

YOUTH, DRUGS AND RESILIENCE EDUCATION

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ABSTRACT

Billions of dollars are spent annually on school-based drug education programs, with youthful drug use remaining near peak levels since the 1980s. Institutional, policy, and program evidence presented here suggests that although primarily delivered in schools, the educational community rarely participates in the development of drug education; and despite the finding that “no-use” programs such as Drug Abuse Resistance Education (D.A.R.E.) or Life-Skills Training (LST) are likely ineffective, they continue to thrive in schools. This may be explained by insufficient educational participation and scientific discourse considering these issues; and the role of interest group politics, such as the symbiotic relationship between government, researchers, and the tobacco industry, in drug education. In addition to this evidence, resilience based program alternatives, evaluation, and implications are discussed.

Today, the United States continues its vigorous efforts to teach young people how to say no to drugs. Each year, billions of dollars are spent on drug prevention [1-4]. The director of U.S. nation’s anti-drug efforts, General Barry McCaffrey, recently declared that the “number one” goal of this nation’s drug strategy “. . . is to educate and enable America’s youth to reject illegal drugs as well as alcohol and tobacco” [5]. As expenditures continue to rise, the leading annual survey shows that young people’s alcohol, tobacco, and illicit drug use remains at or near its highest point since the 1980s [6]. By 12th grade, at least 80 percent of young people will have used alcohol, tobacco, or illicit drugs [6]. In no other educational field might there be such a discrepancy between cost, energy expended, and gain. Among several

related inquiries, this paper examines why “no-use” drug prevention education continues and expands despite such discrepancies.

“School-based programs have constituted the bulk of prevention efforts in the past and are likely to do so in the foreseeable future” [7, p. 93]. Despite being delivered in schools, few articles critically address school-based drug education from an educational, social, and institutional perspective. A purpose of this paper is to fill this void. A second purpose is to offer a promising alternative program that complements comprehensive school reform.

Socio-historical, institutional policy, and program evidence is presented to fill these research gaps. Presented evidence is limited to providing an interconnected overview of issues accompanied by evidentiary support.¹ New evidence comes from critical analysis of the literature and comparative examination of documents and communications with key informants [8-10]. This newly analyzed evidence is considered valid only after contradictory evidence, spurious relations and rival explanations are considered and subsequently ruled out [11, 12].

THE CONTEMPORARY CONTEXT OF DRUG EDUCATION

Enabling Legislation

School regulatory policies are embedded in federal funding procurement requirements, specifically, Title 4 of the “Improving America’s Schools Act of 1994” known as the “Safe and Drug Free Schools and Communities Act” [13]. The “Improving America’s Schools Act” (IASA) was a reauthorization of the “Elementary and Secondary Education Act of 1965.” Title 4 in the IASA supports goal seven of the “National Educational Goals Act”: “By the year 2000, every school in the United States will be free of drugs, violence and the unauthorized presence of firearms and alcohol and will offer a disciplined environment conducive to learning” [13].

Program Regulation and Policy

The U.S. Department of Education is charged with regulation and oversight of school-based drug prevention programs. The regulatory process is described by the U.S. General Accounting Office [GAO]:

The U.S. Department of Education oversees state programs directly and local programs indirectly through required state actions. Its state oversight is a combination of activities required by the Act and other generally applicable requirements. Working along with states, Education reviews, helps states to revise, and, finally, approves state plans—which include a description of

¹For comprehensive reviews of the supporting literature and issues raised in this paper, please see [85, 100].

planned state-level activities, criteria for selecting high-need districts that will receive supplemental funds, and plans for monitoring local activities—before disbursing funds. In addition, Education conducts on-site monitoring visits. To allow states and localities enough flexibility to meet their needs, Education has issued no program specific regulations and advises states on program matters, such as allowable expenditures, through nonbinding guidance [4, p. 4].

To procure funding, each state develops an application that is submitted to the U.S. Department of Education every three years. In the application, states report the results of needs assessments, how funds and activities will be coordinated and used, and how ongoing evaluation will be conducted [13, Title IV, Section 4112 (a-d)].

Additional requirements follow several additional and important guidelines. First, each state must show how programs will teach young people that “illegal alcohol and other drug use” is “wrong” and “harmful” [13, Title IV, Section 4132 (a)]. Second, to secure or maintain federal funding, states must now also show that they are selecting and utilizing programs that have “. . . demonstrated effectiveness or promise of effectiveness in preventing or reducing drug use, violence, or disruptive behavior . . .” [14, p. 29905].

Under these policies, federal funds may be used for a variety of activities, including but not limited to: drug prevention program development, educator in-service training, program dissemination and delivery, and program evaluation [13, Title IV, Section 4116]. States cannot use funding for “drug treatment or rehabilitation, except for pupil services or referral to treatment for students who are victims of or witnesses to crime or who use alcohol, tobacco, or drugs” [13, Title IV, Section 4132 (b)]. Local educational agencies may use these funds for referrals to treatment, but not for treatment per se.

Each state’s drug prevention education allocation is based on the proportion of its school-aged population and its relative share of Title I funds [15, pp. 13-14]. Small states are assured of receiving at least one-half of 1 percent of the total amount allocated to all states. Once disbursed, 80 percent of each state’s federal funding is to be used in conjunction with local educational agencies. The remaining 20 percent is awarded to the governor and can be used by state educational agencies [15]. Under these guidelines and funding formulas, all states and over 90 percent of this nation’s local educational agencies receive federal drug education funds [4; 15, p. 6; 16].

Funding and Expenditures

Funding and expenditures for drug education are substantial. The U.S. Office of National Drug Control Policy recently reported that approximately 2 billion dollars in federal funds will be spent on drug prevention in year 2000. Seven hundred million dollars will likely be spent by the U.S. Department of Education

alone for this purpose [1, Table 3]. The remaining 1.3 billion federal prevention dollars will be variably distributed to states or spent by 69 other federal agencies [4].

Gaining an accurate estimate of overall school-based drug education expenditures at the state and local government levels is far more challenging. In addition to federal, state and local contributions, private sector organizations, which include charitable and for-profit institutions, also participate in prevention activities. As the GAO recently concluded: “comprehensive data on private funding of substance-abuse prevention activities over time are sparse” [4, p. 6]. The cost of their activities is not often factored into expenditure estimates, although such contributions to school-based drug prevention are believed to be substantial. For example, a recent news publication found that 4.5 million dollars from the Tobacco Institute was donated to implement one school-based drug prevention program in West Virginia [17]. In California, researchers found that federal expenditures were increased nearly sevenfold by state, local and in-kind charitable contributions [2].

This evidence suggests that more research on school-based drug education expenditures is needed. However, based on extrapolation from the GAO’s (1997) estimates combined with the Romero et al. research, it is estimated that between 1.4 and 5 billion dollars are spent annually on school-based drug education [2]. For a sense of the federal drug education spending trend, since 1985 when the Drug Free Schools and Communities Act was passed, by 1999, the U.S. Department of Education saw a 33 fold budget increase [1, 18].

Program Development and Implementation

On the policy, program development and implementation levels, state and local school-based drug prevention policies and programs are primarily developed and/or implemented by health and law enforcement communities, and to a far lesser extent, the educational community. Program and policy examples follow.

Regarding policy, in 1990 the National Commission on Drug-Free Schools issued its final report that shaped the drug prevention strategy for the coming decade [19]. Co-chaired by the Secretary of Education and the nation’s “Drug Czar,” the commission consisted of 24 individuals:

16 citizen members representing drug education and prevention, state and local education agencies, parent-teacher organizations, school boards, community groups, and law enforcement. Congress appointed a bipartisan delegation of four members of the Senate and four members of the House of Representatives [19, p. 5].

Despite being conducted by educational organizations, no active educators or educational researchers were found on this commission.

At the program development level, two examples are presented. Drug Strategies is a leading private non-profit organization dedicated to promoting “more

effective approaches to the nation's drug problems and to support private and public initiatives that reduce the demand for drugs through prevention, education, treatment, and law enforcement" [20, p. 37]. Over 100,000 copies of their first booklet "*Making the Grade: A Guide to School Drug Prevention Programs*" have been sold and/or distributed across the United States, including many school districts [21]. This booklet is a key information source upon which school district administrators rely when deciding which drug education curricula to implement. Of the 21 experts who offered opinions or evaluated programs, 20 were from public health, medical, or criminological communities. One researcher resided in a school of education. In an updated edition, researchers found a similar inclusion of expertise, where one of 25 experts came from education [22, p. 45].

If the number of research presentations addressing drug education at the largest educational research support organization in the United States is considered, there is an even smaller ratio of educational participation. Over a seven-year period in the 1990s, of approximately 10,300 program sessions presented at the American Educational Research Association's (AERA) annual conference, 19 addressed drug education.

Additional evidence suggests that in program delivery, education relies on the expertise of the law enforcement community. Exemplifying this reality, Drug Abuse Resistance Education (D.A.R.E.) programs alone are reportedly being implemented in at least 70 percent of America's elementary and middle schools as well as 44 other countries [23]. This proportion of the role of law enforcement in program delivery has been supported by large-scale evaluation evidence [24]. The remaining 30 percent of programs were implemented by health educators in middle and high schools, i.e., physical education or health teachers [24]. Additional research is needed to determine the ongoing extent and differential effects of experts in drug education policy, program development, and implementation. Nevertheless, this evidence and evidence dating back over 100 years, suggests that health and law enforcement communities—and to a far lesser extent, the educational community—develop and deliver drug education [25].

Young People's Drug Use

There are two long-term and ongoing national surveys reporting trends in young people's drug use. The first, the National Household Survey, has been reporting adult and youth drug use data since 1975 [26]. A second national survey focuses specifically on young people, the Monitoring the Future Study (MTF). MTF has been reporting data since 1979. Both are conducted for the National Institutes of Health. Compared with the Household Survey—due to anonymity, a larger and more representative sample size, and specific trend reporting for subgroup populations—the MTF survey provides a more useful picture of young people's drug knowledge, attitudes, beliefs, and behaviors. A limitation is that in the MTF survey, school dropouts have always been excluded. This may result in

underestimations of youth drug use. Nevertheless, the authors have claimed their research to be reliable and valid [27].

Unless otherwise noted then, the MTF study's most recently available results will be used to describe salient trends in 8th, 10th, and 12th grade level drug use, as well as gender and ethnic subgroups, and urban/rural patterns [28]. Alcohol, cigarette, and marijuana use levels are described because "these drugs are the most widely used in the U.S., the ones young people try first, and they pose serious, health, safety, and developmental risks for growing children and adolescents" [7, p. 93]. The phrase *illicit drug use* includes any use of marijuana, LSD, other hallucinogens, crack, other cocaine, and heroin, or any use of other narcotics, amphetamines, barbiturates, methaqualone (excluded since 1990), or tranquilizers not under a doctor's orders [6].

Overall Trends

In light of substantial spending on "no-use" policies and programs, drug use remains high. In 1999, 12th graders' illicit drug use was at its highest point since 1987 [6]. Close to 55 percent of the class of 1999 will have used an illicit drug and nearly 50 percent of young people will have tried marijuana, also at its highest level of use since 1987. Sixty-five percent of 12th graders will have tried cigarettes and more than 80 percent have used alcohol.

Factors that indicate problem drug use is daily use in the past 30 days and early initiation of use [29]. Three and one-half percent of high school seniors are using alcohol. This has remained relatively stable throughout the 1990s. Six percent reported using marijuana on a daily basis, the highest reported rate since 1982. Over 23 percent of 12th graders report daily cigarette use, the highest reported rate since 1979 (excepting 1996).

Regarding early initiation of drug use, 30-day prevalence data from 8th graders has been collected since 1991. Here, use of any illicit substance (12 percent), marijuana (10 percent), and alcohol (24 percent) is 1 or 2 percentage points lower than in the mid-1990s. At the same time, cigarette use is 4 to 5 percent lower now than in the middle 1990s (18 percent).

Thirty-day prevalence rates for 8th graders are lower now than earlier in the decade, yet the most recent grade data show that daily use of marijuana (1.4 percent) and alcohol (1 percent) is at its highest point since the expanded survey began in 1991. Again, the exception is cigarette use, which is 2 percent to 3 percent lower than reported earlier in the decade.

Gender and Ethnic Subgroups

There are several gender and racial/ethnic trends that have remained relatively stable over time. As has been the case since these data have been collected and analyzed, young males generally report using drugs at a higher rate than females [28, pp. 82-88]. For example, in 1998, approximately 27 percent of males had used

marijuana in the past 30 days compared with approximately 19 percent of females. Among illicit substances, alcohol, and cigarettes, the only factor bucking this trend is cigarette use. In 1998, females in 8th and 10th grades reported higher cigarette use rates in the past thirty days than their male peers [28].

Turning to differences among ethnic groups, young African Americans generally have the lowest illicit drug use, with Hispanics in the middle, and Whites consistently reporting the highest drug use. For example, in 1997 and 1998, approximately 24 percent of 12th grade Whites reported using marijuana in the past 30 days [28]. This is in contrast to 22 percent of Hispanics, and 18 percent of African Americans [28].

Urban/Rural Patterns

Recently, attention has been focused on urban versus rural drug use patterns. In 1998, 12th grade use of any illicit drugs in urban areas (50.7 percent) was substantially higher than rural areas (44.5 percent) [28]. Among these groups, alcohol use in urban (81 percent) and rural populations (82 percent) is similar [28]. For cigarette use, the data are reversed. Sixty-three percent of urban 12th graders have tried cigarettes, while 70 percent of rural 12th graders have also done so [28].

When examining the indicators of problem substance use, with only one exception, 8th, 10th, and 12th grade daily substance use in the past 30 days is substantially higher among rural youth than among their urban peers. For example, among 10th graders, 12 percent of urban youth reported smoking one or more cigarettes a day compared to 21 percent of rural youth [28].

Drug-Related Disciplinary Action

Intimately connected with drug use trends are statistics related to “zero tolerance policies.” Although not federally codified, under “zero tolerance,” students are to be suspended or expelled from school for use, possession, or distribution of alcohol, tobacco, or drugs. Nearly 90 percent of American schools have such policies in place [16, 30]. In the only year for which national statistics are so far available, 1997, 177,500 students were removed from mainstream schools for the possession, use, or distribution of drugs, alcohol, or tobacco [30, Table 18]. Eighty percent of those youth, or 136,000 young people, were removed from mainstream schools for more than 5 days or expelled [30]. No demographic data were found. The extent to which those who are removed from school have a drug abuse problem versus the serious legal problem of being caught with drugs is not known.

Summarizing drug use trends, although youth drug use is generally lower now than in the 1970s and despite recent small percentage reductions, many significant categories of young people’s use remain at or near their highest points since the late 1970s or early 1980s. Additional concern is generated because young people are initiating daily use at some of the earliest ages since the expanded aspect of the MTF survey began.

Drug related disciplinary action ranks second in frequency only to removal for physical fights. Young people are removed from mainstream education for drugs nearly three times more often than are removed for weapons, and ten times more often than the number of young people removed for carrying firearms [30].

THE EFFECTIVENESS OF DRUG EDUCATION

Numerous articles have described the effectiveness or promise of effectiveness in drug education [7, 31-34]. Considering substantial expenditures and intense prevention efforts though, the high level of young people's drug use and disciplinary action suggests program and policy ineffectiveness. This section provides analyses and institutional explanations in support of this assertion.

Program Description

The GAO finds a wide range of variation in the levels of implementation in drug prevention education programs [4]. Programs fall into three general categories [7]: 1) *information programs*, in which students are to be deterred from substance use by educators providing them with facts about drugs; 2) *affective programs* in which students are to be deterred from substance use by educators attempting to increase their self-esteem through the enhancement of their personal communication skills; and 3) *social skills or influence* programs in which students are to be deterred from substance use by educators motivating and teaching them how to refuse substances offered by others. Here, students may also be taught basic life and/or drug resistance skills. As described here, information and social skills programs are seen as "no-use" programs. Affective programs may be considered "responsible-use" programs [35].

Program Effectiveness

Studies examining the effectiveness of drug education have led researchers to conclude that alone, information or affective programs have neither effectively nor consistently deterred youth from drug use [32-33, 36-39]. Information programs have continued to thrive. They have done so by typically sharing with young people the graphic consequences of drug abuse [25, 40]. Traditional affective programs have all but disappeared from the program landscape.

The social influence or skills model has been called the "most promising" delivery strategy [7, p. 101]. Despite this, it is now fairly well accepted by the research community, if not the general society or school decision makers, that the nation's largest and most popular social skills program, Drug Abuse Resistance Education (D.A.R.E.) has not produced promising results. For example, in a multi-year experimental study of D.A.R.E. funded by the law enforcement community, Rosenbaum and Hanson drew the following conclusion, "Levels of drug

use did not differ as a function of whether students participated in D.A.R.E.” [41, p. 404]. However, they also found negative effects:

Every additional 36 hours of cumulative drug education . . . were associated with significantly more negative attitudes toward police . . . more positive attitudes toward drugs, alcohol, and cigarettes, and more delinquency [41, p. 399].

Supplemental drug education was associated with significantly higher usage likelihoods [41, p. 403].

Suburban students who participated in D.A.R.E. reported significantly higher rates of drug use on all four composite [drug use] indexes than suburban students who did not participate in the program [41, p. 402].

Rosenbaum and Hanson’s is one among a constellation of independent evaluations of D.A.R.E., showing that it does not prevent drug use [41-44]. While D.A.R.E. has fallen into some disrepute in recent years, other “no-use” social skills programs such as the Midwestern Prevention Project [45-48], Project Alert [49-51], Normative Education [52-53], and Life Skills Training [54-66] have gained in prominence. Because of its long research track record and community status, plus the fact that it is slated for national dissemination, the Life Skills Training (LST) program is selected for careful analysis. It serves as an example of the serious issues raised in “no-use” social skills programs.

Life Skill Training: A Consensus Choice for an Effective Program?

Prevention leaders see LST as an “effective” program. The nationally known, federally supported Blueprint Series from the University of Colorado, Boulder, recommends LST:

The results of over a dozen studies consistently show that the Life Skills Training (LST) program dramatically reduces tobacco, alcohol, and marijuana use. These studies further show that the program works with a diverse range of adolescents, produces results that are long-lasting, and is effective when taught by teachers, peer leaders, or health professionals [67].

In addition to the Blueprint Series, Drug Strategies gives LST its highest recommendation [22, p. 35]. Even *Time Magazine* advised the American public to “Just Say Life Skills” [68, p. 70].

Life Skills Training is virtually a consensus choice for national program dissemination by the U.S. Government. Under the National Drug Control Strategy’s “Ten Actions Families Can Take to Raise Drug-Free Kids,” LST is classified among the top programs [69]. LST is also being promoted for nationwide dissemination by the National Institute on Drug Abuse [NIDA] [70], and the Centers for Disease Control and Prevention [CDC] [71].

LST Research

Over the past 15 years LST has undergone significant refinement. It began in the 1980s as a pilot program. Early versions were tested on a variety of young people, including minority youth, yielding limited results [54-56, 58]. For example, significant results were found in one of seven measures of young people's cigarette smoking. In close examination of the early evidence an independent researcher found:

It is curious that, despite the fact that there is no evidence showing the LST program prevents use of illicit drugs among urban minority youth, and that its effects on cigarette smoking are limited at best to low-level experimental use, the program is recommended with enthusiasm to grantees by federal agencies concerned with developing interventions for this target population (72-74) [75, p. 136].

Despite the limited pilot results, the program was still refined and underwent three- and six-year evaluations [57, 59-60, 62-64, 66].

The Blueprint Series describes the most recent version of the LST program in this way:

LST is a primary intervention that targets all middle/junior high school students (initial intervention in grades 6 or 7, depending on the school structure, with booster sessions in the two subsequent years). . . . LST is a three-year intervention designed to prevent or reduce gateway drug use (i.e., tobacco, alcohol, and marijuana), primarily implemented in school classrooms by school teachers. The program is delivered in 15 sessions in year one, 10 sessions in year two, and 5 sessions in year three. Sessions, which last an average of 45 minutes, can be delivered once a week or as an intensive mini-course. The program consists of three major components which teach students (1) general self-management skills, (2) social skills, and (3) information and skills specifically related to drug use. Skills are taught using training techniques such as instruction, demonstration, feedback, reinforcement, and practice [67].

In this large-scale long-term program evaluation, researchers implemented LST in 50 predominantly white middle class schools in New York. The program was initiated with 7th graders. Two naturalistic experimental conditions were developed. In the first condition, educators were trained in LST in a one-day workshop (E1). In the second condition, training was provided through videotape and written materials (E2). Student subjects received the lessons described above by the BluePrint Series. Both experimental groups were compared with a control group. Subjects were assessed for self-reported drug use at three years and six years thereafter (please see Table 1).

Table 1 reproduces the published E1 and E2 "high fidelity findings" from the six-year study and new results that have been analyzed by the present author. New results are discussed in the following sections. Numbers presented in Table 1

Table 1. Reproduced and Imputed Results of Six Year Life Skills Training Program

Variable	Not Reported		Not Reported		Reported Control
	Lo fid E1, N = 366	Hi fid E1, N = 762	Lo fid E2, N = 479	Hi fid E2, N = 848	
Cigarette Smoking					
Monthly	0.33*	0.24	0.31	0.23	0.33
Weekly	0.29**	0.2	0.25	0.19	0.27
Pack-a-day	0.12*	0.09	0.11	0.08	0.12
Alcohol Use					
Monthly	0.67**	0.58	0.62**	0.54	0.6
Weekly	0.39**	0.24	0.31**	0.2	0.29
3 or more	0.65**	0.53	0.6**	0.52	0.59
Drunk	0.4*	0.31	0.42**	0.28	0.4
Marijuana Use					
Monthly	0.19**	0.1	0.16**	0.11	0.14
Weekly	0.08	0.05	0.08	0.05	0.09

*Imputation result equal to control group.

**Imputation result higher than control group.

Notes: "Not reported" = not reported in original research. "Reported" = reprinted from original research [59]. Low fidelity condition is one where young people report receiving 59 percent of the program or less.

represent the proportion of young people reporting drug use for each of the outcome measures. With only two exceptions, at the six-year follow up, in the high fidelity sample, i.e., those receiving 60 percent or more of the program, statistically significant differences were found. According to a *Journal of the American Medical Association* article, among those young people who received a "reasonably complete version of the intervention . . . there were up to 44% fewer drug users and 66% fewer polydrug (tobacco, alcohol and marijuana) users" [59, p. 1106]. Researchers concluded:

Drug abuse prevention programs conducted during junior high school can produce meaningful and durable reductions in tobacco, alcohol, and marijuana if they (1) teach a combination of social resistance skills and general life skills (2) are properly implemented, and (3) include at least 2 years of booster sessions [59, p. 1106].

Critical Analysis of LST

The long-term results garnered by this research formed an apparently rational basis for its popular praise. However, there are serious questions regarding the LST findings. It is the following issues taken in tandem that suggest the popular praise for LST is premature or unwarranted.

Alteration of Analytical Methods and One-Tailed Tests

In their three-year publication, the researchers present continuous data describing LST's results [60]. In the six-year publication, the three-year continuous scale drug use data is transformed into dichotomous yes/no drug use outcomes [59]. No rationale for this mid-study shift from a continuous and more sensitive outcome measurement method to a dichotomous and less sensitive measurement method is provided.

The LST authors note: "Since specific a priori directional hypotheses derived from previous research with this approach were being tested in this study, inferences were based on one-tailed significance" [59, p. 1109]. It is legitimate to form a priori hypotheses and conduct one-tailed tests of significance. However, in the case of drug prevention programs, especially in light of limited pilot program effects, there is an obligation to insure that no harm is done to youth. By conducting one-tailed tests, the likelihood of finding statistically significant effects was effectively doubled [76]. This occurred without testing for potential negative effects, where the direction of the differences might have been reversed.

Aggregation Bias

A number of studies have shown the importance of correctly aggregating data [77-81]. For example, by using multilevel analytical techniques and reanalyzing a previously published data analysis of a noted drug education program, Kreft found that "earlier reported effects . . . were not reproduced" [78, p. 46]. She showed that when student level data was aggregated to the class level for measurement, the aggregation process had the effect of significantly inflating the results [78, 53]. Making inferences about individual effects based on aggregated data where other potential effects have not been eliminated as contributory factors can lead to an ecological fallacy [81]. As early as 1984, aggregation bias as found in the Kreft research was found to be a significant issue in drug education research [82].

When there is historical evidence of an aggregation bias it is *not* justifiable to automatically infer that the effects found in current research are the result of an aggregation bias. However, there is an obligation to assess the extent to which the present analytical procedures fit with other studies where the bias is present. If the circumstances are similar, then these issues need to be addressed.

The LST research contains data aggregation procedures similar to those where the aggregation had the effect of inflating the results. In the 1995 six-year

LST publication, the school (as opposed to the class) is the unit of analysis [59]. There may be individual or class effects that have contributed to the results which have apparently not been accounted for.

Unequal Experimental and Control Groups

In the six-year LST research subjects were found to be “virtually identical” at baseline [59, p. 1109]. Following presentation of full sample results, where less than two-thirds of the analyses were non-significant, students in classrooms receiving an insufficient program dosage were “excluded” from the analysis:

Included in the high fidelity sample were those individuals who, based on classroom observation data were judged to have received at least 60% of the intervention during the seventh, eighth, and ninth grades, while excluding those individuals who received only part of the presentation program [59, p. 1110].

Excluding a significant percentage of the experimental group was based on the claim that it represented analysis from those who received “a reasonably complete version of the intervention” [59, p. 1106]. No support for a 60 percent cutoff as an accepted program implementation standard was provided. By the time the “high fidelity” sample was selected from the full sample then, it was found that:

Of the 2455 LST subjects included in the full [experimental] sample at the 6 year follow up 845 (34%) were excluded from the high fidelity subsample . . . indeed only about 4 of every 10 LST subjects assessed at baseline were eventually included in the high fidelity sample six years later [75, p. 139].

Excluding this many subjects in this way produces a potential confound, best stated by Gorman:

Although the high fidelity and full samples were virtually identical in terms of demographic characteristics . . . it simply cannot be ruled out that the two groups [experimental and control] differ in some fundamental way that affected the dosage they received . . . In short, the differences found using the high-fidelity subsample might simply be spurious, due not to program content, but to self-selection of subjects and/or their schools or classrooms into the intervention [75, p. 139].

Did, for example, educators have different motivations to deliver different levels of LST, or did certain students have different attendance rates based on their levels of drug use? Beyond attrition, the LST subject exclusion procedure may have resulted in unequal study groups [83].

Ineffectiveness or Negative Results in Unreported LST Data

As discussed above, results from the condition in which students reported receiving 59 percent or less of the program were not reported. Lower fidelity

results are important to assess because they provide additional information about aggregation bias or group equivalence. Additionally, from an educational perspective, a circumstance in which the educator delivers less than 60 percent of the program's lessons instead of all lessons represents a likely classroom scenario. Consequently, the present author imputes unavailable and unreported lower fidelity results, e.g., results from those students who were part of the full LST sample, yet received 59 percent or less of the program.

In addition to reproducing the original six-year results in the high fidelity E1 (teacher trained) and E2 (video trained) conditions, Table 1 also reports newly calculated "low fidelity" results. The new results in Table 1 were obtained by algebraically imputing data from the originally reported 1995 Botvin et al. data [59]. Results were obtained by applying the following formula to each drug use outcome in both the teacher-trained (E1) and video-trained conditions (E2): $[(\text{Full sample size}) \times (\text{each drug use cell's reported prevalence})] - [(\text{High fidelity sample size}) \times (\text{each drug use cell's reported prevalence})] / \text{low fidelity sample size}$. For example, in Table 1, the imputed low fidelity E1 monthly cigarette response of .33 is obtained by applying the above formula: $[1128 \times .27] - [762 \times .24] / 366 = .33$. Since the original author's raw data and adjustment information are unavailable, these conclusions are limited to establishing a pattern of unreported results, and not making inferences about specific outcomes.

New results in Table 1 show that when receiving 59 percent or less of the "Life-Skills Training" program in as many as 3 of 18 unreported outcomes reported drug use was equal to the control group. In as many as 10 other unreported program conditions young people's drug use was higher than in the control group. Overall, Table 1 shows that in 13 of 18 unreported "low fidelity" responses, young people's drug use was the same or higher than in the control group.² Understanding that the raw data and adjustments are unavailable, under the conditions that most likely reflect real-life educational situations, "Life-Skills Training" results suggest a pattern of program ineffectiveness as well as potential increases in drug use as a result of receiving part, possibly even most, of the LST program. At the same time, the issues of aggregation bias or group unequivalence noted above cannot be ruled out as explaining the LST results.

Support for the pilot LST research seemed unwarranted, yet the program continued. Analysis of the revised LST program also suggests that its scientific and popular support is unwarranted. The authors are encouraged to address methodological issues, present all results, support independent analysis of those results and independent study of LST. Unless and until this is achieved—based upon the potential combination of analytical alteration, one-tailed tests, aggregation bias, unequal study groups, and previously unreported patterns of

²Results of polydrug use follow a similar pattern and are available upon request.

program ineffectiveness or drug use increases—there is doubt cast over the validity of the LST research.

LST Research: Similar to Other Social Skills Programs

Scrutiny of the LST research is important because it is undergoing national dissemination. It is also important because the serious methodological issues noted above have been raised in virtually every other comprehensive social skills drug education program [78, 80, 84-91]. These kinds of issues and data reporting patterns prompted Moskowitz to note his concern that drug education research is so pervaded by such issues that results are “. . . often biased or uninterpretable” [91, p. 1]. This conclusion is similar to an earlier one reached by the GAO:

With few exceptions, evaluation of drug abuse education and prevention programs over the past 15 years have been of limited usefulness in determining what works, a review of the research shows. Criticisms include flaws in concept and design, evaluations that were premature or relied too much on self-reporting, and lack of proper documentation [92, p. 5].

In addition to the serious methodological flaws found in drug education research, there is a history of program ineffectiveness. For example, at least nine recent independent examinations of drug education found “no-use” social skills programs to be ineffective [24, 40-44, 75, 78, 93]. At least two evaluations found negative program effects [24, 41].

Recent “no-use” drug education evidence suggests that, 1) programs remain marred by methodologically flawed research, and 2) “no-use” programs, including social skills programs, have not shown clear or consistent evidence that they prevent young people from using drugs.

The generality of methodological and effectiveness issues across programs raises an important point. Federally developed or supported programs, which constitute most programs, are united by the mandated “no-use” funding requirement. So for example, although information about drugs may be provided, by educational interpretations of the mandate, only the graphic and negative consequences of drug use seem to be portrayed [24, 40]. Or while “life skills” are promoted as a concept, by interpretations of the mandate, drug refusal skills couched in social skills language constitute what may actually be taught [24, 40]. With different names and perhaps slightly different emphases then, contemporary “no-use” drug education is similar to, and likely as ineffective as, historically ineffective “no-use” drug education.

Explaining Unwarranted Program Expansion Through Interest Group Politics

Outside of a few publications, including a recent special issue of the journal *Evaluation Review* [94], there has been little of the scientific discourse merited and

typically accompanying findings of methodological flaws and program ineffectiveness [37, 80, 91, 94]. Moreover, “no-use” social skills programs like D.A.R.E. and LST continue to be popular or expand [75]. In the case of D.A.R.E., its high public visibility and symbolic effectiveness, added school security and potential time management assistance for beleaguered educators might speculatively explain its popularity and expansion. None of these explanations though, are related to the goals of drug education. What might explain the simultaneous lack of discourse, “no-use” program continuation or expansion? In short, interest group politics [95]. This assertion is developed through the following examples.

There are indications that the federal government is aware of “no-use” program ineffectiveness. For example, many in the research and educational practice community would be concerned about misrepresentation when they view the “talking points” developed and disseminated by the federal government’s Center for Substance Abuse Prevention [96]. In their “Prevention Pipeline” magazine, researchers and practitioners are taught about “Winning the Numbers Game: How to Say Prevention Works When the Numbers Say Something Else.” Here, the government acts as an advocate for questionable “no-use” programs. In so doing, it exhibits its involvement in the interest group politics of drug education.

Government interest group advocacy is amplified by the actions of government/public liaison organizations. When the numerous methodological and ineffectiveness findings were brought to the attention of researchers in these organizations, none were considered in their analyses used to make program recommendations [97, 98]. Moreover, in light of the considerable concerns regarding the LST research, a representative of one organization stated “. . . we do continue to stand behind the program” [99].

What might explain such inadequate consideration of these serious issues? The independence of researchers assessing programs to make recommendations is in question. For example, two-thirds of the middle and high school programs receiving Drug Strategies’ highest program ratings were developed by the researchers sitting on their own research/advisory panel [20, 22]. In fact, a lead researcher for Drug Strategies was formerly a member of the LST research team [20, 22]. At the same time, the progenitors of nearly all social skills programs mentioned above received federal support for the development, implementation, or evaluation of their programs. The entanglements between scientists’, government and government/public liaisons support the role of interest group politics in drug education.

Quite often these entanglements breed unholy alliances. In the case of drug education, one of these alliances is the tobacco industry. In 1999, the *Charleston Gazette* reported on the tobacco industry’s strategy to participate in drug education [17]. Among hundreds of thousands of released confidential tobacco industry memos, one suggests forming liaisons between the industry “with and through credible child welfare professionals and educators to tackle the ‘problem’ of teen smoking” [17, p. 4A]. The text of this tobacco industry document is reproduced in

the Appendix. The editorial concludes “this memo clearly demonstrates the motive is to head off further regulation, paint industry foes as extremists and foster good will by appearing to care” [17, p. 4A]. Despite warnings from organizations like the American Medical Association, the West Virginia Department of Education recently accepted 4.5 million dollars from Philip Morris that was specifically earmarked for LST [17].

In an examination of interest group politics in drug education, an institutional mechanism for the unimpeded support for drug education was described by the author and his UCLA colleague:

The perceived threat of drugs in American society has been escalated to such a level that both humanitarians and moral hard liners can join together, because each offers a strategy to replace “tension and uncertainty with a measure of clarity, meaning, confidence, and security” [95, p. 61]. Given a broadly defined problem (adolescent drug use or abuse), which has an equally broad range of solutions, competing interest groups discover that they share the resource pie while pursuing their own strategies [100, p. 323].

In the above examples, institutions like the government and tobacco industry so fundamentally opposed in recent years, and each with their own likely diverging interests, mutually support questionably effective programs that give the appearance of serving the public interest. This institutional overview of government, government/public liaison, and private groups suggests that in drug education, the researcher and program are the vehicles where interest group politics seem to explain the lack of adequate scientific discourse and continuation and expansion of likely ineffective “no-use” drug education programs. Program ineffectiveness and the accompanying interest group politics have implications.

Implications of Program Ineffectiveness and Interest Group Politics

Squelching Alternatives and Creating Policy Conflicts

At the policy level, interest group politics squelch research on promising program alternatives. The GAO touched on this point:

Because there is no evidence that the no-use approach is more successful than alternative approaches, or even successful in its own right, examining only no-use models may result in the failure of the recognition efforts to identify other strategies that are also helping to reduce drug use. Further, should no-use approaches not prove effective in preventing drug use, the search for program models would have to begin again. Therefore, we believe that while the policy of only recognizing programs that advocate no use in addressing the problem of drug abuse is plausible and within the agencies’ discretion, it nevertheless is premature. Until it has been established that no-use or some other approach

works best in preventing drug use, it seems unreasonable for a federal program to preclude examination of many promising strategies [35, p. 44].

Ineffective “no-use” programs promoted by the federal government not only squelch development of real alternatives, such strict adherence to “no-use” programs raises an unacknowledged policy conflict: Under the Safe and Drug Free Schools and Communities Act only “no-use” programs can be funded. At the same time, under the federal “principles of effectiveness” only “demonstrated” or “promising” programs can be implemented. In light of multiple sources of evidence, these policies suggest that the federal government may be simultaneously mandating and prohibiting “no-use” drug education.

Decreased Educator Credibility

This form of “no-use” drug education has been found to result in decreased educator credibility. Students lose trust in adults due to cognitive dissonance in “no-use” programs and punitive zero tolerance policies [24, 40, 101].

Recent developments in drug education may also lead parents and/or community members to increase their dissatisfaction with public education [102].

Inhibition of Decision-Making Skills Development

At the youth level, relying on fear arousal as a pedagogical tool rather than students’ innate quest for knowledge limits the development of their critical decision-making skills [103]. Additionally, zero tolerance policies remove young people from school, and may thus extend their problems beyond experimentation by disconnecting them from the educational system [24]. For example, in a survey of more than 1300 out-of-school youth in California it was found that 30 percent of those who were expelled or suspended simply never returned to school [104].

Why is education through fear and removal from school rather than a quest for knowledge such a serious issue? Most contemporary drug education exemplifies the Eccles et al. [105, p. 98] earlier findings that there is a “. . . decrease in the personal and positive relationships with teachers after the transition to junior high school [and that] this decline is especially problematic during early adolescence when children are in special need of close relationship with adults outside of their homes.” In a “no-use” context, young people cannot seriously engage with educators in the necessary and complex processes involved in their own cognitive and emotional development around drug issues. These are issues about whether to use or not use drugs, as well as the development of decision-making skills. The accepted interpretation of program guidelines as mandating only “no-use” discussion and zero tolerance policies disconnect many young people from adults. Such disconnections serve as a barrier to the youth-adult relationships that are necessary for healthy development. This evidence is commensurate with

educational research, where development of critical decision-making skills during an essential phase of youth development is inhibited. In psychological terms, under traditional “no-use” programs, where the objective is to scare or shame youth into abstinence, a state of cognitive dissonance has been found to result [40]. The author refers to this inhibitive process as “disintegrative shaming.”

In reviewing the drug educational literature, the author is unable to locate any currently credible educational theory or practice in contemporary “no-use” drug education.

Several implications of ineffective “no-use” drug education and its accompanying interest group politics—squelching exploration of promising alternatives, emerging policy conflicts, reduced educator credibility, inhibition of young people’s skills development, disintegrative shaming, and the lack of credible educational theory or praxis—highlight the urgency for the educational community to more fully participate in drug education. Based on findings presented here and conclusions drawn by organizations like the GAO, a search for promising educational alternatives representing more than a variation of the social skills “no-use” theme is warranted and necessary.

A PROMISING ALTERNATIVE: RESILIENCE DRUG EDUCATION

In their meta-analyses of drug education, Tobler and colleague found that drug education needs to be more interactive [32-34]. The educational and related communities have developed highly relevant, yet unapplied knowledge that can be used to incorporate interactivity and align drug education with credible educational theory and praxis.

Decision Making Research

By middle school, young people’s decision-making about drugs can incorporate a multiplicity of influences such as peers, media, and family [106-109]. Fischhoff found that if provided with sufficient information, adolescents are as adept as many adults in assessing risk of drug use or negative outcomes resulting from sexual practices [110, 111]. Moreover, compared with adults, adolescents displayed minimal difference in decision-making [112]. The capabilities of youth to make informed decisions are clearly supported in the landmark Carnegie Report on Adolescent Development which “. . . challenges longstanding beliefs that adolescents are not competent to make good decisions about a variety of choices facing them” [113, p. 86]. She also asserts that when focusing on young people’s development, “the focus is away from the remediation of single problems, such as substance abuse, adolescent pregnancy, and suicide or health compromising behaviors to the promotion of adolescent health or a cluster of health enhancing behaviors” [113, p. 86].

Risk and Resilience Research

The importance of developing young people's decision making skills has drawn additional empirical support from a burgeoning body of evidence focusing on youths' capabilities rather than their deficits. Called many things by different people in different research arenas, such as "wellness," "youth development," "assets," or "human development," a "strengths perspective," or "protective factor" research, the author refers to this work as "resilience" research.

Risk

To understand the unique concepts of resilience research, it is briefly explored as many view it—connected with risk reduction research. Based on the possession or the existence of "risk" characteristics, children were believed to have increased incidence of accidents, delinquency, and drug abuse [114-119]. It is reasoned that if students possessing these characteristics can be identified early, then drug use or abuse can be averted, thus increasing resilience [120, 121]. Although many consider risk and resilience inextricably linked, in a review of the risk and resilience literature, the present author finds significant differences between risk and resilience:

Historically, protective factor research developed independently of risk factor research . . . Protective factor research, with its positive view of the individual student, promotes the well-being of all as opposed to the maladaptive identification of adolescents [85, p. 547].

Even in the latest research, no evidence showing the frequency, intensity, duration or mix of risk factors predicting negative outcomes and increases in resilience has been found [85, 122]. Moreover, the risk factor model has revealed unintended consequences in practice, i.e., policies and programs often prematurely labeling youth as maladaptive [24, 123-126].

Resilience

Resilience, as conceptually distinguished from risk reduction, focuses on developing the interests and strengths of young people to promote their healthy development. As such, it represents a novel research approach with promise for educational application. In one naturalistic and longitudinal study spanning nearly 50 years, it was found that 60 percent of young people in the most challenging of life's circumstances, i.e, familial drug abuse or poverty, would go on to procure jobs and be productive members of society with little or no outside intervention [127-132]. Additional longitudinal studies have shown that up to approximately 70 percent of young people in similar conditions succeeded in life [133-140].

Resilience research provides for a general transactional model of human development [141]. It suggests that it is *primarily* the nature of the interaction

between child and adult in the context of the larger society that makes a difference in even the most challenging life circumstances. Bonds between infants, children, and adolescents and adults—any adults—have proven successful in fostering thriving as children grow into adults [142]. Longitudinal research has shown that these bonds in the form of “parent-family and perceived school connectedness were [was] protective against every health risk behavior measure except pregnancy,” including drug use [143, p. 823; 144].

Resilience Education

As distinct from the concepts and practices of risk reduction, the application of resilience to education is in its infancy. “Resilience education” has been defined as “the development of decision-making and affective skills within each person and connectedness between people in the context of a healthy/democratic learning community” [145]. Development of a resilience based learning community has resulted in young people having a fuller sense of school as community, higher levels of internal locus of control, concern for others and conflict resolution skills [146]. At the curriculum program level, young people show more participation, higher self-efficacy, better decision-making skills, and less involvement with outside negative activities [147]. Researchers anticipate longer-term results and the possible replication of findings.

Resilience Drug Education

For a brief period in the 1970s, the National Institute on Drug Abuse (NIDA) recognized the importance of some basic principles of what might be part of a modern resilience drug education. They noted:

The teacher has not only the ability but the responsibility to help students learn how to use drugs responsibly and learn how to find alternative solutions to personal problems that might otherwise lead to drug abuse . . . The teacher should serve more as a facilitator of learning than as an imparter of knowledge. This assumption implies a process-oriented or problem-solving approach to drug education. . . . The guiding objective for our task was to meet the drug education needs of students, rather than the needs of school administrators, of teachers, or of the people responsible for preparing future teachers. Too often, drug educational programs are designed and teachers are trained to satisfy the perceptions and biases of different adult groups. Consequently, the programs are likely to be irrelevant to the real world of peer pressure, value confusion, and “growing up” in which young people live [148, p. 2].

NIDA further asserted that when teachers provide drug education, they should be able to “assist students in learning how to weigh the consequences of possible decisions they could make on drug issues” [148, p. 18]. In the current context of our war on drugs, some of NIDA’s earlier statements as well as the following statements may seem remarkable. The extent of implementation or effectiveness

of programs directly based on these principles is not known, due to the sweeping “just say no” social and legal changes of the 1980s [25]. Nevertheless, without condoning drug use, NIDA asked the educational community to focus on the development and well-being of youth so that they can make informed drug decisions. No one wants young people to try drugs, however, at least 80 percent eventually will, so in the educational process, their health and safety outside the classroom becomes of paramount importance.

There is a scientifically sound, yet unapplied basis for this focus, e.g., the application of resilience to drug education. A resilience drug education could be similar to changes made in schools undergoing reform, where learning is part and parcel of each young person’s social and moral development. Respect for the unique development of each young person, is found in constructivist thinking [149-152]. Based on this resilience constructivist youth orientation, the overarching drug education goal is the development of young people’s interests and strengths through 1) deepening educator/youth connections and 2) developing honest, accurate and complete drug information with students. Specifics follow.

Pedagogy

A “just say know” resilience drug education, as coined by Beck, is closely aligned with the best of effective educational practices, where rapport is built between educator and student, i.e., connectedness [25]. Here thinking, feeling, and acting are explicitly connected. Recent developments in cognitive neuroscience research shows that feeling or affect acts as the glue linking thinking and behavior that produces learning [153-160]. Specifically, such linkages occur through movements of peptide chains between the body and brain upon arousal [158]. This jargon is translated into educational vernacular in a special issue of *Educational Leadership*:

Thinking and feeling are connected because our patterning is emotional. That means that we need to help learners create a felt meaning, a sense of relationship with a subject, in addition to an intellectual understanding [161].

The considerable cognitive neuroscience evidence urges us “. . . to think of students as more than mere brain tissue and bodies. Powerful peptides convert that body and brain tissue into a vibrant life force—the whole child that John Dewey urged us to educate” [157, p. 66].

By emphasizing the affective-cognitive connections between young people and adults, a resilience drug education has a reasonable chance of making learning inroads. To focus on affect, consider pedagogy emphasizing connectedness. To focus on cognition, consider the nature of drug information.

Connectedness

It takes time to develop connectedness or rapport. It is built when young people have opportunities to voice their perceptions with the educator and/or peers.

Where this has occurred, researchers found that in 40 focus group interviews youth told an astonishing 494 stories about drugs or drug education [103]. Young people's stories illustrate their feelings about drug issues. Stories also indicated young people's unfulfilled needs to discuss their perceptions about drugs. When young people believe that adults are listening to them regarding their affective issues—needs, fears, curiosities about drug use abuse or misuse—rapport is built. Cognitive neuroscience tells us that they are likely to be ready to learn.

For a brief period in the 1970s, before resilience evidence was available, the educational community shed light on how to develop affective connectedness in educational pedagogy. A classic 1973 Presidential Report entitled "Drug Use in America: Problem in Perspective" suggested that an effective drug education might be operationalized by Confluent Education [162].³ Quoting its founder, the panel described this approach:

Confluent Education is the term for the integration or flowing together of the affective and cognitive elements in individual and group learning . . . This distinction is an important one and it is particularly important to recognize that a focus on the child as a human being with attention to his needs and values does not imply ignoring more traditional intellectual goals. What is being called for is not a substitution to therapeutic goals for academic ones, but rather a recognition of the child's needs, so that a classroom atmosphere might be created in which the child is far better able to satisfy his intellectual needs. It is well known that learning is far more easily accomplished where motivation exists and the child is eager to acquire the information that is being presented [162, p. 373].

Confluent Education (C.E.) continues to develop. It is now considered a precursor to constructivist thinking and is commensurate with developing the kinds of connectedness that resilience research supports [163-165]. With respect to drug education, a resilience C.E. practice could focus on interactive experiential issues and decision-making processes related to drugs. The C.E. practice goal is to facilitate relationships, so students can develop their subject mastery in conjunction with the educator. As a brief example, in an existing C.E. educational climate, this could include listening to the stories young people wanted to share with educators about drugs. In so doing, adult/youth connectedness is deepened. As this lesson continues, young people, then in a curious state, can work with the educator to follow their interest, and according to cognitive neuroscience research, deeply learn about drugs and making drug decisions. As connectedness is operationalized by discussing the affective drug issues of youth, opportunities for educators to introduce useful drug information arise. They may for example, take place in the form of young people asking questions, indicating to the educator verbally or non-verbally that they are ready for drug information. Educators might

³Six of the eight members who made these program recommendations were from the educational community.

see these “teachable moments” as an opportunity for honest, accurate and complete drug information to be offered.

Drug Information

In earlier research and continuing today, the kinds of drug information delivered in “information” programs were and continue to be fear-arousing [25, 40]. In a resilience drug education approach, educational content is reoriented from a focus on drugs and their certain detrimental relationship to the body, to a focus on honest, accurate and complete information.

For reliable insight into what aspects of drug information may be relevant, turn back the clock to Consumer Reports and their 1973 report entitled “Licit and Illicit Drugs” [166, p. ix]. They note the following salient informational factors:

- Major licit drugs—caffeine, nicotine, and alcohol—are considered along with the illicit drugs.
- Each drug is presented in a historical setting.
- The history of drug laws, policies, and attitudes is presented along with the history of drugs themselves.

The Consumer Reports drug analysis suggests that good drug information distinguishes between drugs, levels of use, and various contexts in which drug use occurs. They develop licit and illicit drug information based on a wide range of criteria. Gable has built on this by taking an initial step in developing an objective drug information scale that may be ideally suited to drug education. He incorporates potential toxicity and addiction into two comparative factors: 1) a drug “safety margin” (toxicity), and 2) “dependence potential” (addiction) [167]. On this scale, for example, caffeine is ten times safer than alcohol and has a moderate potential for dependence. This information could also focus on similarities and differences among use and abuse in various cultures, past and present. Offering such information depends on the educator’s assessment of the developmental capabilities of the class and students. In sum, educational and health experts should incorporate objective drug information so that young people can learn about drug history, cultural application, and differences between drug types, usage levels, and effects.

Early Resilience Drug Education

Through extensive searches, evidence has been discovered showing how precursors to resilience education were conducted. In a report written by this 7th grader, when discussing the drug LSD, there is evidence of a relatively sophisticated constructivist educational experience underway:

The letters LSD are derived from the German Lysergsaure Diethylamid, the English translation yields the chemical name, Lysergic Acid Diethylamide. It was synthesized in 1938 at the Sandor Research Laboratories in Switzerland, and its profound mental effects were first noted in 1943 . . . People who use LSD say that it has a number of effects. The first effects are likely to be sudden changes in their physical senses. Walls may appear to move, colors seem stronger and more brilliant. Users are likely to “see” unusual patterns unfolding before them. Flat objects seem to stand out in three dimensions. Taste, smell, hearing and touch seem more acute. One sensory impression may be translated or merged into another . . . One of the most confusing yet common reactions among users is the feeling of two opposite and strong emotions at the same time—they can feel happy and sad at the same time . . . [168, p. 7].

Absent from this portion of her report is the fear-arousing information so often a mainstay of today’s drug education. The student’s focus is not only on the drug’s detrimental effects. Without any endorsement of drug use, the student fuses factual information or cognitive learning with a description of the potential experiential effects of the substance or affective learning. By integrating the cognitive information based on describing an affective experience, she can solidify her learning. Because it is her own incorporation of information, decision-making research tells researchers that the young person would be likely to use it as a learning peg for drug decisions.

From the educator’s perspective, this student received an “A” for her narcotics report and, in response to the LSD section, her educator commented, “a very, very interesting report on this drug.” Rather than closing down this young person’s learning by telling her she should have noted only the detrimental effects of the drug, as “no-use” programs do, the educator supports the youth’s quest for knowledge based on her interests. In this resilience context, a basis for connectedness, learning, and thus thriving is advanced.

Evaluation Components of Resilience Drug Education

To date, the primary ways researchers have determined the effectiveness of drug education is whether the program decreases drug use, and in various ways youth can describe the detrimental effects of drug abuse on one’s body or to others. Researchers will continue to use these measures as part of determining program success. Considering methodological and conceptual advances though, what does it mean for resilience drug education to “work”?

To apply resilience and education evaluation concepts to the evaluation of drug education, as Horowitz and Brown [169, p. 115] suggest, two things can be done. First, it is essential to expand the evaluation perspective to multiple levels so that there is a more holistic view toward identifying program effects [78, 91].

A second way to enhance evaluation is to focus on evaluating competencies. To do this, drug education evaluations can incorporate social contextual variables, such as the extent of development of pro-youth policies that provide assistance to those who need it. On the interpersonal level, an indicator of success could be the perceived adult/youth influence and/or adult/youth connectedness found in drug education [143, 170].

On the intrapersonal level, the individual youth experience in drug education might be examined. Here, in addition to determining drug use levels, part of determining if drug education is “working” could include examining educational content and performance standards focusing on youths’ capabilities to make drug decisions. Determining young people’s knowledge about critical drug issues like distinctions between drug use, abuse and misuse among different drugs is likely to indicate healthy capacities regarding drug decisions. An educational standard illustrating these distinctions could be briefly described in this way:

The content standard. A student’s ability to distinguish between substance use, abuse, and misuse based on different levels and different user contexts in purposeful and meaningful ways in the classroom. Following is a description of a high school drug education performance standard:

- Level 1—I do not make distinctions between use, abuse, or misuse, nor can I identify any ways in which these distinctions would assist me in making drug decisions.
- Level 2—I understand these distinctions and can describe how they might be applied in the real world.
- Level 3—I understand these distinctions and can describe how they might be applied in the real world. I can describe how these distinctions might be applied to a variety of decision-making circumstances not described in the class, not just drugs.
- Level 4—I understand these distinctions and can describe how they might be applied in the real world. I use the distinctions not only for my own understanding, but have also used them with other students to help them gather and analyze information about drugs.

In this example, as the performance level standard increases, so do the demonstrations of student capacities. Developing realistic drug education competency standards is one aspect of developing a promising alternative educational evaluation model that reflects a resilience approach.

In sum, a multilevel resilience drug education evaluation focuses on emphasizing youth competence. It becomes part of shifting our view of youth from a problem perspective or punitive oriented approaches to developing competencies.

Institutional Prognosis for Resilience Drug Education

The evidence presented earlier suggests that interest group politics have affected the culture of the educational community so much so that many interpret

“no-use” programs and zero tolerance policies as a given in their schools, when this is not always the case. For example, zero tolerance policies are not federally mandated. States and schools are free to develop more pro-youth drug policies. Given the fears that the war on drugs engenders, such as federal withholding of funding, can such promising programs like resilience drug education be implemented? In a number of ways, resilience drug education shows promise for institutional implementation.

First, possibilities for educational change begin with public support. A recent poll conducted by the Field Institute shows that nearly 60 percent of California’s adults want their kids kept in school after first time drug offenses [102]. Nearly 60 percent of those polled also want school programs to emphasize young peoples’ decision-making skills [102]. If the educational community develops and implements resilience drug education, there is evidence that it can garner public support.

Second, as has been described, resilience drug education is in concert with credible constructivist theory and practice, which is often part of comprehensive educational reform. Of course, implementation of a resilience drug education model is only as good as the strength of the educators involved. Many think that deepening connectedness and working in a resilience modality is a matter of innate capacity. However, resilience education results described earlier are showing that such principles can be successfully applied through personnel training, including those who might deliver resilience drug education, i.e., health or human development educators.

In three ways, school administrators can support resilience drug education. First, because resilience can dovetail with larger reform efforts. Second, until policies are adjusted toward more pro-youth options, this alternative respects current regulatory policies. Finally, regarding policy evaluation requirements, when moving toward evaluation for youth competence in drug education, resilience drug education can also be evaluated in a standards based environment.

More institutional research is needed to determine the extent to which resilience drug education is effective, can be successfully implemented, and pro-youth policies developed. Based on public support, credible theory, complementary school reform efforts, and its feasibility within the contemporary policy structure, resilience drug education can become part of school reform.

CONCLUSION

This paper fills an educational research gap in drug education through a social and institutional analysis of its program context, effectiveness, and alternatives. Considering billions in annual program expenditures relative to high levels of youthful drug use, concern is generated about the effectiveness of “no-use” drug

education. The claim that these drug education programs work is mitigated by numerous independent government and research analyses—such as the Life Skills Training example provided in this article—suggesting a continuing tradition of flawed research or program ineffectiveness. “No-use” drug education may have different names or slightly different emphases, yet federally developed and supported services are largely bound by narrow program interpretations, development, implementation and evaluation, devoid of credible educational theory or praxis.

These conclusions have youth and educational/institutional implications. Regarding youth, under “no-use” drug education, critical decision-making skills development is likely inhibited. Regarding educational institutions, drug education fosters reduced educator and educational community credibility. Additionally, there is an emerging federal policy conflict. On one hand, funding of only effective or promising programs are mandated, and on the other, only demonstrably deemed ineffective “no-use” programs are partially acceptable for funding.

The simultaneous maintenance of policy conflicts, lack of scientific discourse and continuation or expansion of flawed “no-use” programs may be partially explained by the role of interest group politics in drug education. Under the guise of fighting the war on drugs, opposing interest groups like the federal government and the tobacco industry come together to support researchers and their programs provided that they support the particular interests of each group.

The interest group politics of drug education will begin to be addressed when the educational community appreciates the gravity of drug education to its own community, the public and especially, young people. It will be more deeply addressed when our community participates in the development, implementation and evaluation of realistic and pro-youth drug education that dovetails with effective education.

More research needs to be conducted on drug education’s actual cost, its impact on youth from multiple perspectives, and educational alternatives to “no-use” programs. In the meantime, there is substantial public support for change toward resilience alternatives. Resilience represents a fundamental shift from a youth problem remediation perspective toward a pro-active youth development perspective. The resilience literature is longitudinal and independently replicated.

The development and application of resilience drug education is in its infancy and more research specifying such a program and its effectiveness is warranted. Yet, as distinguished from concepts and practices of risk, it is posited that a resilience drug education represents a pragmatic and promising alternative to contemporary “no-use” drug education. It emphasizes resilience through building connectedness and delivering honest, accurate and complete drug information. The educational community can build on modern Confluent Education instructional strategies, where the importance of the cognitive-affective link that builds connectedness, now supported by cognitive neuroscience research, has been stressed for over 35 years. These strategies emphasize young people’s

decision-making competencies and an affective connection between peers and with adults. Such educational practices allow students to make informed decisions and may 1) reduce risk of drug abuse without the potentially negative effects of a risk approach, and 2) foster youth thriving. Educational researchers can and should collaborate with health experts to develop resilience drug information. For the benefit of our young people, this research urges the educational community to consider not only if, but also how and with whom our knowledge is used to advocate on behalf of youth when addressing serious social issues, like drug use.

APPENDIX

Confidential Tobacco Industry Youth Strategy Document

Produced 08/30/96. Retrieved April 12, 2000 from the World Wide Web: <http://www.tobaccoinstitute.com/>

DISCUSSION PAPER

The youth program and its individual parts support The Institute's objective of discouraging unfair and counterproductive federal, state, and local restrictions on cigarette advertising by:

- Providing on-going and persuasive *evidence* that the industry is actively discouraging youth smoking and independent *verification* that the industry's efforts are valid.
- Reinforcing the belief that peer pressure—not advertising—is the cause of youth smoking.
- Seizing the political center and forcing the anti-smokers to an extreme (as happened when the antis attacked the industry at the time of the launch).

The strategy is fairly simple:

1. Heavily promote industry opposition to youth smoking.
2. Align industry with broader, more sophisticated view of the problem, i.e., parental inability to offset peer pressure.
3. Work with and through credible child welfare professionals and educators to tackle the "problem."
4. Bait anti-tobacco forces to criticize industry efforts. Focus media attention on antis' extremism. Anticipate and blunt antis' strongest points.
5. Establish the sense of a growing, well-accepted program by encouraging a proliferation of small, local projects; and appropriate co-ventures with other TI allies. Avoid dependency on any one organization.

Tactically, the program rests on two pillars:

Promotional—for positioning purposes.

1. Broad-based advertising—whether it offers the booklet or simply outlines the industry's five part program—has the important effect of making the public aware that the industry *says* it is trying to do the right thing.

2. Third party communications adds the message that knowledgeable experts agree that the industry is doing the right things.
 - a) Jolly Ann Davidson's media tours provide a limited endorsement.
 - b) A Consortium "speakers bureau" will increase the effect.
3. Contingency planning helps us anticipate and counter antis' claims. For example, TI might conduct its own "sting" operation to demonstrate (a) that "it took us 25 "stings" to find our first "It's the Law" violation and (b) that the industry is attempting to enforce its own code.

Program—to add substance to the claims.

1. The booklet series and spin-offs have been well accepted by educators and other experts. The large quantities distributed add to the credibility of this project.
2. The consortium provides a means by which experts can advise the Institute on how to refine and build upon existing approaches.

The Institute must remain fairly responsive to this group since its members will be asked to verify industry commitment to the goal of discouraging youth smoking. (In this way, the consortium is similar to the labor-management committee—their "seals of approval" put others more at ease.)

3. Individual projects (whether implemented by consortium members or others) will be the way we establish working relationships where we need them. So long as projects support program strategies, it matters more *who* is doing them and *where*.

Projects may include:

- a) Production of materials, e.g., booklet aimed at low income families.
- b) Establishment of services, e.g., a program to help new Asian families deal with parent-child communication in the US culture.
- c) Development of a new approach, e.g., encouraging parents and children to work together on a community project.
- d) Training professionals to better help parents.
- e) Evaluations of other projects. This is important for two reasons: (1) we need continuing validation of our approach if we are to overcome the antis' claims that the industry efforts are mere PR stunts; and (2) educators "comfort levels." Educators routinely evaluate their programs and expect others to do so.

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