Giving Means Receiving: The Protective Effect of Social Capital on Binge Drinking on College Campuses

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A B S T R A C T

Objectives. We tested whether higher levels of social capital on college campuses protected against individual risks of binge drinking.

Methods. We used a nationally representative survey of 17 592 young people enrolled at 140 4-year colleges. Social capital was operationalized as individuals' average time committed to volunteering in the past month aggregated to the campus level.

Results. In multivariate analyses controlling for individual volunteering, sociodemographics, and several college characteristics, individuals from campuses with higher-than-average levels of social capital had a 26% lower individual risk for binge drinking ($P<.001$) than their peers at other schools.

Conclusions. Social capital may play an important role in preventing binge drinking in the college setting. (*Am J Public Health.* 2000;90:1936–1939)

Binge drinking among adolescents and young adults in college is a prevalent problem affecting upward of two fifths of the college student population.[1] Public and private agencies are now supporting efforts to reduce it and related harms.[2] Newer efforts include social-ecologic interventions to change individual and environmental factors,[3,4] reflecting theories that individual and community characteristics shape youth alcohol abuse.[5–7] One such community factor may be social capital.

Social capital is a contextual characteristic describing patterns of civic engagement, trust, and mutual obligation among persons.[8] Recent attention to it has been spurred by the work of Coleman in sociology,[9,10] Putnam in political science,[11–13] and Kawachi and colleagues in public health.[14] The latter, using aggregate rates of participation in volunteer associations and survey measures of social trust and reciprocity as measures of social capital, found that state-level social capital varied with all-cause mortality,[14] violent crime,[15] and self-rated health.[16] Others have found that juvenile delinquency and violent crime varied with differences in neighborhood collective efficacy (which subsumes concepts of social capital).[17,18]

In this study, we sought to examine campus-level patterns of participation in voluntary activities (an indicator of social capital) in relation to binge drinking in college. Campuses with high levels of social capital may provide the patterns of interconnectedness and mutual obligation required for collective regulation of deviancy in a group. Although social capital may have little effect on (or even encourage) light drinking, it may protect against binge and problem drinking.

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Methods

Sample

We used cross-sectional data from the Harvard School of Public Health 1993 College Alcohol Study, an anonymous, mailed survey of randomly selected young adults aged 18 to 26 years (n=17 592; 69% individual response rate). The sample of 140 surveyed institutions is representative of 4-year colleges nationally (72% institutional response rate). Survey methods have been published elsewhere.[19]

Measures

We defined binge drinking as consumption of 5 or more drinks per drinking occasion (4 for women) at least once in the 2 weeks before the survey.[20,21] Abstinence was defined as consumption of no alcohol ever or during the past year. Typical light drinking was defined as consumption of usually 1 or 2 drinks per drinking occasion in the past month. Analyses of predictors of binge and light drinking were conducted among respondents who drank (85%).

We operationalized social capital as individuals' average daily time volunteering in the past 30 days aggregated to the campus level. Respondents could indicate an average of 0 to 8 hours or more per day on volunteer activities, in hourly increments. Use of an aggregated individual-level variable as a contextual measure is common where no independent measure exists.[22] Using engagement in voluntary activities as a measure of social capital has precedent[14] and reflects the construct's core features—its "public good" element and expression of commitment to the group or collective.[8]

Data Analysis

We used logistic regression in the Statistical Analysis Software (SAS) program[23] to estimate social capital's effect on a dichotomously coded variable for binge drinking. Along with age, sex, race, and a measure of parents' educational attainment (a proxy for socioeconomic status) that may influence volunteering, we entered individual volunteering alone and then together with social capital. We then added fraternity or sorority membership, as well as the campus's geographic region and whether the school was public or private. The latter 2 variables were included to address the possibility of other contextual variables (i.e., regional differences in drinking, social investment in a campus) being confounded with social capital. We report findings for logistic models using the SAS generalized estimating equation procedure that takes into account the potential for individual outcomes to cluster by campus.[24,25]

Analyses were conducted on social capital in both continuously and dichotomized (mean split) forms. All modeling sequences were rerun on individuals from a restricted group of institutions (n=136) to determine the impact on the analyses of removing 4 schools with very high levels of social capital. Findings are reported for the dichotomized measure of social capital on the full school sample (additional analyses are available from the authors upon request).

Results

As reported elsewhere,[19] 43.6% of all respondents reported binge drinking. Binge drinkers were more likely to be male, to be younger than 24 years, to have college-educated parents, and to identify themselves as White. More binge drinkers than nonbinge drinkers reported spending no time volunteering in the past 30 days (81.5% vs 77.2%; χ^2_8 = 51.4; $P<.001$). For both groups, volunteering for any amount of time was reported by only about one fifth to one quarter of all respondents. The average daily time committed to volunteering for all respondents was about 0.37 hour, or 22 minutes. The range of time committed to volunteering by individuals varied from 0 to 8 hours per day (SD=1.01). The vast majority of survey respondents (90%) reported committing an hour or less daily to volunteer activities in the past 30 days.

At the campus level, the aggregate levels of volunteerism ranged from 0.11 hour (about 7 minutes) to 1.16 hours (about 70 minutes), with a mean of 0.37 hour, or about 22 minutes (SD=0.16). Individual volunteerism was minimally correlated with campus levels of volunteerism (our measure of social capital) (Pearson correlation coefficient=0.15; $P<.0001$).

As shown in Table 1, individual volunteerism was associated with a 5% reduction in risk for binge drinking (odds ratio [OR]=0.95; 95% confidence interval [CI]=0.92, 0.98; $P<.01$) after adjustment for age, sex, race, and parents' education (Model 1). When campus-level volunteerism was added, we found that students at campuses with high levels of social capital were 26% less likely to binge drink than were their peers at campuses with low levels of social capital (OR=0.74; 95% CI=0.64, 0.86; $P<.001$) (Model 2). Findings were virtually unchanged after we entered a variable for fraternity or sorority membership (Model 3), a potential confounder because of fraternity and sorority members' independent risks for binge drinking[26] and because fraternities and sororities often require members to volunteer for or commit to service programs. To check whether other community characteristics reflecting regional differences in drinking patterns and levels of social investment in a campus were confounders, we entered last into the model covariates describing campus geographic region and public or private status (Model 4). Findings were again unchanged. All results were essentially unchanged when we reran the models after removing the 4 outlier schools from the sample (data not shown but available from the authors on request).

As a final test of our hypothesis that social capital would exert a protective effect on binge drinking—a measure of deviance—but not on light drinking, we ran the final model against a dependent variable describing typically light consumption (Model 5). As predicted, social capital was associated with 32% greater likelihood of typically consuming 1 or 2 drinks, compared with 3 or more drinks, when drinking in the past month (OR=1.32; 95% CI=1.14, 1.53; $P<.001$).

Discussion

To our knowledge, this is the first report of social capital's protective effect against binge drinking. This effect exceeds that of individual volunteering and persists in multilevel analyses adjusting for potential confounders. The protective effect of social capital was seen in the context of deviant measures of alcohol consumption only. Consistent with theory, social capital was positively correlated with a low-risk style of drinking. The protective effect of social capital might reflect the effect of norms and social controls on curtailing deviant and dangerous consumption in communities where individuals are more bonded to each other and the group. Alternatively, the use of alcohol may be higher in communities with high stress and low levels of social capital.

The findings encourage us to include as prevention programs initiatives aiming to change the social fabric of a college community.[27] The findings also underscore the importance of looking more deeply at how context determines drinking risks and thus may add to the national debate on preventing high-risk drinking. This debate may be polarizing around norm-shifting and supply-reducing approaches. A broader, more integrated view may be needed.

While the findings are promising, several limitations need to be noted. First, although social capital and individual volunteerism were only weakly correlated, the former was derived from the latter. Future work might explore independent measures of social capital. Second, inferences on the temporal ordering of the observed effect are constrained by the cross-sectional nature of these data. Last, we cannot generalize from this work to youth in noncollege settings. Nevertheless, use of a large representative institutional sample and a large random

TABLE 1—Findings From Multivariate Multilevel Models of Social Capital Predicting Binge Drinking, and 1 Model Predicting Light Drinking, Among Respondents at 140 Colleges

Model and Covariates	OR[a]	95% CI	Log likelihood
Model 1: binge drinking			−9774.4
Individual volunteerism (h/wk)	0.95**	0.92, 0.98	
Age (<24 y)	2.02	1.81, 2.24	
Sex (male)	1.6	1.49, 1.71	
Race (White)	2.18	1.95, 2.44	
Parents' education (either/both college graduate)	1.26	1.18, 1.35	
Model 2: binge drinking			−9416.14
Individual volunteerism (h/wk)	0.96**	0.93. 0.99	
Age (<24 y)	2.04	1.83, 2.27	
Sex (male)	1.62	1.51, 1.73	
Race (White)	2.16	1.93, 2.42	
Parents' education (either/both college graduate)	1.26	1.17, 1.35	
Social capital (>mean)	0.74	0.64, 0.86	
Model 3: binge drinking			−9220.86
Individual volunteerism (h/wk)	0.94	0.91, 0.97	
Age (<24 y)	1.9	1.70, 2.13	
Sex (male)	1.62	1.51, 1.74	
Race (White)	2.09	1.86, 2.36	
Parents' education (either/both college graduate)	1.22	1.13, 1.31	
Social capital (>mean)	0.76	0.65, 0.88	
Fraternity or sorority membership (yes/no)	2.48	2.20, 2.80	
Model 4: binge drinking			−9192.35
Individual volunteerism (h/wk)	0.94	0.91, 0.97	
Age (<24 y)	1.9	1.69, 2.12	
Sex (male)	1.63	1.52, 1.75	
Race (White)	2.1	1.87, 2.38	
Parents' education (either/both college graduate)	1.22	1.14, 1.31	
Social capital (>mean)	0.75	0.65, 0.86	
Fraternity or sorority membership (yes/no)	2.49	2.20, 2.82	
Public (vs private) institution	1.01+	0.85, 1.21	
Geographic region (Northeast vs other)	0.87	0.81, 0.93	
Model 5: light drinking			−6978.01
Individual volunteerism (h/wk)	1.08**	1.03, 1.13	
Age (<24 y)	0.42	0.37, 0.47	
Sex (male)	0.54	0.51, 0.59	
Race (White)	0.69	0.60, 0.78	
Parents' education (either/both college graduate)	0.92+	0.85, 1.01	
Social capital (>mean)	1.32	1.14, 1.53	
Fraternity or sorority membership (yes/no)	0.59	0.53, 0.67	
Public (vs private) institution	1.00+	0.85, 1.19	
Geographic region (Northeast vs other)	1.16	1.08, 1.24	

Note. OR = odds ratio; CI = confidence interval.
[a]All covariates significant at $P < .001$ unless otherwise indicated.
*$P < .05$, ** $P < .01$, *** $P < .001$, +, not significant

sample of youth provides a strong foundation for future work. □

Contributors

E. R. Weitzman conceptualized the research, analyzed the data, interpreted the findings, and wrote the manuscript. I. Kawachi contributed to the conceptualization of the research and its main predictor variable, contributed to the interpretation of study findings, and edited the manuscript.

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References

1. Wechsler H, Dowdall GW, Maenner G, Gledhill-Hoyt L. Changes in binge drinking and related problems among American college students between 1993 and 1997. *Coll Health*. 1998;47: 57–68.
2. *We've Got a Drinking Problem: Youth and Alcohol, Creating Solutions by Changing Environments.* Chicago, Ill: Office of Alcohol and Other Drug Abuse, American Medical Association; 1998.
3. Aguirre-Molina M, Gorman DM. Community-based approaches for the prevention of alcohol, tobacco, and other drug use. *Annu Rev Public Health*. 1996;17:337–358.
4. Sallis JF, Owen N. Ecological models. In: Glanz K, Lewis FM, Rimer BK, eds. *Health Behavior and Health Education: Theory, Research, and Practice.* San Francisco, Calif: Jossey-Bass; 1996: 403–424.
5. Hawkins JD, Catalano RF, Miller JY. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychol Bull.* 1992;112:64–105.
6. Flay BR, Petraitis J. Methodological considerations in drug use prevention research: theoretical foundations. In: Leukefeld CG, Bukoski WJ, eds. *Drug Abuse Prevention Intervention Research: Methodological Issues*. Rockville, Md: National Institute on Drug Abuse; 1991:81–109. NIDA Research Monograph 107.
7. Wallack L, Corbett K. Alcohol, tobacco and marijuana use among youth: an overview of epidemiological, program and policy trends. *Health Educ Q.* 1987;14:223–249.
8. Lochner K, Kawachi I, Kennedy BP. Social capital: a guide to its measurement. *Health Place*. 1999;5:259–270.
9. Coleman JS. Social capital in the creation of human capital. *Am J Sociol*. 1988;94(suppl): S95–S120.
10. Coleman JS. *Foundations of Social Theory*. Cambridge, Mass: Harvard University Press; 1990.
11. Putnam RD. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press; 1993.
12. Putnam RD. The prosperous community: social capital and public life. *Am Prospect*. 1993;13: 35–42.
13. Putnam RD. Bowling alone: America's declining social capital. *J Democracy*. 1995;6:65–78.
14. Kawachi I, Kennedy BP, Lochner K, Prothrow-Stith D. Social capital, income inequality, and mortality. *Am J Public Health*. 1997;87: 1491–1498.
15. Kennedy BP, Kawachi I, Prothrow-Stith D, Lochner I. Social capital, income inequality, and firearm violent crime. *Soc Sci Med*. 1998;47: 7–17.
16. Kawachi I, Kennedy BP, Glass R. Social capital and self-rated health: a contextual analysis. *Am J Public Health*. 1999;89:1187–1193.
17. Sampson RJ, Raudenbush SW, Earls F. Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science*. 1997;227:918–924.
18. Kawachi I, Kennedy BP, Wilkinson RG. Crime: social disorganization and relative deprivation. *Soc Sci Med.* 1999;48:719–731.
19. Wechsler H, Davenport A, Dowdall G, Moeykens B, Castillo S. Health and behavioral consequences of binge drinking in college: a national survey of students at 140 campuses. *JAMA*. 1994;272:1672–1677.
20. Johnston LD, O'Malley PM, Bachman JG. *College Students and Young Adults*. Rockville, Md:

National Institute on Drug Abuse; 1998. *National Survey Results on Drug Use From the Monitoring the Future Study, 1975–1997*; vol 2. NIH Publication 98-4846.
21. Wechsler H, Dowdall GW, Davenport A, Rimm EB. A gender-specific measure of binge drinking among college students. *Am J Public Health.* 1995;85:982–985.
22. Buckner JC. The development of an instrument to measure neighborhood cohesion. *Am J Community Psychol.* 1988;16:771–791.
23. *SAS/STAT User's Guide, Version 6.* 4th ed. Cary, NC: SAS Institute Inc; 1994.
24. Bryk AS, Raudenbush SW. *Hierarchical Linear Models.* Newbury Park, Calif: Sage Publications; 1992.
25. Horton NJ, Lipsitz SR. Review of software to fit generalized estimating equation regression models. *Am Statistician*. 1999;53:160–169.
26. Wechsler H, Dowdall G, Davenport A, Castillo S. Correlates of college student binge drinking. *Am J Public Health*. 1995;85:921–926.
27. Spitzberg IJ, Thorndike VV. *Creating Community on College Campuses.* Albany: State University of New York Press; 1992.