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Bullying victimization among college students: Negative consequences for alcohol use

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Abstract

This study reports on the prevalence of bullying victimization at school and work among college freshmen, and the relationships between victimization and changes in alcohol consumption and alcohol problems. Web survey data at two points in time from a sample of 2118 freshmen from eight colleges and universities in the Midwestern United States indicated that 43% of students experienced bullying at school, and 33% of students experienced bullying at work. Bullying, particularly at school, consistently predicted alcohol consumption and problematic drinking, controlling for baseline drinking and other school and work stressors.

Keywords

bullying; stress; alcohol use; problem drinking; college students

Introduction

In the past 15 years, alcohol-related risk-taking behaviors such as binge drinking among college-age young adults have remained at a consistently high level, with about 41-42% of 18-25 year olds reporting binge drinking in the past month[1-8], and heavy drinking among underage college students has become a major public health concern. An estimated 31% of US college students meet diagnostic criteria for alcohol abuse[9]. According to 2011 national data, 64% of college students reported drinking alcohol and 40% reported being drunk in the past 30 days[10].

Social factors play a major role in college student drinking, and both school and worksites are social environments that may significantly influence young adult behavior[11]. College students are more likely to engage in heavy episodic drinking than their counterparts who aren't in college[12,13], even controlling for age, race, gender, and genetic predisposition[14,15]. This strongly implicates the college environment as a risk factor for heavy drinking, beyond demographic and lifestyle factors. Many students also work at some point during college. The Department of Labor estimates that 41% of full time and 75% of part time college students age 16-24 worked in October 2011[16]. While employment has been linked to increased alcohol use in youth[17,18], the influence of employment experiences on college students' drinking has been neglected.

Youth are particularly susceptible to social influences (Barling & Kelloway, 1999, p. 5) and "many developmental trajectories become established and increasingly difficult to

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alter" [19, pp. 110-111]. Thus, the quality of new social interactions at school and in the workplace is important, particularly in terms of the extent to which they may influence developmental trajectories of risky behaviors such as substance use. One social factor of a harmful nature that can occur either at school or at work, and which has been linked to alcohol use in both adolescent and adult samples, is bullying victimization. However, no research to date has examined the impact of bullying victimization on college student alcohol use. This study expands current research on bullying and on risk factors for college student drinking by a) reporting on the prevalence of bullying experiences at school and work among a sample of college freshmen, and b) examining the extent to which bullying experiences at school and work predict alcohol use outcomes, above and beyond the predictive value of other school and work stressors.

School and Workplace Bullying: Relevance for College Populations

In workplace settings, bullying has been studied under various labels (see Keashly & Jagatic[20] for a review), all of which include the core feature of negative interpersonal mistreatment that causes harm to the target[21,22]. For the purpose of this study, we use the term "bullying" to describe negative behaviors occurring at school or in the workplace that encompass verbal aggression, disrespectful or exclusionary behavior, isolation/exclusion, threats or bribes, and physical aggression, that are not obviously related to legally protected characteristics (e.g., gender, race/ethnicity, age, disability).

Because relationships are key to the developmental processes of adolescents and young adults, interpersonal stressors such as bullying may represent a particular health risk for this population. Developmental researchers have argued that "the period between adolescence and adulthood is a critical developmental transition" [23, p. 659], and that entry to college is rife with social and developmental challenges that often take place outside of established peer support networks [24,25]. Social networks in school settings tend to be recognizably hierarchical [26,27], and entry to college involves establishing oneself within a new social hierarchy. In adolescence, bullying tends to increase during periods of school transition (e.g., from elementary to middle school) and is motivated by a desire to maintain or influence social status [28-30]. Thus, bullying may be a significant interpersonal stressor for new college students as social networks and status become established, although these issues have received little research attention.

Only a handful of studies has looked at the prevalence of bullying in college settings. Chapell et al. found that 21-25% of undergraduate students in two samples reported bullying by peers[31,32], and Finn found that 10-15% of an undergraduate sample experienced some form of cyberbullying: harassment, threats, or insults via electronic communication[33]. Thus, bullying does not disappear in college, although it is less prevalent than among younger students[34,35].. However, these studies relied on fairly small convenience samples from individual schools, potentially biasing the results. Also, Chapell et al. required students to label themselves as bullied. We expect prevalence of bullying experiences in college to be higher than prior estimates when self-labeling is not required. Adult research shows that fewer people label themselves as bullied than report individual experiences that can be considered bullying, although effects on health outcomes are similar regardless of labeling[3636-38].

Regarding the workplace, studies of adolescents have mostly focused on work hours; researchers have suggested the need to address quality of employment for young people[39,40]. Young workers often find themselves as part time workers or in temporary jobs, mostly in the leisure, food service or retail industries[41], with little autonomy or job security, little social status in the workplace, and often little knowledge about what to do if one is being bullied at work. To the extent that young people's early job experiences can contribute

to self-efficacy and confidence in their ability to succeed in the role of employee[42], experiences of bullying on the job have the potential for long-term repercussions on both health and career trajectories for victims. Although no research has been done on college-age workers, existing occupational research suggests that young workers are at increased risk for bullying[43-45]. Thus, in the present study we focus on experiences of bullying both at school and in the workplace in a sample of college students. The present study improves on prior research by sampling students from multiple schools and considering effects on outcomes without requiring students to self-label as being bullied.

Bullying and Alcohol Use

Research demonstrates that bullying victimization at school is a significant predictor of alcohol and substance use among adolescents[46-48], and workplace bullying is a significant predictor of drinking behavior among adults[45,49,50]. However, the impact of bullying victimization in school and work settings on college student drinking has not been studied.

Another question is the extent to which bullying represents a more salient predictor of alcohol use outcomes, in the context of other sources of stress. Although evidence is mixed regarding whether typically-studied work stressors (e.g., overwork, lack of control) predict alcohol outcomes [51], non-sexual harassment (similar to bullying) demonstrates consistent predictive value in working adult populations above and beyond the effects of task-related job stressors[43,52] and negative life events[45]. By comparison, there is limited evidence that being bullied is associated with increased risk for substance use in adolescents or young adults[53], although this may be partially due to restricted access to alcohol in younger age groups. The present study fills gaps in existing research by examining the extent to which bullying predicts alcohol use outcomes among college students, in the context of other stressors and alcohol use prior to college entry.

Based on prior research, we hypothesize that bullying in workplace and school domains will be associated with increased alcohol consumption and problematic drinking among college students, beyond the effects of other stressors in school and work domains.

Methods

Study participants were recruited from a random sample of 9100 incoming freshmen at eight colleges and universities in the Midwestern United States. Electronic and mail survey (for students for whom schools provided us with a postal address) invitations to complete a web survey were sent out at two points in time: at the very beginning of students' first year of college in the fall of 2011 (baseline; T0) and four months later in the spring of 2012 (follow-up; T1). Students were required to be at least 18 years old in order to complete the survey. Students were sent a $25 Amazon gift certificate for completing the T0 survey and a $30 certificate for completing the T1 survey. The study was reviewed and approved by the IRB at the University of Illinois at Chicago, as well as the IRB at each school (although some schools chose to waive review and defer to the University of Illinois at Chicago IRB).

Measures

Alcohol consumption patterns are measured with a modified version of the Cahalen et al.[54] quantity-frequency-variability model. Three questions were asked, prefaced by "During the last 30 days (at both T0 and T1)...": 1) frequency: "...about how many days did you drink any type of alcoholic beverage?", 2) quantity: "...when you drank any type of alcoholic beverage, how many drinks did you usually have per day?", and 3) variability: "...what is the greatest amount of alcohol that you drank in any single day?"

Heavy drinking in the past 12 months (T0) and past 4 months (T1) was measured by two items from Wilsnack et al. [55], "About how often in the past 12 months/4 months did you drink enough to feel drunk, that is, where drinking noticeably affected your thinking, talking, and behavior?" (*drinking to intoxication*) and "About how often in the past 12 months/4 months did you have 5 or more drinks (males)/4 or more drinks (females) of any alcoholic beverage on the same occasion?" (*binge drinking*). This definition is consistent with that recommended by the National Institute on Alcohol Abuse and Alcoholism National Advisory Council's approved definition[56]. The web survey format allowed us to tailor the wording of this question to respondents' gender.

Problems due to drinking—A variety of problems with relationships (e.g., fights or arguments with friends or family members), problems at work or school (e.g., missing work or school, not able to do homework)), and tolerance or withdrawal symptoms (e.g., needing more alcohol to get the same effect, felt sick because of cutting down on drinking) were measured with the Rutgers Alcohol Problems Index (RAPI), an 23-item, unidimensional self-administered questionnaire for assessing problem drinking during adolescence [57]. Responses to each item are made on a scale from 0="never" to 4="more than 10 times" and items are summed to form a composite scale. We assessed consequences in the past 12 months at T0 and past 4 months at T1.

For all alcohol measures, we controlled for the corresponding T0 drinking variable in models predicting T1 alcohol use outcomes.

Bullying at school and work at T1 was measured with the 20-item Generalized Workplace Harassment Questionnaire (GWHQ)[50,58]. The GWHQ is comprised of four factors: covert hostility (e.g., being excluded from important meetings or events, 3 items), verbal hostility (e.g., being yelled at, talked down to, 7 items), manipulation (attempts at controlling the target's behavior, e.g., through threats or bribes, 4 items), and physical aggression (e.g., pushed, hit, kicked, 1 item). Although the GWHQ was developed for use in working samples, items and conceptual categories are consistent with school bullying surveys. Compared to measures used in student samples[31,35,59], the GWHQ provides broader coverage of specific experiences and allows more than yes/no response option format. We also added items to tap more "passive" forms of bullying, such as failing to respond to requests for help, and items to measure experiences particularly relevant to a college population, such as a) "cyberbullying" – e.g., through e-mail, text-messaging, or online sites such as Facebook or MySpace, b) being the target of pranks or practical jokes that the target did not think were funny, c) pressure from others to do something that that the student didn't really want to do. Respondents rated each experience as occurring "never," "once," or "more than once". For the purposes of prevalence estimates, we considered someone as being bullied if they indicated experiencing any item "more than once" in the past 4 months.

School stressors were measured with 8 items drawn from the Undergraduate Stress Questionnaire, an 83-item life events checklist of stressful school and non-school related events for college students, developed with input from college student samples (e.g., "had a lot of tests", "had no sleep", "had projects or research papers due"). We selected the eight items found to have the highest severity ratings (average severity score of 3.0 or above, on a scale from 1 "not at all bothered" to 4 "bothered a lot"), for inclusion in our web survey. Students indicated whether or not they experienced each of the 8 items in the past 4 months (yes=1; no=0), and a scale score was created by summing the responses. The overall USQ is associated with increased physical symptoms and decreased mood in undergraduatesCrandall et al., [60]. Because this measure is a checklist of independent events, coefficient alpha reliability is not appropriate.

Job stressors were measured by the Job Content Questionnaire[61]. **Job control** was assessed by Karasek's decision-making latitude scale, which is composed of two highly-correlated components: Decision Authority, which assesses the degree to which one perceives that s/he has the freedom to make decisions, a choice in how to perform work and has a say in the how the job is done, and Skill Discretion, which measures the extent to which the job involves learning new things, developing skills, variety, creativity and lack of repetitiveness. **Job demands** involve the experience of psychological workload, including feelings of having excessive work, conflicting demands and not having time to do work. All items are assessed on a scale from 1 “strongly disagree” to 4 “strongly agree”.

Demographics—We measured and controlled for gender and race/ethnicity (dummy coded into 4 categories with “white” as the comparison group) in all analyses.

Results

At T0, 2984 participants completed the survey, for a response rate of 33%. At T1, 2118 participants completed at least part of the survey, a 72% retention rate. Of the cases which completed both surveys, 66% of students reported having drunk at least one drink containing alcohol in their lifetime and could therefore be included in the analyses involving alcohol outcomes. Forty-three percent of students reported on work harassment measures, as only a portion of students had reported working for pay in the past four months. The sample was 58% female and 54% white (one-tailed z tests that these proportions were greater than the proportions of females and whites in the population, 54% and 49%, respectively, were not significant at the $p<.05$ level). Given that we have a small number of clusters (i.e., schools), and intraclass correlations of study variables were very small, model parameters are negligibly affected by ignoring the clustering factor[62]. Thus, we combined samples from individual schools in our analyses.

Means, correlations, and Cronbach's alpha reliabilities (where appropriate) of study variables are displayed in Table 1. All scales demonstrated acceptable reliability, with the exception of the decision authority scale of the job stress measure, which was .56. Results involving this scale should be interpreted with caution.

Prevalence of Bullying

Because bullying by definition refers to mistreatment that is more than a one-time event, to examine prevalence of bullying at school and work, we counted students as “bullied” if they indicated experiencing any of the items on the questionnaire “more than once” in the past 4 months. At T1, 43% of students reported experiences that could be considered bullying at school. At work, bullying was experienced by 33% of students. Without that condition, 70% of students reported at least one occurrence of school bullying, and 59% of students reported at least one occurrence of work bullying.

Correlations among Study Variables

Work and school bullying were highly positively correlated, demonstrating that experiencing bullying in one setting often co-occurred with experiencing bullying in the other. Gender was not correlated with work or school bullying at T1. Hispanic/Latino students reported lower rates of school bullying when compared to other racial groups.

For students who had worked for pay during the study period and completed the measures of work stress at T1, skill discretion and decision authority were negatively correlated with experiencing work harassment, whereas psychological demands in the workplace were highly positively correlated with students experiencing workplace or school bullying. School

stress was highly positively correlated with school bullying and was also correlated with workplace bullying. Female gender was associated with higher levels of school stress and less decision authority at work.

Work and school bullying were generally associated with all of the alcohol outcomes measured, demonstrating positive correlations with the number of days alcohol was consumed, the greatest number of drinks consumed in one day, the number of alcoholic drinks the student usually had per day, how often the student drank to intoxication, frequency of binge drinking, and how often the student encountered problems due to their drinking. The one exception was that the number of days alcohol was consumed was not correlated with school bullying at T1. All of the alcohol outcomes were highly positively correlated with each other.

Race and gender were also often associated with alcohol outcomes, with minority students generally exhibiting lower scores on drinking measures, and men generally exhibiting higher scores on alcohol measures, consistent with prior research.

In other bivariate analyses, we used t-tests to compare mean alcohol outcomes and chi-square analyses to compare prevalence of positive (“once or more”) responses to alcohol items for students who were bullied at school or at work to students who didn't experience bullying. As indicated in Table 2, Results indicate that those who were bullied at work or at school at T1 exhibited significantly higher ($p \leq .01$) mean number of days drank alcohol, average number of drinks consumed per day, greatest number of drinks per day, and composite RAPI score for problems due to drinking, compared to those who were not bullied. Similarly, chi-square analyses indicated that those who were bullied at work or school reported significantly higher prevalences of drinking to intoxication and binge drinking compared to those who were not bullied. For example, a disturbingly high 85.1% of students who were bullied at work reported binge drinking in the past 4 months, compared to 76.1% of those not bullied at work. Percentages were slightly lower for those bullied at school. Those bullied at school responded affirmatively to 18 out of 23 of the RAPI items at significantly higher rates than those who were not bullied at school. For example, those bullied at school were more likely to report that they neglected their responsibilities because of drinking (35.2% vs. 21.0% of non-bullied); felt that they had a problem with alcohol (9.4% vs. 5.6% of non-bullied); had a fight or an argument with a friend because of drinking (29.7% vs. 18.3% of non-bullied); needed more alcohol than they used to, to achieve the same effect (21.3% vs. 12.9% of non-bullied); or noticed a change in their personality (25.6% vs. 14.5% of non-bullied). Likewise, those bullied at work responded affirmatively to 20 out of 23 RAPI items at significantly higher rates than those who weren't bullied at work, including having relatives avoid them because of their drinking (7.3% vs. 2.2% of non-bullied); having withdrawal symptoms (8.7% vs. 4.1% of non-bullied); passing out or fainting suddenly because of drinking (13.3% vs. 7.4% of non-bullied); and getting into fights or acting badly because of drinking (25.2% vs. 14.1% of non-bullied).

Hypothesis Test: Hierarchical Linear Regression Analyses

To test the hypothesis that school and work bullying would predict higher scores on alcohol measures and explain additional variance beyond demographics, prior drinking, and other measures of stress, hierarchical linear regression analyses were used, with variables being entered in three steps, and each alcohol measure being tested in a separate equation. Results are presented in Tables 3, 4 and 5.

In the first step, the control variables gender, race, and T0 score on the corresponding T1 alcohol measure were entered. The Step 1 control variables accounted for 15 % to 33% of variability in outcome, depending on the model. Gender contributed significantly to all of

the alcohol outcome models, with men exhibiting significantly higher scores on all alcohol outcomes, as noted earlier. Minority status was generally associated with lower scores on alcohol outcomes, with the exception that Black students were more likely to report problems due to drinking which had a significant effect in the model assessing the effects of school bullying.

In Step 2, the scores for work stress (skill discretion, decision authority, psychological demands) in the work bullying models and school stress in the school bullying models were entered. Generally, the work stress scores did not account for any additional variability in the work bullying models. The model predicting problems related to drinking alcohol was the one exception, in which work stressors accounted for 1% of the variability. School stress contributed a bit more towards the prediction of alcohol outcomes, and was significantly positively associated with drinking in the models predicting the number of days alcohol was consumed, the greatest number of alcoholic drinks consumed in a day, binge drinking, and problems due to drinking.

In Step 3, the scores for work or school bullying were entered into the appropriate models. School bullying significantly positively predicted all alcohol outcomes, accounting for 1% to 4% of variability beyond the effects of other variables, depending on the model. Workplace bullying significantly predicted higher number of days alcohol was consumed, average number of drinks consumed per day, and more problems due to drinking alcohol. Workplace bullying accounted for 1% to 2% of the variability in alcohol consumption and problem drinking scores, beyond the effects of the other variables.

In sum, bullying at school positively predicted all of the alcohol variables. Bullying at work positively predicted alcohol consumption variables and problems due to drinking. Overall, bullying experiences at T1, particularly at school, were consistent predictors of some T1 alcohol consumption variables as well as problems due to drinking, controlling for other sources of stress, demographics, and outcome variables at T0, in support of our hypothesis.

Discussion

Bullying among college students is a neglected public health issue. Although awareness is increasing as a result of media attention to tragic deaths related to bullying or harassment, such as the suicide of Tyler Clementi at Rutgers University, bullying among college students is an understudied problem. We found that bullying was experienced at school more often than at work among freshman college students. Bullying at school and work each were consistently associated with higher levels of alcohol consumption, intoxication, binge drinking, and problems with relationships and fulfilling work or school responsibilities. School and work bullying were also each associated with one or more indicators of physical tolerance or withdrawal from alcohol. Bullying at school and work significantly predicted greater alcohol consumption and problems beyond the effects of other work and school stressors, although school bullying was a more consistent predictor of alcohol variables compared to workplace bullying in this sample. Perhaps this is a function of the extent to which bullying is a surprise to victims in college versus work environments. Stories of “the boss from hell” are rampant in U.S. working culture, whereas bullying in the college environment seems to have flown under our collective radar. Students exposed to bullying in college may be more likely to be upset by bullying that comes as a surprise, whereas those exposed to bullying at work may be able to shrug it off as part of the working experience. Alternatively, bullying in college might be occurring in drinking contexts, where students feel pressure to drink to fit in or to avoid being bullied for abstaining, whereas substance use is prohibited on the job. Clearly, more attention to the issue of bullying in the college

environment is needed, as is exploration of mechanisms through which bullying exposure is translated to drinking behavior.

This study adds to the literature on the health effects of bullying by extending it to a college population. Because of the prevalence of drinking in this population, it is particularly important to identify social factors that may contribute to the use and abuse of alcohol. The initiation of college represents an important developmental stage of life in which problematic drinking patterns may be established, and sometimes maintained at subsequent life stages. Thus, social factors in the college environment, such as bullying, that influence problematic drinking constitute important foci for intervention and prevention efforts. Consistent with research on adolescent and working adult samples, bullying victimization was found to be significantly associated with alcohol use outcomes, including problems stemming from drinking. This suggests that bullying victimization is one social factor that may present a life-long risk factor for alcohol use, and possibly the development of substance abuse and dependence.

Limitations and Future Research

The study had several limitations. First, all measures were self-report, possibly resulting in mono-method bias. This issue was slightly ameliorated by the fact that we were able to control for drinking behavior prior to college, which helps increase our confidence that bullying is associated with increased use of alcohol rather than the reverse. However, longitudinal research to examine potential reciprocal effects of these variables is needed.

Another potential limitation is the less-than-ideal initial response rate, although this rate is fairly typical of web survey research with college samples[63,64]. It should also be noted that a portion of students to whom invitations were mailed would have been ineligible for the survey due to being younger than age 18, which likely negatively impacted our initial response rate (we did not have age data on students in the preliminary sample).

A third limitation was that we were unable to examine the extent to which personal characteristics, such as family history of alcoholism and personality, might have influenced both the propensity of college students to experience social interactions as constituting bullying and vulnerability to problematic drinking. For example, research in an adult workplace sample[65] examined the extent to which neuroticism and narcissism influenced the propensity to view social interactions as harassment or bullying, and found that the relationships between harassment/bullying and alcohol outcomes remained when these personality characteristics were entered as control variables in the analyses. Replicating these findings in a college student sample would further strengthen the argument that the relationship between bullying and deleterious drinking is not merely an artifact of personality or other personal characteristics.

Regarding the importance of assessing family history of alcoholism, research indicates that family history of alcoholism increases the propensity of adolescents and young adults to develop alcohol problems[66,67], the likelihood that an individual will be exposed to abuse or violence[68,69], and the likelihood that an individual will exhibit violent behavior themselves[68]. Our data indicate that those who are bullied are both more likely to drink and to experience interpersonal problems (e.g., getting into fights) as a result of drinking (Table 2), further supporting the need for future research to examine perpetration of bullying as well as victimization. Additionally, there is evidence that children of alcoholics exhibit certain personality characteristics, particularly impulsivity[70], that may increase the likelihood of developing problems with addiction and with bullying perpetration. Because impulsivity is implicated in the development of a variety of addictive behaviors[71] (e.g., drug use, binge eating, gambling), future research in this area would also benefit from expanding

the domain of outcome variables to addictive behaviors beyond alcohol use. Other research shows that those who experience childhood abuse are also more likely to experience bullying at school[72], begging the question of whether family history of alcoholism may ultimately increase risk for bullying victimization and/or perpetration via risk for childhood abuse. To the extent that alcohol use decreases inhibitions or causes personality changes such as increased anger or aggression[73,74], those who drink in response to bullying may also be more likely to become perpetrators in the future. Clearly, future research would benefit from incorporating validated measures of personality and family history of alcoholism, assessing history of child abuse, and assessing bullying perpetration in addition to victimization. Future research in this area should also examine the interplay between these variables using prospective research strategies to tease out these complex relationships over time. Greater insight into these complexities might be gained via the use of in-depth, qualitative research strategies with college students who are targets of bullying, and also those who have perpetrated bullying against others. Research of this type would help clarify the role of alcohol and other addictive behaviors both as a response to and a facilitator of bullying, and would be invaluable for determining whether there are other personal or contextual factors at play that have not been addressed by the research in this area.

Several additional avenues for future research are imperative. First, longitudinal research is needed to demonstrate the extent to which the findings in this paper reflecting bullying-related drinking during the early stage of the college experience are maintained, exacerbated or diminished during the remaining years of college. Research following individuals over the life course could further extend these findings by examining the extent to which bullying victimization continues from one setting to the next – e.g., middle school to high school, high school to college, college to the adult workforce – and to examine how bullying affects trajectories of alcohol and substance use over time. Indeed, research over a 10-year time period in an adult sample indicates that trajectories of chronic bullying are associated with the development of problem drinking[75].

Additional research is also needed to assess help- or treatment-seeking in response to being bullied at college. To our knowledge, there is no published research on whether and how college counseling centers deal with the issue of bullying on campus, the extent to which students seek help for this problem, and the degree to which student distress and/or addictive behaviors in response to bullying might be reduced by treatment at counseling centers. Of course students may also seek help via their primary care physician, mental health practitioner, or self-help groups such as Alcoholics Anonymous, and bypass school counseling centers. Future research should assess the variety of ways targets of bullying seek help for emotional distress and for treatment of problems with addiction, and which treatment sources and modalities are most successful in this population.

Finally, future research should also attempt to study these issues in a national sample of schools, and examine whether bullying rates and effects on deleterious drinking outcomes differ by region of the country, type of school (e.g., public versus private, two-year versus four-year), living arrangements of students (e.g., off-campus versus on-campus), and fraternity or sorority membership. For example, bullying might be a particularly harmful issue for new freshmen students who are living away from home for the first time, and don't have the safety of a family home to which to retreat. Also, freshmen who join sororities or fraternities are often subjected to hazing, which usually involves some sort of ritual humiliation, as well as explicit or implicit expectations regarding alcohol consumption[76], which places bullying conducted in the context of sororities or fraternities at particular risk of association with problematic alcohol use.

Conclusion

In conclusion, this study indicates that bullying in both the college and workplace environments represent significant risk factors for drinking among college students, above and beyond typical sources of stress. Prevention and intervention efforts to raise awareness of this issue on campus and development of zero tolerance policies for these types of behaviors can help ensure a positive, healthier campus climate, and reduce some of the triggers for problematic drinking among college students. Also, there have been major legal efforts recently in many states to create and pass legislation which prohibits bullying in the workplace, similar to laws prohibiting sexual harassment[77]. Similar legislation prohibiting bullying in college settings might constitute another means to alter the social dynamics that influence deleterious drinking behaviors in these environments.

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Table 1

Correlations and descriptive statistics for study variables.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Work Bullying	1.19	.28	.89																					
2. School Bullying	1.26	.33	**.40**	.90																				
3. Work Stress: Skill Discretion	2.42	.55	**−.11**	.01	.75																			
4. Work Stress: Decision Authority	2.54	.60	**−.12**	−.02	**.57**	.56																		
5. Work Stress: Psych Demands	2.40	.48	**.30**	**.11**	**.14**	.02	.64																	
6. School Stress	.74	.19	**.10**	**.20**	**.07**	−.01	**.07**	-																
7. # Days Drank Alcohol	4.93	4.95	**.19**	**.20**	.06	.04	**.12**	**.10**	-															
8. # Days Drank Alcohol-T0	3.95	5.96	**.15**	.05	.03	.03	**.07**	**.06**	**.36**	-														
9. Greatest # Drinks in a Day	4.79	2.19	**.10**	**.16**	−.02	−.03	**.09**	**.11**	**.43**	**.22**	-													
10. Greatest # Drinks in a Day-T0	4.38	2.28	**.13**	**.08**	−.06	.01	**.05**	**.09**	**.31**	**.27**	**.50**	-												
11. Average # Drinks per Day	3.90	1.99	**.11**	**.14**	−.06	−.05	.05	.06	**.33**	**.20**	**.78**	**.44**	-											
12. Average # Drinks per Day-T0	3.28	2.03	**.13**	**.08**	**−.10**	−.04	.04	**.09**	**.25**	**.19**	**.43**	**.75**	**.46**	-										
13. Intoxication	1.56	1.13	**.12**	**.16**	−.04	−.06	.05	**.09**	**.56**	**.31**	**.62**	**.43**	**.57**	**.39**	-									
14. Intoxication-T0	1.22	1.54	**.21**	**.11**	−.04	−.01	.06	**.11**	**.45**	**.50**	**.43**	**.62**	**.39**	**.58**	**.52**	-								
15. Binge Drinking	1.58	1.12	**.16**	**.18**	−.04	−.06	**.08**	**.09**	**.57**	**.31**	**.69**	**.43**	**.67**	**.40**	**.75**	**.50**	-							
16. Binge Drinking-T0	1.30	1.57	**.20**	**.08**	−.01	.01	**.09**	**.09**	**.41**	**.50**	**.41**	**.60**	**.39**	**.60**	**.47**	**.83**	**.51**	-						
17. Problems Due to Drinking	.21	.34	**.29**	**.30**	.00	−.03	**.14**	**.13**	**.37**	**.22**	**.28**	**.21**	**.26**	**.21**	**.41**	**.32**	**.41**	**.31**	.91					
18. Problems Due to Drinking-T0	.15	.29	**.28**	**.22**	−.06	.00	.07	**.13**	**.30**	**.35**	**.23**	**.29**	**.23**	**.30**	**.31**	**.52**	**.32**	**.48**	**.52**	.91				
19. Gender	1.58	.50	.05	−.02	−.03	**−.09**	−.02	**.10**	**−.11**	**−.05**	**−.23**	**−.20**	**−.24**	**−.23**	**−.10**	**−.06**	**−.11**	**−.04**	**−.06**	.01	-			
20. Race: Black	.09	.28	−.02	.00	.00	−.03	.00	.01	−.05	−.02	**−.17**	**−.12**	**−.13**	**−.09**	**−.08**	**−.10**	**−.12**	**−.09**	.01	−.02	**.07**	-		
21. Race: Latino	.13	.34	.06	**−.07**	.02	.04	.05	**−.05**	−.04	−.02	**−.08**	−.04	−.04	−.03	**−.10**	**−.08**	−.04	−.02	.01	.02	.02	**−.12**	-	
22. Race: Asian	.17	.37	.01	−.01	−.03	.03	.00	**−.05**	**−.07**	−.02	**−.10**	**−.15**	**−.08**	**−.13**	**−.12**	**−.15**	**−.10**	**−.12**	−.03	**−.04**	**−.08**	**−.14**	**−.17**	-

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
23. Race: Other	.08	.26	.02	.01	.01	−.03	.01	.00	−.02	−.01	.00	**−.06**	−.01	−.03	−.03	.00	.03	.01	−.01	.02	.02	**−.09**	**−.11**	**−.13**

Note: Bolded coefficients are significant at p ≤ .05. Variables measured at T1 unless otherwise indicated. Cronbach's alpha reliability coefficients appear in the diagonal for multi-item, non-checklist scales.

Table 2

Comparisons of means and percentages of T1 alcohol variables for bullied and non-bullied students.

	SCHOOL				WORK			
	Not Bullied	Bullied			Not Bullied	Bullied		
T1 Alcohol Variables - Continuous	**Mean (SD)**	**Mean (SD)**	***p***	**n**	**Mean (SD)**	**Mean (SD)**	***p***	**n**
Number of Days Drank Alcohol	4.18 (4.36)	5.82 (5.44)	.00	1415	4.47 (4.60)	5.80 (5.46)	.00	643
Greatest Number of Drinks in a Day	3.69 (1.92)	4.12 (2.03)	.00	1263	3.64 (1.90)	4.23 (1.99)	.00	585
Average Number of Drinks per Day	4.47 (2.21)	5.14 (2.12)	.00	1250	4.54 (2.20)	5.17 (2.04)	.00	579
Problems Due to Drinking	3.70 (6.56)	6.03 (8.71)	.00	1404	3.73 (6.70)	7.41 (9.99)	.00	639

T1 Alcohol Variables - Categorical	**%**	**%**	***p***	**n**	**%**	**%**	***p***	**n**
Drank to Intoxication	75.3	83.6	.00	1406	76.1	84.5	.01	639
Binge drinking	76.8	83.9	.00	1406	76.1	85.1	.01	640

T1 RAPI ITEMS								
Not able to do homework	20.1	26.1	.01	1395	20.1	27.2	.04	635
Got into fights; acted badly	13.8	22.0	.00	1395	14.1	25.2	.00	637
Missed out on things b/c spent too much on alcohol	8.4	14.8	.00	1396	10.3	21.1	.00	634
Went to work or school high or drunk	9.2	13.9	.01	1401	9.1	21.8	.00	638
Caused shame or embarrassment to someone else	12.5	24.0	.00	1397	12.5	28.2	.00	637
Neglected your responsibilities	21.0	35.2	.00	1397	22.5	41.1	.00	637
Relatives avoided you	2.9	4.2	.24	1393	2.2	7.3	.00	635
Needed more alcohol than you used to	12.9	21.3	.00	1399	12.7	28.2	.00	637
Tried to control your drinking	23.7	34.2	.00	1395	21.9	31.2	.01	634
Had withdrawal symptoms	4.4	6.5	.09	1399	4.1	8.7	.02	637
Noticed a change in your personality	14.5	25.6	.00	1400	15.8	30.1	.00	638
Felt that you had a problem with alcohol	5.6	9.4	.01	1395	6.2	10.1	.08	635
Missed a day of school or work	15.0	22.2	.00	1391	16.3	27.1	.00	635
Tried to cut down or quit drinking	11.2	15.2	.03	1393	11.8	18.3	.03	634
Found yourself in place couldn't remember going to	12.3	19.3	.00	1399	12.7	22.9	.00	636
Passed out or fainted suddenly	8.3	10.2	.23	1398	7.4	13.3	.02	636
Had a fight, argument with a friend	18.3	29.7	.00	1402	20.3	31.5	.00	638
Had a fight, argument with a family member	8.3	7.9	.84	1399	6.0	11.8	.01	639
Kept drinking when you promised yourself not to	10.8	15.5	.01	1401	11.0	19.5	.00	637
Felt you were going crazy	7.3	13.6	.00	1398	8.6	14.6	.03	636
Had a bad time	21.4	36.2	.00	1393	21.1	37.6	.00	631
Physically or psychologically dependent on alcohol	5.1	5.8	.55	1401	5.7	9.1	.14	638
Was told by a friend to stop or cut down drinking	7.2	10.8	.02	1399	8.4	12.3	.12	636

Note: Percentages indicate proportion of students in each bullying group reporting alcohol outcomes once or more in the past 4 months.

Table 3

Hierarchical linear regression models predicting T1 number of days drank and average number of drinks per day from demographic variables, T0 alcohol outcome, other sources of stress, and bullying at work and school: standardized regression coefficients

	Number of Days Drank Alcohol						Average Number of Drinks per Day					
	Work Bullying (n=597)			School Bullying (n=1328)			Work Bullying (n=429)			School Bullying (n=902)		
	Step1	Step2	Step3	Step1	Step2	Step3	Step1	Step2	Step3	Step1	Step2	Step3
Gender	−0.09*	−0.09*	−0.10**	−0.09***	−0.10***	−0.09***	−0.17***	−0.18***	−0.19***	−0.14***	−0.15***	−0.14***
Race - Black	−0.05	−0.05	−0.06	−0.03	−0.04	−0.03	−0.08	−0.09*	−0.09*	−0.08**	−0.08**	−0.08**
Race - Latino	−0.07	−0.08*	−0.08*	−0.08**	−0.07**	−0.06*	−0.09*	−0.09*	−0.09*	−0.04	−0.04	−0.04
Race - Asian	−0.04	−0.03	−0.04	−0.08**	−0.08**	−0.08**	−0.01	−0.01	−0.01	−0.06	−0.06	−0.06
Race - Other	0.02	0.1	0.01	−0.03	−0.03	−0.03	−0.02	−0.02	−0.01	−0.05	−0.05	−0.05
T0 Alcohol Score	0.43***	0.42***	0.40***	0.35***	0.34***	0.34***	0.39***	0.38***	0.37***	0.41***	0.40***	0.40***
Skill Discretion		0.03	0.05					0.02	0.03			
Decision authority		0.01	0.01					−0.08	−0.07			
Psych demands		0.09*	0.05					−0.01	−0.04			
School stress					0.09***	0.05					0.03	0.01
Work Bullying			0.13***						0.10*			
School Bullying						0.18***						0.09**
Change in R^2	0.21***	0.01	0.01***	0.15***	0.01***	0.03***	0.23***	0.01	0.01*	0.24***	0.00	0.01**
R^2			0.23***			0.18***			0.25***			0.25***

Note:

* p < .05

** p < .01

*** p < .001

Table 4

Hierarchical linear regression models predicting T1 greatest number of drinks per day and intoxication from demographic variables, T0 alcohol outcome, other sources of stress, and bullying at work and school: standardized regression coefficients

	Greatest Number of Drinks per Day						Intoxication					
	Work Bullying (n=424)			School Bullying (n=892)			Work Bullying (n=592)			School Bullying (n=1317)		
	Step1	Step2	Step3	Step1	Step2	Step3	Step1	Step2	Step3	Step1	Step2	Step3
Gender	−0.17***	−0.18***	−0.18***	−0.13***	−0.14***	−0.14***	−0.07*	−0.08*	−0.08*	−0.05*	−0.06*	−0.06*
Race - Black	−0.13**	−0.13***	−0.14***	−0.12***	−0.12***	−0.12***	−0.04	−0.04	−0.04	−0.04	−0.05	−0.05
Race - Latino	−0.13**	−0.13**	−0.13**	−0.08**	−0.08**	−0.07*	−0.08*	−0.08*	−0.08*	−0.08***	−0.08***	−0.07**
Race - Asian	−0.03	−0.20	−0.02	−0.09**	−0.09**	−0.09**	−0.07*	−0.07	−0.07	−0.09***	−0.09***	−0.09***
Race - Other	0.03	0.03	0.03	−0.02	−0.02	−0.03	−0.01	−0.01	−0.01	−0.05*	−0.05*	−0.06*
T0 Alcohol Score	0.47***	0.46***	0.46***	0.44***	0.44***	0.43***	0.53***	0.53***	0.53***	0.50***	0.50***	0.48***
Skill discretion		0.03	0.04					0.02	0.02			
Decision authority		−0.08	−0.08					−0.08	−0.08			
Psych demands		0.03	0.01					0.01	0.01			
School Stress					0.07*	0.05					0.04	0.02
Work Bullying			0.07						0.01			
School Bullying						0.10***						0.10***
Change in R^2	0.32***	0.01	0.00	0.29***	0.01*	0.01***	0.33***	0.01	0.00	0.29***	0.00	0.01***
R^2			0.33***			0.30***			0.33***			0.30***

Note:

* p < .05

** p < .01

*** p < .001

Table 5

Hierarchical linear regression models predicting T1 binge drinking and problems due to drinking from demographic variables, T0 alcohol outcome, other sources of stress, and bullying at work and school: standardized regression coefficients

	Binge drinking						Problems Due to Drinking					
	Work Bullying (n=593)			School Bullying (n=1317)			Work Bullying (n=596)			School Bullying (n=1321)		
	Step1	Step2	Step3	Step1	Step2	Step3	Step1	Step2	Step3	Step1	Step2	Step3
Gender	−0.12**	−0.12***	−0.12***	0.07**	−0.08***	−0.07**	−0.11**	−0.11**	−0.12***	−0.08***	−0.08***	−0.07***
Race - Black	−0.09*	−0.09**	−0.10**	−0.08**	−0.08**	−0.08***	0.04	0.04	0.03	0.05*	0.05*	0.05*
Race - Latino	−0.08*	−0.08*	−0.08*	−0.06*	−0.06*	−0.05*	0.03	0.02	0.02	0.01	0.02	0.03
Race - Asian	−0.06	−0.05	−0.06	−0.08***	−0.08***	−0.08***	0.02	0.02	0.02	−0.02	−0.02	−0.02
Race - Other	0.03	0.02	0.02	0.01	0.01	0.01	0.00	−0.01	−0.01	−0.01	−0.01	−0.01
T0 Alcohol Score	0.50***	0.50***	0.50***	0.50***	0.48***	0.47***	0.47***	0.47***	0.43***	0.53***	0.51***	0.48***
Skill discretion		0.03	0.03					0.05	0.07			
Decision authority		−0.11*	−0.10*					−0.09	−0.08			
Psych demands		0.01	0.00					0.08*	0.04			
School Stress					0.06*	0.03					0.08***	0.04
Work Bullying			0.05						0.15***			
School Bullying						0.14***						0.21***
Change in R^2	0.30***	0.01	0.00	0.27***	0.01*	0.02***	0.24***	0.01*	0.02***	0.28***	0.08***	0.04***
R^2			0.31***			0.30***			0.27***			0.33***

Note:

*p < .05

**p < .01

***p < .001