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Will the 'Principles of Effectiveness' improve prevention practice? Early findings from a diffusion study

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Abstract

This study examines adoption and implementation of the US Department of Education's new policy, the 'Principles of Effectiveness', from a diffusion of innovations theoretical framework. In this report, we evaluate adoption in relation to Principle 3: the requirement to select research-based programs. Results from a sample of 104 school districts in 12 states indicate that many districts appear to be selecting research-based curricula, but that the quality of implementation is low. Only 19% of the responding district coordinators indicated that schools were implementing a research-based curriculum with fidelity. Common problems included lack of teacher training, lack of requisite materials, use of some but not all of the required lessons and teaching strategies, and failure to deliver lessons to age-appropriate student groups. This study represents the first attempt to assess the quality of implementation of research-based programs as required by the Principles of Effectiveness. We conclude that low levels of funding, inadequate infrastructure, decentralized decision making and lack of program guidance have contributed to the slow progress in improving school-based prevention.

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Introduction

A critical issue in substance abuse prevention is the gap between what is known to be effective and what is actually being done in practice. The primary context for providing substance abuse prevention education to adolescents has been through the schools (Ellickson, 1995). The US Department of Education provides the largest single source of federal prevention funding through its Safe and Drug Free Schools (SDFS) program (US Department of Education, 1998b). A new Department of Education policy has created an opportunity to close the gap by increasing research-based substance abuse prevention education in schools. The new policy requires school districts to follow the 'Principles of Effectiveness' or run the risk of losing their SDFS funding. The potential impact of the policy is significant since almost all school districts in the country currently receive such funding (US Department of Education, 2000).

The new policy requires school districts to: (1) conduct needs assessments, (2) set measurable objectives, (3) choose research-based programs and (4) evaluate progress towards objectives (US Department of Education, 1998b). The present paper focuses on data from the first of two successive district surveys aimed at evaluating the impact of the policy. For this report, only the third Principle of Effectiveness, the requirement to choose research-based programs, will be assessed.

The Department of Education's non-regulatory guidance instructs grantees to 'design and implement its programs for youth based on research or evaluation that provides evidence that the programs

used prevent or reduce drug use, violence or disruptive behavior among youth' [(US Department of Education, 1998a), p. 1]. This study examines whether school districts appear to be meeting this standard in their choice of prevention curricula. Further, it examines the quality of implementation among those that report choosing research-based programs.

The policy represents an *innovation*, i.e. a new process of selecting school-based prevention programs, based on rational planning. *Adoption* is the decision to make full use of an innovation as the best course of action (Rogers, 1995). If the policy is successful and school districts are adopting the Principles, we expect that they are selecting research-based programs and dropping programs that have not shown evidence of effective prevention. *Implementation* occurs when the organization actually puts the innovation into use. Important aspects of prevention program implementation include teacher training, and the use of specified lesson plans and teaching methods (Smith *et al.*, 1995; Hansen and McNeal, 1999). Since the ultimate goal of the policy is to improve prevention practices in school districts, it is important to assess key issues in the selection process, the programs districts are choosing and the quality of their implementation.

Despite a concentrated effort over the past decade by federal agencies to promote effective prevention strategies (National Institute on Drug Abuse, 1997; Center for Substance Abuse Prevention, 2000; Division of Adolescent and School Health, 2000), schools have continued to select heavily marketed curricula that have not been evaluated, have been evaluated inadequately or have been shown to be ineffective in reducing substance use (Rohrbach *et al.*, 1996; Tobler and Stratton, 1997; Swisher, 2000). Schools have also commonly relied on untested 'homegrown' prevention curricula (Hansen and McNeal, 1999). The Department of Education's new policy thus represents a bold attempt to change the way districts choose programs, with an embedded financial incentive for compliance.

Theoretical framework

Diffusion theory provides a useful framework for evaluating the impact of this policy. Diffusion is the process by which members of a social system learn about, decide about and act on ideas, practices or objects that they perceive as new (Rogers, 1995). The diffusion of innovations in schools has been characterized as a four-stage process: (1) dissemination, or planned efforts to make school districts aware of a program and encourage its adoption; (2) adoption, or the encouragement of districts to make a commitment to initiate a program; (3) implementation, or interventions to assist teachers or other appropriate personnel to deliver the program in accordance with its original design; and (4) maintenance, or the encouragement of school administrators and teachers to continue using the program (Rohrbach *et al.*, 1996).

This paper reports on information related to adoption and early implementation of one aspect of the Principles of Effectiveness. The policy was enacted in July 1998 and data were gathered in Fall 1999. Given that school districts have traditionally not used rational planning in selecting curricula and that there are more than 13 000 school districts in the US, we assumed that this assessment would represent a relatively early point in the diffusion process. Other studies have shown that schools have difficulty implementing research-based strategies, even under the most supportive conditions (Gottfredson, 1997; Hansen and McNeal, 1999). Our intent was to assess whether the policy had actually begun to prompt selection of research-based programs and, if so, how well they were being implemented.

Several diffusion theory constructs are particularly salient for the present analyses. First, diffusion theory suggests that preventive innovations are slow to be adopted, because individuals have difficulty perceiving their *relative advantage* (Rogers, 1995). Relative advantage refers to the economic and social rewards that are thought to follow adoption of an innovation. Prevention rewards tend to be distant in time and there is uncertainty whether prevention activities are

actually needed (i.e. maybe students would not use drugs even without the program). Financial incentives can help to increase relative advantage and the Department of Education's policy provides an incentive for adoption. If districts do not adopt the Principles of Effectiveness, they risk losing their longstanding SDFS funding. On average, schools receive about $6/student/year; because most school districts are small, almost 60% receive less than $10 000/year (Modzeleski, 1999). Large districts can receive substantially more and, based on state-determined criteria of need, certain districts receive larger per pupil allocations ($12). Although funding allocations may be relatively small, many districts report that their prevention efforts rely heavily on SDFS funding, which is by far their largest source of drug abuse prevention funding (Hantman and Crosse, 2000).

Incentives are useful, but can be a double-edged sword. Incentives can increase the rate of adoption, and motivate individuals and organizations that would otherwise not adopt, but commitment to the decision may be low, limiting the intended consequences of adoption (Rogers, 1995). For example, when districts select effective curricula, they may not purchase adequate curricula materials or they may neglect to train teachers in essential methods for effectively teaching the curricula (Smith *et al.*, 1995). Teachers, in turn, may only teach a portion of the lesson plans, resulting in an insufficient 'dose' to students (Pentz and Trebow, 1991; Drug Strategies, 1999). Given the issues associated with relative advantage, we hypothesized that there would be widespread adoption of the Principles and evidence that school districts were selecting research-based programs, but that initial implementation would be of poor quality.

Compatability is a related diffusion construct that can also influence the adoption of effective prevention programs. Compatibility indicates the degree to which the innovation is consistent with existing values, past experiences and needs of potential adopters (Rogers, 1995). If the innovation is perceived as an extreme change, then it will not be compatible with past experiences and will be slow to diffuse. School districts are known to base their prevention decisions on compatibility with past experiences and satisfaction with programs already in place (Hantman and Crosse, 2000). Since programs such as the DARE program have long enjoyed widespread name recognition and community support, we expected that districts would be slow to replace DARE and other familiar programs.

Complexity is another construct that can influence the diffusion process. Innovations that are relatively more complex are less likely to be adopted, and more likely to be *re-invented* and simplified if adopted (Rogers, 1995). Re-invention of prevention curricula often results in a lowered dose (i.e. reducing the number or content of lesson plans) and has generally been found to decrease effects in prevention science (Pentz, 1994; Botvin *et al.*, 1995). Positive program effects are attributed to carefully crafted activities linked to theories of moderators and mediators of behavior (MacKinnon *et al.*, 1991), and re-invention may occur because of lack of knowledge about the concepts underlying the prevention activity (Hansen and McNeal, 1999). We hypothesized that complex prevention programs would be less likely to be adopted and more frequently re-invented than simpler curricula-based programs.

Methods

Sample

A mailed questionnaire was sent to the SDFS coordinators in 104 districts in 12 states and the District of Columbia. Sample districts were selected because of their location in communities participating in an existing study (Hallfors *et al.*, 1997; Saxe *et al.*, 1997). A total of 81 district coordinators (78%) in 11 states responded to the survey. As can be seen in Table I, our sample of 81 school districts has a much greater representation of large, urban districts, than the country as a whole. Districts responding to the survey did not differ from non-responders on either size or urbanicity.

Measurement and data collection

A survey was developed to capture key constructs of diffusion theory predicting innovation adoption.

Table I. *Comparison of national percentages to study sample*

	Study (%)	US (%)[a]	Children attending in the US (%)[a]
Small	35	73	19
Medium	16	22	31
Large	49	6	50
Rural	12	53	27
Suburban	35	42	40
Urban	53	5	34

[a]Based on data obtained from the US Department of Education's Common Core of Data (1997–1998).

In order to test convergent validity, the instrument contained questions (including questions 2–6, below) from a separate study that achieved a nationally representative sample of school districts (Ringwalt *et al.*, 2000). The survey was reviewed for construct validity by diffusion experts and also tested for reliability through a series of cognitive interviews with school district coordinators who were not included in the sample. Cognitive interviews encourage respondents to think out loud, prompted by probes to determine whether questions are understood and measure the construct as intended (Sudman *et al.*, 1996).

Responses to a subset of survey questions were analyzed for the present report. These questions included:

(1) When did you start working to implement the Principles of Effectiveness (more than 1 year ago, more than 1 month but less than 1 year, have not started yet but will soon, do not plan to)?
(2) In your district, how much input does each of the following persons or groups have in selecting your substance abuse curricula (a great deal of input, some input, not too much input, no input)?
(3) In your school district, can individual schools decide whether or not they will implement specific substance use prevention programs (yes, no)?
(4) Which, if any, of the following substance use prevention curricula, available commercially or because of participation in a research study, does your district use (responses described below)?
(5) Has your district adapted or combined any of the above curricula for use within your school district (yes, no)?
(6) Does your district use a written substance use prevention curriculum (or set of materials) that was developed locally by your state, county, school district or one of your schools (yes, no)?

Response categories for the fourth question included a comprehensive list of 59 curricula compiled and reviewed by a private non-profit research institute, Drug Strategies (Drug Strategies, 1999). District coordinators could select more than one curriculum from the list. Since curricula are implemented at the school level, it is possible that different schools in the same district use different programs. In addition, curricula are grade-specific, so we expected that districts would use different programs for elementary, middle and high school.

Six programs on the curricula list were considered to be research-based, having been evaluated in one or more randomized control trials. These programs were: Alcohol Misuse Prevention Program (Dielman *et al.*, 1989), Life Skills Training Program (Botvin *et al.*, 1995), Project ALERT (Ellickson and Bell, 1990), Project STAR or I-STAR (Pentz *et al.*, 1989), Reconnecting Youth (Eggert *et al.*, 1994) and Project Northland (Perry *et al.*, 1996). If any of the sampled SDFS district coordinators reported use of one or more of the six curricula, we conducted a follow-up telephone interview with the coordinator, using a standard protocol. In many cases (38% of contacts), we spoke with a teacher or another person in the district to whom the coordinator referred us, because that person had more direct knowledge about program implementation. The interviewer probed for (1) confirmation that the program was the actual program of interest, (2) teacher access to official curriculum and materials, (3) teacher use of curriculum and the extent to which he or she followed program protocols, (4) teacher training in the use of the curriculum, and (4) program delivery at the appropriate grade level.

All of the research-based programs have a published curriculum with a set number of lesson plans that include exercises for student interaction. All require teacher training for proper implementation. Three of the six programs, however, are more complex than the others, since they include essential elements that go beyond these basic features. The three programs are Project STAR, Project Northland and Reconnecting Youth. Project STAR and Project Northland are comprehensive programs, with required features such as mass-media events, parent activities and community organizing to augment the school-based curricula. Reconnecting Youth is a program for high-risk students, which requires schools to use specific criteria to identify eligible students and to identify teachers with special characteristics to teach the class. In contrast, the other programs were designed for all students at a given grade level. The interviewer asked additional questions for the three complex programs, related to specific components. For example, the interviewer asked how students were identified and invited to participate in Reconnecting Youth.

All aspects of the research plan were reviewed and approved by the Institutional Review Board.

Results

Selection of prevention programs

Since only 59 (73%) of the 81 coordinators that completed the questionnaire reported that they had received information about the Principles of Effectiveness, all but one of the others appropriately skipped the question 'When did you start working to implement the Principles of Effectiveness?'. Of those that responded to this question, only one indicated that they had no plans to implement the Principles of Effectiveness. Thirty-eight coordinators (63%) reported that they had been working on implementation for more than 1 year, 12 (20%) during the past year and nine (15%) had 'not started yet, but will soon'.

All other study questions were answered by all respondents. In response to the question 'In your district, how much input does each of the following persons or groups have in selecting your substance abuse curricula', 70% indicated that the coordinator themselves had 'a great deal of input' in selection, compared to district-level substance use advisory groups (39%), classroom teachers (31%), district administrators (26%), school principals (24%), district school boards (16%), community coalitions (10%) and students or parents (8% each). Nevertheless, individual schools decided whether they would implement specific substance abuse prevention programs in over half (53%) of the districts.

When asked to select the curricula that their district was using, most respondents checked more than one program from the list (range = 1–20; mean = 6). Table II lists the programs that were checked by at least 10% of study districts. As can be seen, more than half of the sample checked each of three programs—DARE, Here's Looking at You, and McGruff Drug Prevention and Child Protection. All three programs have been commercially marketed, with a long history (10–15 years) of development and dissemination. Forty-eight coordinators (59%) reported use of one or more of the six research-based programs in district schools, although none reported use of either Project Northland or the Alcohol Misuse Prevention Program.

Finally, 53% of school coordinators who responded to the survey said that they were using locally developed curricula or materials that were not on the survey list. Fifty-two percent of respondents indicated that they had adapted or combined curricula from the list.

Implementation of research-based programs

Follow-up telephone calls were made to the 48 coordinators that checked one or more of the research-based programs. Since some districts checked more than one program, the total number of possible interviews was 84. Fifty-eight interviews (69%) were completed (see results in Tables III–VI). As can be seen in the tables, coordinators often reported that they were not actually currently

Table II. *Drug prevention curricula and percentage of use (n = 81)*

Program name	Percentage (*n*) of district reporting use
DARE	82 (66)
Here's Looking at You 2000	63 (51)
McGruff's Drug Prevention and Child Protection	52 (42)
Life Skills Training	41 (33)
Project ALERT	31 (24)
Learning to Live Drug Free	27 (22)
Discover: Skills for Life	26 (21)
Sunburst Drugs and Alcohol Curriculum Modules	25 (20)
Quest: Skills for Adolescence	24 (19)
Quest: Skills for Growing	21 (17)
STAR or I-STAR	21 (17)
Great Body Shop	19 (15)
Growing Healthy	19 (15)
Health Skills for Life	17 (14)
Discover: Decisions for Health	16 (13)
Comprehensive Health for the Middle Grades	15 (12)
Talking with Your Student about Alcohol	15 (12)
Quest: Skills for Action	14 (11)
Healthy for Life	12 (10)
I'm Special	12 (10)
Learning about Alcohol and other Drugs	12 (10)
Babes	11 (9)
Reconnecting Youth	11 (9)
Growing up Strong	10 (8)
Positive Action	10 (8)
Teenage Health Teaching Modules	10 (8)

using any of the effective curricula. Only a few of the coordinators or secondary informants could confirm that district teachers engaged in quality implementation of the programs. Common quality problems included lack of teacher training, lack of requisite materials for every class and lack of student exposure to the entire (or even majority of) the curriculum (see Tables III–VI). In some cases, curricula were used at the wrong grade level or in alternative schools rather than regular classrooms.

Discussion

Our findings supported two of our three hypotheses. First, we expected that most districts would recognize the relative advantage of adopting the Principles, that they would begin selecting research-based programs, but that many would implement them with low quality. Indeed, almost every coordinator that knew about the Principles indicated that they had adopted them and the majority of these coordinators reported that they had been working on implementation for 1 year or more. In relation to Principle 3, the majority indicated that they were selecting one or more research-based programs from our list; coordinators usually selected the research-based programs along with several other programs that were not research-based. Follow-up telephone interviews, however, showed that implementation quality of research-based programs was generally poor.

Second, we expected that well-known programs such as DARE would be used more frequently than research-based programs, because they are compatible with past practices. The data supported this assumption even more strongly than anticipated. Two programs appear to be most prominent in school districts: DARE and Here's Looking at You. Unfortunately, neither is supported by peer-reviewed evaluation studies (Hallfors *et al.*, 2001). DARE has been widely studied and found to have relatively small short-term effects with no long-term benefits on substance use behavior (Ennett *et al.*, 1994; Clayton *et al.*, 1996); Here's Looking at You has never been rigorously tested. DARE, in particular, has observable qualities, i.e. uniformed police officers, bumper stickers, tee-shirts and related paraphernalia that facilitated its rapid diffusion (Rogers, 1995). Both programs have been heavily marketed, and closely aligned with 'prevention principles' (National Institute on Drug Abuse, 1997) and requirements of the SDFS policy.

In contrast, the programs that have been rigorously tested and found to be effective have been much slower to diffuse. Most of the research-based programs have not been marketed to the same extent as commercial programs. Two of the six that were included in the survey were not used by any of the 81 districts. A third, Project STAR, was actually used in only one or two districts and not faithfully implemented. Both Project STAR and

Table III. *Implementation of Life Skills Training*

Number of (%) of school districts	Quality of curriculum implementation $n = 19$ (of 33 districts reporting use of LST)
8 (42)	The districts adhered to the protocol for implementation and delivery of the curriculum; all teachers had received appropriate training. Some coordinators noted that there may be variation in implementation in the schools.
1 (5)	The district was using Life Skills Training in one school in the district; teachers used the curriculum 'more often than not', but had not received formal training.
1 (5)	The district was using the program at the high school level. (The program was intended for the middle and junior high school levels.)
4 (21)	The districts were not currently implementing the curriculum but planned to implement it in the Fall of 2000.
4 (21)	The districts were using different programs with the name 'Life Skills'.
1 (5)	The district was not using any curricula called Life Skills Training. (Error in survey response.)

Table IV. *Implementation of Project Alert*

Number of (%) of school districts	Quality of curriculum implementation $n = 15$ (of 25 districts reporting use of Project Alert)
4 (27)	The districts adhered to the protocol for implementation and delivery of the main curriculum; all teachers received ALERT training.
2 (13)	The districts used specific lessons from the curriculum, not the entire curriculum; all teachers received ALERT training.
1 (7)	The district implemented the curriculum at the high school level in an alternative school. (The program was designed for middle school/junior high.) Teachers received ALERT training.
1 (7)	The district borrowed the guidelines/manuals from neighboring districts 'as needed'. Teachers did not receive ALERT training.
3 (20)	The districts were unable to comment on how closely the in-school staff followed the curricula guidelines/manuals. Teachers in two of the sites received ALERT training. The coordinator in the third site had no information on whether or not the staff had received the ALERT training.
2 (13)	The district could not verify any use of Project ALERT in the district.
2 (13)	The districts were not using the Project ALERT curriculum. (Error in survey response.)

Table V. *Implementation of Reconnecting Youth*

Number (%) of school districts	Quality of curriculum implementation $n = 7$ (of nine districts reporting use of Reconnecting Youth)
3 (43)	The districts adhered to all protocols for implementation and delivery of the curriculum; all teachers had received training.
2 (29)	The districts confirmed access to the curriculum but did not follow all protocols regarding use of curricula, student selection and teacher training.
1 (14)	The district reported that a school nurse in one site selected lessons from the curriculum for various group activities.
1 (14)	The district discontinued use of the curriculum prior to the survey.

Table VI. *Implementation of Project STAR*

Number (%) of school districts	Quality of curriculum implementation $n = 17$ (of 17 districts reporting use of Project STAR)
1 (6)	The district confirmed they are using the University of Southern California STAR curriculum, but not the community organizing or parent involvement components.
1 (6)	The district coordinators believed that some of their schools were using the STAR curriculum, but could not confirm.
7 (41)	The district sites were using different programs with the STAR acronym or something very similar.
8 (47)	The districts were not using any STAR programs: two reviewed the curriculum but never implemented, one tried the curriculum 2 years ago and five are not using any STAR curriculum.

Project Northland have been under continued development and testing, and are only now beginning to be marketed. Two programs did appear to have substantial market penetration: Life Skills and Project Alert. Both curricula are universal programs aimed at middle schools, which appears to be the most popular venue for prevention programming.

Finally, we expected that more complex programs would be re-invented, but there was no consistent pattern supporting this assumption. All of the programs were heavily modified by schools and individual teachers. The exception was Life Skills Training, which was reported to be faithfully implemented by most of the districts that confirmed they actually used the program.

Given these results, what are the implications for closing the gap between science and practice? On balance, it appears that the policy, with its incentive, has mobilized school districts to reconsider their process for selecting prevention programs. Districts lacked guidance, however, in choosing research-based programs. The US Department of Education convened an expert panel in 1998 to review program effectiveness and provide such guidance, but their report was not released until January 2001, well after our survey. Change agent effort is known to be a predictor in the rate of diffusion (Rogers, 1995) and the lack of federal guidance may have been an important contributor to the poor implementation of Principle 3.

One example of how federal guidance and consistent reinforcement can lead to the selection of research-based programs is Life Skills. Life Skills is a familiar name on every federal agency's model substance abuse programs list and it is also included on the US Department of Education's list of exemplary programs. Some agencies, such as the Office of Juvenile Justice, have even provided support to school districts to implement the program faithfully (Mihalic and Elliott, 2001). This effort appears to have paid off with findings that Life Skills was the most commonly selected of the research-based programs and the best implemented.

Another diffusion problem may be the decentralized decision making in school districts. Although coordinators have great input in the selection of prevention programs, schools can often make their own decisions about the prevention programs that they will implement. Rogers (Rogers, 1995) notes that decentralized systems tend to lack quality controls for effective diffusion. A related problem is the relatively low funding for prevention. Although half of our sample districts were large, telephone interviews indicated that a well-organized central infrastructure to select, disseminate and monitor the quality of substance abuse prevention implementation was rare.

The present study has several notable limitations. First, the sample is not representative of school districts in the US; large school districts are overrepresented. Small and rural schools make up the majority of districts in this country, and such districts were less likely to know about the Principles of Effectiveness or have a dedicated (more than 25% time) substance abuse prevention coord-

inator (Hallfors *et al.*, 2000). Small and rural districts also receive considerably less funding for substance abuse prevention. Large districts make up only 6% of districts, but they serve 50% of school children in the US, giving some justification for our over sample of large districts. Moreover, our findings on popular curricula are supported by a similar study that did achieve a population-based sample of school districts (Ringwalt *et al.*, 2000).

Another limitation was the difficulty in reaching coordinators for telephone follow-up. Data were incomplete despite repeated contacts to coordinators by telephone and E-mail (average of six contacts for each completed interview). Of the 84 interviews that we attempted to conduct across the four research-based programs, only 58 (69%) were actually conducted. Finally, an important limitation was the reliance on reports of the coordinator. Ideally, we would have made site visits to observe prevention programming in all district schools, but such methods were beyond the scope of the study. Although imperfect, district-level substance abuse coordinators are the most knowledgeable information source about prevention curricula. Data collection was strengthened by including interviews with staff closer to the actual implementation of specific programs (e.g. teachers), whenever possible. Given the findings of previous investigators (Hansen and McNeal, 1997; Ennett and Burrit, 2000), we expect that our 19% estimate of districts faithfully implementing effective curricula is optimistic.

Despite the limitations, this study is the first attempt to assess the quality of implementation of research-based programs by school districts, in relation to the new Department of Education policy. Study findings were assessed at an early stage of policy diffusion. The next phase of the study will query the same sample of coordinators almost 3 years after policy implementation. If no further progress is observed, then it is doubtful that the policy will achieve the stated goals related to use of effective programs. Given the low levels of funding to school districts, it is unlikely that the needed infrastructure will be developed to support effective implementation of research-based programs.

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References

Botvin, G. J., Baker, E., Dusenbury, L., Botvin, E. M. and Diaz, T. (1995) Long-term followup results of a randomized drug abuse prevention trial in a white, middle-class population. *Journal of the American Medical Association*, **273**, 1106–1112.

Center for Substance Abuse Prevention (2000) *The Model Programs*. http://www.samhsa.gov/csap/modelprograms/modelhomenew.htm [November 6].

Clayton, R. R., Cattarello, A. M. and Johnstone, B. M. (1996) The effectiveness of Drug Abuse Resistance Education (Project DARE): 5-year follow-up results. *Preventive Medicine*, **25**, 307–318.

Dielman, T. E., Shope, J. T., Leech, S. L. and Butchart, A. T. (1989) Differential effectiveness of an elementary school-based alcohol misuse prevention program. *Journal of School Health*, **59**, 255–263.

Division of Adolescent and School Health (2000) *Programs that Work: Research to Classroom*. http://www.cdc.gov/nccdphp/dash/rtc/index.htm [November 6].

Drug Strategies (1999) *Making the Grade: A Guide to School Drug Prevention Programs*. Drug Strategies, Washington, DC.

Eggert, L. L., Thompson, E. A., Herting, J. R. and Nicholas, L. J. (1994) Prevention research program: Reconnecting at-risk youth. *Issues in Mental Health Nursing*, **15**, 107–135.

Ellickson, P. L. (1995) Schools. In Coombs, R. H. and Ziedonis, D. (eds), *Handbook on Drug Abuse Prevention: A Comprehensive Strategy to Prevent the Abuse of Alcohol and Other Drugs*. Allyn & Bacon, Needham Heights, MA, pp. 93–120.

Ellickson, P. L. and Bell, R. M. (1990) Drug prevention in junior high: a multi-site longitudinal test. *Science*, **247**, 1299–1305.

Ennett, S. T. and Burrit, S. C. (2000) Estimation of the effectiveness of current practice in school substance use prevention programming through application of meta-analysis findings. In Ennett, S. T. (Chair), *The Diffusion of Prevention Science to Current Practice in School-based Substance Use Prevention*. Symposium conducted at the *Eighth Annual Meeting of the Society for Prevention Research*, Montreal, June.

Ennett, S. T., Tobler, N. S., Ringwalt, C. L. and Flewelling, R. L. (1994) How effective is drug abuse resistance education? A meta-analysis of Project DARE outcome evaluations. *American Journal of Public Health*, **84**, 1394–1401.

Gottfredson, D. C. (1997) *School-based Crime Prevention*. http://www.ncjrs.org/works/chapter5.htm.

Hallfors, D., Rindskopf, D., Stirratt, M. and Saxe, L. (1997) Meta-analysis of school surveys to assess community prevention efforts. Presented at the *CDC and ATSDR Symposium on Statistical Methods—Statistical Bases for Public Health Decision Making: From Exploration to Modeling.* Atlanta, GA, January.

Hallfors, D., Godette, D., Sporer, A. and Pankratz, M. (2000) *Drug Free Schools Survey: Report of Results*. School of Public Health, Department of Maternal and Child Health, University of North Carolina at Chapel Hill, NC.

Hallfors, D., Sussman, S. and Sporer, A. (2001) *Getting Results: Developing Safe and Health Kids, Update 2. Assessing the Effectiveness of Classroom-based Prevention Programs*. California Department of Education, Sacramento.

Hansen, W. B. and McNeal, R. B. (1997) How DARE works: an examination of program effects on mediating variables. *Health Education and Behavior*, **24**, 165–176.

Hansen, W. B. and McNeal, R. B., Jr. (1999) Drug education practice: results of an observational study. *Health Education Research*, **14**, 85–97.

Hantman, I. and Crosse, S. (2000) *Progress in Prevention: Report on the National Study of Local Education Agency Activities under the Safe and Drug Free Schools and Communities Act*. US Department of Education, Office of the Under Secretary, Planning and Evaluation Service, Washington, DC.

MacKinnon, D. P., Johnson, C. A., Pentz, M. A., Dwyer, J. H., Hansen, W. B., Flay, B. R. and Wang, E. Y. I. (1991) Mediating mechanisms in a school-based drug prevention program: first-year effects of the Midwestern Prevention Project. *Health Psychology*, **10**, 164–172.

Mihalic, S. and Elliott, D. (2001) Challenges of dissemination/replication and successful adoption of programs. Presented at the *Drug Abuse Prevention Summit at Snowbird*, Snowbird, UT, April.

Modzeleski, W. (1999) *Testimony of William Modzeleski*, *US Department of Education before the Senate Committee on Health*, *Education*, *Labor and Pensions*. http://www.ed.gov/offices/OESE/SDFS/modzeleski0713.html [July 13].

National Institute on Drug Abuse (1997) *Preventing Drug use among Children and Adolescents*. NIH publ. 97-4212. US Government Printing Office, Washington, DC.

Pentz, M. A. (1994) Adaptive evaluation strategies for estimating effects of community-based drug abuse prevention programs [Monograph]. *Journal of Community Psychology*, CSAP Special Issue, 26–51.

Pentz, M. A. and Trebow, E. (1991) Implementation issues in drug abuse prevention research. *NIDA Research Monograph*, **107**, 123–139.

Pentz, M. A., Dwyer, J. H., MacKinnon, D. P., Flay, B. R., Hansen, W. B., Wang, E. Y. and Johnson, C. A. (1989) A multicommunity trial for primary prevention of adolescent drug abuse. *Journal of the American Medical Association*, **261**, 3259–3266.

Perry, C. L., Williams, C. L., Veblen-Mortenson, S., Toomey, T. L., Komro, K. A., Anstine, P. S., McGovern, P. G., Finnegan, J. R., Forster, J. L., Wagenaar, A. C. and Wolfson, M. (1996) Project Northland: outcomes of a communitywide alcohol use prevention program during early adolescence. *American Journal of Public Health*, **86**, 956–965.

Ringwalt, C. L., Vincus, A. and Ennett S. T. (2000) Are our nations' middle schools implementing effective substance use prevention curricula? In Ennett, S. T. (Chair), *The Diffusion of Prevention Science to Current Practice in School-based Substance Use Prevention*. Symposium conducted at the *Eighth Annual Meeting of the Society for Prevention Research*, Montreal, June.

Rogers, E. M. (1995) *Diffusion of Innovations*. Free Press, New York.

Rohrbach, L. A., D'Onofrio, C. N., Backer, T. E. and Montgomery, S. B. (1996) Diffusion of school-based substance abuse prevention programs. *American Behavioral Scientist*, **39**, 919–934.

Saxe, L., Reber, E., Hallfors, D., Kadushen, C., Jones, D., Rindskopf, D. and Beveridge, A. (1997) Think globally, act locally: assessing the impact of community-based substance abuse prevention. *Evaluation and Program Planning*, **20**, 357–366.

Smith, D. W., Steckler, A. B., McCormick, L. K. and McLeroy, K. R. (1995) Lessons learned about disseminating health curricula to schools. *Journal of Health Education*, **26**, 37–43.

Sudman, S., Bradburn, N. M. and Schwarz, N. (1996) *Thinking About Answers: The Application of Cognitive Processes to Survey Methodology.* Jossey-Bass, San Francisco, CA.

Swisher, J. D. (2000) Sustainability of prevention. *Addictive Behaviors*, **25**, 965–973.

Tobler, N. S. and Stratton, H. H. (1997) Effectiveness of school-based drug prevention programs: a meta-analysis of the research. *Journal of Primary Prevention*, **18**, 71–128.

US Department of Education (1997–98) *Common Core of Data*, *Agency Universe*. US Department of Education, National Center for Education Statistics, Washington, DC.

US Department of Education (1998a) *Nonregulatory Guidance for Implementing the SDFSCA Principles of Effectiveness*. US Department of Education, Office of Elementary and Secondary Education, Safe and Drug-Free Schools Program, Washington, DC.

US Department of Education (1998b) Notice of final principles of effectiveness. *Federal Register*, **63**, 29902–29906.

US Department of Education (2000) *Information and Application Procedures for Fiscal Year 2000. National Programs Federal Activities Grant Program The Challenge Newsletter (CFDA #84.184P)*. US Department of Education, Office of Elementary and Secondary Education, Safe and Drug-Free Schools Program, Washington, DC. http://www.ed.gov/offices/OESE/SDFS/news_archives/2000.html [March 24].

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