

- automobile injuries, edited by J. Graham. Auburn Publishing, Dover, MA. In press.
33. Williams, A., and Lund, A.: Mandatory seat belt laws and occupant crash protection in the United States: present status and future prospects. *In Preventing automobile injuries*, edited by J. Graham. Auburn Publishing, Dover, MA. In press.
 34. Hingson, R., et al.: Repeal of the Massachusetts seat belt law. *Am J Public Health* 78: 548-552 (1988).
 35. Graham, J., and Garber, S.: Evaluating the effects of automobile safety regulation. *Journal of Policy Analysis and Management* 3: 206-224 (1984).
 36. Robertson, L. S.: Automobile safety regulations and death reductions in the United States. *Am J Public Health* 71: 818-822 (1981).
 37. Hingson, R., and Howland, J.: Prevention of drunk driving crashes involving young drivers: an overview of legislative countermeasures. *In Young drivers impaired by alcohol and drugs*, edited by T. Benjamin. Royal Society of Medicine International Congress and Symposium Series No. 116. Royal Society of Medicine, London, 1987, pp. 337-348.
 38. Andeneas, J.: The effects of Scandinavia's drinking-and-driving laws: facts and hypotheses. *Scandinavian Studies in Criminology* 6: 35-53 (1978).
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University Students' Drinking Patterns and Problems: Examining the Effects of Raising the Purchase Age

RUTH C. ENGS, RN, EdD
DAVID J. HANSON, PhD

Dr. Engs is Associate Professor of Applied Health Science at Indiana University and a Board Member of the Alcohol and Drug Problems Association of North America. Dr. Hanson is Professor of Sociology at the State University of New York College at Potsdam.

Tearsheet requests to Dr. Engs at Department of Applied Health Science, HPER, Indiana University, Bloomington, IN 47505.

Synopsis.....

An extensive review of the literature on college students' drinking patterns and problems since the mid-1930s revealed no radical changes over the past several decades. However, during the past 10 years, drinking and problems related to drinking and

driving have gradually decreased among college students.

Results of a study of students at the same 56 colleges and universities throughout the United States (3,145 in 1982-83, 2,797 in 1984-85, and 3,375 in 1987-88) revealed few changes in collegiate drinking patterns and problems attributable to the nationwide increase in the minimum age for alcohol purchase. There was a decline in the proportion of students who drank in the period during which the law changed. However, the proportion of students categorized as heavy drinkers remained constant over time and the proportion of underage students (81 percent) who drank was higher than the proportion of legal age students who drank (75 percent). Of 17 problems related to drinking, all but 5 remained stable over the time periods. Three of the problems represent the continuum of an established trend of fewer students to indicating drinking and driving-related problems.

As discussed in this paper, creative alcohol programming can assist in controlling alcohol abuse among college students.

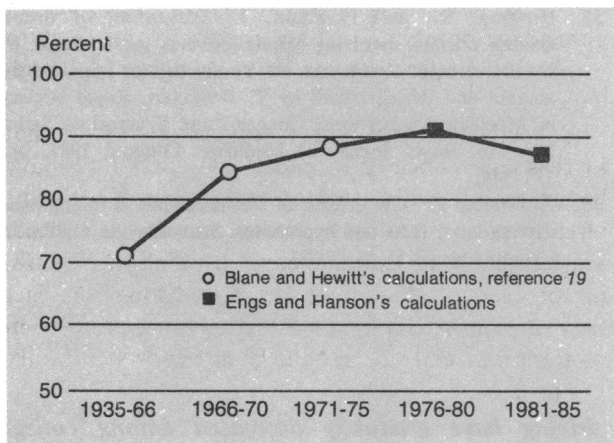
COLLEGE STUDENT DRINKING, legal or illegal, is not a recent occurrence in the United States. As far back as the early 18th century, alcohol was used by students, and there were admonitions and strict regulations on the part of authority figures regarding the practice. However, students have drunk over time regardless of restrictions or prohibitions (1). In spite of laws and their many changes, only

gradual changes in collegiate drinking patterns have occurred over the past several decades.

Cross-Sectional Studies

A number of cross-sectional or point-prevalence studies have been conducted over the years within individual universities, States, or regions as well as

Mean percentage of students who drink as reported in the literature, 1935–85



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nationwide to determine levels of drinking among college students. Despite the expected differences in sampling procedures, statistical analyses, and definitions of drinking among these studies, certain trends in drinking patterns among college students can be identified.

Early studies from the 1930s through the 1950s, including Straus and Bacon's nationwide survey, reported that the proportion of college students who were drinkers ranged from 56 to 95 percent (2–6). During the 1960s and early 1970s, several studies described regional variation in collegiate drinking (7–13). Among the findings were these:

- 68 percent of women and 62 percent of men from a western university drank.
- 58 percent of freshmen and 88 percent of seniors at a midwestern university had used alcohol.
- 68 percent of students from a southern university were drinkers.

- 91 percent of students from a large eastern State university system used alcohol.

Several national studies of college students' drinking patterns were conducted in the late 1960s and early 1970s. These studies reported that approximately 80 percent of college students drank (14,15). In one of the studies (15) it was also found that more than 50 percent of students reported either having a hangover or driving after drinking during the previous 12 months.

Further research in the late 1970s reported on prevalence of heavy drinking and problems related to drinking among college students. Among the New England college students, 29 percent of the men and 11 percent of the women were classified as heavy drinkers (16), and among these students, more than half reported problems related to drinking, such as blackouts, fighting, and trouble with authorities (17). Strange and Schmidt (18) found that 92 percent of the students at the University of Iowa drank and that self-identified problem drinkers were more likely to experience problems related to their drinking than were nonproblem drinkers. (See Blane and Hewitt [19] for a comprehensive review of the literature of college student drinking patterns through the 1970s.)

Interest in college drinking has continued into the 1980s. At least 11 surveys (20–30) at individual universities and States have been conducted through 1984. From these surveys, estimates of the proportion of drinkers among college students ranged from 80 percent for the University of South Florida (22) to 99 percent for a private college in western New York (21).

On the national level, two surveys (31,32) conducted in 1982–83 and 1984–85 found little change over the study period in three measures of student drinking: proportion of drinkers, of heavy drinkers, and having hangovers or driving after drinking. Only the proportion of students reporting vomiting, drinking while driving, or driving after they knew they had drunk too much had changed, from approximately 25 percent in 1982–83 to more than 40 percent in 1984–85.

On the international level, various studies (33–35) report similar proportions of drinkers among students in Australia (85 percent), Oxford University (82 percent), and Scotland (87 percent).

Longitudinal Studies

From the early 1970s through the mid-1980s, several longitudinal studies (31,36–41) have exam-

ined changes in student drinking over time with conflicting results. Two studies (36,37) reported steady increases through the early to mid-1970s in drinking at the universities studied, while two other studies (39,40), one from the early 1970s and the other from the early to mid-1980s, found decreases in drinking among the students surveyed. In contrast, three other studies (31,38,41) reported no apparent change over time in the proportion of drinkers on the college campuses surveyed.

Most of these longitudinal studies used different sampling procedures, statistical analyses, and definitions of drinking. Within these limitations, the incidence of drinking during different periods has been calculated based on the mean percentage of students who drink as reported in the literature. The proportion of drinkers apparently changed between 1950 and the present. Blane and Hewitt (19) found that the mean percentage of those who had ever drunk alcohol rose from 71.4 percent (1936-65) to 84.3 percent (1966-70) to 88.5 percent (1971-75). Similarly, from the various American studies, the authors have examined the mean percentage of students' drinking and have found an increase to 90.0 percent from 1976 to 1980 and a decrease to 88.2 percent from 1981 to 1985 (see figure).

Since the late 1970s, there has been a general downward trend in overall alcohol consumption. According to Smart and Murray (42), the per capita alcohol consumption has stabilized or decreased in many western countries since 1975-76, although the proportion of young drinkers had increased through the mid-1970s. On the whole, since the mid-1930s, almost 80 percent of the college population has consumed alcohol and continues to do so.

Drinking in Relationship to Age

Many studies have examined drinking patterns and problems in relation to age. Studies from the 1950s and 1960s (3,8,14,43) suggest that older students drank significantly more than younger students, and the proportion of students who drank appeared to increase as they progressed through college. Beginning in the mid-1970s through the mid-1980s, many studies (15,16,26,44) reported few age-related differences in the proportion of drinkers, heavy drinkers, or problems associated with drinking.

Several recent individual university, regional, and national studies (25,30-32,45-48), however, have reported that younger students are more likely to

exhibit problems related to drinking, including heavy drinking. Although older students are more likely to have had a drink (by as much as 15 percentage points [30]), they are also more likely to drink in moderation as they progress through college.

Collectively, these reports appear to suggest that increasingly since the mid-1970s, students have begun college with drinking patterns and problems already established and, as they mature in college, are less likely to exhibit heavy drinking and drinking problems. As students progress through college, they are more likely to drink, but to do so in moderation, and are less likely to experience drinking problems.

Legislation and Drinking

Over the past two decades, many changes have been made in the drinking laws of various States that have affected university students and the general youth population.

All States in the United States were required to establish 21 years as their minimum alcohol purchase age no later than July 1987 if they wished to continue receiving Federal highway funds. Since the early 1970s, the legal drinking age in a number of States has changed. Some studies (44,49) have found little difference between drinking patterns of students who were legally able and not legally able to drink. One reason for this lack of differentiation may be that, even if a State had raised its legal drinking age, students were often able to drive to neighboring States with different drinking laws to purchase or consume alcohol.

In 1970, Congress passed the Twenty-Sixth Amendment to the United States Constitution, which granted the right to vote in Federal elections to citizens between the ages of 18 and 21. A movement then began to extend other rights and privileges of adulthood to those aged 18; between 1970 and 1975, 29 States reduced their minimum legal drinking age (50).

Traffic crashes have been examined in studies of the effects of changing the minimum drinking age. A significant increase in auto accidents among those affected by lowered minimum drinking age laws has been reported in virtually all studies. Other research has examined the effects of such legislation on drinking patterns and problems of young people. Again, virtually all studies report increased consumption or greater drinking problems, or both, in States with a lower drinking age. For excellent reviews of the research literature, see

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Wagenaar (50) and a General Accounting Office report (51).

Hypotheses

Based on the literature, which suggests that the proportion of students who consumed alcohol gradually increased during the 1960s and 1970s and slightly declined during the 1980s (before nationwide legislation was posited), the following null hypotheses were suggested. Before and after a national increase in the minimum age permitting the purchase of alcohol in the United States, no significant difference in drinking patterns or in drinking problems would occur among college students.

Method

Instrument. A precoded instrument, "The Student Alcohol Questionnaire" (52,53), was used. Also used by hundreds of other researchers over the past 15 years, it has an internal consistency reliability of .79 and includes demographic items, questions regarding the consumption of various alcoholic beverages, and 17 items concerning possible consequences of drinking. All question items had been used by the authors in the two previous periods with which the current sample is compared. The instructions for the instrument explained the voluntary nature of participation in the study as approved by the Indiana University Human Subjects Committee.

Sample. All colleges and universities that participated in the 1982-83 and 1984-85 studies were contacted. The resulting sample contained 56 universi-

ties that could be matched over the three periods. These represent 4-year colleges and universities in all States. If the same university was not available for a given period, a similar college matched for size and funding source from the same State was used.

The sample was drawn, as in the earlier studies by the authors, from administration of the questionnaire in survey-type sociology and health or physical education courses that had a high probability of containing students from every academic major and class year during the 1987-88 academic year. The response rate exceeded 98 percent, and the demographic composition of the resulting sample of 3,375 closely approximates that of the earlier studies as well as the universe of students attending baccalaureate institutions of higher learning in the United States. The sample for the 1984-85 period was 2,797 and for the 1982-83 period was 3,145. Because of its very large size, the sample had high power for detecting significant differences. The .001 level of significance was selected to rule out type 1 errors due to the large sample size.

Results

Drinking patterns. A significant ($X^2 = 52.56$, $df = 10$, $P < .0001$) decrease occurred in the proportion of students who were drinkers in 1985-86 (83 percent) compared with 1987-88 (79 percent). A drinker was considered someone who had consumed alcohol at least once during the previous 12 months. The decrease occurred in the period when there were major nationwide changes in the laws, increasing the minimum age for purchases of alcohol. No change occurred in the proportion of drinkers between 1983 and 1985.

The decrease in drinkers between the 1984-85 and the 1987-88 periods occurred because there were fewer light to moderate drinkers. Heavy drinkers (those who consume six or more drinks at any one sitting more than once a week) remained a constant 20 percent of the total sample. Among drinkers, 25 percent from all three periods were heavy drinkers (table 1).

Moreover, analysis of the 1987-88 sample revealed that a significantly ($X^2 = 16.8$, $df = 1$) higher proportion of underage students drank (81.2 percent) compared with legal-age students (75.3 percent).

Drinking problems. Of 17 identified drinking problems, significant ($P < .001$) decreases were noted in 3 of them over the three periods: the proportion

of students indicating that they "drank while driving a car" ($X^2 = 59.7$, $df = 2$), had "driven a car after drinking" ($X^2 = 23.6$, $df = 2$), and had "driven after they knew they had had too much to drink" ($X^2 = 54.8$, $df = 2$). A significant ($P < .001$) decrease in vomiting as a result of drinking occurred during the 1987-88 period ($X^2 = 17.1$, $df = 2$). However, a higher proportion of students had "gotten into a fight after drinking" ($X^2 = 16.4$, $df = 2$) (table 2).

Discussion

The first hypothesis (no significant differences in collegiate drinking patterns would occur over time) received only partial support. The proportion of students who drank declined in the period when there were major nationwide increases in minimum purchase-age laws. On the other hand, the proportion of heavy drinkers remained constant over time, and the proportion of underage students who drank was actually *higher* than the proportion of legal-age students who drank.

The second hypothesis (no significant differences in collegiate drinking problems would occur over time) received only partial support since only 5 of the 17 drinking problems significantly changed. Three of these appear to represent a continuation of earlier established trends. However, the only drinking problem that appeared to decrease *after* the increased minimum age laws (and hence might not represent, at least in part, a continuation of earlier established trends) was that of "vomiting" as a consequence of drinking. The increase in "fights" during this time perhaps is a statistical anomaly since it could not be adequately explained.

Although the percentage of students who drink has decreased, the proportion of students categorized as heavy drinkers has remained constant. Many reports have indicated that heavy drinkers are those who are most likely to have drinking-related problems. This stability in heavy drinking may explain why few changes occurred in problems related to drinking over the three periods. Even though fewer students drank, the ones who did drink were just as likely to be heavy drinkers as before the change in the laws and to have alcohol-related problems. Persons who are light drinkers, particularly if underage, may be more inclined to obey the law.

A decrease in the proportion of students who drink appears to support other studies completed over the 1980s that show a decline in drinking. This decrease may not be attributed to the national

Table 1. Percentage of students who drank, according to drinking pattern

Drinking pattern	1983 (N = 3,145)	1985 (N = 2,797)	1987 (N = 3,375)
Abstainer ¹	16.2	17.3	² 21.2
Infrequent drinker ³	8.2	8.3	10.2
Light drinker ⁴	12.0	11.7	10.2
Moderate drinker ⁵	18.7	18.6	17.9
Moderate/heavy drinker ⁶ ...	24.0	23.3	20.1
Heavy drinker ⁷	20.9	20.8	20.4

¹ Drinks less than once a year or not at all.

² $P < .001$.

³ Drinks more than once a year but less than once a month.

⁴ Drinks at least once a month but not more than 1 to 3 drinks at any 1 sitting.

⁵ Drinks at least once a month with no more than 3 to 4 drinks, at least once a week with no more than 3 to 4 drinks, or at least once a week with no more than 1 to 2 drinks, at any 1 sitting.

⁶ Drinks 3 to 4 drinks at least once a week or 5 or more drinks at least once a month.

⁷ Drinks 6 or more drinks at any 1 sitting more than once a week.

Table 2. Percentage of drinkers who experienced drinking problems during the preceding year

Drinking problem	1983 (N = 2,637)	1985 (N = 2,313)	1987 (N = 2,657)
Had a hangover	72.5	73.8	75.7
Vomited as a result of drinking	44.2	46.4	37.1 ¹
Driven a car after having had several drinks	40.4	38.0	34.0 ¹
Driven a car when they knew they had drunk too much ..	59.8	55.3	49.2 ¹
Driven a car while drinking ..	47.4	42.5	37.3 ¹
Came to class after having several drinks	9.0	8.6	8.4
"Cut a class" after having several drinks	9.3	10.8	9.1
Missed a class because of a hangover	23.5	27.6	26.5
Been arrested for driving while intoxicated	1.6	1.1	1.6
Been criticized by someone they were dating because of their drinking	11.5	10.7	13.4
Had trouble with the law because of drinking	4.9	3.7	6.2
Lost a job because of drinking	0.3	0.3	1.0
Gotten a lower grade because of drinking too much	4.4	5.8	5.4
Gotten into trouble with school administration because of behavior resulting from drinking too much	2.0	1.8	2.9
Gotten into a fight after drinking	11.1	12.4	14.7 ¹
Thought they might have a problem with their drinking ..	9.2	8.1	9.9
Damaged property, pulled a false fire alarm, or other such behavior after drinking	9.4	9.4	11.3

¹ $P < .001$.

change in the laws regulating purchase of alcoholic beverages but may represent a continued national and international trend that has been observed by others (42). Likewise, the three drinking and driving variables appear to be the continuation of a trend that began before the law was changed.

Implications

Drinking patterns of college students have been of increasing interest to college administrators as they attempt to reduce alcohol-related problems on campus (54). Unfortunately, the results of most alcohol education and programming efforts have been disappointing (13,55-59).

Based on the results of this study, however, campus administrators are recommended to develop comprehensive and practical alcohol education programming for college students. Although it is illegal for much of the student population to drink, clearly about 80 percent of students, including those who are underage, drink at least once a year. At least half of all students have experienced negative problems related to drinking.

Creative programming that emphasizes the concept of interesting nondrinking activities and events, safe planning and hosting of parties, responsible choices concerning drinking, assertion skills, self-responsibility, and the mature use of alcohol for those who do choose to drink need to be included in any educational efforts aimed at the college-age population (55,56,60,61). Simply telling college students that it is illegal to drink and that they will be punished if they break the law is unlikely to have a significant impact on drinking or alcohol abuse problems.

References

1. Kuder, J. M., and Madson, D. L.: College student use of alcoholic beverages. *J Coll Student Personnel* 17: 142-144 (1976).

2. Studenski, P.: Liquor consumption among the American youth: a study of the drinking habits of certain segments of the American youth. Report presented to the conference of the Social Study Committee of the National Conference of State Liquor Administrators, Mackinac Island, MI, July 20, 1937. Cited by Barnes, G. M., and Welte, J. W.: *In* Predictors of alcohol use among college students in New York State. *J Am Coll Health* 31: 150-157 (1983).

3. Straus, R., and Bacon, S.: *Drinking in college*. Yale University Press, New Haven, CT, 1953.

4. Rogers, E. M.: Group influence on student drinking behavior. *In* The domesticated drug: drinking among collegians, edited by G. L. Maddox. College and University Press, New Haven, CT, 1970, pp. 307-320.

5. Gusfield, J. R.: The structural context of college drinking. *Q J Stud Alcohol* 22: 428-443 (1961).

6. Maddox, G. L., and Williams, J. R.: Drinking behavior of Negro collegians. *Q J Stud Alcohol* 29: 117-129 (1968).

7. Pollock, M. B.: The drug abuse situation: some implications for health education. *J Alcohol Educ* 15: 9-20 (1969).

8. Dvorak, E. J.: A longitudinal study of nonmedical drug use among university students—a brief summary. *J Am Coll Health Assoc* 20: 212-215 (1972).

9. Hope, E. H.: A study of students' opinions and knowledge of smoking and drinking. *J Am Coll Health Assoc* 20: 219-227 (1972).

10. Milman, D. H., and Su, W. H.: Patterns of drug usage among university students. V. Heavy use of marijuana and alcohol by undergraduates. *J Am Coll Health Assoc* 21: 181-187 (1973).

11. Glassco, K.: Drinking habits of seniors in a southern university. *J Alcohol Drug Educ* 21: 25-29 (1975).

12. Penn, J. R.: College student life-style and frequency of alcohol usage. *J Am Coll Health Assoc* 22: 220-222 (1974).

13. Engs, R. C.: Let's look before we leap: the cognitive and behavioral evaluation of a university alcohol education program. *J Alcohol Drug Educ* 22: 39-48 (1977).

14. Hanson, D. J.: Drinking attitudes and behaviors among college students. *J Alcohol Drug Educ* 19: 6-14 (1974).

15. Engs, R. C.: The drinking patterns and problems of college students. *J Stud Alcohol* 38: 2,144-2,156 (1977).

16. Wechsler, H., and McFadden, M.: Drinking among college students in New England. *J Stud Alcohol* 40: 969-996 (1979).

17. Wechsler, H., and Rohman, M.: extensive users of alcohol among college students. *J Stud Alcohol* 42: 149-155 (1981).

18. Strange, C. C., and Schmidt, M. R.: College student perceptions of alcohol use and differential drinking behaviors. *J Coll Student Personnel* 20: 73-79 (1979).

19. Blane, H. T., and Hewitt, L. E.: Alcohol and youth: an analysis of the literature, 1960-75. Report No. PB-268-698. National Technical Information Service, Springfield, VA, 1977.

20. Perkins, R. A., Jenkins, S. E., and McCullough, M. B.: A look at drinking on a university campus. *Coll Student J* 14: 222-229 (1980).

21. Banks, E., and Smith, M. R.: Attitudes and background factors related to alcohol use among college students. *Psychol Rep* 46: 571-577 (1980).

22. Walfish, S., et al.: Alcohol abuse on a college campus: a needs assessment. *Eval Program Planning* 4: 163-168 (1981).

23. Reiskin, H., and Wechsler, H.: Drinking among college students using a campus mental health center. *J Stud Alcohol* 42: 716-724 (1981).

24. Wakefield, L. M.: Alcohol and other drug use among undergraduates at Indiana University, Bloomington. ERIC doc. ED 226-680, Indiana University, Bloomington, IN, 1982.

25. Iutovich, J. M., and Iutovich, M.: Just for fun: alcohol and the college student. *Chem Depend Behav Biomed Issues* 4: 167-185 (1982).

26. Barnes, G. M., and Welte, J. W.: Predictors of alcohol use among college students in New York State. *J Am Coll Health* 4: 150-157 (1983).

27. Hughes, S. P., and Dodder, R. A.: Alcohol-related problems and collegiate drinking patterns. *J Youth Adolesc* 12: 65-76 (1983).

28. Rapaport, R. J., Cooper, A., and Leemaster, H.: Student alcohol misuse: the negative effects of drinking in college. ERIC doc. ED 252-781. Central Michigan University, Mount Pleasant, 1984.
29. Keane, J. S., and Swinford, P. L.: Alcohol use among students at a large midwestern university. Paper presented at annual convention of American Psychological Association, Toronto, Ontario, Canada, August 1984. ERIC doc. ED 257-006.
30. Friend, K. E., and Koushki, P. A.: Student substance use: stability and change across college years. *Int J Addict* 19: 571-575 (1984).
31. Engs, R. C., and Hanson, D. J.: The drinking patterns and problems of college students: 1983. *J Alcohol Drug Educ* 31: 65-85 (1985).
32. Engs, R. C., and Hanson, D. J.: Correlates of drinking problems and knowledge of alcohol among collegians over time: implications for education. Paper presented at NIDA/NIAAA First National Conference on Alcohol and Drug Abuse Prevention, Washington, DC, Aug. 6, 1986.
33. Engs, R. C.: The drinking patterns and attitudes toward alcoholism and Australian human service students. *J Stud Alcohol* 6: 225-229 (1982).
34. Anderson, P.: Alcohol consumption of undergraduates at Oxford University. *Alcohol Alcohol* 19: 77-84 (1984).
35. Engs, R. C., and Rendel, K. H.: Drug use patterns of nursing students in the Tayside region of Scotland. *Health Educ Res* 2: 329-336 (1987).
36. Scheller-Gilkey, G., Gomberg, E. S., and Clay, M.: College students and alcohol: an exploration of observations and opinions. *J Alcohol Drug Educ* 24: 30-41 (1979).
37. Girdano, D. D., and Girdano, D. A.: College drug use: a five-year survey. *J Am Coll Health Assoc* 25: 117-119 (1976).
38. Toohey, J. V., and Dezelsky, T. L.: A six-year analysis of patterns in non-medical drug use behavior. *J School Health* 48: 672-679 (1978).
39. Robinson, G. L., and Miller, S.: Drug abuse and the college campus. *Ann Am Acad Polit Soc Sci* 417: 101-109 (1975).
40. Gonzales, G.: Trends in alcohol knowledge and drinking patterns among Daytona Beach college students: 1981-1985. *J Coll Student Personnel* 27: 496-499 (1986).
41. Hanson, D. J., and Engs, R. C.: College students' drinking problems: 1982-1985. *Psychol Rep* 58: 276-278 (1986).
42. Smart, R. G., and Murray, G. F.: A review of trends in alcohol and cannabis use among young people. *Bull Narc* 33: 77-90 (1981).
43. Igra, A., and Moos, R. H.: Alcohol use among college students: some competing hypotheses. *J Youth Adolesc* 8: 393-405 (1979).
44. Perkins, H. W., and Berkowitz, A.: Stability and contradiction in college students' drinking following a drinking-law change. Paper presented at the Joint Meeting of the American College Personnel Association and the National Association of Student Personnel Administrators, Chicago, Mar. 15-18, 1987. *J Alcohol Drug Educ*. In press.
45. Hinrichs, D. W., and Haskell, K.: Drinking behavior at a small liberal arts college. *J Coll Student Personnel* 19: 557-562 (1978).
46. Kaplan, M. S.: Patterns of alcoholic beverage use among college students. *J Alcohol Drug Educ* 24: 26-40 (1979).
47. Harford, T. C., Wechsler, H., and Rohman, M.: The structural context of college drinking. *J Stud Alcohol* 44: 722-732 (1983).
48. Hanson, D. J., and Engs, R. C.: Correlates of drinking problems among collegians. *College Student J* 20: 141-146 (1986).
49. Engs, R. C., and Hanson, D. J.: Age-specific alcohol prohibition and college students' drinking problems. *Psychol Rep* 59: 979-984 (1986b).
50. Wagenaar, A. C.: Alcohol, young drivers and traffic accidents. Lexington Books, Lexington, MA, 1983.
51. General Accounting Office: Drinking-age laws: an evaluation synthesis of their impact on highway safety. Report to the Chairman, Subcommittee on Investigations and Oversight, Committee on Public Works and Transportation. House of Representatives. U.S. Government Printing Office, Washington, DC, 1987.
52. Engs, R. C.: The student alcohol questionnaire. Indiana University, Bloomington, 1975.
53. Hanson, D. J.: Alcohol norms and deviant drinking behavior. PhD dissertation, Syracuse University, Syracuse, NY, 1972.
54. Anderson, D., and Gadaletto, A.: Progress or illusion: the 1979 and 1982 college alcohol surveys. *J Coll Student Personnel* 25: 332-337 (1984).
55. Goodstadt, M. S.: Myths and methodology in drug education. In *Research on methods and programs of drug education*, edited by M. Goodstadt. Addictions Research Foundation, Toronto, 1974, pp. 113-145.
56. Engs, R. C., and Fors, S.: Drug abuse hysteria: the importance of keeping perspective. *J School Health* 58: 26-28 (1988).
57. Hanson, D. J.: Drug education: does it work? In *Drugs and the youth culture*, edited by F. R. Scorpitti, and S. K. Datesman. Sage Publications, Beverly Hills, CA, 1980, pp. 251-282.
58. Hanson, D. J.: Drug education: time for a moratorium. *Grassroots* 12: 35-36, November 1983.
59. Hanson, D. J.: Drug education programs. In *The international encyclopedia of education*, edited by T. Husen and T. N. Postlethwaite. Pergamon Press, Oxford, England, 1985, pp. 1,457-1,460.
60. Engs, R. C.: Alcohol and other drugs: self-responsibility. Tichenor Publishing, Bloomington, IN, 1987.
61. Gadaletto, A. S., and Anderson, D. S.: Continued progress: the 1979, 1982, and 1985 college alcohol survey. *J Coll Student Personnel* 27: 499-509 (1986).