

Many of the countries in which Cuban medical personnel are working, however, are clearly in need of such help. Until the United States is ready to share its medical resources on a large scale, many countries of the third world are likely to continue to accept such help from our small southern neighbor.

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Pilot Study of Smoking, Alcohol and Drug Abuse Prevention

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Abstract: A longitudinal pilot study gathered data on the onset and prevention of smoking, alcohol, and drug abuse among 526 students from two junior-high-schools in California. Over two school years, students who were trained to resist social pressures toward tobacco, alcohol, and drug use began smoking at less than one-half the rate of those who did not receive special training. Frequent alcohol and marijuana use was also less prevalent among the students who received such training. (*Am J Public Health* 1980; 70:719-721.)

Preventing the onset of cigarette smoking is a major public health goal.¹ Tobacco use is difficult for individuals to control and the usual pattern of life-long, dependent smoking is associated with serious health consequences. Although moderate use of alcohol and marijuana is widespread, and

many people believe that judicious use of these substances may create no serious social or medical risk,² there is general agreement that frequent use of these substances among young adolescents should be prevented. Thus schools and health agencies have sought effective programs to deter or delay smoking, alcohol, and drug use among junior-high-school students. Narrow strategies of prevention have tended to yield disappointing or paradoxical results,^{1,3} prompting researchers to study the problem in search of more effective preventive measures.

Social pressure, particularly peer pressure, appears to be an important factor favoring the onset of early adolescent smoking,⁴ and is probably also involved in the onset of alcohol and drug abuse.⁵ These findings suggest that training students to resist specific social pressures toward tobacco, alcohol, and drug use may reduce the frequency of those behaviors. To gather data on that hypothesis, our research team has been conducting a longitudinal study of the onset of smoking, alcohol, and marijuana use among students in two roughly-matched, middle-class junior-high-schools in California. The background and early results of our investigation are published elsewhere.⁶ This report presents one further year of follow-up study.

Study Design

In one of the two schools studied, following six hours of

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training, teams of five to seven high-school students (chosen because of their influence as models for the behavior of younger students⁷) led six classroom sessions of instruction during the first school year and two further 45-minute sessions in the second year. Although high-school students can be effective counselors,⁸ they acted as leaders for structured sessions whose objective was to increase students' commitment not to start smoking and to psychologically "inoculate" them against pressures to smoke.⁹ For example, students learned to respond to advertisements implying that women who smoke are "liberated" by saying, "She's not really liberated if she is hooked on tobacco." Several of the later sessions included similar activities aimed at deterring use of alcohol and other drugs.

Students in the second school had been exposed to an intensive course of health education (The School Health Curriculum Project or "Berkeley Project"), but were not given special training in resisting pressures toward tobacco, alcohol, or drug use. The pairing of the two schools and their assignment to "experimental" and "control" conditions was not random. The local Lung Association had identified the school where we delivered the program as one in which administrators were seeking a solution to admitted problems of smoking, alcohol, and drug abuse. The "control" school was chosen as a convenient and nearby demographic match where administrators were willing to allow our surveying and breath-testing procedures. The principal of that school considered the existing program of health education to be effective and believed that the onset of smoking was relatively uncommon among his students. The communities served by the two schools were very similar. The rate of parental smoking reported by the students was just above 40 per cent in both schools.

To measure the behaviors of interest we relied on anonymously self-reported data of which students were not forewarned. At all follow-up surveys in both schools students gave breath samples along with their self-reports and were told that these samples could be used to verify their responses. In previous studies this kind of procedure has been shown to markedly increase the number of students who admit smoking.¹⁰ Unfortunately, carbon monoxide in exhaled breath only indicates very recent smoking or exposure to smoke or automobile fumes and cannot accurately detect the limited, experimental smoking of early adolescence. Alcohol and drug use are even more difficult to detect and we were forced to rely entirely on self-reported data. Smoking was measured at all surveys (three times yearly over the two school years). But because we were concerned about the possibility of encouraging alcohol and drug use by asking about it, we did not include items to measure those behaviors until the end of the first year of study. This deprived us of a baseline for these variables.

Results and Discussion

Twenty-one months of longitudinal observation of smoking are displayed in Figure 1. These data are based on the students who were in school at each follow-up point. Be-

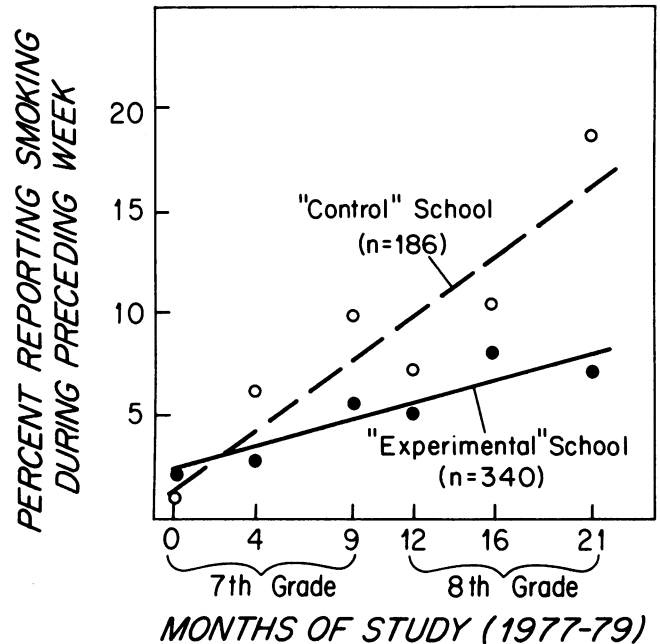


FIGURE 1—Changes in the Reported Prevalence of Weekly Smoking from Longitudinal Observation of Two Study Cohorts

cause we guaranteed respondents' anonymity, we were not able to discriminate between those who had been represented in earlier surveys and those who had been absent or who transferred from another school. The numbers in parentheses refer to the usable responses at the final follow-up survey. Similar numbers of responses were collected at each survey.

The proportions of students who reported smoking in the past week were similar at baseline. But onset rates in the two schools have diverged more-or-less regularly over the following period. The estimated linear onset rate was 8.4 per cent per year in the control school, but only 3.2 per cent per year in the experimental school. Despite the variation around these trends, the difference between the slopes of the two prevalence lines is statistically significant ($p < .05$). At the follow-ups, there were also significant differences in the frequency of students reporting being "high" or drunk on alcohol during the past week or day between the control and experimental school. At the latest follow-up, the difference was 16.2 per cent versus 5.6 percent ($p < .01$). We also found that students reported more frequent marijuana use in the control school. At the latest follow-up 14.9 per cent of those in the control school reported smoking marijuana during the past week or day compared to 7.6 per cent in the experimental school ($p < .01$). The proportion of students reporting less frequent alcohol and marijuana use was about the same in the two schools.

It is possible that these results are biased by natural differences between the students in the two schools, by statistical regression, or by "pseudo-regression" caused by deliberately choosing a population with reportedly acute problems as the experimental group and one with fewer reported

problems as the control group.¹¹ It is also possible that self-reports were biased in the experimental school, despite our efforts to encourage accurate responses. However, we believe this pilot study provides encouraging support for the hypothesis that the onset of behaviors like smoking, alcohol, and marijuana use can be deterred by training young adolescents to resist temptations and inducements from peers and others. The exact processes through which this apparent effect has been produced are, of course, uncertain. Our impression is that the program created generally negative attitudes about smoking at least as much as it actually taught skills for resisting pressures to smoke. In order to gain more certain data on these questions, we have begun a randomized, multi-site experiment in which we will measure and analyze both processes and long-term physiological outcomes among matched cohorts from widely diverse cultural and geographic populations. Our educational materials and measurement instruments are available upon request by other interested researchers.

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1980 Certification Examination for Pediatric Nurse Practitioners/Associates (PNP/As)

The National Board of Pediatric Nurse Practitioners and Associates will administer the fourth National Qualifying Examination on October 24, 1980. Since the first examination was administered in 1977, 1,787 have achieved a passing score and have been certified by The National Board.

The member organizations of The National Board of PNP/As are the National Association of Pediatric Nurse Associates and Practitioners, The American Academy of Pediatrics, and The Association of Faculties of Pediatric Nurse Associate/Practitioners Programs. The National Board of Medical Examiners assists in examination development, administration and evaluation. Registration will begin June 1, and will end August 8, 1980. Information concerning the eligibility criteria, applications and questions regarding the examination may be referred to The National Board of Pediatric Nurse Practitioners and Associates, 550 N. Broadway, Suite 115A, Baltimore, MD. 21205, attention: Mary Kaye Willian, RN, PNA, Executive Director. Telephone: 301/955-8280.