Evaluating a Comprehensive Campus–Community Prevention Intervention to Reduce Alcohol-Related Problems in a College Population*

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ABSTRACT. Objective: This article evaluates Western Washington University's Neighborhoods Engaging with Students project—a comprehensive strategy to decrease disruptive off-campus parties by increasing student integration into and accountability to the neighborhoods in which they live. The intervention includes increasing the number of and publicity regarding "party emphasis patrols" and collaboration with the city to develop a regulatory mechanism to reduce repeat problematic party calls to the same address. The enforcement components are complemented by campus-based, late-night expansion programming, as well as neighborhood engagement strategies including an educational Web site designed to increase students' knowledge of and skills in living safely and legally in the community, service-learning projects in the campus-contiguous neighborhoods, and a neighborhood-based conflict-resolution program. **Method:** The evaluation comprised data from three public universities in Washington. In addition to the Western Washington University site, a second campus created an opportunity for a "natural experiment" because it adopted a very similar intervention in the same time frame, creating two intervention sites and one comparison site. Annual, Web-based student surveys in 2005 and 2006 included measures of alcohol consumption, alcohol-related problems, and student perception of alcohol control and prevention activities. **Results:** Although statistical power with three campuses was limited, results using hierarchical linear modeling showed that the prevalence of heavy episodic drinking was significantly lower at the intervention schools (odds ratio = 0.73; N = 6,150 students). **Conclusions:** The results suggest that alcohol control measures can be effective in reducing problematic drinking in college settings. These findings strongly support conducting a replication with greater power and a more rigorous design. (*J. Stud Alcohol Drugs,* Supplement No. 16: 21-27, 2009)

IN RESPONSE TO GROWING ALARM about college student drinking behavior and alcohol poisoning in particular, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) created a task force on college student drinking, which issued a landmark report in 2002 (Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002). In addition to consolidating epidemiological data to better gauge the scope and magnitude of the problem, the task force commissioned articles to identify any successful prevention interventions appearing in empirical research journals (see Journal of Studies on Alcohol, Supplement No. 14, 2002).

Among those efficacious interventions were individual and small-group brief interventions, cognitive-behavior interventions, and alcohol expectancy challenges (Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002). These were highlighted as "Tier 1" interventions. The task force also found that there had been virtually no rigorous evaluations of universal, campus-level, or community-level interventions apart from scattered reports of single-campus pretest/posttest studies. None of these interventions was of sufficient rigor for the task force to cite as evidence in support of specific universal interventions.

The need for such interventions is clear. In their current form, most of the Tier 1 interventions are labor intensive and require skilled people to conduct them (although there are promising efforts to overcome these potential barriers). More important, those interventions are most appropriate for students whose drinking is already problematic or who are at least members of subgroups who drink more heavily than the general population (see Larimer and Cronce, 2002, 2007). However, as Gruenewald and colleagues (2003) have shown using college student drinking data, alcohol-related harm is not limited to those whose drinking can be characterized as consistently heavy or risky. At the population level, light and moderate drinkers so outnumber the heaviest drinkers that, even at their lower level of individual risk, they are responsible for the majority of alcohol-related problems (see Kreitman, 1986; Weitzman and Nelson, 2004). Thus, interventions aimed at risky drinkers (i.e., indicated or selected prevention interventions) are best complemented by universal

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prevention strategies as well. The task force itself drew attention specifically to examples of community-based universal interventions that were able to reduce alcohol consumption and/or problems.

Communities Mobilizing for Change on Alcohol focused on alcohol availability to youth in seven small to midsize communities in Minnesota and Wisconsin (with another eight communities as comparison). Alcohol sales to minors were reduced in the target communities, and surveys of youth showed a decline in attempts to purchase or consume alcohol (Wagenaar et al., 1999, 2000a,b). The Massachusetts Saving Lives program (Hingson et al., 1996) targeted drunk driving and speeding through activities that included drunk driving checkpoints, speed-watch telephone hotlines, beer keg registration, media campaigns, and increased surveillance of attempts of minors to buy alcohol. The project reported that self-reported driving after drinking among those younger than age 20 dropped from 19% to 9%, the prevalence of speeding was cut by half, and alcohol-related traffic deaths were reduced 45% more in the treatment cities compared with the rest of the state.

Finally, the Community Trials Project targeted alcohol-related injury and deaths in three communities (each with a matched community for comparison). Specific components included responsible beverage service training and enforcement, increased enforcement of drunk driving laws (and public perception of that increase), enforcement of underage sales laws, reduced alcohol availability via curtailing outlet density, and mobilizing the community and its leaders in support of these interventions. Among other outcomes, the intervention reduced alcohol-involved crashes by more than 10% over the comparison communities (Holder et al., 2000).

Since the task force report was issued, a small handful of multicomponent universal college interventions has been reported in the literature, but, as summarized in an update by Toomey et al. (2007), nearly all of these efforts had very weak designs (e.g., no comparison campuses). One of the better studies was an evaluation of the American Medical Association's "A Matter of Degree" program. Weitzman and colleagues (2004) compared a comprehensive environmental community intervention comprising such strategies as reduced alcohol availability, enhanced enforcement of serving laws, and restrictions on alcohol advertising at 10 colleges with a high prevalence of heavy drinking with 32 similar campuses. Although they first found no significant reduction in drinking between the intervention and comparison campuses, a subset of five campuses that implemented the program with greater intensity did produce significantly lower rates of heavy drinking and alcohol-related negative consequences.

Clapp and colleagues (2005) evaluated a driving-under-the-influence prevention program on one campus that included enhanced enforcement via roadside checkpoints and patrols accompanied by a media advocacy campaign and a social marketing effort. Self-reported driving under the influence at that campus decreased (odds ratio = 0.55), although no change was reported among students at a comparison school.

The subject of the present study, the Neighborhoods Engaging with Students (NEST) project, is similar to several of the multicomponent community interventions just described. A combination of alcohol-control measures and an education campaign aimed at informing students of the relevant laws was used to try to meet the goal of the intervention, which was to make students more aware of community norms related to alcohol consumption and hosting responsible social gatherings (parties). The hypothesized effect of this program was that it would reduce the prevalence of heavy episodic drinking and intoxication at off-campus parties proximal to the campus. The aim here is to contribute to the small but growing body of evidence on Tier II interventions sought by the NIAAA task force.

The relative dearth of studies on whole-campus interventions can be attributed to the significant challenges for both the implementation of such programs as well as for the research designs suitable for cases in which the unit of analysis is the campus and its surrounding community. The present study evaluates the impact of a campus–community intervention using student survey data collected before and just after the intervention from multiple campuses using analyses that control for nonindependence of student data and for random campus-level effects. Although this study has its own limitations (which are discussed later), it does represent a step forward in design and contributes to a growing body of evidence that campus–community interventions can be effective in reducing alcohol-related problems among college students.

Method

Intervention

The NEST project was implemented within the existing infrastructure of the Western Washington University (WWU)–Bellingham Campus Community Coalition, established in 1999. Coalition stakeholders, work groups, and staff implemented the project's three interrelated components of enforcement, neighborhood engagement interventions, and late-night activities on campus.

The first year of the project (2004-2005) was dedicated to planning, with implementation of all major interventions taking place in the second project year. Enforcement interventions included increased party/alcohol emphasis patrols in the intervention neighborhoods and increased compliance checks at on-premise and off-premise establishments within 2 miles of the WWU campus. Enforcement was augmented by student-targeted publicity, such as advertisements in the

student newspaper, articles in the local media, and educational "Think Locally, Act Neighborly" door knockers distributed in the neighborhoods near campus.

Neighborhood engagement interventions focused on educating students regarding rights and responsibilities associated with living in the community. An educational Web site, Off Campus WWU (www.offcampuswwu.com), was developed for students preparing to move or already living off campus, and a series of "Let's Talk Forums" brought together long-term neighborhood residents, WWU students, and law enforcement personnel in facilitated dialogues regarding disruptive parties and other neighborhood issues.

Education was supplemented with interventions to integrate students into neighborhood organizations and activities. Some WWU faculty agreed to expand the number of courses that incorporated neighborhood-based, service-learning projects. The Neighborhood Service Alternative Project required students from intervention neighborhoods who received minor-in-possession-of-alcohol citations to complete community service in those neighborhoods. Finally, a Neighborhood Mediation Program was intended to increase the capacity to resolve neighborhood conflicts involving students. Although this initiative trained 80 students and nonstudents in conflict management and mediation, it was not possible to sustain it.

Finally, LateNight@WWU, the initiative to increase late-night programming on campus, was focused on underage, especially first-year, students. Multiple campus departments and programs collaborated to plan, implement, promote, and evaluate the programs, resulting in 12 such events.

As the evaluation was being planned, two other public university campuses in Washington were recruited as comparison sites. As the study got under way, one of the sites succeeded in obtaining funds for a campus–community intervention very similar to that of the WWU intervention (meetings were held among prevention staff at the two campuses to facilitate this). Although there were differences, the second campus also adopted the same enforcement strategy and also focused on alcohol sales (in partnership with the local hospitality industry). Enforcement operations were also aimed at social hosts who made alcohol available to minors (e.g., at parties). As at WWU, there was an education campaign on good neighbor relations targeted in neighborhoods where there had been conflicts between students and other residents. The second campus intervention did not include late-night activities, however, nor did it involve service-learning courses or mediation programs. However, the number of WWU students involved in the courses and mediation was very small, making it unlikely that they would represent a significant difference between campuses. Rather than drop this second campus from the evaluation, we elected to retain it and treat it as a second intervention site, as a "natural experiment."

Student survey

Simple random samples of 2,500 undergraduate students per campus were selected for participation in each of the fall 2005 and fall 2006 Web surveys. Each year involved an independent, cross-sectional sample from each campus. With protocols approved by internal review boards from each campus, a prenotification letter with a cashable $10 check was first sent via U.S. mail to inform each sampled student about the study. The survey was thus confidential but not anonymous. An email invitation followed with a URL that each student could click on to go to a Web site that hosted the survey. Two email reminders were sent to students who had not completed the online survey 3-7 days after the first email contact. On average, the questionnaire took approximately 25 minutes to complete.

Response rates and sample weights

The overall survey response rates were 45.6% in 2005 and 42.4% in 2006. Overall survey completion rates were 42.9% in 2005 and 39.1% in 2006. Students who completed more than the first two pages (screens) of the questionnaire were retained in the study; there were relatively few partial responders. Survey response rates were lower for the comparison school relative to combined NEST intervention schools (e.g., 43.4% vs 46.6% response rate in 2005; 35% vs 46.1% response rate in 2006). The demographic makeup of survey respondents (see Table 1) differed from that of the general student population at each campus because women and whites were overrepresented in the sample of respondents. Sample weights were developed to adjust for these differential response rates by using campus population/respondent sample ratios for gender and race for each survey year. These sample weights were used for all analyses.

Survey measures

Alcohol use and heavy drinking. At the beginning of the survey, the following alcoholic drink definition was provided: "For all questions, one drink equals: 12 oz. of beer (8 oz. of Canadian, malt liquor, or ice beers or 10 oz. of microbrew), 10 oz. of wine cooler, 4 oz. of wine, 1 cocktail with 1 oz. of 100 proof liquor or 1¼ oz. of 80 proof liquor." Students were asked to report their typical alcohol-use pattern (never tried alcohol, abstainer, light social nonproblem drinker, moderate social nonproblem drinker, heavy nonproblem drinker, heavy problem drinker). This question was used to classify students as drinkers or nondrinkers. Students were asked, with an open-ended response, how many times in the past 2 weeks they had five or more consecutive alcoholic drinks. An additional dichotomous variable was created, representing any heavy drinking in the past 2 weeks. Students were asked how many drinks they consumed the last time they "partied"

or socialized. Because of the emphasis of the intervention on parties at off-campus settings, students also were asked how often they had gone to parties at an off-campus house or apartment since the beginning of the academic year and, of those times, how many times they drank enough to get drunk. Sources for these items may be found in Gruenewald et al. (2003) and Paschall and Saltz (2007).

Drinking consequences. Students were asked, with open-ended responses, how often in the past 30 days they experienced 13 different consequences while they were drinking or as a result of their drinking. The consequences included driving after having consumed any amount of alcohol, driving after having five or more drinks, physically injuring yourself, being involved in a fight, did something you later regretted, neglected your responsibilities, were not able to do your homework or study for a test, and missed a day (or part of a day) of school or work. Because the majority of student drinkers did not report any consequences, each consequence was treated as a yes/no (1/0) dichotomy, and an overall measure of consequences was created by summing the dichotomies.

Demographics. Students reported their age, gender, race/ethnicity, and place of residence. Because the majority of students reported their race/ethnicity as white, and numbers of respondents in other racial/ethnicity categories were too small to obtain reliable estimates of alcohol use, this variable was treated as a dichotomy (white vs nonwhite). Places of residence included home with parents, campus residence hall (dormitory), fraternity or sorority house, and off-campus apartment or house; these were treated as dummy-coded variables.

Data analysis

Preliminary descriptive analyses were conducted to compare the intervention and comparison schools with respect to alcohol-related variables and demographic characteristics. Regression analyses were then conducted to examine changes in levels of alcohol use, heavy drinking, and alcohol-related consequences among students at NEST intervention schools versus those at the comparison school. This effect was modeled as a Time × Condition term in each regression model, along with corresponding main effects (time, condition), demographic variables (age, gender, race/ethnicity, place of residence), and current drinking status as covariates. Logistic regression was used for dichotomous outcomes, and linear regression was used for continuous outcomes. As previously noted, sample weights were used for all analyses to adjust for differential survey response rates. Hierarchical linear modeling software was used to adjust for clustering of student observations within each campus (Raudenbush et al., 2004). Because of the small number of schools involved in the study, it was not possible to model the NEST intervention condition as a campus-level variable with university and Time × University random effects, which is the preferred approach when groups of individuals (i.e., universities) are the units of assignment to intervention condition (Murray, 1998). Analysis results were therefore interpreted as being suggestive only of possible intervention effects.

Results

Sample characteristics

Baseline descriptive statistics for study variables are provided in Table 1 for the total sample and by intervention condition. A condition of participation by the sites other than WWU included maintaining their anonymity. Intervention and comparison schools were similar with respect to age and race, but a higher percentage of students were male at the comparison school. Higher percentages of students at intervention schools were living at home with parents or in a campus residence hall, whereas a higher percentage of students at the comparison school were living in a fraternity or sorority house (neither intervention campus has residential fraternities or sororities; therefore, analyses included a control for residence in a fraternity or sorority house). Intervention and comparison groups were similar with respect to most alcohol-related behaviors at baseline, but students at the comparison school reported significantly more occasions of drinking enough to get drunk at off-campus parties.

NEST intervention effects on alcohol-related behaviors

In the analyses, we simultaneously included the two intervention campuses with the comparison campus. An alternative would have been to separately analyze each intervention campus with the same comparison site (two separate models). Our decision was heavily influenced by the opportunity, when including all three campuses, to minimize having campus-level differences correlated with intervention condition, as would have been the case if the models included only two campuses at a time.

Results of hierarchical linear modeling to assess NEST intervention effects on behavioral outcomes are provided in Table 2. Logistic regression analysis results indicated a significant reduction in the likelihood of any heavy drinking among students at NEST intervention schools relative to students at the comparison school (odds ratio = 0.75, $p < .05$; the odds ratio is the likelihood of heavy drinking at the intervention campuses over the likelihood at the comparison campus, so that a ratio less than 1 represents a lower risk and thus a positive intervention effect). Similarly, linear regression analysis results indicated a greater reduction in the frequency of heavy drinking among students at NEST intervention schools relative to students at the comparison school (unstandardized $\beta = -.20$, $p < .05$). NEST intervention effects on these outcomes are illustrated in Figures 1 and 2. Other

TABLE 1. Baseline sample characteristics by intervention condition, mean (SD) or percentage[a]

Variable	Total sample (N = 3,193)	Intervention (n = 2,160)	Comparison (n = 1,033)
Demographics			
Age	21.8 (5.1)	21.7 (5.1)	22.0 (5.2)
Male	49.9	48.5	52.7*
White	77.1	77.4	76.5
Place of residence			
Home with parents	3.8	4.9	1.6†
Campus residence hall	36.4	38.1	33.0†
Fraternity/sorority house	3.3	0.0	10.0†
Apartment or house	51.3	51.8	50.4
Alcohol use			
Current drinker	79.1	78.5	80.2
Any heavy drinking, past 2 weeks	42.2	41.8	43.1
Heavy drinking frequency, past 2 weeks[b]	1.0 (1.7)	1.0 (1.7)	1.1 (1.7)
No. of drinks the last time partied or socialized[b]	4.4 (4.2)	4.3 (4.3)	4.5 (4.2)
Times drunk at off-campus parties[c]	3.2 (5.3)	2.9 (4.8)	3.7 (5.9)*
Drinking consequences[b]	2.0 (2.5)	2.0 (2.4)	2.1 (2.5)

[a]Descriptive statistics were obtained with sample weights, whereas sample (N) and subsample (n) sizes are unweighted; [b]based on students who classified themselves as current drinkers; [c]based on current drinkers who reported drinking alcohol at one or more off-campus parties during the semester.
*$p < .05$; †$p < .01$.

significant predictors of heavy drinking included age, gender (male), race (white), living in fraternity or sorority housing, and living in an off-campus apartment or house. As indicated in Figure 2, it would appear that for this specific outcome (frequency of heavy drinking) the intervention effect worked against a secular increase observed at the comparison site.

Linear regression analyses also indicated similar, although nonsignificant, trends for NEST intervention effects on number of drinks the last time students partied or socialized, number of times drunk at off-campus parties, and drinking consequences. The NEST intervention effect was statistically significant for missing all or part of a day at school or work (odds ratio = 0.71, $p < .05$).

Combining the two intervention campuses in these analyses may raise curiosity about how similar they might have been if looked at individually. Figure 3 breaks out the relative magnitude of effects for one outcome across all three campuses. It can be seen that the two intervention campuses are quite similar in slope, with the second intervention campus starting at a higher baseline and decreasing slightly more than at WWU. The other outcomes (not shown here) were very much the same.

Discussion

The results of this evaluation add more support for the use of alcohol control and allied environmental strategies in reducing consumption and alcohol-related problems among college students. The study is not definitive because it involved only three public university campuses in the state

TABLE 2. Results of regression analyses to assess intervention effects on alcohol-related outcomes

Predictor	Logistic regression, odds ratio (95% CI) any heavy drinking, past 2 weeks	Linear regression, unstandardized β coefficient (SE)			
		Heavy drinking freq., past 2 weeks	No. drinks, last time partied or socialized	Times drunk at off-campus parties	No. of drinking consequences
Time × Condition	0.75 (0.58-0.97)*	-0.20 (0.09)*	-0.27 (0.20)	-0.55 (0.38)	-0.15 (0.13)
Time[a]	1.15 (0.93-1.43)	0.18 (0.08)*	0.08 (0.17)	0.93 (0.30)†	-0.11 (0.11)
Condition[b]	1.41 (0.89-2.24)	0.31 (0.18)	0.28 (0.51)	-0.09 (1.07)	0.24 (0.29)
Age	0.89 (0.88-0.92)†	-0.04 (0.01)†	-0.11 (0.01)†	-0.23 (0.03)	-0.06 (0.01)†
Male	2.97 (2.63-3.35)†	0.78 (0.04)†	2.04 (0.09)†	1.37 (0.18)†	0.47 (0.06)†
White	1.30 (1.12-1.51)†	0.13 (0.05)*	0.54 (0.11)†	0.37 (0.22)	0.20 (0.07)†
Current drinker	55.58 (34.3-90.1)†	1.14 (0.06)	4.18 (0.13)†	3.63 (0.28)†	1.88 (0.09)†
Residence					
Home	1.04 (0.65-1.67)	0.07 (0.15)	-0.08 (0.34)	-0.87 (0.73)	-0.24 (0.22)
Campus dormitory	1.08 (0.78-1.50)	0.11 (0.11)	0.17 (0.24)	-1.05 (0.50)*	-0.23 (0.15)
Fraternity/sorority house	3.03 (1.88-4.89)†	1.12 (0.17)†	1.48 (0.36)†	0.92 (0.67)	1.61 (0.23)†
Apartment/house	1.60 (1.18-2.18)†	0.38 (0.10)†	0.63 (0.23)†	-0.04 (0.48)	0.23 (0.15)

Notes: Freq. = frequency. [a]1 = 2005, 2 = 2006; [b]0 = comparison, 1 = intervention.
*$p < .05$; †$p < .01$.

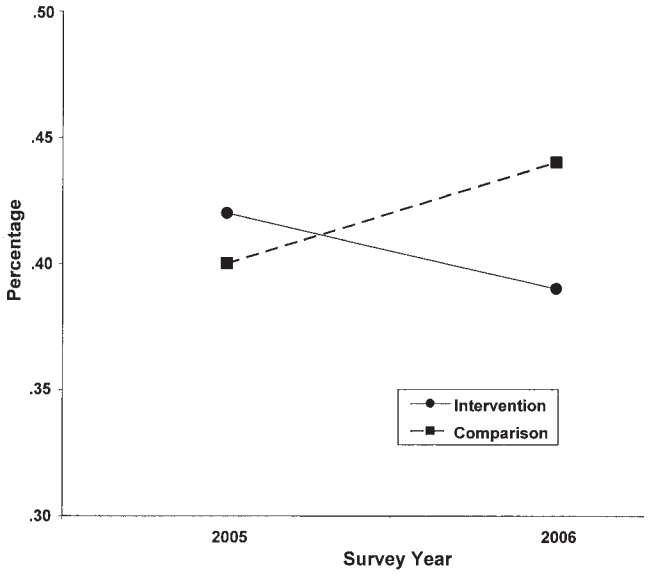

FIGURE 1. Change in prevalence of heavy drinking among students attending Neighborhoods Engaging with Students (NEST) intervention schools versus comparison school

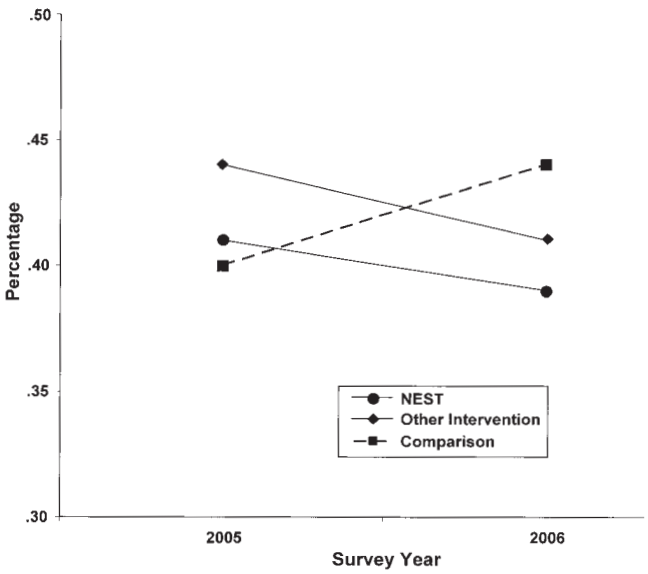

FIGURE 3. Change in prevalence of heavy drinking among students attending Neighborhoods Engaging with Students (NEST) intervention school, second intervention campus, and comparison school

of Washington and did not involve random assignment to condition. Nevertheless, using a conservative analytic approach (hierarchical linear modeling) and having only three campuses, we were able to show a significant reduction in heavy episodic drinking in two intervention sites relative to a third campus. Perhaps more significantly, those reductions were achieved in only a year.

In better appreciating these results, it should be kept in mind that WWU had already built an infrastructure and had conducted a variety of coalition-based interventions before the NEST program was adopted. The second intervention campus had just launched its campus–community coalition in the year ahead of the time covered by this evaluation and seems to have achieved a measure of success relatively quickly. Thus, even to show an impact, both campuses may have had to overcome a hurdle (for different reasons). At WWU, the new intervention had to be sufficiently powerful to show a significant additive impact to what was already in place, whereas the second intervention site had to get the infrastructure in place and implement the specific interventions. With apparent success in each case, the prevention field has reason to be optimistic that environmental interventions can achieve good outcomes in a relatively short time across very different organizational contexts.

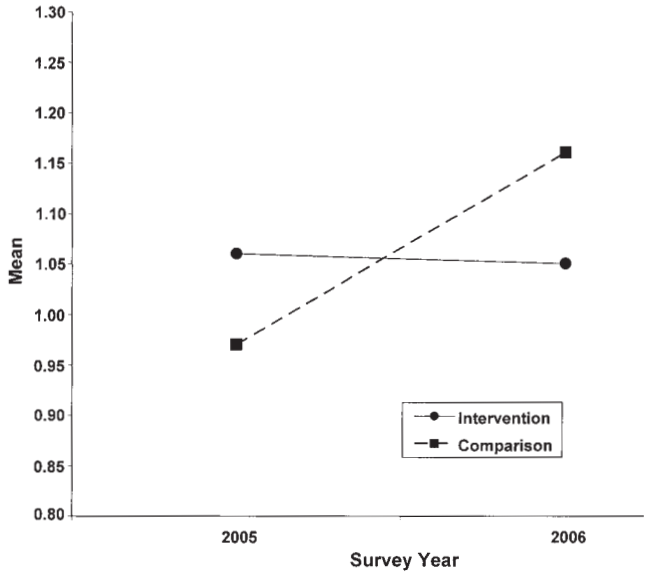

FIGURE 2. Change in frequency of heavy drinking among students attending Neighborhoods Engaging with Students (NEST) intervention schools versus comparison school

A little insight into the NEST program may be valuable here. In reflecting on the intervention, enforcement efforts and neighborhood engagement strategies became less distinct as time passed. Enforcement came to be viewed as an educational strategy in and of itself, as it communicates and upholds community expectations. At the same time, the neighborhood engagement strategies reinforced community expectations regarding "neighborliness," thereby reducing the need for supporting enforcement. Although the evaluation did not allow us to determine the impact of specific neighborhood engagement or educational strategies separate from enforcement, it may be that the reduction of high-risk drinking was a result of the combination of enforcement and neighborhood engagement. Further research could provide a better understanding of the relative impacts of specific components.

The intervention's focus on neighborhood engagement presented some unique challenges. Even with strong neigh-

borhood infrastructure and capacity, the project encountered a "culture gap" between neighborhood associations and the university. The relative informality and changeability of the neighborhood associations, combined with a historical lack of collaboration between the neighborhood associations and the university, required that the partnerships be continually cultivated. In addition, the continual flux of the student population among neighborhoods made it difficult to sustain students' neighborhood engagement.

Four elements were identified that would be crucial for others interested in employing similar approaches: (1) adequate neighborhood capacity (e.g., neighborhood association or similar structure, established communication channels), (2) a systematic way to identify the geographic distribution of students living off-campus (e.g., geographic information system mapping) to focus efforts, (3) efficient ways to identify and reach students living in specific neighborhoods, and (4) an emphasis on creating enduring structures/systems that promote student engagement in the neighborhoods.

The results here are encouraging, but the study's limitations must be kept in mind. There are only three campuses and two intervention sites, both of which may have been unusually effective in implementation compared with what might happen elsewhere. Also, the two interventions were not identical, and this could be seen as a weakness in the design. At base, however, they are more similar than different in their emphasis on alcohol law enforcement and control, combined with a campaign to magnify the direct effect of enforcement.

There is also the possibility that some other event co-occurred with the intervention sites to produce the same outcomes, but an advantage to having the two intervention sites would be to limit the plausibility of a history effect at both simultaneously. Finally, the impact is being measured over the span of only 1 year. We have no idea if these effects can be sustained over time. On the one hand, the effect could be the beginning of a continuous "ratcheting down" on heavy alcohol consumption as each new class of students enters, or it may prove difficult to maintain students' attention to the enforcement after the novelty wears off.

The prevention field has come a long way since the days of simple awareness campaigns, and the work evaluated here reflects the advances made, not only in moving alcohol control policies into campus communities but also in the practical skills that have been developed to implement such programs in a relatively short time and with the desired impact. There is every reason to suppose that we are still in the early stages of understanding how to replicate these results with even greater impact and with more efficiency. Although some people in recent public debates (including college administrators) question whether anything can be done to reduce alcohol consumption and related problems, these results argue for the affirmative. Coupled with other research, such as that cited early in this article and others to come (which may be able to employ even more rigorous designs), college administrators will be in a position to blend a variety of prevention strategies on their campus that will eventually produce a general decline in alcohol-related harm among their students.

References

Clapp, J.D., Johnson, M., Voas, R.B., Lange, J.E., Shillington, A., and Russell, C. Reducing DUI among US college students: Results of an environmental prevention trial. Addiction **100:** 327-334, 2005.

Gruenewald, P.J., Johnson, F.W., Light, J.M., Lipton, R., and Saltz, R.F. Understanding college drinking: Assessing dose response from survey self-reports. J. Stud. Alcohol **64:** 500-514, 2003.

Hingson, R., McGovern, T., Howland, J., Hereen, T., Winter, M., and Zakocs, R. Reducing alcohol-impaired driving in Massachusetts: The Saving Lives Program. Amer. J. Publ. Hlth **86:** 791-797, 1996.

Holder, H.D., Gruenewald, P.J., Ponicki, W.R., Treno, A.J., Grube, J.W., Saltz, R.F., Voas, R.B., Reynolds, R., Davis, J., Sanchez, L., Gaumont, G., and Roeper, P. Effect of community-based interventions on high-risk drinking and alcohol-related injuries. JAMA **284:** 2341-2347, 2000.

Kreitman, N. Alcohol consumption and the preventive paradox. Brit. J. Addict. **81:** 353-363, 1986.

Larimer, M.E. and Cronce, J.M. Identification, prevention, and treatment: A review of individual-focused strategies to reduce problematic alcohol consumption by college students. J. Stud. Alcohol, Supplement No. 14, pp. 148-163, 2002.

Larimer, M.E. and Cronce, J.M. Identification, prevention, and treatment revisited: Individual-focused college drinking prevention strategies 1999-2006. Addict. Behav. **32:** 2439-2468, 2007.

Murray, D.M. Design and analysis of group-randomized trials. New York: Oxford University Press, 1998.

Paschall, M.J. and Saltz, R.F. Relationships between college settings and student alcohol use before, during and after events: A multi-level study. Drug Alcohol Rev. **26:** 635-644, 2007.

Raudenbush, S., Bryk, A., Cheong, Y.F., and Congdon R. HLM 6: Hierarchical Linear and Nonlinear Modeling, Lincolnwood, IL: Scientific Software International, 2004.

Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism. A Call to Action: Changing the Culture of Drinking at U.S. Colleges, NIH Publication No. 02-5010, Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism, 2002.

Toomey, T.L., Lenk, K.M., and Wagenaar, A.C. Environmental policies to reduce college drinking: An update of research findings. J. Stud. Alcohol Drugs **68:** 208-219, 2007.

Wagenaar, A.C., Gehan, J.P., Jones-Webb, R., Toomey, T.L., Forster, J.L., Wolfson, M., and Murray, D.M. Communities mobilizing for change on alcohol: Lessons and results from a 15-community randomized trial. J. Commun. Psychol. **27:** 315-326, 1999.

Wagenaar, A.C., Murray, D.M., Gehan, J.P., Wolfson, M., Forster, J.L., Toomey, T.L., Perry, C.L., and Jones-Webb, R. Communities mobilizing for change on alcohol: Outcomes from a randomized community trial. J. Stud. Alcohol **61:** 85-94, 2000a.

Wagenaar, A.C., Murray, D.M., and Toomey, T.L. Communities mobilizing for change on alcohol (CMCA): Effects of a randomized trial on arrests and traffic crashes. Addiction **95:** 209-217, 2000b.

Weitzman, E.R. and Nelson, T.F. College student binge drinking and the "prevention paradox": Implications for prevention and harm reduction. J. Drug Educ. **34:** 247-266, 2004.

Weitzman, E.R., Nelson, T.F., Lee, H., and Wechsler, H. Reducing drinking and related harms in college: Evaluation of the "A Matter of Degree" Program. Amer. J. Prev. Med. **27:** 187-196, 2004.