The use of non-alcoholic drugs for recreational purposes dates back to 4000 BC (Sonnedecker, 1962). Introduced to New England in 1629, marijuana (medicinal use) and hemp (rope) were cultivated as major crops until the Civil War (Bercher, 1972). Efforts to control drug use were virtually non-existent through much of history. In the United States, efforts directed toward control began with the passage of a city ordinance in San Francisco regulating the distribution of opium (Green and Levy, 1976). About 40 years later, the Harrison Act sought to establish national control for opiates. It was followed 23 years later by the Marijuana Tax Act of 1937. The first national agency to combat drug sales was established in 1930 and evolved into today’s Drug Enforcement Administration (McWilliams, 1990). Drug enforcement grew rapidly during the 1970s and 1980s, and by 1990 specialized enforcement programs were in place in all 50 states (Drug Enforcement Administration, 1990).

Even though enforcement efforts have led to increasingly high levels of interdiction and seizure, the use of drugs by younger and younger children has continued to expand. Johnston et al. (1986) studied trends in high school student drug use by examining results from surveys of 16,000 high school seniors from 1975 to 1985. Among their findings were indications that about 61 percent of the students reported having used illicit drugs at some time in their lives, and about 5 percent had reported using marijuana and alcohol on a daily basis.

Drug use by children cannot be predicted from family background. There are no significant relationships between drug use and
characteristics such as sex, race, religion, family income, or father’s income (Kandel et al., 1978). There does appear to be a relationship between drug use and drug use of the child’s peers, and the attitudes and values of drug users reflect lessened conformity to social expectations (Kandel, 1980). There is a consistent pattern of decreasing grades, absences from school, and declining academic motivation prior to drug use (Binder et al., 1988).

Attention has turned to drug prevention programs, many of which are educational in nature. Oetting and Beauvais (1987) suggested that nearly all drug use begins in the pre-adolescent or adolescent years. They further noted that nearly all young people occasionally take drugs (including alcohol) but seldom take enough drugs to produce tolerance or addiction. Addiction is influenced by a number of social, cultural and psychological factors. They suggest that these factors in the decision to use drugs are secondary to the values and pressures expressed by the child’s peer group. Peers provide drugs, talk to each other about drugs, and determine the context in which drugs are used. Nearly all drug use occurs with peers, but even when used alone it is done as a function of norms established by the youth’s peers.

Research in the 1970s examined the factors associated with drug use and discovered factors such as gateway drug use (Kandel and Faust, 1975), socialization and peer recreational activities, and predisposing character traits (Smith and Fogg, 1975). While secondary school students were familiar with different types of drugs, they were unaware of the hazards associated with drug use (Wright and Pearl, 1981). In order to prevent drug use, educational programs were developed for use in the nation’s schools.

Many of the early educational programs were less than successful and in some cases appeared to be counterproductive. Some programs produced increased drug awareness but this increased awareness appeared to lead to increased investigations of drugs on the part of the children involved in the programs (Shepphard et al., 1987); meanwhile, other programs appeared to be of marginal value in preventing drug use (Botvin and Wills, 1985). Careful analysis of early efforts and revised second generation programs led to the discovery of a number of factors that appear to be linked to program success. A short, concentrated, lecture-oriented effort is less effective than longer participative programs. Successful programs have both substance and quality (Bonaguro et al., 1988), include an emphasis on resistance skills (Gonzalez, 1988; Hansen et al., 1988), decision-making skills (Milgram, 1987), problem-solving
skills and value clarification (Goodstadt, 1989), and role playing or
modeling and self-management skills (Goldstein, 1989). In addition,
students must be motivated to use what they have learned (DeJong,
1987), and programs that include booster or follow-up sessions are more
successful (Duryea and Okwumabua, 1988).

The Los Angeles Police Department and the Los Angeles Unified
School District applied these factors to the program of drug education
that they developed. The Drug Abuse Resistance Education Program
(DARE) created by this joint venture is composed of three elements
designed for specific grade levels (kindergarten through grade 4, grades 5
and 6, and grades 7 through 9). Students are prepared to recognize the
pressures that might influence them to use drugs and are provided with
the skills needed to resist those pressures using a focus on self-esteem,
communication skills, decision-making skills, and positive alternatives to
drug use. The DARE program is taught by veteran police officers in
regular classrooms, during school hours, for one hour a week for one
semester. The primary program is in the fifth and sixth grade component.
The early component introduces the students to the police officers and to
the negative effects of drugs, and the later component functions as a
booster for the basic program. The early component is a class visitation or
enrichment component while the booster component is a second one-
semester, hour program (DeJong, 1987). The DARE program has enjoyed
wide acceptance and has been adopted by a number of police departments
and schools in the United States.

Three previous evaluations of DARE programs have been
reviewed. The first evaluated the original DARE program. DeJong
(1987) compared seventh graders who had been exposed to the DARE
program with seventh graders who had not been exposed to the DARE
program. Seventh graders who had been exposed to the DARE program
reported lower usage of alcohol, cigarettes and other substances during
their seventh grade year. A second study conducted by the Illinois State
Highway Patrol, evaluated the effectiveness of training the children to
say “no” (Ringwalt et al., 1990). In this study, the control group subjects
increased their use of tobacco, a “gateway” drug, while the experimental
group displayed no increase in tobacco use; differences in alcohol use,
however, were not significant. The experimental group did have higher
levels of self-esteem than the control group.

The third evaluation focused on program acceptance by various
cooperating groups (Earle et al., 1987). It was found that the program was
well accepted by teachers, school administrators and students with
resistance from drug and alcohol abuse service providers. They also evaluated effectiveness and found that by the fourteenth week of the program 92 percent of the students had acquired full refusal skills. The study reported here attempts to assess attitude change, learning and reported behavior following the administration of the program. The site selected for evaluation was Los Alamos, New Mexico, a town that has adopted and which is considering expanding the DARE program.

**METHODOLOGY**

Los Alamos is a moderate sized town with a professional base in a relatively isolated environment. Crime rates tend to be consistently lower than national averages. There have been no arrests for heroin in recent years, although cocaine and marijuana arrests are not out of the ordinary. There is neither an inner city nor areas which could be characterized as extremely low income “ghetto” neighborhoods. Each year the Los Alamos School District administers the PRIDE Survey which includes measures of the use of controlled substances. Data were collected using two instruments in a field experiment and one instrument in a series of surveys.

**VARIABLES**

The independent variable in this study is exposure to the DARE program. The DARE program is a set of 17 lessons designed to reduce the likelihood that students will choose to use drugs which are presented to students in the sixth grade as a part of their regular curriculum taught by police officers.

The primary dependent variables were attitudes toward drug use and degree of reported drug use. Attitudes toward drug use was measured by a 40 item Likert type scale with six subscales: beliefs regarding the effects experienced through drug use, beliefs concerning addiction, beliefs regarding legal status of drug use, beliefs concerning the physiological consequences of drug use, beliefs concerning the effects of drug use, and beliefs concerning adult messages about drug use. Items were scored such that attitudes which negatively label drugs and drug use received higher scores. Thus, the higher the score the higher the rejection of drugs and drug use. Reported drug use included reports of subject use.
of controlled substances, beliefs regarding the harmfulness of controlled substances, and frequency of use of controlled substances by friends. The substances addressed included cigarettes, beer, wine coolers, liquor, marijuana, cocaine, uppers, downers, inhalants and hallucinogens.

**COLLECTION OF DATA**

Two approaches were used in the collection of data. The first used a field experiment approach. The DARE program is delivered to one half of the schools in the district each semester. Data were collected during the fall semester of 1990. The pre-test was administered at the beginning of the semester and the post-test was administered at the end of the fall semester. Students in the schools receiving the DARE program were the experimental subjects and students in the schools not receiving the DARE program constituted the control group. Assignment of the schools to the DARE program was made by the superintendent of schools. Teachers were trained and they administered the pre-test and the post-test.

The instrument was composed of a 40 item Likert type scale and a set of demographic items. Following the administration of the pre-test, complaints regarding the nature of the instrument were made by community members who were concerned about privacy and possible police investigation based on the information in the questionnaires even though full human subject safety precautions were used. As a result, the demographic items were removed from the post-test, thus demographic data is only available from the pre-test. Complete data were collected for 248 subjects.

The second method of obtaining data relied on the regular collection of data from the PRIDE Survey. The PRIDE Survey is administered by teachers in the classroom to all seventh graders during the fall semester and includes measures of reported controlled substance abuse. Data from three seventh grades (1989, \( n = 216 \); 1990, \( n = 245 \); 1991 \( n = 259 \) ) were evaluated. The 1991 class had completed the DARE training approximately 11 months before the collection of the PRIDE data. The PRIDE instrument is a standardized self-administered questionnaire which is composed of ten sections. Each of the eight sections which measures drug behavior or beliefs is composed of a list of ten drugs which students evaluate for focus questions such as “when did you first?” and “within the past year how often have you?” These data
were analyzed by PRIDE, Inc. who produced the analyses needed for this project.

FINDINGS

There were no significant differences between the control and experimental groups for the demographic variables. In addition, the reported family demographics corresponded to census figures for the Los Alamos population. There were no significant relationships among the reported drug use measures and the various demographic measures. The items in the Likert type scale were evaluated using the inter-quartile t. Six items failed to discriminate and were dropped, producing a 34 item scale with a range of 91 to 160 and a distribution which approximated a normal curve.

The first hypothesis stated that children exposed to the DARE program would have stronger anti-drug use attitudes than children not exposed to the DARE program. Scores for the two groups corresponded to the expected pattern, providing support for the first hypothesis (see Table 1). Anti-drug use attitudes increased for the experimental group and decreased for the control group with the pre-test scores for both groups relatively equivalent. Attitudes of children who were exposed to the DARE program were more positive toward drugs and drug use (increased scores reflect a negative labeling of drugs and drug use) with a mean increase of 4.3 units following the program, while the attitudes toward drugs and drug use of children not exposed to DARE declined 2.9 units during the same period.

The second hypothesis stated that children who had been exposed to the DARE program would report lower use of controlled substances than students who had not been exposed to the DARE program. This

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test</th>
<th>Post-test*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental*</td>
<td>134.4706</td>
<td>138.9067</td>
</tr>
<tr>
<td>Control</td>
<td>135.2500</td>
<td>132.3797</td>
</tr>
</tbody>
</table>

\[ n = 248 \]

\[ * p < 0.002 \]
hypothesis was not supported by the data. The differences between the control groups and the experimental group were not significant and several reversals can be noted. Students who were exposed to the DARE program reported lower use of controlled substances (2.45%) than the 1989 sample (2.86%) but not less than the 1990 sample (1.66%) (see Table 2). While DARE subjects reported lower first use of beer, cigarettes, marijuana and inhalants than the control group, they reported higher first use for liquor, cocaine and prescription drugs. Both first use and past year sections had never used response options. Students who indicated that they never used drugs for these items were classified as abstainers. While DARE students reported lower levels of overall abstinence than the control groups (91.57% compared with 93.44% and 92.54%) (see Table 3), the differences are not significant and reversals can be noted for individual drugs. DARE subjects reported higher abstinence levels than the control group for cigarettes and hallucinogens.

Table 2

<table>
<thead>
<tr>
<th>Substance</th>
<th>Control 1989</th>
<th>Control 1990</th>
<th>DARE 1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarettes</td>
<td>7.9</td>
<td>6.2</td>
<td>4.7</td>
</tr>
<tr>
<td>Beer</td>
<td>4.2</td>
<td>2.5</td>
<td>2.3</td>
</tr>
<tr>
<td>Wine Coolers</td>
<td>7.0</td>
<td>3.7</td>
<td>5.8</td>
</tr>
<tr>
<td>Liquor</td>
<td>3.7</td>
<td>2.5</td>
<td>5.8</td>
</tr>
<tr>
<td>Marijuana</td>
<td>3.3</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Cocaine</td>
<td>0.5</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Uppers</td>
<td>0.9</td>
<td>0.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Downers</td>
<td>0.5</td>
<td>0.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Inhalants</td>
<td>0.9</td>
<td>1.2</td>
<td>0.8</td>
</tr>
<tr>
<td>Hallucinogens</td>
<td>1.4</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Other</td>
<td>1.4</td>
<td>0.4</td>
<td>3.1</td>
</tr>
<tr>
<td>Mean</td>
<td>2.86</td>
<td>1.66</td>
<td>2.45</td>
</tr>
<tr>
<td>n</td>
<td>216</td>
<td>245</td>
<td>259</td>
</tr>
</tbody>
</table>

a All subjects were measured while in the seventh grade. For the DARE subjects this was the year immediately following exposure to DARE.

b There were no significant differences in comparisons between the percentages for the DARE and control years.
but lower levels of abstinence than the control group for beer, wine coolers, liquor, cocaine and downers. Lack of significance is also noted for perceptions of drugs as harmful with a single reversal – liquor. The DARE students were more likely to see the controlled substances as harmful than either of the two control groups (see Table 4).

### SUMMARY

DARE programs are being developed across the country. These programs represent a major investment of both police manpower and class time. The data reported here indicate that the DARE program is successful in providing information. DARE students are more likely to have attitudes favorable to avoidance of drug use. DARE students have stronger anti-drug use attitudes than the control group at the end of training and appear to have retained aspects of this perspective one year later. The levels of reported behavior are less supportive. This study did
not find significant improvement in self-reported drug use when DARE students were compared with two control groups. This is not consistent with the results of an evaluation of the original program (DeJong, 1987) which found lower reported use of all drugs for DARE subjects or with an evaluation of an Illinois program (Ringwalt et al., 1990). Of course, the groups may not be directly comparable because different time periods are involved (1989, 1990, 1991). The inability to gather demographic data with the post-test also limits the interpretation of the findings. It is possible that the DARE program is more effective with one type of student than with others. The one-year follow-up provides a limited time frame and does not fully assess the stability of the effect over time.

At best, it appears that further research needs to be conducted with more precise measures of reported use over a longer period of time. It should be noted that at the time of the study, neither the seventh grade “booster” sessions nor the earlier introductory sessions were in place. With limited positive results at this stage, program expansion should be approached with caution and with plans for comprehensive evaluation which should include long-term measures of reported behaviors.

Table 4

<table>
<thead>
<tr>
<th>Substance</th>
<th>Control 1989</th>
<th>Control 1990</th>
<th>DARE 1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarettes</td>
<td>74.3</td>
<td>73.9</td>
<td>78.7</td>
</tr>
<tr>
<td>Beer</td>
<td>56.5</td>
<td>51.9</td>
<td>58.9</td>
</tr>
<tr>
<td>Wine Coolers</td>
<td>50.0</td>
<td>49.0</td>
<td>50.8</td>
</tr>
<tr>
<td>Liquor</td>
<td>69.6</td>
<td>65.3*</td>
<td>74.8</td>
</tr>
<tr>
<td>Marijuana</td>
<td>90.7</td>
<td>90.5</td>
<td>94.6</td>
</tr>
<tr>
<td>Cocaine</td>
<td>93.0</td>
<td>91.3</td>
<td>95.3</td>
</tr>
<tr>
<td>Uppers</td>
<td>84.6</td>
<td>85.1</td>
<td>90.7</td>
</tr>
<tr>
<td>Downers</td>
<td>84.6</td>
<td>85.1</td>
<td>90.7</td>
</tr>
<tr>
<td>Inhalants</td>
<td>83.6</td>
<td>82.2</td>
<td>82.9</td>
</tr>
<tr>
<td>Hallucinogens</td>
<td>89.2</td>
<td>88.4</td>
<td>91.5</td>
</tr>
<tr>
<td>Mean</td>
<td>77.61</td>
<td>76.27</td>
<td>80.89</td>
</tr>
<tr>
<td>n</td>
<td>216</td>
<td>245</td>
<td>259</td>
</tr>
</tbody>
</table>

* Comparisons between percentages for the control group and the DARE group significant at the 0.05 level.
REFERENCES


