and program planning, vol. 11. Pergammon Press, New York, 1988. In press.
124. Katzper, M., et al.: Preliminary aspects of modeling and simulation for understanding alcohol utilization and the effects of regulatory policies. Report to the National Institute on Alcohol Abuse and Alcoholism, Rockville, MD, 1976.
125. Levy, D., and Sheflin, N.: New evidence on controlling alcohol use through price. J Stud Alcohol 44: 929-937 (1983).
126. Grossman, M. D., Coate, D., and Arluck, G. M.: Price sensitivity of alcoholic beverages in the United States: youth alcohol consumption. *In* Control issues in alcohol abuse prevention: strategies for states and communities, edited by H. Holder. JAI Press, Greenwich, CT, 1987, pp. 169-198.

Alcohol Dependency Prevention and Early Intervention

PETER E. NATHAN, PhD

Dr. Nathan is Henry and Anna Starr Professor of Psychology and Director of the Center of Alcohol Studies, Rutgers, The State University of New Jersey. While on leave from this position for the period 1987-89, he is Senior Program Officer, Health Program, The MacArthur Foundation.

Requests for tearsheets to Dr. Peter E. Nathan, Health Program, The MacArthur Foundation, Suite 700, 140 South Dearborn Street, Chicago, IL 60603.

Synopsis

Current data on efforts to prevent alcoholism indicate that we are better able to prevent some of the consequences of alcohol misuse, such as alcohol-related car crashes and fetal alcohol syndrome, than chronic alcohol dependence itself.

A review of data on outcomes of treatment for long-term alcohol dependence indicates that 9 of 10 alcohol dependent persons receive no treatment for the disorder in any given year. When treatment is provided for long-term alcohol dependent persons, it has only slightly positive results. As a result, many clinicians and researchers have concluded that rather than exclusive preoccupation with long-term alcoholics, early intervention with persons who are just beginning to abuse alcohol may be a more effective use of resources.

ALCOHOL ABUSE and dependence are a major public health problem in the United States. Alcohol abuse is estimated to have cost almost $117 billion in 1983, the latest year for which such data are available. Of this amount, nearly $71 billion was attributed to lost employment and reduced productivity. Another $15 billion was for health care costs. In 1988, these costs will likely approach $150 billion (*1*).

Forty-eight percent of all persons convicted of crimes in the United States in 1983 had been using alcohol when they committed the crime (*1*).

In 1980, alcohol use and abuse was either the main or a contributing cause in almost 100,000 deaths (see table). In 20 percent of these deaths, including those attributable to alcoholic cirrhosis and alcoholic cardiomyopathy, alcohol was the main cause. In an additional 40 percent, those that resulted from alcohol-related automobile and other types of accidents, alcohol was a contributing cause in that death would likely not have occurred had alcohol not impaired judgment and driving ability. In the remaining 40 percent of the deaths, alcohol use accelerated an ongoing physical disease process (*2*).

Alcoholism exacts a terrible, increasing toll in our society that fully justifies our best efforts to prevent and to treat the condition.

Outcomes of Treatment

Data on outcomes of treatment for long-term alcohol dependence are sufficiently discouraging to justify a concentrated search for alternatives. Prevention and early intervention are the most effective alternatives.

In any given year in this country, no more than 10 percent of those who meet accepted criteria for alcohol dependence are treated. These figures include persons whose treatment largely involves contact with self-help groups as well as those treated by professionals. Probably, an even lower percentage of women, minorities, youth, and the

Estimated number of deaths attributable to alcohol, United States, 1980

Cause of death	Number of deaths	Attributable to alcohol	
		Number	Percent
Alcohol as main cause [1]	19,587	19,587	100
Alcohol as contributing cause	323,721	77,943	5–50
Cancer[2]	31,955	7,269	20–25
Other diseases	150,280	11,679	5–25
Accidents[3]	96,987	37,849	10–50
Violence[4]	54,499	21,144	30–50

[1]Includes alcohol dependence syndrome, alcoholic cardiomyopathy, alcoholic cirrhosis of the liver, and similarly alcohol-attributable diseases.
[2]Cancer of directly exposed tissues.
[3]Includes motor vehicle traffic accidents, falling, drowning, suffocation, and other alcohol-related accidents.
[4]Includes suicide and homicide.
SOURCE: Reference 2.

elderly, are reached, largely because most treatment programs are designed to meet the needs of the prototypic white, middle-aged, male alcoholic (*3*).

Moreover, as surveys of the treatment outcome literature dating from the early 1970s to the present (*3–5*) continue to show, even when long-term, alcohol dependent persons are treated, treatments are only partly effective.

Despite widely held convictions that the treatment methods used are the ones which work best, the data indicate that different treatment methods do not differ significantly in their effect on the ultimate outcomes of treatment for long-term alcohol dependence. Differences in the theoretical underpinnings of therapies, as well as in the techniques and procedures themselves, do not appear to be associated with differences in treatment outcomes (*5–7*).

The same seems to be true about locus and intensity of treatment. Whether treatment takes place in an inpatient or an outpatient setting, and whether treatment lasts a week, a month, or a year, has not been shown to affect outcomes (*8*). These findings are counter intuitive and unexpected.

Outcomes of treatment for long-term alcohol dependence apparently vary with a number of factors specific to the patient, including age; gender; marital, educational, and occupational status; drinking history and pattern; psychiatric status; and degree of motivation for treatment (*3*, *9*).

In view of the modest results of the national effort to treat long-term alcohol and drug dependency, many of those treating patients have refocused their energies. They are attempting to prevent alcohol and drug problems from developing in the first place, and at the same time are trying to intervene earlier, before emerging problems with alcohol and drugs develop into intractable long-term dependence.

Prevention

Funding. Despite the fact that alcohol and drug abuse are among the Nation's most pressing health and social problems, Federal and State authorities have not recognized the problems by allocating sufficient funds for alcohol and drug prevention. In a recent representative year, for example, only 4 percent of the Federal funds expended on alcohol-related activities were for prevention (*10*). Yet, despite the small size of this prevention commitment in relation to the size of the problem, the funds, $24 million, are 64 percent of the public funds from all sources, Federal, State, and local, expended for alcoholism prevention (*11*).

Both the amount and the percentage of public funds allocated to prevention-related programs for alcohol and drug abusers have increased recently, in response to the belated recognition that the conditions have reached epidemic proportions in this country. However, the percentage of funds for prevention remains substantially less than 10 percent of the public funds earmarked for all alcohol- and drug-related purposes.

One reason that funds for prevention have increased in recent years has been the growing effort to restrict the supply of drugs by trying to destroy them where they are grown and to intercept those who try to bring them into the country. Such prevention methods have been criticized by leaders of the countries where drugs are grown, who fault the United States for failing to enforce its laws against purchase and sale of the drugs, and by American politicians, who claim that the profit margin associated with illegal drugs is so great that it guarantees an adequate supply regardless of any effort to restrict their importation.

Empirical research on the effectiveness of efforts to control alcohol and drug addiction by restricting the availability of the substances suggests that critics of this type of control may be correct. Data indicate that efforts to reduce alcohol and drug dependence by restricting availability are least effective with regard to those persons for whom the efforts are most important, namely those who are heavily addicted (*12*, *13*).

Public education programs. Educational efforts to prevent alcohol and drug abuse in this country are mainly in the form of public education and

school-based programs, both of which have achieved moderate results (*14*).

While public education, most often through the mass media, is generally acknowledged to have succeeded in increasing public awareness of the hazards of alcohol and drug misuse, it has probably had little effect on the behavior of those who have developed dependency and are most likely to be disabled by alcohol or drugs.

Public education campaigns have been more successful when they were focused on the consequences of alcohol misuse, such as in drunken driving and fetal alcohol syndrome. In both instances, public pressure generated by public education campaigns has led to changed public attitudes, corrective legislation, increased funding for research and prevention and, most important, decreases in incidence (*15–17*).

School-based programs. Like public education programs, school-based prevention programs are supposed to increase knowledge about and to change attitudes toward alcohol and drugs. In recognition of the presumed malleability of the target population, some programs have been designed to teach values and decision-making skills and to help develop social competence.

Some of these programs have met the goals (*18, 19*). However, some observers complain that methodological problems prevent an unequivocal interpretation of favorable outcomes (*20*), while others have suggested that attitude clarification and decision-making programs actually undermine the knowledge and attitudes curriculum (*21*). Data that document changes in drinking behavior following full implementation of such programs are rare, as are changes in the incidence of drinking and driving, or changes in the risk of development of alcoholism later in life.

Students who are most responsive to school-based programs probably are those for whom such programs are least necessary. Programs may not be reaching those children who are at greatest risk to develop alcohol and drug problems—those with a family history of abuse, or a developmental history of antisocial behavior, and those from ethnic and racial minority groups, for example—because many of these children may remain physically or psychologically beyond the reach of traditional, school-based prevention programs. Similar problems exist with college campus-based prevention programs, which have developed in increasing numbers in recent years. They have produced evidence for changes in the knowledge bases and attitudes concerning alcohol and drugs (*22, 23*). However, they have not been able to document changes in drinking behavior in persons at greatest risk of misusing alcohol and drugs (*24*).

Control of availability. Unlike educational programs, laws and regulations designed to control the availability of alcohol, by making its acquisition more expensive or raising the minimum age of purchase, have had a demonstrable impact on both use and misuse.

Even relatively small increases in the price of distilled spirits (largely from State taxes) have been reported to reduce both consumption and deaths from cirrhosis and automobile crashes (*25, 26*). Data from a related series of studies suggest that higher prices for beer, the alcoholic beverage of choice among youth, reduce both the number of young people who drink and the incidence of both heavy and frequent drinking (*27, 28*).

Saffer and Grossman investigated relationships between State excise taxes on beer and motor vehicle accident mortality rates for young people during the years 1975–81 (*29*). They found that States with relatively high excise taxes on beer had lower death rates from motor vehicle accidents for those 15 to 24 years of age than States with lower excise taxes. Extrapolating from the findings, the investigators estimated that, had the Federal excise tax on beer risen with the rate of inflation since 1951 (it did not), the lives of 1,022 youths would have been saved.

In a related review, Ornstein and Levy concluded that, in this country, beer is relatively price-inelastic, distilled spirits is price-elastic, and the price-elasticity of wine remains uncertain (*30*). In other words, changes in the price of beer are more likely than those of spirits or wine to affect consumption, largely because beer is the alcoholic beverage of choice among the young, for whom price can be an important barrier to consumption.

The findings, taken together, encourage the view that restricting the availability of alcoholic beverages by making them more expensive impacts on both alcohol consumption and its consequences. In the United States, this impact appears to be greatest on younger people, for whom price is a more important issue.

The findings do not respond directly to a related question, however, that asks whether price is as important a determinant of consumption for those who habitually and regularly abuse alcohol as it is for those who do not. Most observers doubt whether price alone impacts substantially on rates

of alcoholism in most western countries, because the continued availability of alcohol to those dependent on it is more important than its modest cost.

Increasing the minimum age of purchase does appear to have affected rates of alcohol misuse. Wagenaar reported reductions of 16 percent in single vehicle night-time crash involvement and 19 percent in police-reported, alcohol-related injuries after legislation raising the minimum drinking age to 21 in Michigan was passed (*31*). The effect of the nationwide drive by the National Highway Traffic Safety Administration to raise the minimum age of purchase was a net 13 percent fewer fatal crash involvements per year per affected driver in the 13 States where the minimum age of purchase had been raised (*32*).

However, there is a major difficulty in interpreting data on the impact of changes in minimum drinking age. At about the same time that efforts began to raise the minimum age of purchase, both State and local authorities as well as voluntary groups began campaigns to reduce the incidence of drunken driving by other means. The means included markedly increased enforcement efforts, a dramatic stiffening of the legal and financial consequences of drunken driving, more public attention and efforts by citizens' groups like MADD and SADD, and a jump in public education activities. The net effect, a significant reduction in the involvement of youth in alcohol-related crashes during most of the past several years, likely has been a function of all factors, those affecting availability and those focused directly on drunken driving.

While we have seen a reduction in alcohol-related crashes, we cannot be sure just how they came about, which makes it more difficult to undertake similar changes elsewhere.

Prevention summary. The survey of current approaches to prevention suggests that meaningful changes in consumption as a direct result of alcohol education programs have been difficult to document, especially for alcohol dependent persons.

Restrictions on the availability of alcohol, by raising taxes as well as the minimum age of purchase, have brought about changes in consumption by youths and in its consequences. Whether control of availability affects 20 percent of the population who consume 80 percent of the alcoholic beverages is unknown. The issue is debated by preventionists who support control of availability and those who oppose it. Control of availability, to the limited extent it has been used in this country, has not been shown to seriously impact on drinking by alcohol dependent persons.

Intervention

While treatment for those who have developed long-term alcohol dependence appears to yield modest positive benefits, predictors of positive outcomes relate more to the personal resources clients bring to treatment than to variations in the treatments themselves. Moreover, we are able to prevent some of the consequences of alcohol misuse, including drunken driving and the fetal alcohol syndrome, better than we are able to prevent long-term alcohol abuse itself.

Taking these conclusions as valid, greater efforts to intervene in developing patterns of alcohol misuse would make sense. Three promising efforts of this kind include early intervention programs for alcohol misusers who have not yet developed the physical and behavioral stigmata of chronic alcoholism; relapse-prevention programs, which recognize the difficulties for both the recovering alcoholic and the early abuser in maintaining long-term abstinence, which are different from the difficulties in achieving abstinence in the first place; and rational means to heighten the motivation of alcohol misusers and abusers to make meaningful changes in their drinking behavior.

Intervention with young adults. Many investigators have reported promising results from trials of treatment with a unique group of clients (*33–39*). Typically recruited through newspaper advertisements, clients in the trials were selected to ensure that they were in good physical health, did not have a history of psychiatric treatment, had maintained social stability and support, had been problem drinkers for a relatively short period of time, did not see themselves as alcoholic, rejected abstinence as a long-term treatment goal, and wished to receive brief treatment that would be minimally disruptive of their daily routine. While variously labelled, these clients were perhaps best considered to be young adult alcohol misusers. Few would have met *DSM–III–R* (Diagnostic and Statistical Manual of Mental Disorders, 3*rd* Ed., Revised. American Psychiatric Association, Washington, DC, 1987) criteria for moderate or severe alcohol dependence.

Typically, the clients were seen for several months in outpatient settings. The goal of their

brief treatment, in virtually every instance, was to enable them to stabilize, and ultimately, to moderate their drinking, so that it did not reach alcoholic levels. A variety of behavioral techniques were employed to teach the clients self-control skills to help them make more appropriate choices about when, where, and how much they drink.

The overall results of attempts to induce young adult problem drinkers to modify a risky pattern of drinking have been promising. Typical reductions in rates of drinking of 30 percent and more have been reported, although followup periods have rarely extended beyond a year. Nonetheless, brief interventions intended specifically for persons who have just begun to misuse alcohol, designed to prevent the development of alcoholism in the future as much as to treat current misuse, hold considerable promise. Additional research on outcomes is needed in order to confirm the durability of the treatment effects, determine the identity of clients for whom this kind of intervention is appropriate, and investigate the extent to which the interventions actually inhibit the progression of drinking to alcoholic proportions.

The developers of broad-based employee assistance programs and wellness programs in industry have begun to target the same client population and to entertain similar goals. One of their aims, relatively new, is to attract to treatment not only those whose alcohol and drug problems are of long duration and great severity, but those who recently had been arrested for the first time for drunken driving, started to experience problems on the job or at home because of alcohol or drugs, or begun to ask themselves whether they were beginning to develop a problem. They are the individuals who do well in the less insistent interventions, those associated with wellness programs and generally focused on other health risks (*40*, *41*). While there is little data on the degree to which the programs actually succeed in inducing early alcohol and drug misusers to commit themselves to a program designed to modify their drinking pattern, the thrust of the growing effort is clear and data may be expected to result. (*42*, *43*).

Cognitive mediation of relapse-related phenomena. Marlatt and coworkers have described the importance of controlling cognitively mediated, relapse-related phenomena during the recovery and maintenance period of both alcohol dependence and alcohol abuse (*44*, *45*). Considering the post-treatment cognitions of recovering alcoholics, Marlatt and coworkers emphasize what they call the "abstinence violation effect," the scenario in which a single "slip" by the recovering alcoholic inexorably leads him or her to conclude that recovery is impossible, making a quick return to alcoholic drinking inevitable.

Marlatt and coworkers propose a series of cognitively based interventions to alter the alcoholic's conviction that a single "slip" condemns him or her to a lifetime of alcoholism, degradation, and worthlessness. They offer hope and a set of intervention approaches to those who share the belief that treatment does not end when the patient leaves the hospital and that intervention during the maintenance phase of treatment is a long-term enterprise that requires as much attention from both client and clinician as the inpatient treatment that precedes it.

More recently, Marlatt and his coworkers have applied cognitive therapy methods derived from his relapse-prevention model to heavy drinking University of Washington fraternity members (*46*). Recognizing the justified association between alcohol misuse and fraternity drinking practices, Marlatt developed an association with a fraternity at the university that permits him to test intervention strategies designed to help moderate drinking behavior.

Treatment motivation and outcomes. Miller (*47*) and coworkers (*48*) described the factors which influence motivation for treatment. Their aim was to develop procedures to heighten motivation, on the justified assumption that increasing motivation for treatment will increase the likelihood that alcohol-abusing clients will benefit from treatment.

Miller concluded from an extensive review of the literature that motivational programs need to provide the abusive drinker with feedback from a trusted friend or counselor about the likelihood of the drinker developing serious alcohol-related problems (*47*). Miller's conviction derives in part from a series of studies conducted in this country and in Europe that indicate that relatively brief interventions, properly performed, can have a lasting impact upon problem drinkers. The impact can be comparable to much more extensive, costly, and prolonged interventions (*49–51*). Miller and others are impressed with Edwards' classic demonstration (*52*) that brief "advice" about the seriousness of a drinking problem can, under certain circumstances, lead to changes in the drinking behavior of alcohol dependent persons, changes as pronounced as those induced by more extensive treatment.

At the core of Miller's effort to heighten motiva-

tion is the Drinker's Check-up, a 3-hour assessment procedure ostensibly designed to detect both risk factors and the harmful consequences of overdrinking on neuropsychological, physical, social, and psychological behavior (*53*). Implicit in the assessment is Miller's conviction that informing the early-stage problem drinker of the details of alcohol's harmful effects may lead the drinker to do something about the drinking, something the drinker might not otherwise do.

Initial research on the Drinker's Check-Up indicates that the results of this assessment have greater short- and long-term effects on drinking when the feedback is presented in such a way as to elicit and reflect the drinker's reactions to it, rather than in a confrontational manner. Miller explains these findings by pointing to the importance of inducing alcohol misusers to take personal responsibility for a change in their drinking behavior. The Drinker's Check-Up, and the manner in which its results are given the subjects, represent a promising vehicle for getting drinkers to take responsibility for their own behavior and to benefit from the brief but accurate advice the counselor is able to give.

Conclusion

Effective alternatives to traditional treatment approaches are available for long-term, alcohol dependent persons. New methods of prevention and innovative, brief interventions used in treating those less severely dependent, offer a wide array of tools with which to confront the alcohol and drug problems of patients.

References

1. National Institute on Alcohol Abuse and Alcoholism: Sixth special report to Congress on alcohol and health. DHHS Publication No. (ADM) 87-1519, U.S. Government Printing Office, Washington, DC, 1987.
2. Ravenholt, R. T.: Addiction mortality in the United States, 1980: tobacco, alcohol, and other substances. Popul Dev Rev 10: 697-724 (1984).
3. Nathan, P. E., and Skinstad, A-H.: Outcomes of treatment for alcohol problems: current methods, problems, and results. J Consult Clin Psychol 55: 332-340 (1987).
4. Emrick, C. D.: A review of psychologically oriented treatment for alcoholism: I. The use and interrelationships of outcome criteria and drinking behavior following treatment. J Stud Alcohol 35: 534-549 (1974).
5. Vaillant, G. E.: The natural history of alcoholism. Harvard University Press, Cambridge, MA, 1983.
6. Emrick, C. D.: A review of psychologically oriented treatment of alcoholism: II. The relative effectiveness of different treatment approaches and the effectiveness of treatment versus no-treatment. J Stud Alcohol 36: 88-108 (1975).
7. Polich, J. M., Armor, D. J., and Braiker, H. B.: The course of alcoholism: four years after treatment. Wiley, New York, 1981.
8. Miller, W. R., and Hester, R. K.: Inpatient alcoholism treatment: who benefits? Am Psychol 41: 794-805 (1986).
9. Miller, W. R., and Hester, R. K.: The effectiveness of alcoholism treatment: what research reveals. *In* Treating addictive behaviors: processes of change, edited by W. R. Miller, and N. Heather, Plenum Publishing Corp., New York, NY, 1986, pp. 121-174.
10. National Institute on Alcohol Abuse and Alcoholism: Fifth special report to Congress on alcohol and health. DHHS Publication No. (ADM) 84-1291, U.S. Government Printing Office, Washington, DC, 1985.
11. Nathan, P. E.: Outcomes of treatment for alcoholism: current data. Ann Behav Med 8: 40-46 (1986).
12. Levy, D., and Sheflin, N.: New evidence on controlling alcohol use through price. J Stud Alcohol 44: 929-937 (1983).
13. Levy, D., and Sheflin, N.: The demand for alcoholic beverages: an aggregate time series analysis. J Public Policy Marketing 4: 47-54 (1985).
14. Nathan, P. E.: Failures in prevention: why we can't prevent the devastating effect of alcoholism and drug abuse on American productivity. Am Psychol 38: 459-468 (1983).
15. Fell, J. C.: Alcohol in fatally injured drivers—1984. NHTSA Research Notes, June 1985.
16. Fell, J. C., and Klein, T.: The nature of the reduction in alcohol in U.S. fatal crashes. SAE Tech Paper Series No. 860038, Society of Automotive Engineers, Warrendale, PA, 1986.
17. Prager, K., et al.: Smoking and drinking behavior before and during pregnancy of married mothers of live born infants and stillborn infants. Public Health Rep 99: 117-127 (1984).
18. Braucht, G. N., and Braucht, B.: Prevention of problem drinking among youth: evaluation of educational strategies. *In* Prevention of alcohol abuse, edited by P. M. Miller, and T. D. Nirenberg. Plenum Publishing Corp., New York, NY, 1984, pp. 253-279.
19. Rootman, I.: Preventing alcohol problems: a challenge for health promotion. Health Educ 24: 2-7 (1985).
20. Flay, B.: What we know about the social influences approach to smoking prevention: review and recommendations. *In* Prevention research: deterring drug abuse among children and adolescents, edited by C. Bell and R. Battjes. NIDA Research Monograph Series No. 63, DHHS Publication No. (ADM) 85-1334. U.S. Government Printing Office, Washington, DC, 1985, pp. 67-112.
21. Schlegal, R., Manske, S., and Page, A.: A guided decision making program for elementary school students. *In* Prevention of alcohol abuse, edited by P. M. Miller, and T. D. Nirenberg. Plenum Publishing Co., New York, NY, 1984, pp. 407-439.
22. Goodstadt, M. and Caleekal-John, A.: Alcohol education programs for university students: a review of their effectiveness. Int J Addict 19: 721-741 (1984).
23. Kraft, D.: A comprehensive prevention program for college students. *In* Prevention of alcohol abuse, edited by P. M. Miller, and T. D. Nirenberg. Plenum Publishing Co., New York, NY, 1984, pp. 327-369.
24. Moskowitz, J.: The primary prevention of alcohol problems. Prevention Research Center, Berkeley, CA, 1986.
25. Cook, P.: The effect of liquor taxes on drinking, cirrhosis

and auto accidents. *In* Alcohol and public policy: beyond the shadow of prohibition, edited by M. Moore and D. Gerstein. National Academy Press, Washington, DC, 1981, pp. 255-285.

26. Cook, P., and Tauchen, G.: The effect of liquor taxes on heavy drinking. Bell J. Econ 13: 379-390 (1982).
27. Grossman, M., Coate, D., and Arluck, G. M.: Price sensitivity of alcoholic beverages: youth alcohol use and motor vehicle accident mortality. *In* Control issues in alcohol abuse prevention: strategies for States and communities, edited by H. D. Holder. JAI Press, Inc., Greenwich, CT, 1988, pp. 169-198
28. Coate, D., and Grossman, M.: Effects of alcoholic beverage prices and legal drinking ages on youth alcohol use: results from the Second National Health and Nutrition Examination Survey. National Bureau of Economic Research, New York, NY, 1986.
29. Saffer, H., and Grossman, M.: Effects of beer prices and legal drinking ages on youth motor vehicle fatalities. National Bureau of Economic Research, New York, NY, 1985.
30. Ornstein, S., and Levy, D.: Price and income elasticities of demand for alcoholic beverages. *In* recent developments in alcoholism, vol. 1. Plenum Publishing Co., New York, NY, 1983, pp. 303-345.
31. Wagenaar, A. C.: Raised legal drinking age and automobile crashes: A review of the literature. Abstr Rev Alcohol Driving 3: 3-8 (1982).
32. Arnold, R. D.: Effect of raising the legal drinking age on driver involvement in fatal crashes: The experience of thirteen States. NHTSA Tech. Rep. DOT HS 806 902, U.S. Government Printing Office, Washington, DC, 1985.
33. Annis, H. M.: Is inpatient rehabilitation of the alcoholic cost effective? Con position. Adv Alcohol Subst Abuse 5: 179-185 (1986).
34. Miller, W. R.: Behavioral treatment of problem drinkers: a comparative outcome study of three controlled drinking therapies. J Consult Clin Psychol 46: 74-86 (1978).
35. Miller, W. R., Gribskov, C. J., and Mortell, R. L.: Effectiveness of a self-control manual for problem drinkers with and without therapist contact. Int J Addict 16: 1247-1254 (1981).
36. Miller, W. R., Pechacek, T. F., and Hamburg, S.: Group behavior therapy for problem drinkers. Int J Addict 16: 829-839 (1981).
37. Miller, W. R., Taylor, C. A., and West, J.: Focused versus broad-spectrum behavior therapy for problem drinkers. J Consult Clin Psychol 48: 590-601 (1980).
38. Sanchez-Craig, M., Annis, H. M., Bornet, A. R., and MacDonald, K. R.: Random assignment to abstinence and controlled drinking: evaluation of a cognitive-behavioral program for problem drinkers. J Consult Clin Psychol 52: 390-403 (1984).
39. Sanchez-Craig, M., and Wilkinson, D. A.: Brief treatments for alcohol and drug problems: practical and methodological issues. Paper presented at Fourth International Conference on Treatment of Addictive Behaviors, Bergen, Norway, August 1987.
40. Feldman, R. H. L.: Evaluating health promotion in the workplace. *In* Behavioral health, edited by J. D. Matarazzo, et al. Wiley-Interscience, New York, NY, 1984, pp. 1087-1093.
41. Naditch, M. P.: The Staywell program. *In* Behavioral health, edited by J. D. Matarazzo, et al. Wiley-Interscience, New York, NY, 1984, pp. 1071-1078.
42. Nathan, P. E.: Johnson & Johnson's Live for Life: a comprehensive positive lifestyle change program. *In* Behavioral health, editied by J. D. Matarazzo, et al. Wiley-Interscience, New York, NY, 1984, pp. 1064-1070.
43. Nathan, P. E.: Alcohol prevention in the workplace. *In* Prevention of alcohol abuse, edited by P. M. Miller and T. D. Nirenberg. Plenum Publishing Co., New York, NY, 1984, pp. 387-406.
44. Marlatt, G. A., and Gordon, J.: Relapse prevention. Guilford Press, New York, NY, 1985.
45. Marlatt, G. A., and Rohsenow, D. J.: Cognitive processes in alcohol use: expectancy and the balanced placebo design. *In* Advances in substance abuse: behavioral and biological research, edited by N. K. Mello. JAI Press, Greenwich, CT, 1980, pp. 159-199
46. Baer, J. S., et al.: A comparison of three methods of secondary prevention of alcohol abuse with college students: Preliminary results. *In* Addictive behaviors: prevention and early intervention, edited by T. Loberg, et al. Swets & Zeitlinger, Amsterdam. In press, 1988.
47. Miller, W. R.: Motivation for treatment: a review with special emphasis on alcoholism. Psychol Bull 98: 84-107 (1985).
48. Miller, W. R., and Sanchez, V. C.: Motivating young adults for treatment and lifestyle change. Paper presented at Conference on Issues in Alcohol Use and Misuse by Young Adults, University of Notre Dame, South Bend, IN, April 1988.
49. Heather, N., Whitton, B., and Robertson, I.: Evaluation of a self-help manual for media-recruited problem drinkers: six month follow-up results. Br J Clin Psychol 25: 19-34 (1986).
50. Kristensen, H.: Studies on alcohol related disabilities in a medical intervention, Ed 2. University of Lund, Malmo, Sweden, 1983.
51. Ritson, B.: The merits of simple intervention. *In* Treating addictive behaviors: processes of change, edited by W. R. Miller, and N. Heather. Plenum Press, New York, NY, 1986, pp. 375-387.
52. Edwards, G., et al.: Alcoholism: a controlled trial of "treatment" and "advice". J Stud Alcohol 38: 1004-1031 (1977).
53. Miller, W. R., Sovereign, R. G., and Krege, B.: Motivational interviewing with problem drinkers: II. The Drinker's Check-up as a preventive intervention. Behav Psychother. In press, 1988.