (2) differential reinforcement, where a behavior may be viewed negatively or positively; (3) cognitive processes, the individual's use of this learning to shape her thinking; and (4) reciprocal determinism, the mutual and interdependent causation of individual behavior. SLT requires that we understand which peer groups an individual is influenced by and what values these groups value or admire.

According to social learning theory, one may infer something about an individual's alcohol consumption by understanding what peer groups the individual belongs to. Although peer influence is critical in understanding the substance use of adolescents (Akers, 1998), it is also clear that college students are heavily influenced by and model their peers when engaging in this type of behavior (Costa, Jessor, & Turbin, 1998).

As Linden, Cathy, and Braitman (2012) observe, social norms may consist of injunctive (perceived attitudes toward drinking behavior) and descriptive norms (perceptions of how much someone drinks). Interesting research has explored

whether students have an accurate perception of “typical” drinking patterns of their fellow students. Students often overestimate the frequency and severity of alcohol consumption (Perkins, Meilman, Leichliter, Cashin, & Presley, 1999), and this may affect beliefs about what is “normal” drinking behavior. Perceived norms significantly predict drinking quantity (Neighbors, Lee, Lewis, Fossos, & Larimer, 2007).

Of course, a student’s peer groups are likely to change as she graduates from high school and progresses through her college experience (Nezler, Pilkington, & Bilbro, 1994). The culture of heavy alcohol use in peer intensive campus contexts is a crucial factor in developmental transitions from freshman to senior and beyond. As parental influence becomes less immediate, peer interactions become increasingly important, though parental behaviors and the quality of communication between students and their parents still play an important role. Children are socialized into acceptable drinking behavior merely by observing their parents’ alcohol consumption (Akers, 1992). The drinking behavior of parents influence children at an early age and direct encouragement of drinking is not necessary to have an important long-term effect. Using a sample of 370 students from an eastern university that was surveyed in the summer before their matriculation and again in their second year of college, Varvil-Weld et al. (2013) found that individuals who had poor communication with their parents were most likely to have problems with alcohol.

The influence of social learning theory on substance use is clear in the literature. Thus, we draw on the existing work of Schroeder and Ford (2012) in conceptualizing and measuring social learning by combining parents, friends, and self attitudes toward alcohol use to understand the influence of social learning.

General Strain Theory

A second classic theory of behavior that may explain alcohol abuse and other forms of deviance is general strain theory (GST). With intellectual roots in the work of classical sociologists like Emile Durkheim and Robert Merton, Agnew’s (1992) version of strain theory identifies an individual’s failure to achieve positively valued goals as a source of distress. Sociologists who employ GST try to understand how an individual copes with personally stressful situations. General strain theory is applicable to substance use because the use of such substances allows individuals a response mechanism to strain stemming from either stress from external sources or in response to emotional/psychological stress (Agnew, 1992; Brezina, 1996). Such responses are even more likely when the legitimate coping mechanisms—such as access to medical care, psychological, and/or social services—are unavailable or lacking (Agnew, 1992).

Several studies have made important contributions to our understanding of strain theory and its empirical validity as an explanation for substance use. Agnew and White (1992) found that strain variables had a significant effect on delinquency and drug use. Students who do poorly in school may simply have a poor academic work ethic; alternatively they may be frustrated with their

academic performance. Sun and Longazel (2008, p. 559), in a sample of 647 students from a mid-Atlantic university, found that students with higher GPAs were less likely to have problems with alcohol while individuals who were members of Greek associations were more likely to exhibit negative behaviors.

The existing literature differentiates between strain and negative emotions (Akins, Smith, & Mosher, 2010; Brezina, 1996; Broidy, 2001; Hoffmann & Cerbone, 1999; Jang & Johnson, 2003; Mazerolle & Piquero, 1998). Strain is most readily expressed as external sources of strain—stressors (Akins et al., 2010; Jang & Johnson, 2003). A multitude of stressors such as the end of a relationship, the death or illness of a friend, the divorce of one's parents, financial strain, or frustrations with one's work are all indicative of this type of strain. On the other hand, negative emotions represent a state of emotional discord that may arise due to internal or external conditions. For example, if one suffers from depression it would be an example of negative emotions tied to any number of external or internal factors.

Our focus is upon two possible sources of external stressors. First, we have identified a series of negative stressors that are likely to lead to strain, including relationship with family, friends, and significant others, along with stressors brought on via school and work life. Consistent with prior research, we have identified nine indicators that comprise our measure of “negative stressors” (Akins et al., 2010; Brezina, 1996; Broidy, 2001; Hoffmann & Cerbone, 1999; Jang & Johnson, 2003; Mazerolle & Piquero, 1998; Ostrowsky & Messner, 2005). Additionally, because we are concerned with the specific stress brought about in a setting of higher education we have also included an indicator of academic performance as a means to measure external negative stressors; academic performance is identified as an important source of strain for students within the existing literature (Akgun & Ciarrochi, 2003; Clark & Rieker, 1986; Linn & Zeppa, 1984; Struthers, Perry, & Menec, 2000).

Because we are focusing upon both social learning and general strain theories it is worth noting several studies linking the two to substance use. Schroeder and Ford (2012) found that both social learning and strain measures exert independent influence on adolescents' decisions to abuse nonmedical prescription drugs. Although Akins et al. (2010) focus upon an adult population, the research identifies pathways to alcohol abuse by demonstrating the role that both strain and learning theory play in accounting for this behavior across divergent racial subgroups. Nonetheless, there is a paucity of research that explores the influence of both lines of theory in our understanding of substance use.

Acculturation Theory

A third theory of behavior that may account for the alcohol habits of immigrant groups or cultural minorities is acculturation theory. This theory applies only to the subset of Americans who are not fully assimilated into the dominant culture. While SLT and GST may serve as explanations of criminal behavior, acculturation has broad value as a description of how new arrivals to a

culture may adapt their lifestyles, behavior, and attitudes in order to fit in more comfortably with their adopted country. Akins, Mosher, Smith, and Gauthier (2008) provide a superb review of this rapidly growing literature. The United States is presently experiencing a dramatic demographic shift and as the percentage of Hispanics and Latinos increases in the United States population, there are likely to be important repercussions. Although any racial group can experience strain, Hispanics and Latinos are more likely to experience strain that directly stems from the process of acculturation (Akins et al., 2008, 2010).

College campuses are increasingly diverse, particularly owing to increases in student populations of Asian and Hispanic and Latino descent. Dowdall and Wechsler (2002) noted that there was a lack of research on how increasing diversity among college students might impact alcohol use, but recent research has begun to explore differences among college students from different racial and ethnic backgrounds. Similar to research results from the larger population, research on college students has found that Whites drink more alcohol and binge drink more often than non-Whites (Caetano, 1997; Caetano & Kaskutas, 1992; Pino & Smith, 2009; Talbott et al., 2008). In addition, minority students are more likely than White students to be first-generation students, and first-generation students are less likely to binge drink than second-generation students (Pino & Smith, 2009).

If acculturation (i.e., adopting the values and attitudes of one's new culture) indeed explains patterns of alcohol consumption in student populations, we would need to detect a distinction between individuals who have not become acculturated and those who are thoroughly acculturated. Hispanics and Latinos have been a focus of research since they are the largest ethnic minority in the United States. A wide-ranging body of literature finds that acculturation, measured in varying ways, plays an important role in understanding substance abuse among Hispanics and Latinos (Burnam, Hough, Karno, Escovar, & Telles, 1987; Vega & Rumbaut, 1991; Wagner-Etchegaray, Schultz, Chilcoat, & Anthony, 1994; Welte & Barnes, 1995) with variations based upon gender (Black & Markides, 1993; Vega, Alderete, Kolody, & Aguilar-Gaxiola, 1998) and drug use versus alcohol use (Vega, Gil, & Wagner, 1998). Although the effects of acculturation are largely positive, an ironic twist on acculturation is that it has the negative effect of encouraging increased substance use among Hispanics and Latinos. For example, Akins et al. (2008) discovered that acculturated Hispanics and Latinos were 13 times more likely to report current hard drug use than non-acculturated Hispanics and Latinos. Black and Markides (1993) found that higher levels of acculturation were related to greater consumption of alcohol among women who emigrated from Cuba, Mexico, and Puerto Rico. Traditional Hispanic and Latino culture, they argue, discourages alcohol consumption among women (Black & Markides, 1993). A comprehensive overview of the literature (Zemore, 2007) concluded that higher acculturation is consistently associated with higher odds of drinking and HED among Hispanic and Latino women but that the evidence is more ambiguous among Hispanic and Latino men.

Kam, Cleveland, and Hecht (2010) use both acculturation theory and general strain theory to examine the drug and alcohol habits of Mexican-American

children between 5th and 8th grade in Phoenix. They find that acculturation stress is positively associated with increased use of alcohol, tobacco, and other drugs by the Hispanic and Latino children in their sample. GST focuses on negative emotions like anger, anxiety, frustration, and depression. To alleviate stress that perceived discrimination causes them, these children appear to turn to substance abuse. Similarly, Perez, Jennings, and Gover (2008), found that ethnic-specific strain that results from acculturation pressures increased the likelihood of violent delinquency among Hispanic and Latino origin adolescents.

As discussed above, the present study assesses the explanatory value of SLT, GST, and Acculturation Theory in predicting HED among college students, specifically freshmen and sophomores. We are concerned with underclassmen in particular because we would like to ascertain the factors that contribute to HED relatively early in the transition from high school to college in order to inform HED reduction policies implemented by college administrators and other stakeholders. The literature on acculturation notes a trend in which substance use increases with increased levels of acculturation and, thus, understanding the nexus between acculturation and entry into college is an important consideration as the Hispanic and Latino population increases on college campuses.

The following hypotheses, derived from the above theories, are tested in this research. The hypotheses are as follows:

Social Learning Theory. H₁: Heavy episodic drinking (HED) among college students is significantly influenced by social learning (attitudes of self, parents, and friends).

General Strain Theory. H_{2a}: Negative stressors significantly increase the frequency of HED among college age students.

H_{2b}: College students who are satisfied with their academic performance tend to engage in HED significantly less than those who are dissatisfied with their academic performance.

Acculturation Theory. H₃: Hispanic and Latino students who show greater levels of acculturation tend to engage in HED significantly more than Hispanic and Latino students who are less acculturated.

In addition to race/ethnicity, gender, intimate relationship status, and educational background of parents, we include living arrangement, religiosity, and fraternity/sorority membership status as control variables in our study, owing to their apparent importance in influencing HED on college campuses. Ward and Gryczynski (2009) demonstrated how living arrangements lead to higher or lower odds of heavy episodic drinking. Students living in fraternity/sorority housing and living with a roommate produced higher odds of HED than living with a spouse, with parents, or in alcohol-free housing. To these authors' surprise, living on campus was not associated with higher HED (Ward & Gryczynski, 2009). Fraternities and Greek organizations are clearly an important peer group for some students as well. Consistent with the stereotype, fraternity members are

more likely to binge drink than nonmembers (Pino & Smith, 2009), and Cashin, Presley, and Merlman (2008) find that fraternity and sorority leaders used more alcohol than nonmembers and members alike and set drinking norms for their groups. Talbott et al. (2008, p. 439) argue that emulation of alcohol consumption and peer behavioral influence lead “first year male college students in general and Greek affiliated (both male and female) to participate in a significantly greater number of drinking days.” The behavior that members of these organizations admire and encourage may be quite different from, for example, the lifestyles praised by religious groups. Neighbors et al. (2013) use a sample of 1,124 undergraduate students recruited from a large northwestern university to demonstrate that religious values, commitments, and practices appear to be inversely related to alcohol consumption and misuse.

Research Methods

Sample

The study was carried out in a large southwestern university with a population of more than 35,000 students. The authors obtained an approval from their university’s Institutional Review Board to conduct the research. Data for this study were collected through an 87-item questionnaire from 12 large classes. The large classes surveyed were all state required government courses, mostly composed of freshmen and sophomores from a wide variety of academic fields and majors across campus. Because we are primarily interested in the behaviors of new college students, our sample only considers first- and second- year students (freshmen and sophomores).

Measures and Analysis

Tables 1 and 2 display cross-sectional comparisons of students who engage in HED with those who do not. Comparisons in these two tables do not account for any possible intervening variables, but we account for these intervening factors using four logistic regression models. The dependent variable (DV) of the study, for all of the regression models, represents frequency of *heavy episodic drinking (HED)*, a measure adapted from the 1993 Harvard Alcohol Study (Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998). We measure HED with a single item asking the number of times a student had five or more drinks in one sitting within a typical 2-week period while college is in session (none, once, twice, 3–5, 6–10, and 11þ) (see also Pino & Smith, 2009). Since the dependent variable of this study represents ordinal data where the distance between values is not considered equal, the use of OLS regression is inappropriate. Instead, we collapsed the dependent variable into a binary variable (0 ¼ does not binge drink; 1 ¼ engages in binge drinking at least once during a typical 2-week period) allowing the use of logistic regression models to test our hypotheses. To corroborate the logistic results presented below, comparable OLS models using the original ordinal

Table 1. Cross-Sectional Comparison of HEDs and Non-HEDs

	N	Chi-Square	w/in Group % Engaged in HED
Classification			
Freshman	659	28.81**	37.8
Sophomore	437		54.2
Gender			
Female	661	23.82**	38.1
Male	429		53.1
Fraternity/sorority			
No	135	20.18**	41.7
Yes	952		62.2
Race/ethnicity			
White	564		51.6
Latino	341	35.75**	38.4
Black	87		27.6
Other	54		24.1

variable were run and they produced similar outcomes; however, given the nature of our dependent variable logistic regression is more appropriate and is the focus of our discussion.

Four logistic regression models that include four theoretical variables and seven control variables are used to test our hypotheses. Model 1 tests social learning theory, Model 2 tests general strain theory, Model 3 tests acculturation theory, and Model 4 tests social learning theory and general strain theory.¹ The advantage to this type of model presentation is that it allows us to weigh the relevance of each theory net of control variables (Models 1–3) and then to consider how the theories and control variables fare in an inclusive model (Model 4).

Table 2. Comparison of HEDs and Non-HEDs

	N	Mean	t-Value	Scale Possible Range
Social Learning Score				
No-HED	610	2.75	19.98**	1.0–5.0
Yes-HED	486	3.71		
Negative Stressor Score				
No-HED	607	2.72	3.55**	1.0–5.0
Yes-HED	485	2.88		
Acculturation Score				
No-HED	265	1.20	1.36**	4.0 to 4.0
Yes-HED	170			
Religiosity Score				
No-HED	606	3.01	4.97**	0–8.0
Yes-HED	484	2.35		
Parents Edu. Score				
No-HED	597	9.97	3.15**	2.0–16.0
Yes-HED	475	10.62		
Ac. Performance Score				
No-HED	604	3.27	2.61**	1.0–5.0
Yes-HED	484	3.11		

The control variables include gender, race/ethnicity, religiosity, living arrangements, membership in a fraternity/sorority, parents' education, and relationship status. The variables of theoretical interest include measures of general strain theory, social learning theory, and acculturation. Each of these measures is described below.

Gender is a dichotomous variable with female as the comparison group.

Race/Ethnicity covariate includes three dummy variables with White race as the reference group. The three dummy variables are Hispanic and Latino, African American, and other races.

Religiosity is a combination of two separate items on the questionnaire. The questions ask about the extent to which students consider themselves religious and the frequency of attending religious services.

Living Arrangements is measured via three dummy variables with "on-campus-living" used as the reference group. Dummy variables measuring "Living Arrangements" are: living with family, nonfamily off-campus housing (including fraternity/sorority housing), and other (nondorm) campus housing.

Fraternity/Sorority Membership is a dichotomous variable. Respondents are categorized as in a fraternity/sorority or not in a fraternity/sorority with the latter being the comparison group.

Parents' Education is the sum of mother's (or guardian) level of education and father's (or guardian) level of education. Eight levels of parental education ranging from "Grammar school or less" to "Graduate/professional degree" were offered as response choices.

Relationship Status is a dichotomous variable: in a relationship or not in a relationship; with the latter being the comparison group.

Attitudes of parents, friends, and self: Following the work of Schroeder and Ford (2012), we used three items to measure social learning theory. Two of the items inquire about the extent to which parents or friends approve or disapprove of the use of alcohol. The third set of items asks students about the extent to which they approve or disapprove of someone their age using alcohol. Our data show a reliability alpha of 0.73 for this construct. Although grouping one's own attitude toward alcohol may, at first, appear counterintuitive, it is important to note that all three of these items are highly correlated. Furthermore, social learning is the process of adopting, constructing, and forming one's own attitudes in relation to other (friends, parents) attitudes. Thus, consistent with prior research (Schroeder & Ford, 2012) we believe this is the best means of capturing social learning theory.

We have also used two independent variables to assess relevance of GST to students' HED. These variables are: negative stressors and satisfaction with academic performance.

Negative stressors includes modified measures originally deployed in the National Youth Survey (ICPSR, 1983), but consistent with the work of Ostrowsky and Messner (2005) and Schroeder and Ford (2012). From these studies, we selected nine items that are relevant to college-level students and helped us to create our construct. The items are all consistent with the concept of negative stressors and focus upon the strain associated with relationship with family,

peers, significant others, along with strain caused by school and work. For example, one item asks, “Within the past year, how often have you argued or had a fight with a member of your family?,” while another asks, “Within the past year, how much stress or pressure has there been in your relationship with close friends?” The items of this construct are measured on a 5-point scale (the scale ranges from 1 ¼ very little to 5 ¼ a great deal). A reliability test for this construct showed a Cronbach’s alpha of 0.78.

Satisfaction with academic performance is a respondents’ self-rated satisfaction with academic performance on a 5-point scale ranging from very dissatisfied to very satisfied. We include this measure as a separate, yet conceptually important, indicator of stress as research indicates the toll that the negative stress associated with academic performance can have on those engaged in higher education (Akgun & Ciarrochi, 2003; Clark & Rieker, 1986; Linn & Zeppa, 1984; Struthers et al., 2000).

The third regression model involves only Hispanic and Latino respondents. The regression assesses the impact of *acculturation* on HED. Consistent with previous research (Cuellar, Arnold, & Maldonado 1995), we have constructed *acculturation* as the difference between two constructs—orientation toward Hispanic and Latino culture and language, and orientation toward Anglo culture and language. Orientation toward Hispanic and Latino culture and language is measured by nine items on a 5-point scale where 1 represents “Not at all” and 5 denotes “Extremely often or almost always.” The Cronbach’s alpha for the nine items of this construct is 0.89. Orientation toward *Anglo* culture and language, on the other hand, is measured by seven items on a similar scale. The reliability alpha for these seven items is 0.73. All acculturation questions are derived from the ARMSA II scale (Cuellar et al., 1995). As mentioned, acculturation construct of our study is the difference between two separate constructs (Hispanic and Latino orientation—Anglo orientation), each being measured on a scale of 1–5. As a result, our overall acculturation construct can assume values between -4 to 4 where 4 represents extreme Anglo orientation and -4 represents extreme Hispanic and Latino orientation.

Results

The results from the logistic regression models are discussed below and presented in Table 3. In terms of the major control variables tested, we generally find across models that males are more likely to engage in HED than females, fraternity and sorority members are more likely to drink heavily than non- members, Whites are more likely to engage in HED than non-Whites (particularly African Americans and those who are “other”), those who express more religiosity are less likely to engage in HED, and those students who live in non- family private environments are more likely to engage in HED. The remaining control variables are inconsistent and/or not significant across at least three of the models. Below, the results of each model are discussed with their accompanying theoretical orientation.

Table 3. Logistic Regression Results

	Model 1: SLT Exp(B)	Model 2: GST Exp(B)	Model 3: Acculturation Exp(B)	Model 4: Full Model Exp(B)
Control variables				
Gender/male	1.731 ^{***}	2.021 ^{***}	1.139	1.945 ^{***}
Hispanic/Latino ^a	0.940	0.704 ^{**}		0.940
African Am. ^a	0.348 ^{***}	0.326 ^{***}		0.315 ^{***}
Other races ^a	0.304 ^{***}	0.275 ^{***}		0.273 ^{***}
Religiosity	0.930 ^{**}	0.890 ^{***}	0.875 ^{***}	0.932 [*]
Living w/family ^b	0.718	0.719	1.345	0.674
Nonfamily private living ^b	1.979 ^{***}	2.597 ^{***}	3.460 ^{***}	1.944 ^{***}
Other campus housing ^b	1.505	1.406	2.486	1.556
Fraternity/sorority member	1.709 ^{**}	1.884 ^{***}	1.614	1.620 [*]
Parents' education	1.022	1.055 ^{**}	1.054 [*]	1.033
In relationship	0.978	0.772 [*]	0.828	0.918
Social learning theory				
Attitudes of self, parents, and friends	4.360 ^{***}			4.354 ^{***}
General strain theory				
Negative stressors		1.405 ^{***}		1.291 ^{**}
Academic perf. satisfaction		0.884		0.912
Acculturation theory				
Acculturation score			0.997	
N	1007	993	415	993
Intercept	0.004 ^{***}	0.257 ^{***}	0.343 ^{***}	0.003 ^{***}
-2Log likelihood	995.403 ^{***}	1191.979 ^{***}	510.850	966.647 ^{***}
Goodness-of-fit χ^2	382.978 ^{***}	167.805 ^{***}	40.616	393.138 ^{***}
Hosmer & Lemesho χ^2	4.137 ^{n.s.}	8.907 ^{n.s.}	5.510 ^{n.s.}	4.493 ^{n.s.}
% Correctly predicted	75.6%	66.0%	66.5%	76.8%

^aWhite as the reference group. ^bCollege residency as the reference group. *Wald χ^2 significant at $a < 0.10$. **Wald χ^2 significant at $a < 0.05$. ***Wald χ^2 significant at $a < 0.01$. n.s., not significant.

Social Learning Theory

Model 1 shows that those who are White (compared to African Americans and members of "other" racial groups), male, less religious, fraternity/sorority members, and those who live in private nonfamily environments are more likely to engage in HED than their counterparts. It is also true that social learning plays an important role in predicting HED: one's own attitudes coupled with parents' and friends' attitudes are a clear and robust predictor of HED. In fact, SLT is the strongest predictor in Model 1.

General Strain Theory

The results in Model 2 are similar to those in Model 1 with a few additions: Hispanics and Latinos are less likely to engage in HED (relative to Whites), as are those in a relationship, while parents' education increases the likelihood of HED. Strain theory received mixed support: negative stressors are related to higher likelihood of HED, while academic performance is not. The results suggest that

satisfaction with academic performance, alone, is not a sufficient stressor to influence one's willingness to engage in HED-related behavior. However, these results also point to the fact that when we consider a series of negative stressors spanning multiple facets of life (personal, family, and friend relationships along with work and school stress) such negative stressors do, in fact, lead to a higher likelihood of engaging in HED.

Acculturation

The third principal hypothesis, acculturation, was not supported in Model 3. It was hypothesized that more acculturated Hispanic and Latino students would be more likely to engage in HED than Hispanic and Latino students who were less thoroughly integrated into American culture. Previous research efforts have found that acculturation patterns can significantly affect alcohol consumption rates, but we did not find that to be the case with our sample. Model 3 does show that Hispanic and Latino students are more likely to engage in HED if they are less religious, live in private nonfamily settings, and have more educated parents. Reduced church attendance, living apart from family members, and coming from a relatively more educated background could point to Hispanics and Latinos who are comparatively more acculturated and is consistent with previous literature on this topic.

Full Model

Many of the same significant indicators are present in the full model. Those who are White (compared to African Americans and "other" racial categories, but not compared to Hispanics and Latinos), male, less religious, members of fraternities or sororities, and living in a nonfamily private environment are more likely to engage in HED than their counterparts. In terms of our hypotheses, when we include both strain and social learning we see that attitudes of self, parents, and friends is by far the most robust and significant predictor of HED, while negative stressors is a significant, but less powerful effect. These results indicate that even when we account for a number of control variables, external stress and social learning stand as important facets in our understanding of HED-related behavior. Because social learning, along with a number of important control factors such as living arrangements and membership in a fraternity/ sorority, are clear predictors of HED, the results suggest that peer and parental influence are the most robust factors in our understanding of alcohol abuse among early college students. These social learning factors, combined with negative stressors, provide important insight into our understanding of HED-related behavior.

Discussion

In this study, we sought to test the efficacy of social learning theory (SLT), general strain theory (GST), and acculturation on heavy episodic drinking (HED)

among college students. We found support for both SLT and GST (in the form of attitudes of self, parents, and peers and negative stressors, respectively) in our regression models, but there is little support for acculturation. In addition, binge drinking is more likely to be found among Whites, males, the less-religious, fraternity and sorority members, and those living in a nonfamily private environment.

It is clear that social learning theory (SLT) is right to emphasize the importance of people's peer groups as an influence shaping their perception of appropriate behavior. While we did not test peer and individual attitudes independently, existing research cited above (Akers, 1998; Costa et al., 1999) confirms the importance of peers on college student attitudes toward alcohol and actual alcohol use. Our findings regarding strain theory indicate that a suite of stressors must be present for strain to press one to engage in HED and, as mentioned above, it is apparent in our sample that one's peers appear to have a larger influence on HED than stressors.

It is unclear why we did not find a relationship between acculturation and HED. It is possible that Hispanic and Latino college students, on the whole, are already highly acculturated or, alternatively, it could be the lack of variation in acculturation levels amongst our college students that suppresses any measurable effects. Further research on this topic as it relates to new college students is warranted, and any future research should examine the possibility that acculturation effects on HED could be mediated by or explained through our control variables.

This study has several implications for addressing the problems alcohol abuse on college campuses. A comprehensive approach might include alcohol screening, intervention, treatment, education, prevention, and enforcement. Prior research indicates that only 3 percent of campuses reported that alcohol use among their students was not a problem (Wechsler, Seibring, Liu, & Ahl, 2004), but that only 34 percent of college administrators reported that they offer a broad mix of enforcement and intervention strategies (Toomey et al., 2013). The challenge of controlling problem drinking on college campuses is also complicated by the reality that circumstances beyond the control of college administrators such as the proximity and number of bars near the campus as well as the frequency of promotions like low price specials can also shape a campus's drinking environment (Dowdall & Wechsler, 2002).

A variety of strategies have been used to attempt to ameliorate the possible harms of alcohol abuse on many college campuses. Mayhew et al. (2011) use a survey of 206 first-year undergraduate students to learn that infusing alcohol prevention messages into curricular content appears to reduce high-risk drinking behaviors. College freshmen around the United States are increasingly required to take a first-year seminar centering on college success and retention. These seminars reach all new students and alcohol abuse prevention could be a required part of the curriculum. As Talbott et al. (2008) argue, intervention efforts should be targeted in particular at freshmen males who are members of or are considering joining a fraternity. All students might be warned of the deleterious

effects alcohol abuse might have on their health or their academic performance, and learn of the risks of addiction as well as the possibility that their lives might be permanently damaged or even lost as a result of alcohol abuse. As discussed above, peer and parental influences are the strongest predictors of HED, so these seminars could emphasize the importance of choosing the right friendship network as well as the benefits of positive intimate relationships. Furthermore, given the support for the effects of negative stressors on HED in our study, these seminars might help students with general mental health issues and coping mechanisms for reducing stressors; and, as is customary in these seminars, various methods for improving academic performance could continue to be covered.

In order to promote normative socializing on campus as a way to increase prosocial peer networks, campus recreation centers may offer alcohol-free dances, music, and parties that provide students with the social settings to develop the friendships and relationships that they yearn for. Students can be persuaded that they can be socially accepted and popular even if they choose not to consume or abuse alcohol. Understanding the logic of social learning theory and understanding the tremendous power of peer groups on college students enhances the ability of administrators to design effective strategies for coping with the problems that alcohol abuse may pose for many university and college communities.

Our study findings offer other potential strategies to reduce HED on campus. First, while Neighbors et al. (2013) suggest incorporating religious or spiritual values into student interventions, such a strategy is not without possible legal and philosophical pitfalls, particularly on state university campuses. However, owing to the fact that religious students are less likely to engage in HED, universities could continue to have a welcoming attitude toward various campus religious groups. Universities can also try to increase the proportion of students living on campus. Finally, universities that increase the racial and ethnic diversity of their student bodies are likely to reduce overall HED on their campuses, due to the regularly occurring finding in the literature that non-Whites are less likely than Whites to binge drink.

Limitations

We must be cautious regarding the implications of the findings presented here in part because we lack a nationally representative sample and limited our analysis to underclassmen (freshman and sophomores). Using cross-sectional rather than longitudinal data also reduces our ability to make inferences about the effects of students' universities experiences on their drinking habits. While it would be prudent for future research on this topic to include nationally representative samples of a wide range of students at different points in their academic careers, we can still be confident in the usefulness of these findings for informing future research and policy discussions owing to our sample's ethnic and racial diversity as well as its focus on underclassmen that are beginning their collegiate careers.

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Notes

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1. Acculturation is only measured among Hispanics and Latinos so the race/ethnicity variables are not present in Model 3. Likewise because acculturation is limited to the Hispanic and Latino respondents, this variable is suppressed in Model 4.

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