

# DO SCHOOL-BASED SOCIAL SKILLS TRAINING PROGRAMS PREVENT ALCOHOL USE AMONG YOUNG PEOPLE?

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School-based social skills training programs are among the most popular form of alcohol misuse prevention strategies employed in the USA. This paper reviews published evaluations of this strategy, in an attempt to assess consistency of findings across studies. The majority of studies show that social skills training programs, while not detrimental, have little or no impact upon participants in terms of their alcohol use behavior. Reasons why such programs are ineffective are discussed, and suggestions made concerning the direction of future primary prevention research.

Keywords: School-based alcohol prevention programs, social skills training.

## INTRODUCTION

Developments in school-based substance abuse prevention programs over the past thirty years are typically described in terms of three phases in which specific strategies have dominated research and practice (Botvin, 1986; 1990; Ellickson & Bell, 1990; Falco, 1992; Perry & Kelder, 1992a; 1992b). During the first of these (early-1960s to early-1970s), programs were information-based and concerned primarily with imparting factual information about drug effects and drug use. These programs were concerned primarily with changing knowledge and attitudes rather than behavior, and evaluations showed that they were largely ineffective in achieving these objectives (Braucht *et al.*, 1973; Randall and Wong, 1976; Kinder, Pape and Walfish, 1980). During the second phase of primary prevention (early-1970s to early-1980s), affective programs were dominant. Many of these were not drug-specific, but concentrated on broader issues of personal development; typical program components were decision-making, values clarification, and stress-management (Botvin, 1990; Hansen, 1992). A series of reviews indicated that these programs had little influence on either drug use or hypothesized intervening variables such as self-esteem (Battjes, 1985; Moskowitz, 1989).

The social influence model has dominated the third phase of drug abuse prevention research (early-1980s to present). There are two basic types of social influence program, one

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of which is focussed principally on resistance skills training and one of which incorporates broader personal and social skills training (Botvin, 1990; Hansen, 1992). The former program is typically delivered in less than ten sessions, and incorporates just one or two additional components (usually factual information and establishing "conservative norms" about prevalence) in addition to resistance skills training. Evaluation studies of these programs are reviewed elsewhere (Gorman, in press). In contrast, the social skills training approach is premised on the idea that a wide range of psychosocial risk factors are important in the development of alcohol abuse, and therefore general skills training is essential as well as training in "domain-specific" skills (e.g., resistance skills) if alcohol use and abuse among young people is to be prevented (Caplan *et al.*, 1992). Social skills training programs take between ten and twenty sessions to deliver, and are comprised of six or more specific components (see Table 1 for details).

Proponents of the resistance skills training and social skills training approaches maintain that both strategies are of demonstrated empirical efficacy in reducing alcohol and other drug use among young people (Botvin, 1986; 1990; Botvin and Botvin, 1992; Ellickson and Bell, 1990; Falco, 1992; Perry and Kelder, 1992a; 1992b). For example, writing in 1992, Botvin and Botvin stated: "The only prevention approaches that have been demonstrated to effectively impact on substance use behavior are those that teach junior high school students social resistance skills either alone or in common with approaches designed to enhance general personal competence by teaching an array of personal and social life skills" (Botvin and Botvin, 1992, page 924).

In addition to the traditional literature reviews cited above, reviewers employing the statistical technique known as "meta-analysis"—most notably Tobler (1986; 1992)—have also argued that skills-based techniques are effective for the early-adolescent audience that is the target of most prevention programs. However, it has recently been pointed out that Tobler's reviews are not comprehensive (Hansen, 1992), and include a number of methodologically unsound studies in which the interventions that were assessed "are not, by and large, drug prevention programs as the term is generally understood" (Gerstein and Green, 1993, page 82). The authors of the latter report suggest that reviewers should examine studies "that employ much more tightly defined contents and more careful scientific designs than appear typical among the types of studies that carry so much weight in some of the meta-analyses" (Gerstein and Green, 1993, page 85). For his part, Hansen (1992) suggests that it is more useful to attempt to identify consistency of findings across studies than to estimate effect sizes as done in meta-analysis.

## SELECTION OF STUDIES

This review follows the recommendations of both Gerstein and Green (1993) and Hansen (1992). It focuses on one clearly defined question pertaining to substance abuse prevention—namely, how effective are school-based social skills training programs (delivered by personnel other than law enforcement officers) in reducing alcohol misuse? Although this is a narrowly defined question, it is of fundamental importance since alcohol (along with nicotine) is the main drug of abuse among adolescents, and school-based social skills training programs are among the most widely used prevention strategies in the United States.<sup>1</sup> Excluding evaluations of programs delivered by law enforcement officers serves only to

eliminate studies of the DARE program. These are excluded from the current review as it is well established that DARE has little or no impact on alcohol use (see Ennett *et al.*, 1994 for details). Even proponents of the social influence approach do not support the use of the DARE program as currently designed and implemented (Falco, 1992). Thus, the current review focuses on evaluations of social skills training programs delivered under circumstances and by personnel that proponents of this approach consider to be most appropriate.

The rationale for focusing exclusively on alcohol is that different types of prevention strategies may be required for different types of drugs. For although there is considerable overlap among drug using behaviors and a common set of etiological factors can be identified (Jessor and Jessor, 1977), there are also key differences at the level of pharmacological effect of the agent, individual-level vulnerability of the host, and the environmental factors that influence use (Glantz and Pickens, 1992). Each of these has potential impact on prevention programming. For example, the high addiction potential of tobacco and the infrequency with which social smoking occurs, suggests that responsible use is an inappropriate goal for smoking prevention programs. The primary prevention of smoking is, therefore, almost invariably concerned with preventing use in any form, and in this sense it is similar to the primary prevention of illicit drug use (Smart, 1992). In contrast, it may be difficult to convince young people that alcohol is to be completely avoided, not only because drinking is commonplace but also because there is evidence indicating that moderate use has some protective health consequences (Jackson, Scragg and Beaglehole, 1991). Thus, programs that have responsible use as their goal are plausible in the case of alcohol in a way that they are not with tobacco or illicit drugs. To take another example, the norms concerning tobacco use and alcohol use now differ considerably—smoking is no longer normative among adults, whereas drinking alcohol is (at least in most western industrial societies). Given these differences in broad social norms, programs that focus on changing perceptions of the prevalence of drug use are likely to stand more chance of success in preventing smoking than alcohol use.

Studies that did not employ an experimental or quasi-experimental design with both before (baseline) and after (posttest and/or follow-up) assessment of the same subjects were excluded from this review (e.g., Kim *et al.*, 1989; Kim *et al.*, 1990), as were studies that reported program effects only on knowledge, attitudes, and/or intentions to use alcohol but not on actual alcohol use (e.g., Kreutter *et al.*, 1991; Botvin *et al.*, 1994).

Using the above criteria, 12 studies evaluating nine different types of school-based social skills training programs were identified.<sup>2</sup> Two programs have been evaluated in more than one study—the Napa Project Drug Education Program and the Life Skills Training (LST) program. The remaining programs have each been evaluated in a single study. Table 1 lists the name of the programs, the studies in which they were evaluated, the number of sessions used to deliver each program, and the sessions of which each was comprised.

## REVIEW OF STUDIES

Table 2 gives details of the design of each evaluation and a summary of its principal findings. The 12 studies are grouped in the table under three headings: (1) studies reporting no effects; (2) studies reporting minor effects; and (3) studies reporting positive effects. The studies are discussed below under these three headings.

**Table 1** Details of Program Content and Evaluations

<i>Program Name</i>	<i>Evaluation Studies</i>	<i>Number of Sessions<sup>a</sup></i>	<i>Program Components</i>
Napa Drug Education	(1) Moskowitz <i>et al.</i> (1983; 1984a) <sup>b</sup>	12	Motivation
	(2) Moskowitz <i>et al.</i> (1984b)	12	Decision-making Personal goal setting Peer and media influences Assertiveness Alternatives Information
LST	(1) Botvin <i>et al.</i> (1984a)	20	Decision-making
	(2) Botvin <i>et al.</i> (1984b; 1990a)	20 + 10	Independent thinking Media influences
	(3) Botvin <i>et al.</i> (1990b; 1995)	15 + 10 + 5	Self-image enhancement Coping skills Communication skills Social skills Assertiveness Resistance skills Information
Skills Enhancement	Gilchrist <i>et al.</i> (1987)	10	Self-esteem Values clarification Decision-making Problem-solving Personal goal setting Resistance skills Information
BCST	Schinke <i>et al.</i> (1988)	10	Communication skills Resistance skills Coping skills Discrimination skills Alternatives Social network building Information
Social Skills Training	Baer <i>et al.</i> (1988)	22	Self-esteem enhancement Assertiveness Resistance skills Advertising resistance Resisting adult pressure Self-expression Alternatives Information
TAPP	Hansen, Malotte and Fielding (1988)	15	Decision-making Values clarification Goal setting Stress management Resistance skills Norm setting Pledge Information

**Table 1** (Continued)

<i>Program Name</i>	<i>Evaluation Studies</i>	<i>Number of Sessions<sup>a</sup></i>	<i>Program Components</i>
PRIDE	LoSciuto and Ausetts (1988) <sup>c</sup>	24	Communication skills Decision-making Problem-solving Sibling relationships Adult relationships Opposite sex relationships Peer influences Attitudes to drugs Self-esteem/awareness
PYDP	Caplan <i>et al.</i> (1992)	20	Stress management Self-esteem Problem solving Social network building Assertiveness Resistance skills Information
AMPS-E	Shope <i>et al.</i> (1994)	8 + 5 + 4	Norm-setting Problem solving Decision-making Resistance skills Refutation skills Information

<sup>a</sup> Typically a class period of 45 to 60 minutes. In two of the studies, subjects in the intervention group received booster sessions in subsequent years (the third LST study and the AMPS-E). In one other study, about half of those in the intervention group received booster sessions (the second LST study).

<sup>b</sup> Also included a teacher training course (Effective Classroom Management) and an alternatives program.

<sup>c</sup> Also included a teacher training course and a parent training course.

### *Studies Reporting No Effects*

*The Napa Project—Study 1* (Moskowitz *et al.*, 1983; 1984a). The Napa Project involved a series of evaluations of different types of prevention programs (Schaps *et al.*, 1986). The social skills program—called simply “drug education”—evolved out of an earlier 10-session affective program that was principally concerned with decision-making skills, alternatives to drug use, and information (Schaps *et al.*, 1982). In its revised form, the curriculum was expanded to 12 sessions, and components on personal goal setting, motivation, assertiveness, and peer and media influences on drug use were added.

The first Napa evaluation assessed the combined effects of the drug education program as taught by a specialist in health education and two other prevention strategies. The first of these was a teacher training program (Effective Classroom Management—ECM) designed to improve the classroom management and communication skills of teachers and their sensitivity to the cognitive and affective needs of students. The second was an alternatives program, that enabled students to participate in a Cross-Age Tutoring Course or a School Store. The former dealt with listening and communication skills, tutoring behavior, and reading and language development among elementary school children. The latter involved students in activities such as advertising, market research, and accounting.

Seventh grade students from one suburban school received the intervention, and those from another school acted as a comparison group. At baseline, 419 students were in the

**Table 2** School-based Social Skills Training Programs: Basic Details and Summary of Results

<i>Authors</i>	<i>Program Name</i>	<i>Conditions<sup>a</sup></i>	<i>Baseline n (and age of subjects)<sup>b</sup></i>	<i>Follow-up (months) (% followed-up<sup>c</sup>)</i>	<i>Type of comparison group<sup>d</sup></i>
<i>(1) Studies Reporting no Effects</i>					
Moskowitz <i>et al.</i> (1983; 1984a)	Napa-1	SST Comp	687 (12)	PT, 12 (69%)	NR-school
Summary of Results. <sup>e</sup> No statistically significant effects on alcohol use.					
Moskowitz <i>et al.</i> (1984b)	Napa-2	SST Comp	473 (12)	PT, 5 (74%)	RA-school
Summary of Results. No statistically significant effects on alcohol use.					
Botvin <i>et al.</i> (1984b; 1990a)	LST-2	SST (teacher) SST (peer) SST (teacher & booster) SST (peer & booster) Comp	1311 (12)	PT, 12 (76%)	RA-school
Summary of Results. No statistically significant positive differences between the intervention groups and comparison group at follow-up on any measure of alcohol use.					
Baer <i>et al.</i> (1988)	SST	SST Affective Comp	1037 (13)	24 (60%)	NR-classroom
Summary of Result. No statistically significant effects on alcohol use.					
Hansen, Malotte and Fielding (1988)	TAPP	SST Comp	Cohort-1 1221 (12) Cohort-2 1707 (11&12)	Cohort-1 PT, 3, 12, 24, 36 (see note <sup>f</sup> ) Cohort-2 PT, 12, 24 (see note <sup>f</sup> )	RA-school
Summary of Results. No statistically significant effects on alcohol use for either cohort.					
LoSciuto and Ausetts (1988)	PRIDE	SST Comp	1084 (11&12)	PT (69%)	RA-school & classroom
Summary of Results. No statistically significant effects on alcohol use.					
<i>(2) Studies Reporting Minor Effects</i>					
Botvin <i>et al.</i> (1990b; 1995)	LST-3	SST (personal training) SST (video training) Comp	5954 (12)	36, 60 (60%)	RA-school
Summary of Results. The 36-month follow-up compared a "high fidelity" intervention group with the comparison group. There were no statistically significant differences between the two LST groups and comparison group on measures of alcohol use, although one of the LST groups differed significantly on a measure of drunkenness. At the 60-month follow-up, both LST groups differed significantly from the comparison group on the drunkenness measure when the "full sample" was compared to the comparison group. Program effects on alcohol use measures were evident when the "high fidelity" LST group was compared to the comparison group. By the 60-month follow-up, the "high fidelity" subsample comprised only about 40% of the original LST group.					

**Table 2** (Continued)

<i>Authors</i>	<i>Program Name</i>	<i>Conditions<sup>a</sup></i>	<i>Baseline n (and age of subjects)<sup>b</sup></i>	<i>Follow-up (months) (% followed-up<sup>c</sup>)</i>	<i>Type of comparison group<sup>d</sup></i>
Caplan <i>et al.</i> (1992)	PYPD	SST Comp	282 (11&12)	PT (83%)	RA-classroom
Summary of Results. No statistically significant effects on alcohol use, but statistically significant effects on measures of alcohol abuse.					
Shope <i>et al.</i> (1994)	E-AMPS	SST Comp	3704 (11)	PT, 12, 24 (47%)	RA-school
Summary of Results. No statistically significant effects on alcohol use, and no statistically significant effect on alcohol misuse for most of the sample.					
<i>(3) Studies Reporting Positive Effects</i>					
Botvin <i>et al.</i> (1984a)	LST-1	SST Comp	239 (12)	PT, 6 (70%)	RA-school
Summary of Results. At final follow-up, significant differences were found between the groups on all three measures of alcohol use.					
Gilchrist <i>et al.</i> (1987)	Skills Enhancement	SST Comp	102 (11)	PT, 6 (82%)	RA-reservation center/school
Summary of Results. The difference between the change scores of the two groups from baseline to 6-month follow-up was statistically significant.					
Schinke <i>et al.</i> (1988)	BCST	SST Comp	137 (12)	PT, 6 (91%)	RA-reservation
Summary of Results. Alcohol use was significantly lower among the intervention group than among the comparison group at posttest and follow-up.					

<sup>a</sup> SST = social skills training. Comp = comparison group. The titles of other programs are listed in full.

<sup>b</sup> Most studies report the grade of students and not their age in years. Here, 5 is added to each grade level to estimate age (e.g., 5th grade is reported as 10 years).

<sup>c</sup> In most cases, the figure reported refers to the proportion reassessed at the final follow-up point in each study. The exceptions are: (1) the LST-1 (Botvin *et al.*, 1984a) in which the figure refers to those present at all three assessment points; and (2) the E-AMPS (Shope *et al.*, 1994) in which the figure refers to those who were present at all assessment points and met certain program attendance criteria.

<sup>d</sup> All studies include a comparison group. RA refers to random allocation and NR to non-random allocation. Details are given here of the unit used in allocating subjects to conditions, e.g., by student, by classroom, or by school. It should be noted that in some cases the actual number of units allocated is very small (e.g., two schools in Botvin *et al.*, 1984a and two reservations in Schinke *et al.*, 1988), and therefore random allocation will not serve to reduce any differences across units at pretest (see text for a discussion of this for each study).

<sup>e</sup> The term "statistically significant" is used here to refer to the traditional level of  $p < 0.05$ .

<sup>f</sup> Data from the table show that 40 (7.2%) of the 556 Cohort 1, District A students were present at all assessment points and 411 (73.9%) were present for any of the follow-up assessments points. The comparable figures for the 665 Cohort 1, District B students were 142 (21.4%) and 539 (81.1%), for the 1,379 Cohort 2, District A students the figures were 258 (18.7%) and 958 (69.0%), and for the Cohort 2, District C students the figures were 98 (29.9%) and 204 (62.2%).

intervention group and 268 in the comparison group. Due to attrition and other factors, posttest analysis was conducted on 335 intervention group subjects and 217 comparison group subjects. The sample was predominantly white (about 90%), and contained fewer females in the intervention group (47%) than in the comparison group (53%). A total of 125 students took part in the alternatives program in addition to receiving the drug education, and 18 of the 55 eligible teachers completed two-years of ECM training.

Involvement in alcohol use was assessed in terms of current use (i.e., use during the last four weeks), lifetime use, and intentions to use during the forthcoming year. Analysis of covariance showed that there were no statistically significant effects of the program on alcohol involvement at posttest for either males or females (Moskowitz *et al.*, 1984a). Two-hundred-and-eighty-six of the intervention group and 186 of the comparison group were reassessed at a one-year follow-up. Again, there was no statistically significant program effect on alcohol involvement for either males or females, nor was involvement in the alternatives program or exposure to ECM-trained teachers associated with less alcohol use (Moskowitz *et al.*, 1983).

*The Napa Project—Study 2* (Moskowitz *et al.*, 1984b). The second Napa evaluation (Moskowitz *et al.*, 1984b) was conducted in two junior high schools in a predominantly white, middle class suburban community. The study was designed to overcome some of the methodological weaknesses of the previous research, and used random allocation to study conditions and more sophisticated statistical analyses. In addition, two instructors and two schools were used, so as to reduce confounding of program delivery variables with program content variables.

Within each of the schools, eight seventh grade classes were matched in terms of students' attitudes towards and use of alcohol, cigarettes and marijuana. One school in each pair was randomly assigned to receive the program, while the other served as a no-intervention comparison. At baseline, the experimental classes comprised 237 students and the comparison classes 236 students. Subjects were posttested immediately after the program (at which point 399 were reassessed) and followed-up five months later (at which point 352 were reassessed).

A scale of involvement in alcohol use was constructed by combining questionnaire items on current use, lifetime use, and intentions to use. Analysis of covariation was used to assess the effects of the program at posttest and follow-up, with separate analyses conducted for males and females. In each case, no statistically significant differences were found at either point between the intervention group and the comparison group in terms of involvement in alcohol use.

*The Life Skills Training Program—Study 2* (Botvin *et al.*, 1984b; 1990a). The evaluation of the LST program described by Botvin *et al.* (1984b; 1990a) involved predominantly white, middle class seventh grade students from ten New York schools. Four of the schools were randomly assigned to receive a 20-session LST program delivered by regular teachers, four were randomly assigned to receive the same program delivered by older students ("peer leaders"), and two were randomly assigned to a no-intervention comparison condition. At baseline, 1311 students were assessed, of whom 1185 (90%) were reinterviewed immediately after the program. Drinking behavior was assessed using two measures: a five-point scale of amount of alcohol consumed per occasion (ranging from "one drink" to "until getting high or drunk") and a six-point scale of frequency of drunkenness (ranging from "never" to "almost everyday").

At the posttest measurement point, there were no statistically significant differences between either of the LST conditions and the comparison condition (Botvin *et al.*, 1984b). However, there was significantly less drinking per occasions among those in the peer-led LST condition than among those in the teacher-led LST condition ( $p < 0.03$ ) and the control



condition ( $p < 0.02$ ). One year after the posttest, 998 (76%) of the baseline sample were reassessed (Botvin *et al.*, 1990a). Subjects in two of the peer-led schools and those in two of the teacher-led schools participated in a 10-session LST booster program during the intervening year. In addition to the two scales used at the initial posttest (alcohol consumed per occasion and drunkenness), three other alcohol use outcome measures were used at the one-year follow-up. Drinking frequency was assessed using a five-point scale ranging from “never” to “every day”, and two dichotomous (“yes”/“no”) items assessed whether subjects had consumed alcohol in the previous week or consumed alcohol in the previous month.

Multivariate analysis showed that there were significant main effects on outcome as assessed by the monthly measure of alcohol use, the weekly measure of alcohol use, and the drinking frequency scale, but in all cases it was the teacher-led booster session that produced the worst results. The subjects in this group reported more alcohol use on these measures than subjects in any of the other intervention conditions or subjects in the comparison group.

*Social Skills Training (Baer et al., 1988).* In the evaluation reported by Baer et al. (1988), 1037 seventh grade students (mean age 13 years) were recruited from four schools in a predominantly white, middle class suburb of Houston, Texas. Subjects were first administered the baseline questionnaires and then assigned (according to convenience of scheduling) by classroom to one of three study conditions: (1) a 22-session social skills training program; (2) a 22-session affective program; and (3) a no-intervention comparison. (There were two types of comparison group—one comprised classes in schools in which the interventions were also being conducted and one comprised classes in schools where no program activities occurred. The two groups were combined for the purposes of data analysis.) Programs were conducted by research psychologists and social workers, not classroom teachers.

Data were collected through self-completed questionnaires. Four measures were used to assess alcohol use and consequences, each using a five-point Likert format ranging from “none or abstinent” to “excessive”. The four measures were frequency of use in last month, frequency of use in last year, quantity per occasion, and adverse social consequences of use. Both a one-year and a two-year follow-up were conducted, but the analysis presented focused exclusively on the latter. At this point, 60% of the baseline sample were reassessed—186 from the social skills training program, 161 from the affective program, and 273 from the comparison group. Results showed that for the alcohol use measures there were no statistically significant differences between those who received the two interventions (whether analyzed separately or combined) and those who did not.<sup>3</sup>

*Tobacco and Alcohol Prevention Program (Hansen, Malotte and Fielding, 1988).* Hansen, Malotte and Fielding (1988a) assessed the 15-session Tobacco and Alcohol Prevention Program (TAPP) using two cohorts of students from Los Angeles. The curriculum was delivered by teachers who received between one and two days of training. With both cohorts of students, outcome was assessed in terms of self-report questionnaire items of alcohol use and number of alcoholic drinks consumed during the past 30 days. Cohort-1 included five schools and a total of 1221 students (51% female). Two-thirds of the students were white, 12% Asian, 4% African American, 4% Latino, 2% Native American, and 12% unclassified. Baseline assessment occurred during seventh grade, after which students from three schools were assigned to receive the TAPP curriculum and those from two schools were assigned to the no-intervention comparison group. Subjects

were followed-up at five points—at end of the seventh grade, eighth grade fall semester, eighth grade spring semester, ninth grade spring semester, and tenth grade spring semester. Results showed “No significant effects of the program and no significant trends of differences in onset rates of either type of alcohol use . . .” (Hansen, Malotte and Fielding, 1988a, page 105). This was true of both “low-level” use (any use in the past 30 days) and “high-level” use (five or more drinks in the past 30 days).

Cohort-2 included five seventh grade schools ( $n = 1379$  students) and four sixth grade schools ( $n = 328$  students). Fifty-one percent of the sample was male. Fifty-four percent was white, 17% Asian, 7% African American, 14% Latino, 2% Native American, and 7% unclassified. Following baseline assessment, three of the seventh grade and two of the sixth grade schools were assigned to receive the TAPP curriculum, with the remainder forming the no-intervention comparison group. Subjects were followed-up six, 18 and 30 months after baseline. Data from the seventh grade students showed that those in the comparison group reported less alcohol use at baseline and most follow-ups, making it difficult to assess the effects of the program. The authors conclude “. . . that the program had relatively little or no effect in reducing the prevalence or incidence of alcohol use . . .” (Hansen, Malotte and Fielding, 1988a, page 108). Among the sixth graders, there was more alcohol use reported among the intervention group at the initial follow-up point, although this was not maintained at the 18-month and 30-month points. The authors conclude that the program had “no discernable effect” on alcohol use among sixth grade students.

*Project PRIDE (LoSciuto and Ausetts, 1988).* Project PRIDE comprised a standardized school-based curriculum taught by a prevention specialist and two additional program components—teacher training in drug abuse prevention, classroom management and communication and teaching skills, and parent training in limit-setting, communication, decision-making and conflict resolution skills. At baseline, 1084 sixth and seventh grade students from Philadelphia were assessed (the study population was largely of low socioeconomic status). A sophisticated system of random allocation of schools and classes resulted in five study conditions: (1) no-intervention comparison; (2) school-based curriculum; (3) school-based curriculum and parent training; (4) school-based curriculum and teacher training; and (5) school-based curriculum and parent training and teacher training.

At posttest, immediately following the program, 743 students (69%) were reassessed and formed the data analysis sample. Self-reports of the frequency of alcohol use in the past 30 days were assessed on a six-point scale ranging from “not at all” to “every day”. Analyses of covariance showed that there was no statistically significant program effect on frequency of alcohol use at posttest.

### *Studies Reporting Minor Effects*

*The Life Skills Training Program—Study 3 (Botvin et al., 1990b; 1995).* In the evaluation of the LST program described by Botvin et al. (1990b; 1995), two experimental conditions—one in which training in the use of the program was conducted through a one-day workshop and one in which training was provided through videotape and written material—were compared with a no-intervention comparison condition. Students in the two intervention conditions received 15 LST classes in seventh grade, 10 in eighth grade, and

five in ninth grade. The three-year evaluation involved 3684 students from 50 schools in New York State. Schools were assessed as to the level of smoking among students at baseline (high, medium, low), and then randomly allocated to study conditions from within these groups. The group of 3684 students for whom the effects of the program were assessed (the "high fidelity" sample) represented 62% of those originally recruited to the study ( $n = 5954$ ) and 83% of those for whom data were available at both baseline and final follow-up ( $n = 4466$ ). In order to be included in the high fidelity sample, subjects had to score 60% on a measure of program implementation devised by the authors (see Botvin et al., 1990b, pages 440–441). The high fidelity sample was 91% white, 51% male, and 84% of subjects lived with both parents. No outcome data were reported for the 782 students excluded from the high fidelity sample.

Data were collected through self-completed questionnaires. Three scales were used to assess alcohol use: a nine-point frequency scale (ranging from "never" to "more than once a day"); a six-point quantity per occasion scale (ranging from "don't drink" to "more than six drinks"); and a nine-point frequency of getting drunk scale (ranging from "don't drink" to "more than once a day"). Results showed that there were no statistically significant differences between the intervention groups and comparison group at follow-up on either the frequency scale or the quantity scale. One of the intervention groups differed significantly from the comparison group at follow-up on the drunkenness scale: the adjusted mean score of the video-training intervention group was 2.19 compared to 2.32 for the comparison group ( $p < 0.05$ ).

At the six-year follow-up, the same three alcohol use scales as employed in the three-year follow-up were used, although for the purposes of data analysis each was dichotomized into "yes"/"no" variables. Two dichotomous variables were created from the frequency measure ("monthly" use and "weekly" use), while the quantity measure was used to assess "heavy" drinking (more than three drinks per occasion) and the drunkenness scale to assess getting drunk one or more times per month. Program effects were assessed for all of those subjects assessed at baseline and follow-up (the "full sample") and for the high fidelity sample (defined, as in the three-year follow-up, as having received 60% of the intervention).

The full sample comprised 3597 subjects (60% of the original sample). Data analyses showed no statistically significant differences between each of the LST groups and the comparison group on the two measures of drinking frequency or the measure of heavy drinking, although there were statistically significant differences between each of the intervention groups and the comparison group on the dichotomous drunkenness measure (the mean prevalence rates of the two LST groups were 0.34 and 0.33, compared to 0.40,  $p < 0.05$  and  $p < 0.01$ , respectively<sup>4</sup>). The high-fidelity sample comprised 2752 subjects (46% of the original sample). Of the 1610 intervention group subjects included in the full sample, 845 (34%) were excluded from the high fidelity subsample (obviously all 1142 comparison subjects present at six-year follow-up were included in both the full and high fidelity samples). In all, only about four out of 10 of the LST subjects present at baseline were included in the high fidelity sample six years later. Data analyses showed stronger program effects with this refined subsample. The LST group whose implementors received training through videotape differed significantly from the comparison group on all four outcome variables (at  $p < 0.01$ ).

The other LST group differed significantly from the comparison group on the weekly use and drunkenness variables (at  $p < 0.05$ ) and the heavy drinking variable (at  $p < 0.01$ ).

*Positive Youth Development Program (Caplan et al., 1992).* The Positive Youth Development Program (PYDP) was evaluated using a primarily African American (90%) urban sample and a predominantly white (99%) suburban sample from south-central Connecticut. One school in each site was used, with sixth and seventh grade classes randomly assigned to intervention and comparison conditions. The intervention group comprised 109 subjects (72 urban and 37 suburban) and the comparison group 173 subjects (134 urban and 39 suburban). About 55% of the sample was male. Subjects were assessed at baseline and immediately following the program (posttest). The program was implemented by classroom teachers and health educationalists. At posttest, 84% of the intervention group and 82% of the comparison group were re-assessed.

Alcohol use (assessed separately for beer, wine, and hard liquor) was measured using a five-point scale ranging from "never" to "two or more times a week". Alcohol abuse was assessed using four scales. A six-point scale, ranging from "none" to "four or more drinks", was used to assess how much liquor subjects usually drank at one time. Three four-point scales, ranging from "never" to "a lot", were used to assess how often subjects had three or more drinks, had too much to drink, and had gotten drunk.

A Condition (intervention/comparison) by Time (baseline/posttest) MANOVA was used to assess program effects on alcohol use, and was not found to be statistically significant. In addition, a separate Condition by Time MANOVA assessed program effects on the four alcohol abuse scales, and was statistically significant ( $p < 0.05$ ). Compared to those in the intervention group, comparison group subjects more often drank three or more drinks per occasion, had too much to drink, and increased the amount of alcohol consumed per occasion.

*Enhanced Alcohol Misuse Prevention Study (Shope et al., 1994).* Shope et al. (1994) described an evaluation of an enhanced version of the Alcohol Misuse Prevention Study (E-AMPS) curriculum. The original curriculum contained just four sessions, concerned with resistance skills training and information (Dielman et al., 1989). The enhanced curriculum contained eight sessions in the first year, five the following year, and four in the final year (see Table 1 for details of the additional components).

Thirty-five elementary and middle school buildings in south eastern Michigan were matched (by achievement scores, provision of free/reduced lunch, and ethnicity), and randomly assigned to receive the E-AMPS or to the no-intervention comparison group. The baseline sample comprised 3704 sixth grade students (50% female). Subjects were re-assessed after the sixth grade curriculum was taught (posttest), and at one-year and two-year follow-up (i.e., after the seventh grade and eighth grade curricula were taught). Data analysis was conducted on just 47% of the baseline sample (840 in the E-AMPS group and 885 in the comparison group), these being subjects who were present at all assessment points, had attended half of the AMPS sessions each year (intervention group only), and had not received other programs similar to the AMPS (intervention and comparison group).

Alcohol use was assessed through separate quantity and frequency items for beer, wine and liquor. These data were used to calculate weekly drinking scores on a seven-point scale ranging from "none" to "ten plus drinks per week". An 11-point alcohol misuse index was created from questions concerning overindulgence, trouble with peers, and

trouble with adults due to alcohol use (ranging from “no problems” to “ten problems”). For the purposes of data analysis, subjects were grouped into one of three categories according to their use of alcohol at baseline: “abstainer” (i.e., never drank alcohol); “supervised use” (i.e., consumed alcohol with adult family member); and “unsupervised use” (i.e., consumed alcohol with older siblings, friends, or alone). Repeated measures analysis of variance revealed no statistically significant program effect for any of these subgroups in terms of alcohol use. For alcohol misuse there was a statistically significant intervention by testing occasion by baseline drinking status interaction. This effect was accounted for by the results for the “unsupervised use” subgroup, who comprised only 8% of the data analysis sample. Among the “abstainer” group and “supervised use” group (whom together comprise 82% of the sample) there were no statistically significant differences at posttest or either follow-up.

### *Studies Reporting Positive Effects*

*The Life Skills Training Program—Study 1 (Botvin et al., 1984a).* In the initial pilot study assessing the effectiveness of the LST program in preventing alcohol use (Botvin et al. 1984a), a 20-session program delivered by two volunteer science teachers was compared with a no-intervention comparison condition. A total of 239 seventh grade students from two New York schools were recruited at baseline. Those in one school were randomly allocated to receive the program. Subjects were assessed at baseline, immediately after receiving the program (posttest), and again six months later. Complete data from all three measurement points were available for 70% of the original sample (94 in the LST group and 73 in the comparison group). This data analysis sample was 57% white, 28% African American, 13% Hispanic, and 2% Asian. Fifty-three percent of the sample were female.

Data were collected through self-completed questionnaires. Three scales were used to assess alcohol use: a six-point frequency scale (ranging from “never” to “every day”); a four-point amount per occasion scale (ranging from “one drink” to “more than six drinks”); and a nine-point frequency of getting drunk scale (ranging from “never” to “almost every day”). For the purposes of data analysis, each scale was dichotomized as follows: drinking frequency—“never or a few drinks a year” versus “a few drinks a month or more”; amount per occasion—“one or two drinks” versus “three or more drinks”; and frequency of drunkenness—“never or once or twice a year” versus “once a month or more”.

Results from the first posttest assessment showed no significant differences between the two groups on any of the three measures. However, at the six-month follow-up, significant differences were found between the groups on all three measures. The number of subjects reporting drinking “a few drinks a month or more” in the LST group rose from eight at baseline to 11 at final follow-up, compared to an increase from six to 19 for the comparison group ( $p < 0.02$ ). One member of the LST group and two members of the comparison group reported drinking “three or more drinks” at baseline, and this rose to three and eight, respectively, at final follow-up ( $p < 0.04$ ). Finally, the number reporting being drunk “once a month or more” increased from zero to three in the LST group, compared to an increase of two to ten in the comparison group ( $p < 0.01$ ).

*Skills Enhancement Program (Gilchrist et al., 1987).* Gilchrist et al. (1987) evaluated a 10-session Skills Enhancement program with a sample of 102 Native American youth (mean age 11 years, 49% female) resident in the Pacific Northwest. Subjects were recruited from seven sites (schools and tribal centers), three of which were randomly allocated to receive the intervention and four of which acted as a comparison group. Subjects were assessed at baseline, immediately following the program (posttest), and at six-month follow-up (at which point 82% were re-assessed).

Alcohol used was measured on a five-point scale (ranging from "never use" to "used four or more times in the past week"). Program effects were assessed in terms of change scores from baseline to posttest, and from baseline to six-month follow-up. There was no statistically significant difference between the change score of the intervention group and that of the comparison group from baseline to posttest (-0.13 versus 0.06). However, the difference between the change scores of the two groups from baseline to six-month follow-up was statistically significant (-0.14 versus 0.09,  $p < 0.01$ ).

*Bicultural Competence Skills Training Program (Schinke et al. 1988).* Schinke et al. (1988) evaluated a 10-session Bicultural Competence Skills Training (BCST) Program, with a sample of 137 Native American adolescents (mean age of 12 years) from two reservations in Washington State (54% female). Assessments took place at baseline, immediate posttest, and six-month follow-up. Following baseline assessment, subjects in one reservation were assigned to the intervention group, while those in the other formed the comparison group.

Multiple choice items were employed to assess use of beer, wine and spirits during the previous 14 days, and the data were then "scored for subjects' interval-level use rates on each index substance" (Schinke et al., 1988, page 88). Ninety-one percent of the sample were reassessed at the six-month follow-up. The mean score on the alcohol use index of those in the intervention group was 3.6 at posttest and 3.8 at 6-month follow-up, compared to 4.7 and 4.9 for the comparison group (both significant at  $p < 0.05$ ).

## DISCUSSION

This review shows that six of the 12 evaluations of social skills training prevention programs found little or no effect on participants' alcohol use and related behavior. Included here are the two Napa studies (Moskowitz et al., 1983; 1984a; 1984b), the second LST study (Botvin et al., 1984b; Botvin et al., 1990a), the Social Skills Training program (Baer et al., 1988), the TAPP (Hansen, Malotte and Fielding, 1988), and Project PRIDE (LoSciuto and Ausetts, 1988). While some of these studies reported isolated statistically significant findings, the majority of results presented were non-significant. For example, in the case of the second LST study, although the multivariate analysis showed no main effects,  $t$  tests of pairwise comparisons between study conditions showed that students in the peer booster condition reported less use of alcohol per occasion than those in the control condition ( $p < 0.05$ ) (Botvin et al., 1990a). However, a large number of comparisons were made in this study (four intervention conditions were compared to the control condition using five outcome variables), thereby increasing the chance that an isolated posi-

tive effect would emerge. Given that one or two significant results are likely when numerous comparisons are made between study conditions, these six studies do not provide strong empirical support for the social skills training approach to alcohol use prevention.

Three others studies found that program effects were limited to measures of alcohol misuse or subsamples of the intervention groups (Botvin *et al.*, 1990b; 1995; Caplan *et al.*, 1992; Shope *et al.*, 1994). As Caplan *et al.* (1992) note, findings limited to measure of misuse should be interpreted with caution due to the lack of significant program effects on alcohol use (the primary focus of the interventions). In the case of the third LST study, only one of the two intervention groups differed significantly from the comparison group on the drunkenness scale at three year follow-up, and the actual difference between these two groups was very small (0.13 on a nine-point scale). Also, in this study, effects were largely limited to a select subsample of intervention group subjects—just four out of 10 those recruited at baseline remained in the high fidelity group at the six-year follow-up. In the E-AMPS evaluation presented by Shope *et al.* (1994), program effects were evident among just 8% of the sample.

Only three studies reported consistently positive results—the first LST evaluation (Botvin *et al.*, 1984a), the Skills Enhancement program (Gilchrist *et al.*, 1988), and the BCST program (Schinke *et al.*, 1988). These studies involved the fewest subjects (239, 102, and 137, respectively), and each presents difficulties in the interpretation of findings. The first LST evaluation found significant differences between the intervention and comparison groups on three dichotomized measures of alcohol use. However, in assessing these findings, it should be noted that the collapsing of variables into dichotomized scales was done to facilitate analysis and was somewhat arbitrary, raising the question of whether statistically significant differences would have emerged had other cut-off points been used. In their evaluation of the Skills Enhancement program, Gilchrist *et al.* (1987) reported statistically significant differences between the change scores (from baseline to six-month follow-up) of the intervention and comparison groups. However, because baseline alcohol use levels were not reported it is impossible to assess the implications of these change scores, although the actual amount of change involved was very small. For example, if the mean baseline score of each group was 2.00 on the five-point alcohol use scale, then at follow-up the score of the intervention group would be 1.86 and that of the comparison group 2.09. These are very minimal differences, and thus of questionable *practical* significance (as compared to *statistical* significance. (For a discussion of the issue of the practical significance of program effects on drug use behavior and hypothesized mediating variables see Gorman, 1995). Similarly, in the study reported by Schinke *et al.* (1988), data pertaining to baseline alcohol use were not reported, so it is impossible to ascertain how much change occurred over the course of the study. Also, it is difficult to know what the differences between groups actually mean, since the number of points on the scale used in the evaluation was not specified, nor was it stated whether these scores pertained to number of occasions on which alcohol was used, the number of drinks consumed per occasion, or an index combining both quantity and frequency.

All of the studies reporting positive results also display one fundamental methodological weakness that would further reduce confidence in their findings. Each allocated subjects to study conditions at the group level (namely, by the school they attend or reservation

where they live) but analyzed data at the level of the individual. This is understandable given that the small number of units used for allocation in each study (two in the LST and BCST evaluations and seven in the Skills Enhancement program evaluation) provide little statistical power for data analysis. However, while a move to analyzing data at the level of individual subjects increases statistical power, it also inappropriately assumes independence of observations and hence inflates the rate of Type I error—that is, it increases the likelihood of finding program effects where none exist (Murray & Hannan, 1990). Since none of the studies adjusted for intergroup correlation, Type I error is possible.

Social influence models (whether broad-based or narrowly focused on domain-specific skills) have come to dominate the field of primary prevention in the United States. The strategy was developed initially for preventing use of tobacco products (Evans, 1976), and is widely advocated for this purpose (see US Department of Health and Human Services, 1994). It is also advocated for use with behavioral problems other than substance abuse (e.g., sexual risk behaviors; see Kirby *et al.*, 1994). However, against the groundswell of support for this strategy, reviews have begun to appear which indicate that this approach is not the universal panacea some would claim (Cleary *et al.*, 1988; Kozlowski *et al.*, 1989; Gerstein and Green, 1993; Gorman, 1992; in press). This review adds to this literature by showing that, to date, the evidence supporting the use of school-based social skills training for alcohol use prevention among adolescents is, at best, sparse.

The minimal effectiveness of such programs is hardly surprising when one considers the complex network of factors, ranging from the intrapersonal to the sociostructural, that influence adolescent alcohol use (Gorman, 1994). Social skills training programs attempt to influence a very narrow range of these factors—primarily those within the interpersonal domain of peer relations—and are premised on assumptions about the nature of the relationship between these factors and initiation of drug use that are overly simplistic (Gorman, 1992; Mason, Lusk and Gintzler, 1992; May, 1993). Indeed, many of the components of social influence programs are the same as those of the affective strategies of the 1970s, which are generally considered to be ineffective in preventing alcohol and other drug use (Botvin, 1990; Hansen, 1992). Included here are decision-making, values clarification, stress management, and self-esteem enhancement. The reasons as to why these approaches might become effective in reducing alcohol use simply through combining them with resistance skills training are not stated by proponents of the social skills training approach. In any case, given that resistance skills training on its own has such limited impact on drug use (Gorman, in press; Cleary *et al.*, 1988; Kozlowski *et al.*, 1989), combining it with training in broader social skills is unlikely to prove to be an effective strategy.

Other approaches to primary prevention must be developed and tested. As noted above, the idea that alcohol use among young people is primarily caused by a narrow range of factors operating within the domain of interpersonal relations is too simplistic to be of practical utility. Refining programs in order to identify potentially effective components has been advocated by some prevention specialists. Hansen (1993), for example, argues that correcting erroneous beliefs about the prevalence of alcohol use is the key component of social influence programs. In a comparison of this “normative education” strategy with resistance skills training, Hansen and Graham (1991) reported that the former had the most consistent effect on reducing alcohol use, drunkenness, and alcohol-related prob-



lems. They went on to suggest that resistance skills training may actually increase adolescents' perception of the prevalence of alcohol use by overstating the extent to which there is pressure to use, and hence be counterproductive.

It has also been argued that school-based programs must be refined in terms of the strategies through which they are delivered, and move away from the "universal" approach and toward "targeting" or "matching" interventions more appropriately to the profile of risk factors evident among subgroups within broad populations (Gorman, 1992). This would involve targeting environmental risk factors (e.g., access to inexpensive drugs, economic deprivation), as well as intrapersonal and interpersonal risk factors. Thus, at the same time that we refine our interventions, we must broaden the scope of primary prevention research and practice, and begin to place greater emphasis on developing and evaluating programs that limit youth access to alcohol through environmental strategies (e.g., Holder, 1993; Wagenaar *et al.*, 1994). To date, however, most community-based alcohol prevention programs have also relied on individual- and interpersonal-level intervention strategies (Gorman and Speer, 1995). Unfortunately, such an emphasis may only serve to limit the extent to which individuals understand the role of community and societal forces in the etiology of alcohol misuse and alcohol-related problems, and thus inhibit the development of effective prevention strategies.

### Footnotes

1. Two community-based programs that used social skills training techniques were excluded from the review—the Midwestern Prevention Project (Pentz *et al.*, 1989) and the Boys & Girls Clubs Stay SMART program (St. Pierre *et al.*, 1992). These studies are reviewed in Gorman and Speer (1995).
2. Project SMART is not included in this review since it principally involved a comparison of an affective program and a resistance skills training program (Hansen *et al.*, 1988). In addition, a social skills training program was developed through combining elements of each of these approaches. The three programs were evaluated in a paper by Graham *et al.* (1990). This paper is not included in the present review as it does not present an analysis focused on the isolated effects of the combined social skills training program on alcohol use. Rather, three types of analyses are presented: first, all intervention groups versus the comparison group, with an overall drug use index (combining alcohol, tobacco and marijuana use) as the outcome variable; second, affective program versus resistance skills training program, with the overall drug use index as the outcome variable; and, third, all intervention groups versus the comparison group, with tobacco use, alcohol use, and marijuana use as separate outcome variables.
3. Data were also collected from a sample of tenth grade students. However, in this case, the two intervention programs were combined for the purposes of data analysis. ANOVAs with the two intervention conditions combined showed that for the measures of frequency of use in last month and frequency of use in last year, the interaction of intervention versus comparison by baseline versus follow-up was significant ( $p = 0.05$  and  $p < 0.05$ , respectively). Comparison of the mean values at follow-up showed significant differences between the combined intervention group and comparison group on the measures of quantity per occasion ( $p < 0.05$ ) and frequency of use in last year ( $p < 0.01$ ). Combining the intervention groups for the purposes of statistical analysis means that it is not possible to judge the effectiveness of the social skills training program against the comparison condition. However, the authors also present a figure in which the baseline and follow-up scores of each of the groups are plotted. (Only data from the three alcohol use measures were presented—data pertaining to adverse social consequences were not reported.) For the measure of frequency of use in last year, both the social skills training group and the comparison group scored about 3.10 on the five-point scale at baseline. At follow-up, the comparison group score had risen to just over 3.50 and the social skills training group to just over 3.25. For the measure of frequency of use in last month, the score of the comparison group rose from approximately 2.25 at baseline to about 2.50 at follow-up, while that of the social skills training group was about 2.40 at both points (increasing very slightly from baseline to follow-up).

Finally, for use per occasion, both the social skills training and the comparison group scored about 2.80 at baseline, with the score of the former increasing to about 3.0 at follow-up and that of the latter to about 3.20. Thus, while the differences between the scores of the combined intervention group and comparison group reached statistical significance in a number of the analyses presented, the actual differences between the groups at follow-up were very small (for example, 0.2 on a five-point scale).

4. In the six-year follow-up, inferences were based on one-tailed significance tests.

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