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**An assessment of the effectiveness of a suburban police
department's Project DARE (drug abuse resistance education)
program on student knowledge of drugs, alcohol, and tobacco**

Johnson, Timmy Dane, Ed.D.

Wayne State University, 1994

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AN ASSESSMENT OF THE EFFECTIVENESS OF
A SUBURBAN POLICE DEPARTMENT'S
PROJECT DARE (DRUG ABUSE
RESISTANCE EDUCATION) PROGRAM
ON STUDENT KNOWLEDGE OF DRUGS, ALCOHOL,
AND TOBACCO

by

TIMMY DANE JOHNSON

DISSERTATION

submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

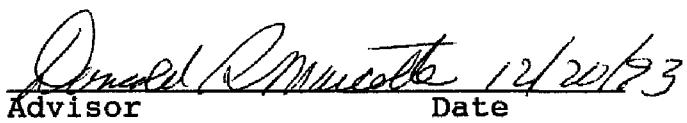
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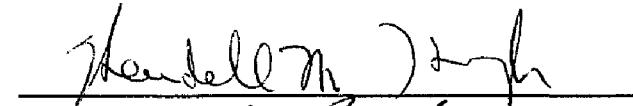
DOCTOR OF EDUCATION

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Approved by:


Donald A. Mirek 12/20/93
Advisor Date




DEDICATION

This study is dedicated to my family. To my father, who always provided me with a desire to excel in my academic pursuits. I know he is as proud of this project and my accomplishments as I am. To my mother, who provided me with a sensitivity and desire for excellence.

Finally, this dissertation is dedicated to my wife, Luann, and my son, Timothy Axel, whose unconditional patience, support and love became an internal strength to help me carry on through the dissertation process. Their constant understanding helped me to find my own personal abilities and use them in this study. I am amazed at both their levels of understanding and especially grateful for their love.

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CHAPTER 1

INTRODUCTION

Substance abuse is a problem which affects every aspect of society in the United States today (Bureau of Justice Assistance, 1988). Over the past two decades, there has been a dramatic increase in drug and alcohol use among adolescents (Novacek, Raskin, & Hogan, 1991). America's problem with substance abuse has taken a tremendous toll in terms of human potential and suffering, as well as an enormous expenditure of public and private monies (Bureau of Justice Assistance, 1991).

Substance abuse has also directly impacted upon the school systems in the United States. Studies have shown that the United States has the highest level of teenage drug use of any industrial nation in the world. In fact, almost two-thirds of all high school seniors will have used an illicit substance by their graduation (Johnston, O'Malley, & Bachman, 1984). Other studies have also shown a trend of a declining average age of first use of drugs and alcohol (Johnston, O'Malley, & J. G. Bachman, 1986).

After the late 1960s, substance abuse education in the schools became a prime vehicle in which American society has dealt with these issues (English & Austin, 1989). Many of the initial educational programs were little more than scare tactics, which presented "exaggerated, overblown, and often inaccurate information" (English & Austin, 1989, p.3). Accompanying these scare tactics were programs which

relied primarily on providing information to students. These approaches to the substance abuse problem contain the belief that students were unaware that substance abuse was detrimental to their health. By providing students with factual information on the effects of substance abuse, they would either cease their use of these substances, or never engage in their use of the substances in the first place.

Another approach used in conjunction with scare tactics and information to students in the school environment was the use of "testimonials" by recovering addicts to various substances and how their lives had been adversely affected by their actions. These individuals were portrayed in a positive light, and were usually well dressed. Many students perceived through these presentations that substance abuse was not always bad and certainly something which could be overcome at a later date.

Although many of these programs were considered to be successful in increasing students' overall knowledge of various substances, their effectiveness at influencing students to refrain from using the substances showed little impact. In fact, some studies showed an increase in substance abuse after the presentation of only factual knowledge because many students were no longer afraid of the substances (English & Austin, 1989). Students now knew which particular drugs would give a desired effect, as well as how much to use to avoid becoming intoxicated. An increase in knowledge alone was not the solution to the problem.

Next, educators began to research new approaches to the substance abuse problems. In doing so, they often abandoned scare tactics and information approaches, and instead embraced an affective approach to the situation. After identifying low self-esteem and poor decision making skills as obstacles to youths making responsible decisions concerning substance abuse, educators, influenced by the humanistic movement in education, developed substance abuse programs so that youths could make responsible decisions concerning the use of substances. Although many of these programs were successful in addressing these concerns, in some degree, they also had difficulties. Many of these programs seemingly encouraged the use of substances, as long as they were used responsibly (English & Austin, 1989).

With the continuing rise in substance abuse in the late 1970s, as well as the rise in other social problems which accompanied it, a more sophisticated approach to substance abuse prevention was undertaken, (Pentz et al., 1989). These new programs emphasized both cognitive and affective elements in their structure and showed some reduction in the use of substances. These multi-faceted programs are now the primary method of presenting substance abuse education programs, although there remains a variety of different programs which emphasize different aspects in their presentations.

There have been numerous substance abuse prevention programs created and implemented in response to mounting

national concern about the use of drugs by American youth. Many of these programs have been abandoned, but others have been expanded. Although many different types of programs still exist, the number of current educational approaches to substance abuse can be divided into four different types of curricula.

Current Approaches To Substance Abuse Education

Education programs designed to educate students about substance abuse are varied and complex in nature. Various curricula have been used in the presentation of these programs to students, often with little regard for standardization or assessing program effectiveness and outcomes. Given these shortcomings, programs have generally been divided into four theoretically based prevention strategies: a) information based, b) normative education, c) resistance education, and d) multi-component.

Information Programs

The initial approach to substance abuse education adopted by the schools educates students about the effects of using alcohol and other substances. These curricula emphasize teaching students the adverse effects of substance abuse and employs scare tactics in achieving its objectives.

Normative Education

Normative education programs are based on cultivating or establishing conservative norms and beliefs among students who are under the mistaken impression that a

majority of their peers use various substances on a regular basis. When given the information that most of their peers do not engage in substance abuse, students are in a better position to resist peer pressure, knowing that all of their friends are not using substances.

Resistance Education

Teaching skills to students which enable them to resist peer pressure to use various substances is the foundation of many programs. By identifying various kinds of social and peer pressure, students can be given instruction in a variety of strategies to resist the pressures which confront them in their lives.

Multi-component Education

Mutli-component programs combine the information, normative, and resistance education approaches. By combining the essential components of each of these approaches, students are provided with the necessary knowledge and skills to abstain from substance abuse.

There are a number of multi-component programs currently being used in the school environment, each of them with their own particular emphasis on different aspects of substance abuse education. One of the most researched and evaluated programs in this area is Project DARE, which is the focus of this study.

Drug Abuse Resistance Education (DARE)

One of the newest and most popular drug education

programs currently employed by thousands of school districts and municipalities in the United States, as well as numerous other countries, is Drug Abuse Resistance Education (DARE) . Project DARE is a substance abuse prevention program developed in 1983 by the Los Angeles Police Department and the Los Angeles Unified School District.

Using well-trained, uniformed police officers, a formal curriculum is presented to elementary students in their classrooms on a weekly basis. The curriculum addresses five basic concerns.

These are:

- a) Enhancement of self-esteem;
- b) Resistance to peer pressure;
- c) Positive modification of attitudes toward law enforcement;
- d) Heightened understanding and knowledge of drugs; and
- e) Development of a negative attitude toward drug abuse (DeJong, 1986) .

The DARE curriculum consists of sixteen weekly lessons which focus on building the students' level of self-esteem, emphasizing the consequences of substance abuse, identifying alternative means of coping with stress, and gaining peer acceptance. In presenting this curriculum, DARE combines three types of drug education by "1) providing factual information about drugs; 2) addressing attitudes, feelings, values, and self-concept; and 3) dealing directly with behavior" (Faine & Bohlander, 1988, p.5).

According to the Bureau of Justice Assistance (1991),

approximately six million students received DARE training in the United States during the school year 1991-1992. Eight million additional students will receive the training in the school year 1992-1993. As of 1993, 11,217 law enforcement officers were trained to teach DARE. The DARE Program has been expanded to include students from kindergarten through high school, and includes workbooks in English, Spanish and Braille. The DARE Training Center Policy Advisory Board (TCPAB) has been created and given the authority by the U.S. Department of Justice to develop policy and provide assistance for the five regional training centers (R.T.C.) which are located throughout the country. Each R.T.C. is responsible for training and program administration in its respective geographical area, as well as submitting quarterly and annual reports to the TCPAB and the Bureau of Justice Assistance.

Major Questions of the Study

1. How will completing the DARE Program affect the students' knowledge of drugs, alcohol, and tobacco?
2. Will there be a difference between males and females who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?
3. Will there be a difference between 5th and 6th grade students who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?
4. Will there be a difference between students who have completed DARE training in the three school districts

in their knowledge of drugs, alcohol, and tobacco?

Operational Definitions

For the purpose of this study, the following terms are defined:

DARE: Acronym for Drug Abuse Resistance Education. A preventative drug education program intended to stop drug use before it begins. Conducted by experienced, certified police officers, a series of sixteen weekly sessions are conducted to teach students various techniques aimed at resisting peer pressure and providing information so they can say "no" to drug, alcohol, and tobacco use.

DARE Officer Training: An authorized 80 hour course of instruction provided to DARE officer candidates that certifies them to teach the DARE curriculum in elementary schools.

Full Program: A DARE curriculum presented to students from the elementary level to the high school level.

Inservice Training: Provides the necessary skill enhancement and state-of-the-art updates on DARE related programs.

Instructor: A certified DARE officer qualified to present the DARE curriculum in elementary schools.

Out of Formula: When school districts receive no general fund financial assistance from the state to support public education due to a high level of state equalized valuation (S.E.V.) within their district boundaries.

Partial Program: A DARE curriculum presented only to

students at the elementary level.

Role Playing: Opportunities in the curriculum for students to display various resistance skills to avoid substance abuse.

Self-Esteem: How the students feels about themselves in a variety of different situations.

Limitations

The experimental group was comprised of both fifth and sixth grade students from all three school districts and three separate schools. Some of the classes were conducted in an elementary school environment while others were held in a middle school setting. The control group was comprised of only fifth grade students from one elementary school.

Finally, each one of the four schools have important differences in terms of socioeconomic background and levels of achievement on standardized tests. The control group is below average in terms of socioeconomic conditions and achievement on standardized tests while the experimental group is at or above average in these respects.

CHAPTER 2
REVIEW OF RELATED LITERATURE
Prior Evaluations of DARE

Los Angeles Evaluations

The DARE program, implemented in 1983, was created by a joint effort of the Los Angeles Police Department and the Los Angeles Unified School District. Since The DARE program's implementation in Los Angeles, yearly evaluation reports have been provided by the Evaluation and Training Institute (ETI) with funding from both the Los Angeles Police Department and the Los Angeles Unified School District. The first assessment of DARE was undertaken by ETI for the school year 1984-1985. An interim evaluation report was presented in March, 1985, to discuss the first semester activities. Principle changes noted in the assessment were changing the format for presenting the curriculum to weekly for one semester rather than bi-weekly for two semesters, as well as implementing a junior high curriculum.

After submitting questionnaires to all of the principals and teachers in the participating schools, the study found widespread support for the program among both groups. Both groups felt that DARE made a positive impression on their students and supported the premise of having a uniformed police officer present the curriculum. They also believed that the students carried over skills they acquired in their DARE class to their other classes.

Student behavior generally improved and parents were supportive of the program.

The only negative aspects found in the questionnaires were that the officers could not be in the school more often, and that it was only a one semester program. Less than 10% of the respondents cited the need for more audiovisual aids and additional bilingual materials in presenting the program.

In the final evaluation report submitted for the school year 1984-1985, the report stated:

As a result of this school's participation in DARE, students have more negative attitudes about drug use; there are fewer disciplinary problems; students are taking more responsibility for their actions; students are better able to resist peer pressure; and students are more willing to talk about problems related to drugs (p.2).

While this study is primarily descriptive in nature, it does convey important information concerning principal and teacher attitudes about the program. Given their level of importance to the program's overall effectiveness, these are important factors which need to be addressed.

A second evaluation of the DARE program by ETI for the school year 1985-1986 noted that there was a significant increase in attendance on the day the DARE program was presented. They did not show a significant increase in the DARE students academic performance during the semester which DARE was presented.

This study, like the previous one conducted, was primarily descriptive in nature and was not published in any journals. It is useful in noting attitudes and feelings about the program in general, but has no scientific basis it can rely on in its presentation.

William DeJong (1987) in his article, "A Short Term Evaluation of Project DARE (Drug Abuse Resistance Education): Preliminary Indications of Effectiveness", evaluated the effectiveness of the DARE program on 7th grade students in Los Angeles. DeJong's analysis of questionnaire data suggested that DARE students reported significantly lower levels of substance use than students in the control group, as well as receiving significantly fewer offers to use drugs.

While these are important findings, the students in both groups were surveyed only at the end of the program. Also, there was no random assignment of students to the treatment and control groups. These two conditions are serious flaws in that there are extraneous variables which cannot be controlled.

Recognizing the need for long term assessment of the DARE curriculum in Los Angeles, ETI undertook a longitudinal evaluation of the program. Reporting on data collected in the school years of 1985-86, 1986-87, and 1987-88, ETI found that there was a statistically significant difference between DARE and non-DARE students in reported use of all categories of alcohol, tobacco, and drugs. In cases where

the differences were not statistically significant, numeric differences showed a higher percentage of DARE students reporting either no use of any substances or a lower percentage of use.

The problem encountered in this study was the high rate of attrition among both the control group and the experimental group. Approximately 30% of the experimental group were lost during the course of the three years while 70% of the control group could not be surveyed in the final year. By losing almost 50% of the total sample, the results must certainly be viewed as suspect.

Many of these same problems confronted ETI in their most recent report for 1985-1989. While concluding that DARE students had significantly improved attitudes and behaviors in the expected direction, as well as fewer disciplinary problems and a higher opinion of police, they also note extremely high rates of attrition in the control group sample which required them to use a "random replacement procedure" in order to complete the study. There is no mention in their report of how this procedure was performed so replication would be impossible given the limited information provided.

Based on surveys of principals, teachers, and counselors, the study noted that DARE had increased student drug awareness, and prepared students to resist peer pressure more effectively. School staff also felt the the program allowed the students to view police officers as

positive role models instead of adversaries, and that the DARE officers were effective teachers in educating students about drugs and drug resistance.

The study suggested two recommendations to the police commission:

1. Continue to expand the program as currently piloted in high school to ensure that students receive instruction at this critical juncture,
2. Continue linking DARE educational efforts with individual law enforcement officers to enhance the image and effectiveness of police with students and their families (p.5).

Hawaii Evaluation

In 1986, the University of Hawaii's Youth Development and Research Center published a study on the Honolulu Police Department's DARE program. Using a pretest/posttest control group design, the study concluded that, given short term data, DARE does show promise in fulfilling its purpose of preventing substance abuse. Students and teachers also reported that students used their newly acquired skills in a variety of situations both in and out of the classroom.

While expressing primarily positive comments, teachers and administrators also expressed a need for providing longer class sessions as well as additional time for role-playing and audio visual aids. Return visits were also seen as critical in reinforcing positive relationships.

Illinois Evaluations

The Illinois DARE program was piloted from January

through May, 1987, reaching 8,600 students in 46 school districts and 86 different elementary schools. During this time, Earle, Garner and Phillips (1987) of the A.H. Training and Development Systems, Inc., (AHTDS) conducted an evaluation of the program for the Illinois State Police.

In doing the evaluation, AHTDS sent out surveys to five different groups identified as service providers, law enforcement officers, community representatives, principals, and teachers. More than 90% of those surveyed found it appropriate to have a state police officer teaching the DARE curriculum, although a majority of those responding found it more appropriate for a local police officer to teach DARE.

There was also strong support for the premise that the classroom teachers would not have achieved the same positive results as did the officer. All of the law enforcement officers, community representatives and principals would recommend DARE to their colleagues, as would 87% of the teachers, without any qualifications. Parents were also very positive in their feelings towards the program. In most instances, their only recommendations were to expand the program to the junior and/or senior high and to expand the parent component of the program.

Classroom teachers did recommend that the DARE officers receive additional training in classroom management and that the program be shortened to twelve weekly lessons. With this additional training and a shorter schedule, the curriculum could be presented three times a year instead of

twice, which would increase the officer's productivity by half. This would make the program more affordable or allow it to be expanded without incurring additional costs.

Ringwalt, Curtin and Rosenbaum (1990) conducted a follow-up study of the Illinois State Police DARE program to provide an evaluation of DARE's short term effects on students in a number of areas. By using pretests and posttests in the form of questionnaires, students and teachers were surveyed about the various aspects of DARE.

In general, students exposed to DARE in comparison to those in the control group exhibited the following:

- were less likely to have smoked cigarettes in the past 30 days;
- reported more negative attitudes towards drugs;
- were more likely to report negative peer attitudes toward drug use;
- were more aware of media influences concerning beer and cigarettes;
- reported more positive changes in self-esteem
- reported more assertiveness; and
- reported more positive attitudes towards police (p.18).

Teachers were also impressed with the quality of instruction provided by the DARE officer. At least 80% of the teachers strongly agreed with the following:

- DARE made a positive impression on children;
- students liked the DARE instructor;
- the officer did a good job of teaching; and
- students understood the content of DARE (p.16).

Recognizing the need for a longitudinal evaluation of the program, Rosenbaum et al. (1991) examined the effects of the DARE program nine months after the completion of the curriculum, which was one year after the pretest. The study was still primarily concerned with the students' drug use

attitudes, beliefs and behaviors.

The major results of this study can be summarized as follows:

- Students' alcohol use in the first and second years was generally not affected by participation in the DARE program. However, the program did have a differential effect on subgroups within the target population, as black students showed reduced 30-day alcohol use after exposure to DARE, while other students did not.
- DARE had an immediate beneficial effect on cigarette smoking. The program impacted both 30-day and lifetime use of cigarettes, which was attributed to preventing non-users from initiating smoking. DARE's immediate effect on lifetime use of cigarettes persisted into the study's second year, but the effect on 30-day use did not.
- Many of the immediate effects of DARE on attitudes and beliefs persisted into the second year, including perceived peer attitudes toward drug use, perceived media influence concerning beer and cigarettes, and resistance to peer pressure.
- The immediate effects of DARE on self-esteem and assertiveness did not persist in the second year.
- Although DARE did not impact students' academic performance, it did appear to improve social behavior at school. Students exposed to DARE were less likely to have official discipline records at school than students in the control group.
- Drug education other than DARE is widespread in Illinois but the use of "name brand" curricula is rare. Exposure to non-DARE drug education did not impact on students' drug use behaviors, nor did it interact with DARE exposure to produce a cumulative effect (p.34).

One of the most interesting findings in the study suggests that DARE had the greatest impacts on Blacks, Hispanics, and urban students. As a result of their participation, black students reported a lower level of alcohol use. Hispanics reported favorable changes in drug attitudes and greater ability to resist peer pressure.

Urban students demonstrated greater abilities in recognizing media attempts to make alcohol and cigarette use desirable. In contrast, suburban students tended to perceive greater benefits from using drugs after participating in the DARE curriculum.

The importance of these final two evaluations cannot be casually dismissed because of the appropriate methodology employed in the research. Both the control and experimental groups were matched by school type, ethnic composition, number of students with limited English proficiency and percentage of low income families.

Additionally, tracking efforts were employed which, in the final analysis, yielded a completion rate of 89% of the original students tested. This made the use of randomized replacement unnecessary and allowed for a more accurate assessment.

Kentucky Evaluations

Faine and Bohlander (1988) evaluated three components of the Kentucky State Police DARE program. These were:

- the effects of the DARE program on fifth or sixth grade youth;
- an evaluation by the principals and teachers in all the participating schools; and
- the opinions of parents of elementary school age children regarding the need for drug and alcohol programs like DARE (p.3).

Using a non-equivalent control group design with 451 students in the experimental group and 332 students in the control group from selected elementary schools, the study made the following conclusions:

- A significantly higher improvement in self-esteem among children in the DARE program. It should be noted that some improvement was also found among non-DARE students;
- A significant increase among DARE students in their understanding of drugs and alcohol;
- An increase in DARE student ability to resist peer influences;
- Strong positive increases in the attitudes of fifth grade students towards law enforcement;
- A significant decrease in positive attitudes towards drugs and alcohol following exposure to the DARE curriculum (p.3).

An analysis of responses to an evaluation survey by 470 teachers and principals from the same elementary schools provided the following conclusions:

- Overwhelming support for the impact of the DARE programs on students in all of the elementary school grades;
- A positive perception of the modification of student behavior after being exposed to the DARE curriculum;
- Positive improvement of the total school environment by the delivery of the DARE program;
- Support for expansion of the DARE program to all elementary schools in the Commonwealth (p.3).

The parent survey involved 212 parents from the experimental group and 148 parents from the control group.

After receiving approximately 64% of the responses back, the study made the following conclusions:

- An overwhelming majority who saw a positive change in their children's attitudes toward drug and alcohol related issues;
- Perception of a marked positive change in their children's attitudes toward law enforcement;
- Preponderant support for the DARE program by responding parents (p.3).

Results of the study are especially credible due to the use of a non-equivalent control group design as well as the random assignment of schools to the experimental and control groups.

Another strength is the instrument used to assess the criterion measures. The readability of the instrument is critical because it requires only a third grade reading level and requires the student to choose between only two possible responses. The responses were then analyzed in three different manners, namely percentages, the Wilcoxon Matched Pairs Signed Rank Test and an analysis of covariance.

Building on these findings, Faine and Bohlander (1989) conducted a second evaluation of the DARE program in Kentucky schools. Using pre to posttest differences between students who received DARE and those who did not, while controlling for the type of school (rural-suburban, parochial-private) a number of conclusions were made. While not specifically examining self-reported use of drugs, the evaluation did show a significant improvement in self-esteem when comparing the control and treatment groups. No significance was found between the types of schools.

Attitudes towards police improved significantly for the DARE students while the non-DARE students showed no change. The DARE curriculum did have the desired effect of producing significantly greater peer resistance levels among the DARE students. This study, as the previous one conducted a year prior, was reasonably rigorous in nature and deserves to be taken in a serious light.

The study concludes by noting that, while short-term improvements were demonstrated in the areas of peer

resistance, attitudes towards police and drugs, as well as self-esteem and knowledge of drugs and alcohol, all of these returned to their pre-curriculum levels after one year. Attitudes towards drugs not only reversed after one year, but in fact became more positive. Peer resistance remained positive for boys, but declined for girls to the point prior to the program.

No positive gains were found in the lower class, inner-city students in a metropolitan school system. No significant differences were noted in attitudes towards drugs, peer resistance or attitudes toward the police. Much of this was attributed to a greater familiarity with drugs, adult role-modeling and pressure for drug use among lower class areas of the city.

In the fall of 1986, Lexington, Kentucky implemented a DARE program on a pilot basis for sixth grade students. After being given positive comments by the community, students, and school personnel, the Lexington-Fayette County School Board mandated the program's full implementation in its 31 elementary schools. In the fall of 1987, a grant was received from the National Institute on Drug Abuse (NIDA) in order to do a formal evaluation over a five year time span. Clayton, Cattarello, Day and Walden (1991) began this longitudinal study of the Lexington, Kentucky, DARE program.

Using randomly assigned treatment and control schools, a series of pre and posttest questionnaires were administered to the sixth grade classes. Statistically,

significant differences were found between the treatment and control groups concerning their general attitudes towards drugs, as well as their feelings regarding cigarettes, alcohol, and marijuana.

No statistically significant differences were found between the two groups in the areas of self-esteem and their reported involvement with cigarettes, alcohol, and marijuana. The lack of significant differences was attributed to low baseline rates of substance abuse rather than evidence of an ineffective program. Significant differences may in fact emerge in later years as the students enter junior high and high school years.

A critical part of the study was an analysis of the effects that different officers have on the effectiveness of the curriculum. In general, officers who were described as "instrumental" and/or "task oriented" were considered to be more effective than the "affective, expressive" officer. While carefully noting that these findings were not conclusive, they do focus attention on the need to match the type of officer to the specific needs of the student population.

It is important to note that the students in the control group were exposed to a drug unit in their science curriculum after the pretest and prior to the posttest. Because of this, the control group was different than many of the other control groups in previous studies. Initial equivalence was not achieved on the basis of race so it was

included as a control variable in an analysis of variance on the standardized gain scores for some of the attitudinal and self-reported drug use scales.

Clayton, Cattarello, and Walden (1991) conducted a follow up study to their previous study to examine DARE's long term effects. While concluding that the DARE program was well designed and presented, the main effects of DARE on the students past year of alcohol, cigarette and marijuana use were not statistically significant compared to those in the control group. Self-esteem and peer pressure resistance skills were also found to have no statistical significance, although peer pressure resistance skills were close to the .05 criterion.

The study emphasized the problem of low baseline rates which are a problem in this type of research because they often lead to results which do not show statistically significant differences. Statistically significant differences may emerge in the latter part of the five year study when the students are in their high school years.

Indiana Evaluation

Anisckiewicz and Wysong (1990) evaluated the DARE program in Kokomo, Indiana using data from four public schools and three private religious schools to perform a multi-dimensional assessment of the program. While noting that the program showed many positive short-term results, as it has done in other communities, the program's political ramifications were highlighted in a manner never presented

in earlier studies.

Various organizations have a tremendous political stake in the program which may impact on the evaluation of the program. Police departments and school districts, as well as corporate sponsors, all have political interests in the continuance of the program, as well as its possible expansion. Each one of these groups, as well as their leaders, have used the program's existence to demonstrate their concern and involvement in dealing with the issue of substance abuse.

Much like the Head Start program in the 1960s, the DARE program is being implemented and expanded without adequate information and evaluation of the efficacy of the program. Numerous DARE programs are being implemented and institutionalized because at a minimum, they represent a symbolic action in response to the "drug crisis" (p.739). The study properly notes that just because a program is popular does not always make the program a success.

North Carolina Evaluation

An evaluation of the DARE program in North Carolina by Ringwalt, Ennett, and Holt (1990) focused on students who attended the fifth or sixth grade. Using an experimental design, 10 schools were randomly assigned to the experimental group and 10 schools were randomly assigned to the control group. Controls were put in place to control for attrition, school effects, and for non-equivalency between the comparison groups.

By conducting pre- and posttest questionnaires, no significant differences were noted on self-reported drug use, intentions to use drugs, or on a measure of their self-esteem. DARE was effective in changing students' drug related attitudes and their levels of assertiveness, a behavior believed to be related to substance use.

While the study was methodologically sound, follow up on a long term basis was not possible because the DARE program was implemented on a district wide basis the following year. This prohibited the administration of a second posttest to determine if these positive changes continued or if a particular behavior did not manifest itself until some time after the end of the program.

In evaluating the findings of this study, it is important to note that, despite random assignment of the schools to either the treatment or control group, students in the two groups differed at pretest in seven different variables. These variables included age, ethnicity, alcohol involvement, general and peer attitudes towards drugs and their use, as well as the costs of using alcohol, and the media's portrayal of beer. This control for nonequivalence at pretest, as well as assessing attrition and employing statistical methods that adjusted for school effects make this study one of the few carefully controlled evaluations of drug prevention programs which are school based.

RELATED SUBSTANCE ABUSE EDUCATION PROGRAMS

Project SMART

Project SMART, (Self-Management and Resistance Training), a five year smoking and drug abuse prevention project, was originally implemented in the Los Angeles Unified School District. The project was comprised of two different curriculums, one of which focused on prevention through social pressure resistance training and the other being an affective approach to prevention.

In 1988, Hansen et al. conducted a study of Project SMART to determine the efficacy of each of the two approaches. Using random assignment, eight junior high schools were selected for the study with four schools assigned to each of the experimental groups.

Using a questionnaire for the pretest and two posttests, as well as a collection of saliva samples by trained data collectors to validate self-reports of cigarette and marijuana use, the researchers concluded that the social program was the most efficacious program for reducing drug abuse onset. The affective program apparently increased the use of marijuana and cigarette use compared to the control groups, with increases in use increasing over time.

The study also noted there was no support for the continuance of the affective program and only limited support of the social approach program. While noting that there may have been problems in the area of equivalency between the experimental and control groups, it was still

noted that goal setting, behavioral alternatives, stress management, and self image enhancement alone fail to show positive results in reducing substance use. In order to be effective, these factors need to be included in a multi-faceted approach in substance abuse education.

The most serious problem in this study is one of methodology. Moskowitz (1989) notes that, not only did randomization fail to produce initial equivalence of conditions, as previously noted, the attrition rate was 52% overall, and differed by condition. This would suggest a definite problem with the validity of the research design because of experimental mortality attrition.

In a related study of Project SMART, Graham et al. (1984) performed an evaluation of the questionnaire used in the Project SMART study. The study concluded that self-reports of drug use can be reliable when used as a part of a lengthy questionnaire administered to an entire classroom. This information is critical in order to accurately assess the results of questionnaires assessing self-reported substance use.

Project STAR

The Midwestern Prevention Project (MPP) is a community-based program for prevention of drug abuse. Implemented in September, 1984, the Project includes mass media programming, community organization, a school-based education program, parent education and organization and health policy components that are introduced into

communities during a six year period. This curriculum is currently being delivered in Kansas City and Indianapolis under the title of the STAR program.

The school-based portion of the program, using science and health education classes, consisted of a 10 session educational program on skills training for resistance of drug use and 10 homework sessions involving active interviews, and role-playing with parents and family members. Topical areas included psycho-social consequences of drug use, correction of beliefs about the prevalence of drug use, recognition and counteraction of adult, media, and community influences on drug use, peer and environmental pressure resistance, assertiveness in practicing pressure resistance, problem solving for difficult situations that involve potential drug use and statement of public commitment to avoid drug use.

Pentz et al. (1989) conducted a study using a quasi-experimental design in Kansas City and a randomized experimental design in Indianapolis to determine the effectiveness of the program and replicability of a multicomponent community drug abuse prevention program. Overall, the study reported significantly lower rates of use of cigarettes, alcohol, and marijuana among those who received the STAR Program.

Two possible threats of validity are the nonequivalence of the study groups as well as reliance on self-report measures to estimate program effects. Due to the nature of

the study, the researchers were not able to control for these two important variables because of administrator flexibility and the possibility of students underreporting their use of substances.

Here's Looking At You

Here's Looking at You (HLAY), an alcohol education project implemented during 1982-1987 in the Charlotte-Mecklenburg Schools in North Carolina, was originally adopted as a demonstration project by the National Institute on Alcohol Abuse and Alcoholism. In looking at the program, Kim (1988) determined that, on a short-term basis, there was a knowledge gain about alcohol and alcoholism, however, not as great of a gain as those in the control group. A positive attitudinal gain was also seen among the HLAY students. On a long-term basis, the actual drinking pattern of the HLAY students was indistinguishable from the students who did not participate in the program.

Not only were the results of the study inconclusive, there was no control to guarantee equivalence among the experimental and control groups. Additionally, the program was not readily identifiable by name during its implementation so the HLAY Program could have been contaminated by other programs. Given the difficulties, Kim correctly notes, "the study has been suggestive at best" (p.242) and the results cannot be relied upon to provide accurate data.

In 1989, Green and Kelley evaluated the effectiveness

of a revised HLAY Program entitled, "Here's Looking at You, Too" (HLAYT). The revised program was a comprehensive alcohol and drug education program developed for grades K through 12. The curriculum features both a parenting program and a student assistance program to assist parents and students with family substance abuse problems as well as an absentee prevention program.

Results of the study showed a statistically significant increase in knowledge about drugs and alcohol among elementary and middle school students. No significant change was observed in attitudes. Some of the posttest outcomes were significantly affected by sex as well as socioeconomic status as represented by their parents' education.

"I'm Special" Program

The I'm Special Program (ISP) was developed in a joint project of the Drug Education Center (DEC) and the Junior League of Charlotte. The program was implemented in North Carolina in 1978 to either reduce or delay the onset of illegal substances by students. The ISP curriculum is composed of nine, one week sessions which are 45-50 minutes in length for students in the fourth grade.

The program focuses on personal growth, social control and development, and social learning. ISP focuses on a child's sense of uniqueness and self worth, as well as healthy, social skills and the development of skills to resist pressure to use drugs.

Kim, McLeod, and Palmgren (1989) found significant reductions among members of the ISP group in the areas of alcohol, marijuana, and cigarette use. ISP students were also found to engage in significantly less stealing and school absenteeism than those who did not receive the program.

The study is limited in that there was no pretest to control for baseline knowledge and use level of substances. Additionally, the study asked students to recall whether they had taken the ISP as long as eight years prior to the questionnaire. Some of the students may not have accurately recalled an event that happened up to eight years earlier when they were in the fourth grade.

Using the Self-Concept Attitudinal (SCAT) Inventory, Kim, McLeod, and Shantzis (1990) examined the short-term outcome of the ISP, using a pre- and posttest instrument. A control group was not employed due to the school district's policy of including all students in the program. Using 270 randomly selected students from all third grade classes in the Charlotte-Mecklenburg North Carolina School System, students were asked to respond to forty-two different items on a Likert-type scale.

The study noted that, while the SCAT Inventory has a number of advantages such as economy, reliability, and validity, it also has a number of problems. Foremost among these difficulties is the students' difficulty in discriminating between scales points such as "strongly

agree" and "agree". In addition to this, there are no self-administered pencil-and-paper evaluation instruments for third grade students which are economical and accurate to record the effects of drug abuse prevention/education programs.

Given these limitations, the study reported not only positive short-term attitudinal effects, but long-term behavioral effects. These results however must be tempered because of their lack of generalizability due to the weakness of the design. Estimating treatment effects in order to compensate for design weakness could lead to serious validity problems.

WHOA! A Great Way to Say No

One of the many programs to be generated by the "Just Say No" programs at the national level was the WHOA program. The WHOA curriculum is composed of three sessions, each approximately fifty minutes in length, for seventh grade students. Using four specific steps, students learn and develop specific skills to enable them to resist the pressures to use drugs to avoid other potential trouble without fear of being ostracized by their friends.

Employing a heavy emphasis on role-playing, the program's four steps are:

1. What's going on?: Students learn to ask questions to determine if there is potential trouble.
2. How's that trouble?: They identify and name the trouble in legal or other strong, clearly stated terms.

3. Own the consequences: Students learn to be responsible for themselves.
4. Add an alternative: Students can respect the friendship by offering to do something legal, safe, and fun (Kim, McLeod, and Shantzis, 1989, p.364).

Using random selection, 10 classrooms were assigned to the treatment group and 6 classrooms were assigned to the control group. Employing a pre- and posttest, evaluation data were collected using a standardized evaluation instrument, the Student Attitudinal Inventory (SAI).

The pre- and posttest evaluation instruments used an abbreviated version of the SAI using the scale items Drug Attitude, Social Attitude, Rebelliousness, and Self-Esteem. Each of these items had a Cronbach Alpha of .80 or higher.

Noting that there was no statistically significant difference between the pre- and posttest, the authors concluded that interventions targeted towards younger students may be more effective. They also noted that comprehensive programs are probably more effective than "one shot" programs, and that a follow-up "booster" component would increase the effectiveness of the program.

Drug Abuse Evaluation Literature

One of the newest and most important areas of substance abuse literature concerns program evaluation and its accompanying methodology. Drug abuse prevention research findings have been inconsistent due to a variety of reasons such as study design and methodology (Leukefeld and Bukoski, 1991). The importance of accurate program evaluations for

drug education programs was emphasized with the passage of the Drug-Free Schools and Communities Act Amendments of 1989, where Congress specified that state education agencies' (SEA) applications for funding should "provide for an annual evaluation of the effectiveness of programs" (Brandon, 1992, pp.25-26).

Drug abuse prevention strategies are varied in their design and methodology, as well as the differences between study findings (Leukefeld and Bukoski, 1991). Not only are there differences in desired outcomes, there is wide disparity in how to achieve the desired outcomes.

Given the importance of accurate program evaluations, the literature identifies a number of areas which need to be considered and addressed. Principle among these is the need for sophisticated evaluations about drug education programs (Brandon, 1992). In 1988, Banqert-Drowns stated that, "only thirty-three evaluations were produced during the last fifteen years that could meet the standard" he needed to perform his meta-analysis (p.260).

These same concerns for quality evaluations were also addressed by Janvier, Guthmann, and Catalano (1980) when they state, "adequate evaluations of drug abuse prevention programs can be performed, but few are" (p.32). Schaps, DiBartolo, Moskowitz, Palley and Churgin (1981) also concluded that "evaluation research in primary prevention remains weak in general" (p.40).

The key to any program evaluation is assessing its

effectiveness in terms of long-term effects of the intervention as well as replication. Attrition rates, often overlooked in a number of studies, must also be assessed in order to control for internal and external validity (Leukefeld and Bukoski, 1991). A number of researchers have called for evaluation studies using experimental and quasi-experimental designs in order to adequately address these concerns (Bangert-Drowns, 1988; Schaps, DiBartolo, Moskowitz, Palley, and Churgin, 1981; and Janvier, Guthmann, and Catalano, 1980).

Current Evaluation Recommendations

While many drug education evaluations still advocate the use of experimental and quasi-experimental designs in drug education programs, a growing number of program evaluations now recommend the use of non-experimental, mixed methods designs, where both qualitative and quantitative data-collection methods are employed (Brandon, 1992). Greene, Caracelli, and Graham (1989) state that mixed method studies that "link program implementation and outcomes" should lead to "strengthened inferences" (p.269).

Hennessy and Sullivan (1989) stated that the designs are difficult to implement due to the problems concerning the need for randomization, as well as the costs involved in the process. Evaluators need practical designs and "useful advise about how to make their decisions given the constraints under which they work" (p.57).

Leukefeld and Bukoski (1991) believe that "prevention

evaluation research should incorporate, as appropriate, various social unit measures including those which are approximate: the family; peer groups, as well as larger social units like schools; health care providers; and other institutional and community social units" (p.197).

Brandon (1992) contends that studies are needed to assess both the breadth and depth of program implementation on a statewide basis. These types of evaluations will achieve a number of goals such as collaboration, while limiting the expenditure of monies. Additionally, the findings can be used to facilitate program improvements and provide "first-hand familiarity with the program and answering questions about program activities, facilities, and equipment, interorganizational influences on the program, and extraneous or unanticipated factors affecting implementation" (p.33).

Brandon concludes that this type of approach will "help explain how program implementation affects program outcomes" (p.35). The findings can be used for short-term program improvement and employ both qualitative and quantitative data-collection methods while involving program stakeholders in reviewing and interpreting the findings of the evaluation.

Related Literature

Numerous articles and studies have been conducted and presented in attempts to define and describe the effective drug education programs. Milgram (1987) states that, "it

seems ludicrous to state that the content of alcohol and drug education programs should be chosen to meet the needs of the students. However, it is a necessary statement" (p.48). Gold, Duncan, and Sutherland (1980) also seem to support this contention by stating, "Drug education should be designed or redesigned to address itself more adequately to the full range of student interests and to reflect in part student priorities among topic areas" (p.88).

A thorough preparation of instructors is also seen as critical in a number of studies (Milgram, 1987; Winters, 1990; Lohrmann and Fors, 1986). This preparation should include a thorough understanding of scientific facts concerning substance abuse and use, as well as the transmission of this knowledge.

Community support is also seen as an important part of any substance abuse education program (Wertz and Bigley, 1985) and society, in general, has supported alcohol and drug education programs (Milgram, 1987). Parental support is also critical if prevention programs are to succeed (Winters, 1990).

Goodstadt (1989) notes that a number of decisions must be made in planning, designing, and implementing drug education. Decisions must be made on what types of drugs will be the focus of attention, legal or illegal. Should abstinence or responsible use be the focus of the program? Should governmental emphasis be placed on the supply reduction or demand reduction, and is education or

legislation the key principle? Also, is education more help than it is harm?

While there are many more questions that could be asked, Goodstadt notes that the key to any successful curriculum is the integration of all of these concepts into a variety of programs which deal with the situation. What is needed is to focus on the "big picture" (p.207), in order to deal effectively with all of these issues.

CHAPTER 3

METHODS AND PROCEDURES

Participants

The focus of this inquiry was the fifth and sixth grade students who completed the 16 week DARE curriculum. The target population for data consists of students who attend public school in a city with a population of 27,617. The students attend one of three school districts which serve a majority of students in the city.

Sampling Plan

The students were selected on the basis of their school district's participation in the DARE Program. All of the students in the experimental group participated in the curriculum while those in the control group were in one of the school districts that were not scheduled to receive the curriculum until the following semester.

All of the students in the experimental group were exposed to the same curriculum, which were presented by the same instructor. The instructor is a certified police officer with 14 years experience, the last year as a full-time certified DARE officer. Mandatory in-service training has also been fully completed by the officer prior to this study.

School District A

School District A is an urban school district located in the southern end of the city, encompassing less than four

square miles. Approximately 65% of School District A's general fund is from the State of Michigan. This makes School District A not only one of the smallest, but also one of the poorest school districts in the state.

District wide, School District A students are at or below average in their performance on standardized achievement tests in relation to county and state averages. Students in School District A, also appear to have average discipline problems, as well as average rates of citizenship like most other districts in the area. The sample is taken from the district's two K-5 elementary schools.

Approximately 47% of the students at School 1 qualify for free or reduced school lunches under criteria established by the United States Department of Agriculture, while 73% of the students at School 2 meet these criteria.

School District B

School District B is a suburban school district located predominately in the middle of the city. A significant portion of the district has undergone a commercial development which resulted in the district being "out of formula" for a couple of years. It has recently been back in formula for the past year.

District B students, on a district wide basis, perform at an average level on standardized achievement tests. They are generally regarded as having an excellent choice of electives in their curriculum, as well as good discipline and attendance.

The sample of students in District B is taken from the middle school which houses the 4th-8th student population. The school is divided in a manner that restricts the 4th-6th grade students from the 7th-8th grade students. Approximately 35% of the student population in the middle school is eligible for free or reduced school lunches according to the criteria established by the United States Department of Agriculture.

School District C

School District C is a suburban school district located in the northern end of the city. The students in the building are comprised of 5th-8th grade and are taught in three teacher teams.

On average, the students are rated as good in the areas of discipline, attendance and citizenship, with a normal distribution of IQ. Performance on standardized achievement tests can be described as average or slightly above the county and state norm. Approximately 15% of the student population qualify for free or reduced school lunches according to United States Department of Agriculture criteria.

Design

The study is a nonequivalent control group design. The design is represented by the following diagram,

Experimental Group — — — O — — X — — O
Control Group O O
where X represents the treatment, O represents the pretest

or posstest measurement of the dependent variable, and the broken line indicates that the experimental and control groups are not formed randomly.

Instrument

In this design, students who participated in the program (experimental) and students who did not participate in the program (control) were administered a questionnaire prior to the start of the program and then again at the end of the program. By using this design, changes in attitudes and knowledge could be detected. The questionnaire was originally constructed by Faine and Bohlander (1988). In designing the questionnaire, a total of six criterion measures were defined to summarize the principal components of the DARE curriculum. These were:

- (1) Self-esteem;
- (2) understanding and knowledge of drugs;
- (3) resistance to peer pressure;
- (4) attitudes toward the police;
- (5) attitudes toward drugs; and
- (6) perceived external control (Faine & Bohlander, 1988, p.12).

The self-esteem questions were derived from the Rosenberg Self-Esteem Scale and the Coopersmith Self-Esteem Inventory. The drug knowledge questions were taken from a variety of previous questions which had been used in evaluations of the DARE Program in Los Angeles. Additional questions were also constructed by the authors specifically for their study. According to Faine and Bohlander (1988):

"Items were included in the final scales based on (1) face validity in relation to the concept being measured; (2) inter-item correlation (Yule's Q) with other items in the scale, and (3) item-scale intercorrelation based on a hierachial cluster analysis of a Yule's Q correlation matrix and principal axis factor solutions within scales" (p. 13).

The instrument was designed in such a manner as to avoid the use of complex words and sentences. Uncommon words were also avoided. Overall, the instrument, with the exception of the understanding and knowledge of drugs section, required only a third grade reading level in order to comprehend the questions.

Parental Consent

Prior to administering the questionnaire, parental permission was sought using passive consent procedures. The parents were informed, by mail, that their child's class had been invited to participate in a survey of student attitudes.

They were also invited to review a copy of the instrument which was kept on file in the school principal's office. They could contact the principal if they wanted to review the instrument prior to their child's participation, or if they did not want their child to participate in the survey.

Administering the Instrument

The instrument was administered by the regular classroom teacher as well as the researcher. The researcher was identified only as a doctoral student. In all

situations, the students were told only that they were participating in a research project on student attitudes.

Questionnaires were pre-coded with unique identification numbers on both the cover sheet and the questionnaire. Students were instructed to write their name on the cover sheet and then pass it to the front of the room. The cover sheets were then sealed in an envelope to provide visual assurance to the students of the confidentiality of their responses. The identification numbers were used only to match the pretest with the posttest responses. The administrator of the test remained at the front of the room to avoid influencing student responses to sensitive questions.

The instrument was self-administered with the administrator reading instructions to the students orally. Students were encouraged to work individually on their responses and to answer each question honestly as it pertains to them. Most students completed the questionnaire within 25 minutes.

Extraneous Variables

Due to the nature of the study, questions concerning the possible effects of extraneous variables were minimized. The period of time between the pretest and posttest was approximately four months, which would limit the effects of history and maturation.

Given the selection process, the variables of statistical regression and differential selection of

subjects would not play a role in altering the proper interpretations. Experimental mortality attrition and selection-maturation should not significantly alter pretest to posttest changes because of this same selection process.

The pretesting variable was difficult to control for, given that a pretest is an integral part of the research design. Given that the type of questions in the pretest primarily call for opinions, with limited questions on cognitive based knowledge, this variable should have extremely limited effect on the posttest.

Data Analysis and Major Research Questions

Analysis was done utilizing the computer program, Statistical Package for the Social Sciences (SPSS). The first analysis consisted of a series of cross tabulations run on all categorical variables by groups. The purpose of this analysis is to report descriptive data by groups. Cross tabulations were performed so that each subgroup's pretest and posttest scores could be compared to other subgroups, as well as the group as a whole.

The collection of data from the survey involved tabulating enumerative data. Since the instrument was a survey involving the use of two or more nominal categories in which the data consisted of a tabulation of frequency counts placed in appropriate cells, the chi-square test of independence was calculated. Chi-square is a nonparametric test of independence to determine if two variables are related or independent.

The following research questions were be tested at the .05 level of statistical significance.

1. How will completing the DARE Program affect the students' knowledge of drugs, alcohol, and tobacco?
2. Will there be a difference between males and females who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?
3. Will there be a difference between 5th and 6th grade students who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?
4. Will there be a difference between students who have completed DARE training in the three school districts in their knowledge of drugs, alcohol, and tobacco?

CHAPTER 4

RESULTS AND DISCUSSION

Introduction

The purpose of this study was to determine the efficacy of a suburban police department's DARE Program in increasing the students' knowledge of drugs, alcohol, and tobacco. This chapter is used to report the outcome of the experiment of the DARE Program. The experimental group of students consisted of those students who participated in the DARE Program. The control group consisted of students who were not scheduled to receive the DARE Program until the following semester. The experiment was designed to answer the following questions:

1. How will completing the DARE Program effect the student's knowledge of drugs, alcohol, and tobacco?
2. Will there be a difference between males and females who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?
3. Will there be a difference between 5th and 6th grade students who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?
4. Will there be a difference between students who have completed DARE training in the three school districts in their knowledge of drugs, alcohol, and tobacco?

The experiment was conducted in a city where students attend school in one of three school districts. The experimental group was comprised of students from all three

school districts. The control group was drawn from only one of the school districts where the students were not scheduled to receive the DARE Program until the following semester. Due to a number of factors, selection bias was an issue which needs to be addressed. Due to constraints on the officer's time, as well as the scheduling needs of the school districts, there was no random sample available for the control group or the experimental group. The experimental group was comprised of fifth and sixth grade students from three different buildings in the three different school districts. The control group was comprised solely of fifth grade students from one building. The level of attrition in each group was explainable and resulted from student absence for the pretest or posttest, or the student changing schools.

During the course of the experiment, each student in the experimental group was scheduled to participate in the DARE Program curriculum which consisted of 16 weekly class sessions approximately 50 minutes in length. The police officer conducting the program is a state certified police officer with 14 years of experience, with the last year spent teaching the DARE curriculum. The officer did not involve himself in day to day discipline problems in any of the schools.

Each of the students in each of the schools was exposed to the identical curriculum, by the same police officer. Students who did not take both the pretest and posttest

questionnaire were not participants in the experiment. The comparisons in this chapter are about students who participated in both the pretest and posttest questionnaire, as well as participating in the DARE Program during the semester.

Data Collection

The data used in the statistical analyses were obtained from students who attend the three school districts within the city. One of the school districts involved two buildings which served fifth grade students in an elementary school. One of these two buildings was part of the experimental group while the other building served as the entire control group. The remainder of the experimental group was comprised of sixth grade students attending a middle school in the other two school districts. Both the control group and the experimental group data collection dates are for the same period. Students who were enrolled in the three school districts between September, 1992, and January, 1993, form the population of both the control group and the experimental group.

Experimental Group Selection

The population of the experimental group consisted of students from the three school districts who participated in the DARE Program. Members of the experimental group also participated in a pretest questionnaire prior to receiving the curriculum, as well as a posttest questionnaire at the

completion of the curriculum. The experimental group consisted of 66 fifth grade students from one elementary school and 142 sixth grade students from two middle schools in two other school districts. The entire population of 208 students was used in completing the statistical analyses. Students who participated in the curriculum but did not complete a pretest and posttest questionnaire were not included in the analyses.

Control Group Selection

The population of the control group consisted of those students from one of the three school districts who chose to participate in the DARE Program the following semester. Members of the control group consisted of 44 fifth grade students from one elementary school building. The control group completed a pretest and posttest questionnaire during the same time period as those students in the experimental group. The entire population of 44 students was included in the statistical analyses. Students who did not complete both a pretest and posttest questionnaire were not included in the statistical analyses.

Presentation and Analysis of Data

In assessing the students' knowledge of drugs, alcohol, and tobacco at the beginning and end of the semester-long DARE Program, an 11 item scale was used. The scale consisted of short sentences which required a true or false response (see Figure 1).

Figure 1

<u>Knowledge of Drugs Questions</u>	<u>Correct Answer</u>
1. Stimulants make your heart beat faster	True
2. Alcohol is called a stimulant	False
3. A person can die from drinking too much alcohol	True
4. Crack and marijuana are the same thing	False
5. Cocaine is a pill you swallow	False
6. LSD is a hallucinogen	True
7. All drugs can be dangerous	True
8. Cocaine is smoked	False
9. If people drink too much they can die	True
10. Marijuana is a pill you swallow	False
11. Teenagers are too young to be alcoholics	False

A test of proportions was calculated, by question, to measure any significant difference between the various groups at the pretest and posttest stage, as well as a test of proportions by question, comparing the pretest-posttest changes. A chi-square test of correlated proportions was then calculated for each group.

TABLE 1
TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
BY DARE (N=208) AND NON-DARE (N=44) GROUPS

QUESTION	DARE	NON-DARE	Z TEST
1	.571	.425	1.75
2	.366	.293	1.00
3	.894	.909	.40
4	.894	.725	2.67*
5	.692	.641	.63
6	.673	.795	-1.63
7	.570	.500	.78
8	.442	.390	.56
9	.654	.395	2.50*
10	.874	.721	2.50*
11	.242	.068	2.42*

* $P \leq .05$

Table 1 shows the results of the tests of proportions, by question, for the pretest, by the DARE and non-DARE groups. In 10 out of 11 instances, the DARE group posted a higher percentage of correct answers to the questions. The Z tests for questions four, nine, ten and eleven show a statistically significant difference between the DARE and non-DARE students on four of the eleven pretest items.

TABLE 2
TESTS OF PROPORTIONS BY QUESTION FOR POSTTEST
BY DARE (N=208) AND NON-DARE (N=44) GROUPS

QUESTION	DARE	NON-DARE	Z TEST
1	.686	.698	- .13
2	.470	.279	2.11*
3	.933	.750	3.60*
4	.971	.932	.33
5	.809	.659	2.14*
6	.743	.864	-1.71
7	.524	.432	1.00
8	.425	.364	.78
9	.788	.432	4.50*
10	.908	.818	1.50
11	.385	.114	3.50*

* $p \leq .05$

Table 2 shows the results of the tests of proportions, by question, for the posttest, for the DARE and non-DARE groups. In 9 out of 11 instances, the DARE group posted a higher percentage of correct answers to the questions.

The Z tests for questions two, three, five, nine, and eleven show a statistically significant difference between the DARE and non-DARE students on five of the eleven posttest questions.

TABLE 3
 TESTS OF PROPORTIONS BY QUESTION FOR PRETEST-
 POSTTEST DIFFERENCE BY DARE (N=208)
 AND NON-DARE (N=44) GROUPS

QUESTION	PRETEST DARE	- POSTTEST DIFFERENCE NON-DARE	Z TEST
<hr/>			
1	.12	.27	-2.50*
2	.10	-.01	2.20*
3	.04	-.16	5.00*
4	.08	.20	-2.40*
5	.12	.02	2.00*
6	.07	.06	.25
7	-.05	-.07	.50
8	-.01	-.03	.33
9	.14	.03	1.83
10	.04	.10	-1.50
11	.15	.04	1.83
<hr/>			

* $p \leq .05$

Table 3 presents the results of the tests of proportions, by question, for the pretest to posttest change, by the DARE and non-DARE groups.

Statistically significant differences were found in the pretest to posttest change by DARE and non-DARE students for five of the eleven questions. For question one, "Stimulants make your heart beat faster", the DARE students who answered

correctly increased 12% while the non-DARE students who answered correctly increased by 27%. The increase in the non-DARE group from 42.5% to 69.8% answering correctly led to a Z test of -2.5.

On question two, "Alcohol is called a stimulant", the DARE students answering correctly increased 10% while the non-DARE students showed a slight decrease of 1%, resulting in a statistically significant difference and a Z test of 2.2.

On question three, "A person can die from drinking too much alcohol", the DARE group showed a slight increase from 89.4% on the pretest to 93.3% on the posttest, while the non-DARE students showed a dramatic decrease from 90.9% on the pretest to 75% on the posttest with a resulting Z score of 5.

On question four, "Crack and marijuana are the same thing", a statistically significant difference was found resulting in a Z test of -2.4. The DARE students increased from 89.4% on the pretest to 97.1% on the posttest while the non-DARE students increased from 72.5% on the pretest to 93.2% on the posttest.

Question five, "Cocaine is a pill you swallow", also yielded statistically significant differences between the DARE and non-DARE groups. The DARE group increased from 69.2% on the pretest to 80.9% on the posttest while the non-DARE students showed only a slight increase from 64.1% on the pretest to 65.9% on the posttest, with a Z test of 2.

TABLE 4
CHI-SQUARE TESTS OF CORRELATED PROPORTIONS
BY DARE (N=208) AND NON-DARE (N=44) GROUPS

QUESTION	DARE	NON-DARE
1	6.70*	4.76*
2	4.94*	.06
3	2.67	7.00*
4	11.20*	.20
5	1.48	2.78
6	8.39*	.08
7	3.27	1.29
8	.85	.25
9	.05	.25
10	12.80*	7.36*
11	15.00*	1.00

=====

df=1 *p≤.05

Table 4 displays the chi-square test of correlated proportions between the DARE and non-DARE students. The DARE and non-DARE students displayed significant differences on question one, "Stimulants make your heart beat faster". The DARE group displayed a chi-square value of 6.7 while the non-DARE group displayed a chi-square value of 4.76.

The DARE students showed a statistically significant increase on question two, "Alcohol is called a stimulant",

displaying a value of 4.94 while there was no significance in the non-DARE group.

Question three, "A person can die from drinking too much alcohol", found a significant difference in the non-DARE students, displaying a value of 7, while there was no significant difference in the DARE students.

Question four, "Crack and marijuana are the same thing" and question six, "LSD is a hallucinogen", both displayed a statistically significant increase in the DARE students.

Question four displayed a chi-square value of 11.2 while question six displayed a chi-square value of 8.39. The non-DARE group had almost no change on each of these questions.

Question ten, "Marijuana is a pill you swallow", found both the DARE students and non-DARE students showing a statistically significant increase with a chi-square value of 12.8 for the DARE students and 7.36 for the non-DARE students.

A statistically significant difference was also found on question eleven, "Teenagers are too young to be alcoholics". In the DARE students, a statistically significant increase was observed with a chi-square value of 15.

Discussion

Initial analysis of the previous information shows that the DARE Program did improve the students' knowledge of drugs when comparing them to the non-DARE students. A number of additional points are necessary to understand

the results.

The non-DARE students were exposed to other drug and alcohol information between the pretest and posttest. This could explain their levels of improvement on question one, "Stimulants make your heart beat faster", and question four, "Crack and marijuana are the same thing."

Question three, "A person can die from drinking too much alcohol", showed a 16% decrease in the number of correct responses in the non-DARE students. This decrease is not only significant, but difficult to explain. No specific event can be identified as causing this decrease.

The DARE students were not exposed to other drug and alcohol information during their DARE curriculum experience. They displayed a statistically significant increase in six out of eleven questions. A percentage increase in correct answers was found in nine out of eleven questions.

DARE students showed a percentage decrease on question seven, "All drugs can be dangerous", and question eight, "Cocaine is smoked". A possible explanation for this is found in the DARE curriculum. DARE students are taught that all drugs are not dangerous, if they are prescribed by a doctor and taken in accordance with the recommended dosage.

They are also taught that crack is a form of cocaine that is smoked. They would have trouble answering correctly because of the ambiguity of the question. The questions need to be reworded to accurately reflect the information requested with the curriculum that is taught.

TABLE 5
 TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
 BY MALE DARE STUDENTS (N=97) AND
 FEMALE DARE STUDENTS (N=111)

QUESTION	MALE	FEMALE	Z TEST
<hr/>			
1	.600	.545	.71
2	.411	.327	1.14
3	.866	.937	-1.75
4	.897	.891	.25
5	.736	.654	1.50
6	.629	.712	-1.33
7	.567	.573	.00
8	.417	.464	-.57
9	.660	.649	.14
10	.887	.864	.60
11	.260	.225	.50
<hr/>			

* $p \leq .05$

Table 5 shows the results of the tests of proportions for the pretest, by question, for the male DARE students and female DARE students. There was no statistically significant difference between the groups, although the male students had a higher percentage of correct answers on seven out of eleven instances.

TABLE 6
 TESTS OF PROPORTIONS BY QUESTION FOR POSTTEST
 BY MALE DARE STUDENTS (N=97) AND
 FEMALE DARE STUDENTS (N=111)

QUESTION	MALE	FEMALE	Z TEST
<hr/>			
1	.667	.704	-.50
2	.495	.449	.71
3	.928	.919	.25
4	.979	.964	.97
5	.792	.825	-.60
6	.740	.739	.00
7	.567	.486	1.14
8	.495	.364	2.00*
9	.784	.793	-.17
10	.918	.900	.50
11	.433	.342	1.57
<hr/>			

* $p \leq .05$

Table 6 shows the results of the tests of proportions for the posttest, by question, for the male DARE students and female DARE students. The Z test for question eight shows a statistically significant difference between the two groups. The male students continued to show a higher percentage of correct answers on seven out of eleven questions.

TABLE 7
 TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
 POSTTEST DIFFERENCE BY MALE DARE STUDENTS (N=97)
 AND FEMALE DARE STUDENTS (N=111)

QUESTION	PRETEST - POSTTEST DIFFERENCE		Z TEST
	MALE	FEMALE	
<hr/>			
1	.07	.14	-1.75
2	.09	.12	-.75
3	.06	-.02	4.00*
4	.08	.07	.25
5	.05	.18	-3.25*
6	.11	.03	2.00*
7	.00	-.08	2.67*
8	.08	-.10	9.00*
9	.12	.14	-.40
10	.03	.04	-.33
11	.17	.11	1.20
<hr/>			
p<.05			

Table 7 shows the results of the tests of proportions, by question, for the pretest to posttest change, by the male DARE students and female DARE students. Statistically significant differences were found in the pretest to posttest change by the male DARE students and female DARE students in five out of eleven questions. For question three, "A person can die from drinking too much alcohol",

the male DARE students who answered correctly increased 6% while the female DARE students who answered correctly decreased 2%, resulting in a Z test of 4.

On question five, "Cocaine is a pill you swallow", the female DARE students who answered the question correctly increased 18%, while the male DARE students who answered correctly increased only 5%, yielding a Z test of -3.25.

On question six, "LSD is a hallucinogen", the male DARE students showed an 11% increase in the number answering correctly, while the female DARE students showed a 3% increase, resulting in a Z test of 2.

Question seven, "All drugs can be dangerous", also displayed statistically significant differences between the male and female DARE students. The male DARE students had no percentage increase, while the female DARE students showed an 8% decrease, resulting in a Z test of 2.67.

Question eight, "Cocaine is smoked", also showed statistically significant differences in correct responses between male and female DARE students. Male DARE students increased 8% while the female DARE students decreased 10%. The increase by the male DARE students and decrease by the female DARE students resulted in a Z test of 9.

TABLE 8
CHI-SQUARE TESTS OF CORRELATED PROPORTIONS BY
MALE DARE STUDENTS (N=97) AND FEMALE DARE STUDENTS (N=111)

QUESTION	MALES	FEMALES
1	.78	8.10*
2	1.19	4.45*
3	3.00	.33
4	7.20*	6.40*
5	6.00*	.89
6	.62	9.76*
7	4.17*	.29
8	.00	1.59
9	1.88	2.38
10	8.00*	5.30*
11	8.76*	6.26*

df=1 *p<.05

Table 8 displays the results of the chi-square tests of correlated proportions between the male DARE students and female DARE students. Female DARE students showed a statistically significant difference on question one, "Stimulants make your heart beat faster", and question two, "Alcohol is called a stimulant", resulting in Z tests of 8.1 and 4.45 respectively.

Both male DARE students and female DARE students

displayed a significant difference concerning question four, "Crack and marijuana are the same thing". Male DARE students showed a chi-square value of 7.2 while female DARE students showed a chi-square value of 6.4.

Question five, "Cocaine is a pill you swallow", found a statistically significant difference in the male DARE students where a chi-square value of 6 was calculated. There was no difference in the female DARE students.

Female DARE students displayed a statistically significant difference on question six, "LSD is a hallucinogen". Female DARE students displayed a chi-square value of 9.76, while the male DARE students showed no significant difference.

For question seven, "All drugs can be dangerous", male DARE students showed a statistically significant difference with a chi-square value of 4.17. Female DARE students showed no significant difference in their responses.

For questions ten and eleven, "Marijuana is a pill you swallow" and "Teenagers are too young to be alcoholics", both the male and female DARE students displayed statistically significant differences. Male DARE students showed chi-square values of 8 and 8.76 respectively for questions ten and eleven, while female DARE students showed chi-square values of 5.3 for question ten and 6.26 for question 11.

Discussion

Using the data from Table 7, male DARE students remained the same or showed a percentage increase on all eleven test items, while the female DARE students showed a percentage increase on eight of the eleven questions. In two of the three instances the females showed a decrease. The wording of the questions is again the issue.

Female DARE students showed a percentage decrease on question seven, "All drugs can be dangerous" and question eight, "Cocaine is smoked". Because of these decreases, significant Z tests were calculated for questions seven and eight.

By calculating chi-square tests of correlated proportions, by question, for male and female DARE students in Table 8, female DARE students had significant chi-square values on six of the eleven questions. Male DARE students had significant chi-square values on five of the eleven questions.

While the male DARE students had a smaller degree of percentage increases, the female DARE students had a slightly higher number of statistically significant increases in the Z tests.

Given the data in tables 7 and 8, there is no difference in the knowledge of male and female DARE students. Both the male and female groups displayed similar increases in their knowledge of drugs, alcohol, and tobacco.

TABLE 9

TESTS OF PROPORTIONS BY QUESTION FOR PRETEST BY 5TH GRADE
DARE STUDENTS (N=66) AND 6TH GRADE DARE STUDENTS (N=142)

QUESTION	5th GRADE	6th GRADE	Z TEST
<hr/>			
1	.484	.610	-1.86
2	.297	.397	-1.43
3	.894	.894	.00
4	.800	.937	-1.50
5	.586	.736	-2.14*
6	.682	.752	-1.16
7	.615	.571	1.28
8	.391	.465	-1.14
9	.515	.718	-2.85*
10	.846	.887	-.80
11	.154	.282	-2.16*
<hr/>			

* $p \leq .05$

Table 9 shows the results of the tests of proportions for the pretest, by question, for the fifth grade students and sixth grade students. There was a statistically significant difference between the groups on questions five, nine, and eleven. In addition to having a statistically significant difference on these three questions, the sixth grade students had the same or higher percentage of correct answers on ten out of eleven questions.

TABLE 10
 TESTS OF PROPORTIONS BY QUESTION FOR POSTTEST
 BY 5TH GRADE DARE STUDENTS (N=66) AND
 6TH GRADE DARE STUDENTS (N=142)

QUESTION	5th GRADE	6th GRADE	Z TEST
<hr/>			
1	.677	.691	.14
2	.415	.496	-1.14
3	.955	.923	1.00
4	.970	.972	.00
5	.635	.890	-4.16*
6	.712	.669	.57
7	.424	.549	-1.85
8	.409	.433	-.29
9	.682	.838	2.67*
10	.864	.929	.67
11	.303	.423	-1.71
<hr/>			

p≤.05

Table 10 shows the results of the tests of proportions for the posttest, by question, for the fifth grade DARE students and the sixth grade DARE students. The Z tests for question five and question nine show a statistically significant difference between the two groups. Each group had a percentage increase on four questions, while there was no difference on question four.

TABLE 11
 TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
 POSTTEST DIFFERENCE BY 5TH GRADE DARE STUDENTS (N=66) AND
 6TH GRADE DARE STUDENTS (N=142)

QUESTION	PRETEST - POSTTEST DIFFERENCE		Z TEST
	5th GRADE	6th GRADE	
1	.20	.08	2.40*
2	.12	.10	.50
3	.07	.03	1.33
4	.17	.03	3.50*
5	.05	.15	-2.00*
6	.03	-.08	3.67*
7	-.20	-.02	-4.50*
8	.02	-.04	2.50*
9	.16	.12	.80
10	.01	.04	-1.50
11	.15	.14	.20

* $p \leq .05$

Table 11 shows the results of the tests of proportions, by question, for the pretest to posttest change, by the fifth grade DARE students and the sixth grade DARE students. On question one, "Stimulants make your heart beat faster", the number of fifth grade students answering correctly increased 20%, while the sixth grade students increased only 8%, resulting in a Z test of 2.4.

For question four, "Crack and marijuana are the same thing", the fifth grade students answering correctly increased 17%, compared to only a 3% increase for the sixth grade, with a resulting Z test of 3.5.

For question five, "Cocaine is a pill you swallow", the fifth grade students answering correctly increased only 5% while the sixth grade students answering correctly increased 15%. The percentages led to a Z test of -2.

On question six, "LSD is a hallucinogen", the fifth grade students had a slight increase of 3%, while the sixth grade students decreased 8%. The small increase and moderate decrease resulted in a Z test of 3.67.

Question seven, "All drugs can be dangerous", showed a decrease in both groups. The fifth grade students displayed a decrease of 20% while the sixth grade students decreased 2%, with a resulting Z test of '4.5.

For question eight, "Cocaine is smoked", the fifth grade students demonstrated a 2% increase in the percentage of correct responses, while the sixth grade showed a decrease of 4% in the percentage of correct responses. This resulted in a Z test of 2.5.

TABLE 12

CHI SQUARE TESTS OF CORRELATED PROPORTIONS BY 5TH GRADE
DARE STUDENTS (N=66) AND 6TH GRADE DARE STUDENTS (N=142)

QUESTION	5TH GRADE	6TH GRADE
1	5.54*	2.40
2	2.00	2.97
3	2.67	.89
4	4.48*	6.72*
5	.07	2.00
6	.33	11.11*
7	2.00	3.60
8	5.45*	.25
9	1.67	.31
10	11.00*	2.78
11	6.25*	9.10*

df-1 *p<.05

Table 12 shows the results of the chi-square tests of correlated proportions between the fifth grade and sixth grade DARE students. The fifth grade DARE students showed a statistically significant difference on question one, "Stimulants make your hear beat faster", resulting in a chi-square value of 5.54.

For question four, "Crack and marijuana are the same thing", both the fifth grade and sixth grade students showed

a statistically significant difference. The fifth grade students showed a chi-square value of 4.48, while the sixth grade students showed a chi-square value of 6.72.

On question six, "LSD is a hallucinogen", the sixth grade students displayed a chi-square value of 11.11. The fifth grade students displayed no significant difference.

For question eight, "Cocaine is smoked" and question ten, "Marijuana is a pill you swallow", the fifth grade students showed a statistically significant difference, with chi-square values of 5.45 and 11 respectively. The sixth grade students showed no difference on these questions.

Finally, on question eleven, "Teenagers are too young to be alcoholics", both the fifth and sixth grade students showed a statistically significant difference. The fifth grade displayed a chi-square value of 6.25 and the sixth grade showed a chi-square value of 9.1.

Discussion

Using the data from Table 11, the fifth grade students displayed a percentage increase in ten out of eleven questions, while the sixth grade students showed a percentage increase in eight out of eleven questions. Both groups showed a decrease on question seven, "All drugs can be dangerous", while sixth grade students also showed a percentage decrease on question eight, "Cocaine is smoked".

Both of these decreases are explainable by examining the DARE curriculum. DARE students are instructed in the principal that all drugs are not dangerous, if they are

prescribed by a doctor and taken in accordance with the recommended dosage.

They are also instructed that crack is a form of cocaine that is smoked, while cocaine in its powder form is inhaled. Because of the ambiguity in both questions, confusion could result in the student providing the proper answer.

Sixth grade students also showed a percentage decrease on question six, "LSD is a hallucinogen". The sixth grade students decreased 8% for an undetermined reason. Because of these three decreases in percentages by the sixth grade, statistically significant differences were calculated in the Z tests.

When the decreases in the sixth grade percentages are excluded, the fifth grade students show a statistically significant increase on questions one and four, while the sixth grade students show a statistically significant increase on question five.

Employing the data from Table 12, the fifth grade students showed significant chi-square values for five of eleven questions. The sixth grade students showed significant chi-square values for three of the eleven questions.

Given the data in tables 11 and 12, the fifth grade students improved more than the the sixth grade students in their knowledge of drugs. This improvement was demonstrated in terms of both percentage increases, as well as statistically significant values.

TABLE 13
 TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
 BY DARE STUDENTS IN SCHOOL A (N=66) AND
 NON-DARE (N=44) GROUP

QUESTION	SCHOOL A	NON-DARE	Z TEST
<hr/>			
1	.484	.425	.46
2	.297	.293	.11
3	.894	.909	-.33
4	.800	.725	.88
5	.586	.641	-.50
6	.682	.795	-1.30
7	.615	.500	1.20
8	.391	.390	.00
9	.515	.395	1.20
10	.846	.721	1.63
11	.154	.068	1.33
<hr/>			

* $p \leq .05$

Table 13 shows the results of the tests of proportions, for the pretest, by question, for the DARE students in School A and the non-DARE students. In eight out of eleven instances, the DARE students in School A posted a higher percentage of correct answers to the questions. There was no statistically significant difference on any of the questions between the two groups.

TABLE 14
 TESTS OF PROPORTIONS BY QUESTION FOR POSTTEST
 BY DARE STUDENTS IN SCHOOL A (N=66) AND
 NON-DARE (N=44) GROUP

QUESTION	SCHOOL A	NON-DARE	Z TEST
<hr/>			
1	.667	.698	-.69
2	.415	.279	1.40
3	.955	.750	3.50*
4	.970	.932	1.00
5	.633	.659	-.20
6	.712	.864	-1.88
7	.424	.432	-.10
8	.409	.364	.50
9	.682	.432	2.50*
10	.864	.818	-.80
11	.303	.114	2.38*
<hr/>			

*P≤.05

Table 14 shows the results of the tests of proportions, for the posttest, by question, for the DARE students in School A and the non-DARE students. In six out of eleven instances, the DARE students in School A show a higher percentage of correct answers to the questions.

The Z tests for questions three, nine, and eleven, show a statistically significant difference between the

DARE students in School A and the non-DARE students on three of the eleven posttest questions.

TABLE 15
TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
POSTTEST DIFFERENCE BY DARE STUDENTS IN SCHOOL A (N=66)
AND NON-DARE (N=44) GROUP

QUESTION	PRETEST - POSTTEST DIFFERENCE SCHOOL A	NON-DARE	Z TEST
<hr/>			
1	.20	.27	-.88
2	.12	-.01	2.60*
3	.07	-.16	7.67*
4	.17	.20	-.38
5	.05	.02	1.00
6	.03	.06	-1.00
7	-.20	-.07	1.50
8	.02	-.03	1.67
9	.16	.03	1.18
10	.01	.10	-2.25*
11	.15	.04	1.83
<hr/>			

* $p \leq .05$

Table 15 displays the results of the tests of proportions, by question, for the pretest to posttest change, by the DARE students in School A and the non-DARE students.

Statistically significant differences were found in the pretest to posttest change by DARE students in School A and non-DARE students for three of the eleven questions. For question two, "Alcohol is called a stimulant", the DARE students in School A who answered the question correctly increased 12% while the non-DARE students decreased 1%, resulting in a Z test of 2.6.

On question three, "A person can die from drinking too much alcohol", the DARE students in School A who answered correctly increased 7% while the non-DARE students decreased 16%. This increase by the DARE students, and decrease by the non-DARE students led to a Z test value of 7.67.

For question ten, "Marijuana is a pill you swallow", both the DARE students in School A, as well as the non-DARE students showed a moderate increase of 10%. The increase in the non-DARE group provided a Z test value of -2.25.

TABLE 16

CHI SQUARE TESTS OF CORRELATED PROPORTIONS BY DARE STUDENTS
 IN SCHOOL A (N=66) AND NON-DARE (N=44) GROUP

QUESTION	SCHOOL A	NON-DARE
<hr/>		
1	5.54*	4.76*
2	2.00	.06
3	2.67	7.00*
4	4.48*	.20
5	.07	2.78
6	.33	.08
7	2.00	1.29
8	5.45*	.25
9	1.67	.25
10	11.00*	7.36*
11	6.25*	1.00
<hr/>		
DF=1 *P<.05		

Table 16 shows the chi-square test of correlated proportions between the DARE students in School A and the non-DARE students. The DARE students in School A and the non-DARE students displayed significant differences on question one, "Stimulants make your heart beat faster". The DARE students in School A showed a chi-square value of 5.54 while the non-DARE students showed a chi-square value of 4.76.

The non-DARE students showed a statistically significant decrease on question three, "A person can die from drinking too much alcohol", with a chi-square value of 7. The DARE students in School A had no significant difference.

On question four, "Crack and marijuana are the same thing", the DARE students in School A displayed a statistically significant increase, posting a chi-square value of 4.48, while the non-DARE students showed no significant difference.

For question eight, "Cocaine is smoked", the DARE students in School A showed a chi-square value of 4.48. The non-DARE students displayed no significant difference.

On question ten, "Marijuana is a pill you swallow", both the DARE students in School A and the non DARE students displayed statistically significant chi-square values. The DARE students in School A showed a chi-square value of 11 while the non-DARE students showed a chi-square value of 7.36.

Finally, on question eleven, "Teenagers are too young to be alcoholics", the DARE students in School A showed a statistically significant difference, showing a chi-square value of 6.25. The non-DARE students showed no statistically significant difference.

Discussion

Examining the data from Table 15, the DARE students from School A showed a percentage increase on ten out of

eleven questions while the non-DARE group showed increases on only seven out of eleven questions.

On question two, "Alcohol is called a stimulant", the statistically significant Z test is primarily the result of an increase in the percentage of the DARE students in School A answering the question correctly and the non-DARE students showing almost no difference in the pretest-posttest change.

On question three, "A person can die from drinking too much alcohol", the Z test value of 7.67 is due primarily to the 16% drop from the pretest to the posttest by the non-DARE students. The DARE students in School A showed a 7% increase.

For question ten, "Marijuana is a pill you swallow", the non-DARE students' increase of 10% from the pretest to the posttest was primarily responsible for the Z test value of -2.25. The DARE students in School A showed only a 1% increase from the pretest to the posttest.

Table 16 shows the DARE students from School A showed significant chi-square values on five of eleven questions. Non-DARE students showed a significant chi-square value on three out of eleven questions.

After considering the data in tables 15 and 16, it can be concluded that the DARE students from School A demonstrated a greater improvement in their knowledge of drugs, alcohol, and tobacco than the non-DARE students. These improvements were seen in both statistically significant values, as well as percentage increases.

TABLE 17
 TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
 BY DARE STUDENTS IN SCHOOL B (N=78) AND
 NON-DARE (N=44) GROUP

QUESTION	SCHOOL B	NON-DARE	Z TEST
<hr/>			
1	.628	.425	2.22*
2	.468	.293	2.00*
3	.885	.909	-.40
4	.949	.725	3.67*
5	.649	.641	.13
6	.615	.795	-2.25*
7	.564	.500	.67
8	.590	.390	2.22*
9	.692	.935	3.22*
10	.859	.721	.82
11	.295	.068	.33
<hr/>			

*P_<.05

Table 17 shows the results of the tests of proportions for the pretest, by question, for the DARE students in School B and the non-DARE student. There was a statistically significant difference between the two groups on questions one, two, four, six, eight, nine, and eleven. In six of these seven instances, the DARE students in School B scored higher on the pretest questions. On three of the

remaining four questions, the DARE students in School B showed a higher percentage of correct answers than the non-DARE students.

TABLE 18
TESTS OF PROPORTIONS BY QUESTION FOR POSTTEST
BY DARE STUDENTS IN SCHOOL B (N=78)
AND NON-DARE (N=44) GROUP

QUESTION	SCHOOL B	NON-DARE	Z TEST
<hr/>			
1	.744	.698	.50
2	.566	.279	3.22*
3	.936	.750	3.17*
4	.974	.932	1.33
5	.923	.659	3.71*
6	.756	.864	-1.42
7	.551	.432	1.33
8	.500	.364	1.56
9	.897	.432	5.88*
10	.910	.818	.82
11	.551	.114	5.50*
<hr/>			

*P≤.05

Table 18 shows the results of the tests of proportions for the posttest, by question, for the DARE students in School B and the non-DARE students. Statistically

significant differences were found between the two groups on questions two, three, five, nine, and eleven. In all five instances, the DARE students in School B showed a higher percentage of correct responses. Also the DARE students in School B showed a higher percentage of correct answers on five of the remaining six questions.

TABLE 19
 TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
 POSTTEST DIFFERENCE BY DARE STUDENTS IN SCHOOL B (N=78)
 AND NON-DARE (N=44) GROUP

QUESTION	PRETEST - SCHOOL B	POSTTEST DIFFERENCE NON-DARE	Z TEST
<hr/>			
1	.11	.27	-2.29*
2	.10	-.01	2.25*
3	.05	-.16	4.20*
4	.02	.20	-3.60*
5	.27	.02	3.57*
6	.14	.06	1.60
7	-.01	-.07	3.00*
8	-.09	-.03	1.50
9	.21	.03	3.00*
10	.50	.10	-1.25
11	.25	.04	3.00*
<hr/>			

*P≤.05

Table 19 shows the results of the tests of proportions, by question, for the pretest to posttest change, by the DARE students in School B and the non-DARE students. For question one, "Stimulants make your heart beat faster", the DARE students in School B answering the question correctly increased 11% while the non-DARE students increased 27%, with a Z test of -2.29.

Question two, "Alcohol is called a stimulant", showed the DARE students in School showing a 10% increase, while the non-DARE students decreased by 1%. A Z test value of 2.25 was calculated.

On question three, "A person can die from drinking too much alcohol", the DARE students in School B increased 5% while the non-DARE students decreased 16%, resulting in a z test of 4.2.

For question four, "Crack and marijuana are the same thing", the DARE students in School B showed a slight increase of 2%. The students in the non-DARE group showed a large increase 20% for the same question, resulting in a z test value of -3.6.

Question five, "Cocaine is a pill you swallow", showed a 27% increase for the DARE students in School B while the non-DARE students showed only a 2% increase. This difference resulted in a Z test of 3.57.

On question seven, "All drugs can be dangerous", the DARE students showed a decrease of 7% which resulted in a z test value of 3.0.

For question nine, "If people drink too much, they can die", the DARE students in School B showed a 21% increase. Non-DARE students showed a 3% increase. The resulting z test value was 3.0.

On question 11, "Teenagers are too young to be alcoholics", the DARE students in School B displayed at 25% increase in correct responses compared to only a 4% increase

in the non-DARE students. The resulting Z test value was 3.0.

TABLE 20
CHI SQUARE TESTS OF CORRELATED PROPORTIONS BY DARE
STUDENTS IN SCHOOL B (N=78) AND
NON-DARE (N=44) GROUP

QUESTION	SCHOOL B	NON-DARE
1	2.45	4.76*
2	1.32	.06
3	1.33	7.00*
4	10.67*	.20
5	1.33	2.78
6	17.64*	.08
7	5.26*	1.29
8	.03	.25
9	1.69	.25
10	1.00	7.36*
11	11.76*	1.00

df=1 *p≤.05

Table 20 shows the results of the chi-square tests of correlated proportions between the DARE students in School B and the non-DARE students. The non-DARE students showed statistically significant differences on questions one,

three, and ten. Question one, "Stimulants make your heart beat faster", showed a statistically significant difference with a chi-square value of 4.76.

Question three, "A person can die from drinking too much alcohol", demonstrated a statistically significant difference with a chi-square value of 7 for students in the non-DARE group. No statistically significant difference was seen for the DARE students.

For question ten, "Marijuana is a pill you swallow", the non-DARE students showed a statistically significant difference with a chi-square value of 7.36. No difference was seen in the DARE students.

The DARE students in School B showed statistically significant differences on questions four, six, seven, and eleven. For question four, "Crack and marijuana are the same thing", a statistically significant difference was shown with a chi-square value of 10.67. No difference was seen in the non-DARE group.

On question six, "LSD is a hallucinogen", a chi-square value of 17.64 showed a statistically significant difference for the DARE students in School B. No difference was seen in the non-DARE group.

Question seven, "All drugs can be dangerous", showed a statistically significant chi-square value of 5.26 for the DARE students in School B. The non-DARE group saw no difference.

For question eleven, "Teenagers are too young to be

alcoholics", the DARE students in School B showed a statistically significant difference with a chi-square value of 11.76. There was no difference in the non-DARE group.

Discussion

Using the data from Table 19, the DARE students from School B showed a percentage increase from the pretest to the posttest in nine out of eleven instances. The non-DARE group showed increases in percentages from the pretest to the posttest in seven out of eleven instances. Both groups showed small to moderate decreases on question seven, "All drugs can be dangerous", and question eight, "Cocaine is smoked".

Both questions seven and eight are ambiguous and allow for different answers which may both be correct. Additionally, the DARE curriculum tells students that drugs are not dangerous if prescribed by a physician and taken according to the directions. Also, while cocaine is not smoked, crack, a derivative of cocaine, is smoked. Confusion is likely with both of these questions.

On question one, "Stimulants make your heart beat faster", and question four, "Crack and marijuana are the same thing", the non-DARE group showed a statistically significant difference compared to the DARE students in School B. This change is probably due to their exposure to other drug and alcohol information between the pretest and posttest.

Question three, "A person can die from drinking too

much alcohol", showed a 16% decrease from the pretest to posttest in the percentage of correct responses. No specific event or occurrence can be identified to explain this decrease in correct responses.

Table 20 shows the DARE students from School B showed significant chi-square values on four of the eleven questions. Non-DARE students displayed a significant chi-square value on three out of eleven questions.

Considering the data in tables 19 and 20, it can be concluded that the DARE students from School B demonstrated a greater improvement in their knowledge of drugs, alcohol, and tobacco than the non-DARE students. These improvements were observed in both percentage increases, as well as statistically significant values.

TABLE 21
 TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
 BY DARE STUDENTS IN SCHOOL C (N=64)
 AND NON-DARE (N=44) GROUP

QUESTION	SCHOOL C	NON-DARE	Z TEST
<hr/>			
1	.587	.425	1.60
2	.313	.293	.22
3	.906	.909	.00
4	.922	.725	2.71*
5	.841	.641	2.22*
6	.734	.795	.78
7	.531	.500	.30
8	.313	.390	-.89
9	.750	.395	3.50*
10	.922	.921	2.86*
11	.266	.068	2.50*
<hr/>			

*P_<.05

Table 21 shows the results of the tests of proportions for the pretest, by question, for the DARE students in School C and the non-DARE students. Statistically significant differences were observed between the two groups on questions four, five, nine, ten, and eleven. In all five of these questions, the DARE students in School C scored higher than the non-DARE students. On the remaining six

questions, the DARE students showed a higher percentage of correct answers than the non-DARE students on five of the questions.

TABLE 22
TESTS OF PROPORTIONS BY QUESTION FOR POSTTEST
BY DARE STUDENTS IN SCHOOL C (N=64) AND
NON-DARE (N=44) GROUP

QUESTION	SCHOOL C	NON-DARE	Z TEST
<hr/>			
1	.623	.698	-.80
2	.410	.279	1.30
3	.906	.750	2.28*
4	.968	.932	1.00
5	.845	.659	2.38
6	.746	.864	1.38
7	.597	.432	1.70
8	.349	.364	-.10
9	.766	.432	3.40*
10	.952	.818	2.17*
11	.266	.114	2.00*
<hr/>			

* $P \leq .05$

Table 22 shows the results of the tests of proportions for the posttest, by question, for the DARE students in School C and the non-DARE students. Statistically

significant differences were found between the two groups on questions three, five, nine, ten, and eleven. The DARE students in School C were higher than the non-DARE students in all five instances. The DARE students in School C also scored a higher percentage of correct answers on four of the remaining six questions.

TABLE 23
 TESTS OF PROPORTIONS BY QUESTION FOR PRETEST
 POSTTEST DIFFERENCE BY DARE STUDENTS IN SCHOOL C (N=64)
 AND NON-DARE (N=44) GROUP

QUESTION	PRETEST - SCHOOL C	POSTTEST DIFFERENCE NON-DARE	Z TEST
<hr/>			
1	.03	.27	-2.33*
2	.10	-.01	2.20*
3	.00	-.16	3.20*
4	.05	.20	-2.14*
5	.01	.02	-.50
6	.02	.06	-1.00
7	.07	-.07	2.80*
8	.04	-.03	1.75
9	.02	.03	.33
10	.03	.10	-1.40
11	.00	.04	1.33
<hr/>			

* $p \leq .05$

Table 23 shows the results of the tests of proportions, by question, for the pretest to posttest change, by the DARE students in School C and the non-DARE students. For question one, "Stimulants make your heart beat faster", the DARE students in School C showed only a 3% increase while the non-DARE students showed a 27% increase. This resulted in a Z test value of -2.33.

On question two, "Alcohol is called a stimulant", the DARE students in School C showed a 10% increase in correct responses while the non-DARE students decreased slightly by 1%. This resulted in a Z test value of 2.2.

Question three, "A person can die from drinking too much alcohol", showed no change among the DARE students in School C. The non-DARE students showed a 16% decrease. Because of this decrease among the non-DARE students, a Z test value of 3.2 was calculated.

For question four, "Crack and marijuana are the same thing", the DARE students in School C displayed an increase of 5% in correct responses, while the non-DARE students showed an increase of 20%. This resulted in a Z test value of -2.14.

On question seven, "All drugs can be dangerous", the non-DARE students showed a 7% decrease in the number of correct responses while the DARE students in School C showed a 7% increase for the same question. A Z test value of 2.8 was calculated.

TABLE 24
 CHI SQUARE TESTS OF CORRELATED PROPORTIONS BY
 DARE STUDENTS IN SCHOOL C (N=64) AND
 NON-DARE (N=44) GROUP

QUESTION	SCHOOL C	NON-DARE
<hr/>		
1	.33	4.76*
2	1.69	.06
3	.00	7.00*
4	.05	.20
5	.67	2.78
6	.09	.08
7	.06	1.29
8	.86	.25
9	.39	.25
10	1.80	7.36*
11	.00	1.00
<hr/>		
df=1 *p≤.05		

Table 24 shows the results of the chi-square tests of correlated proportions between the DARE students in School C and the non-DARE students. The non-DARE students showed statistically significant differences on questions one, three, and ten. For question one, "Stimulants make your heart beat faster", the non-DARE students showed a significant difference with a chi-square value of 4.76. No

difference was noted for the DARE students.

On question three, "A person can die from drinking too much alcohol", the non-DARE students showed a significant difference with a chi-square value of 7. The DARE students in School C showed no difference.

Question ten, Marijuana is a pill you swallow", showed no significance for the DARE students in School C. The non-DARE students however showed a statistically significant difference with a chi-square value of 7.36.

Discussion

Using the data from Table 23, the DARE students from School C showed a percentage increase in nine out of eleven instances from the pretest to posttest. The non-DARE students showed percentage increases from the pretest to posttest in seven out of eleven instances.

The non-DARE students showed small to moderate decreases on question three, "A person can die from drinking too much alcohol", question seven, "All drugs can be dangerous", and question eight, "Cocaine is smoked". The decrease on question three of 16% cannot be identified with any specific event or occurrence. The decreases for question seven and question eight are small and probably occurred within normal limits.

The increases shown by the non-DARE students on question one, "Stimulants make your heart beat faster", and question four, "Crack and marijuana are the same thing", are due to their exposure to other drug and alcohol information

between the pretest and posttest.

The only instance where the DARE students in School C showed a statistically significant difference due to their own percentage increases was question two, "Alcohol is called a stimulant". The DARE students in School C showed at 10% increase while the non-DARE students showed a decrease of 1%. A Z test value of 2.2 was calculated.

Table 24 shows that the DARE students from School C showed no significant chi-square values on any of the questions. The non-DARE students displayed significant chi-square values on three out of the eleven questions.

Considering the data in these tables, it can be concluded that the DARE students from School C were not impacted by the DARE program in any way. No improvements were noted in either the percentage increases or the chi-square values.

The most likely reason for the DARE program having so little impact in School C is the type of classroom teacher and the type of students in the classroom. The classroom teachers in School C have considerably less control of their students than do their counterparts in School A and School B.

This lack of discipline was also exhibited during the DARE lesson's presentation. The DARE officer frequently stopped the presentation to quiet the students and in many instances, had them leave the room in order to continue. The classroom teachers readily admit this is one

of the worst classes for discipline in their memory.

Overall Discussion of Results

Given the previous results and limited discussion of the results, a more generalized examination of the data is now possible. A number of issues need to be addressed to more fully understand the implications of this study to the Project DARE curriculum in general, as well as this specific program.

Curriculum Implications

Given the high percentage of correct answers provided by most of the students on parts of the pretest, it is apparent that some of the information being covered in the curriculum is already widely known. Most of the students appear to have a basic understanding of substance abuse prior to beginning the program. What appears to give them the greatest problems are some of the more technical points, and definitions.

Fortunately, the DARE Program appears to enjoy some success in this area. Particular definitions and concepts which are weak at the beginning of the program are improved upon by its conclusion. In this instance, all that is required is for the DARE instructor to spend a little more time on what the students do not know, by spending a little less time on what they do know.

Another critical implication in the curriculum area is that of allowing the DARE instructor to vary the program in

a limited number of ways to adjust to classroom differences. In the current program, the DARE instructor must cover the same material, in the same amount of time, regardless of the differences between the classrooms. What appears necessary in this study is allowing the DARE instructor the necessary latitude and discretion to spend the needed amount of time on each particular topic.

In this same area, the DARE curriculum needs to be more adaptable to the various circumstances which confront the thousands of DARE instructors who teach DARE in a dozen different countries. The DARE student in mid-Michigan receives the identical DARE lesson as the DARE student in south central Los Angeles. While they may share many of the same problems and concerns, their lives are different in many ways.

What is needed is a curriculum that is adaptable to the students whom it serves. Different substances enjoy different levels of use in different communities. While some are common such as alcohol, tobacco, and possibly marijuana, there are large differences in the remaining areas of substance abuse. DARE instructors need to be provided the expertise, and discretion, to meet these varying needs.

Major Findings

The study showed that the DARE Program is a positive way to instruct children in the cognitive areas of drugs, alcohol, and tobacco. The DARE Program is successful in

elementary schools and middle schools, with both 5th and 6th grade students. Additionally, the program impacts on males and females in an equally positive manner, regardless of the socioeconomic class of the students.

What appears to be the major factor in the success of the program is the classroom conduct of the students. As would be expected in any program, where the classroom was orderly, learning took place. When the classroom was unruly, levels of cognition were decidedly lower.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this study was to determine the efficacy of the DARE Program in leading to an increase in the students' knowledge of drugs, alcohol, and tobacco. In this chapter, the major findings and conclusions of this study are presented and discussed. The limitations of the study and implications of the findings are also reviewed.

Substance abuse problems which confront every segment of society, especially it's youth, led to this study. It is generally conceded that substance abuse problems negatively impact every member of society in a number of ways. The true cost of substance abuse in terms of dollars and wasted lives is incalculable. Substance abuse has led to a dramatic increase in crime rates against both people and property. Lower levels of worker productivity and higher health care costs are also directly attributable to substance abuse. The abuse of substances also curtails many employment opportunities and severely limits educational prospects. Life patterns in general may be adversely effected by the abuse of substances. The purpose of the study was to determine effects, if any, that the DARE Program has on increasing the student's knowledge of drugs, alcohol, and tobacco.

Summary of Research Problem

The experiment was designed to assess the students'

knowledge of drugs, alcohol, and tobacco prior to their participation in the DARE Program, as well as at the conclusion of the DARE Program. The experiment was conducted in a city comprised of three school districts. The experimental group consisted of students from each of the three school districts while the control group was drawn from only one of the schools in one of the districts which was not scheduled to receive the DARE Program until the following semester.

The two groups were selected based upon their school district's participation in the DARE Program. All selected individuals were enrolled in one of the three school districts between September, 1992, and January, 1993. A comparison was made of the students' level of knowledge in the control group versus the experimental group in January, 1993, by administering a pre- and posttest to each group.

Limitations of the Study

The nature of this project, involving the evaluation of a multi-faceted program presented to a large and diverse group of students, required attention to a number of issues. Chief among these concerns is the issue of sampling bias. The ideal situations for the experiment would have been a program presented to a randomly assigned group of students in all three school districts, employing a similar group of randomly assigned students to the control group. Due to scheduling constraints on the instructor, as well as constraints imposed by the school districts, randomization

was not possible.

While all three of the school districts are in the same city, there are significant differences among the members of the experimental group, as well as the experimental group and the control group. The major difference is the various socio-economic levels of the three school districts. Another important difference is the grade in which each of the groups members are currently enrolled in their respective schools. The control group is comprised solely of fifth grade students while the experimental group is comprised of fifth and sixth grade students.

The sampling bias also limits the generalizability of the results. It is also necessary to note that, in addition to the aforementioned limitations in the sample, the sample was comprised almost solely of Caucasian students. While all the schools were surveyed in their entirety, the population of the city is approximately 97% Caucasian.

In obtaining demographic information on the students, there was a small percentage of students who responded in an ambiguous manner when they responded to the question asking them who they lived with most of the last year. Approximately 2% of the students responded with two answers, stating they lived with "both parents" as well as "mother and father (about equally)". In performing the data analysis, this type of response was recorded as "both parents". Additionally, if a students response to this question changed from the pretest to the posttest, the

response given on the posttest was recorded for purposes of data analysis.

Findings and Interpretations

The study was designed to answer the following questions:

1. How will completing the DARE Program effect the students' knowledge of drugs, alcohol, and tobacco?
2. Will there be a difference between males and females who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?
3. Will there be a difference between 5th and 6th grade students who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?
4. Will there be a difference between students who have completed DARE training in the three school districts in their knowledge of drugs, alcohol, and tobacco?

Research Question One

How will completing the DARE Program effect the students' knowledge of drugs, alcohol, and tobacco?

Findings

The study demonstrated that the DARE Program did have a significant impact on the students' knowledge of drugs, alcohol, and tobacco. DARE students showed a percentage increase on nine of eleven questions, six of which were statistically significant.

The non-DARE group, which was exposed to a limited

amount of substance abuse education program, between the pretest and posttest, showed percentage increases on seven of eleven questions. Two of the seven increases were statistically significant. Any increase in the non-DARE students is probably attributable to this sporadic instruction.

Interpretation

The study showed that the DARE Program can be a useful tool to public officials charged with the responsibility of educating students in the areas of drugs, alcohol, and tobacco. It should not be assumed that this one program is the beginning and the end of the students' education in the area of substance abuse, rather only one of many important steps.

Research Question Two

Will there be a difference between males and females who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?

Findings

There was no significant differences between males and females who completed the DARE Program in their knowledge of drugs, alcohol, and tobacco. Male DARE students showed a percentage increase on all eleven test items, while the female DARE students showed percentage increases on eight of eleven test items.

Male DARE students also displayed significant

chi-square values on five of eleven test items. Female DARE students displayed significant chi-square values on six of eleven test items.

Interpretation

The study showed that the DARE Program is a valuable tool in educating both males and females in the areas of drugs, alcohol, and tobacco. Based on a variety of factors, some substance abuse education programs have been found to impact on males or females disproportionately.

In this study, males and females were impacted almost identically, in a positive manner. Small differences are noted in percentage increases and statistically significant values. In the final analysis, these small differences appear to even out among the two groups.

Research Question Three

Will there be a difference between the 5th and 6th grade students who have completed the DARE curriculum in their knowledge of drugs, alcohol, and tobacco?

Findings

The study shows that the DARE Program had a greater impact on the 5th grade students than it did on the 6th grade students. The 5th grade students showed percentage improvements on ten out of eleven questions, while the 6th grade showed percentage improvements on eight out of eleven questions.

The 5th grade students also showed statistically

significant increases on two of the eleven questions. The 6th grade students showed a statistically significant increase on only one of the eleven questions.

Interpretation

While not dramatic or significant, the 5th grade students appear to have performed slightly better than the 6th grade students in most areas. Neither group of students performed significantly better or worse than the other group to justify any changes in when the curriculum is offered to students.

Research Question Four

Will there be a difference between students who have completed DARE training in the three school districts in their knowledge of drugs, alcohol, and tobacco?

Findings

The study demonstrated that there were significant differences in how the DARE Program impacted the three school districts. School A showed a percentage increase on ten out of eleven questions, while the non-DARE students showed increases on only seven of the eleven questions. The DARE students in School A showed significant chi-square values on five of eleven questions, while the non-DARE students showed significant chi-square values on three of eleven questions.

Similarly, DARE students in School B showed percentage increases on nine out of eleven questions, while the

non-DARE students showed percentage increases on only seven of the eleven questions. Four of the nine instances of percentage increase were found to be statistically significant, and not related to a decreased percentage in the other group. The DARE students in School B also had significant chi-square values on four of the eleven questions while the non-DARE students showed significant chi-square values on three of eleven questions.

DARE students in School C did not have the same success in the DARE Program. While posting percentage increases on nine out of the eleven questions, on only one occasion was the percentage increase statistically significant because of the increase in the DARE students and not a corresponding decrease in the non-DARE students. Similarly, the DARE students in School C showed no significant chi-square values on any of the eleven questions.

Interpretation

School A, comprised of 5th grade students in a below average socioeconomic area demonstrated similar results to the students in School B, which is made up of 6th grade students in an average socioeconomic area. School C, also comprised of 6th grade students in an upper middle class area demonstrated much poorer results than those in School A and School B.

The major difference in the three schools which seems to contribute to this difference is the conduct of the students in the classroom. The teachers in School A and

School B appear to be in more control of their classrooms. This control was translated to the DARE instructor who was able to spend more time on the lesson and less time on keeping the students behaving in an appropriate manner.

Suggested Applications

The implementation of a Project DARE curriculum in local school districts, which was the subject of the experiment in this study, is suitable for adoption by any school district in conjunction with a local, county, or state police department. The findings and conclusions of this study show that 5th and 6th grade students, male and female, can benefit from being exposed to Project DARE.

Additionally, recent changes in state law now require schools to spend their state drug education funds on specific drug education programs. In the past, drug education could be incorporated into the students' health education classes. Schools must now adopt a specific plan to teach drug education in order to spend their state allocated funds.

The starting costs associated with a DARE Program are minimal. The only major expense associated with the program is the salary and benefits paid to the officer/instructor. These costs are typically borne by the police department and/or school districts which are served by the program. In addition to this, there are occasional fund raising activities to help pay for some of the incidental expenses involved in operating the program such as tee shirts and

students workbooks. The police officer is typically given office space and staff support by the police department.

This DARE Program concentrated on fifth and sixth grade students in the elementary or middle school with a limited program also in place for the younger students down to the kindergarten level. The findings and conclusions of the experiment show that the DARE Program is particularly appropriate for fifth and sixth grade students. It is equally beneficial for all of its students, irrespective of socioeconomic status, grade level, or sex. What has been shown to be a critical element is a disciplined classroom environment, which could negatively impact any educational program. Completing the DARE Program can provide the students with the opportunity to increase their resistance level to drug use and thereby reduce their chances of becoming involved in the use and abuse of drugs, alcohol, and tobacco.

Implications of Findings

The findings and conclusions of this study show that 5th and 6th grade students who complete the 16 week DARE curriculum have a significantly greater degree of knowledge concerning drugs, alcohol, and tobacco. The students' successful completion of the DARE Program can increase their knowledge of various substances and may assist those students in avoiding drugs, alcohol, and tobacco.

A critical finding which needs to be emphasized is that

the DARE Program, for all its positive points, should not be expected to solve the substance abuse problem in this country by itself. No single program conducted in the 5th or 6th grade, for 16 hours over one semester, should be seen as the single answer. Continuing education and opportunities for reinforcement must be integrated into the curriculum at critical points in the students' education once they enter the middle school and high school grades. The implications of the findings and conclusions of the experiment are several and varied and relate to various established community and school functions, as well as the individual who is exposed to the program.

The experiment was conducted to determine how the DARE Program would affect the students' knowledge of drugs, alcohol, and tobacco; that pursuit was accomplished. In addition to the fifth or sixth grade student affected by retention/rejection of the hypothesis, this study has implication to six other groups of people who comprise or support the substance abuse education system. The groups are:

1. State, county, and city officials who are interested in maximizing the effectiveness of programs supported by tax dollars.
2. Administrators in state and local educational areas who are seeking the most effective means of presenting substance abuse material.
3. Classroom teachers who are concerned with the

implementation and presentation of substance abuse programs to their students.

4. Theoreticians who are interested in studying the relationship between students who are exposed to the program and those who are not exposed to the program.

5. Taxpayers who support the educational system, and who are the victims of substance abuse crimes.

6. Parents of students who become victims of substance abuse.

In addition, the findings and conclusions of this study may be of interest to counseling professionals, business people, and police personnel. The businesses are often the victims of substance abuse related crimes, and the police are the people who become involved with the individual when their substance abuse problems manifest themselves in terms of illegal activity.

Legislators, state and local officials of Michigan and other states can evaluate their educational efforts and make a determination about how effectively their current educational system is operating. Each may find that their current system is functioning with a sufficient level of efficiency to justify its continuation.

Other public officials in Michigan and other states who are responsible for expending funds may well determine that their current efforts are not achieving the desired effects and changes need to be implemented in their current system. These officials may determine that the youthful substance

abuser is being denied the opportunity of a useful and productive life.

The costs associated with substance abuse education are substantial. The costs of doing nothing are astronomical. Substance abuse education is not a social experiment but a legitimate means of dealing with a serious problem. A new method in substance abuse education could result in enhanced results of the programs as well as reduced costs. Additionally, the public is interested in seeing the public officials returned to office when that official has done something demonstrative. The official who is charged with providing the best program for the lowest cost could accomplish each of these expectations and responsibilities by reducing the level of substance abuse and it's inherent costs.

DARE Programs in other areas may or may not produce the same results that this experiment demonstrated in the location studied. Should the program not achieve the desired results, the officials would be free to alter or discontinue the program. Should the DARE Program function with even a minimal degree of success, the public benefits in the success and the public official is credited with the success.

Recommendations for Future Study

The DARE Program is a multi-faceted curriculum designed to assist in dealing with the significant problem facing society in the area of substance abuse. There are many

aspects to the DARE Program which were not reviewed in this study. Initially, there are four more principle components of the DARE Program. These are: self-esteem, resistance to peer pressure, positive modification of attitudes towards law enforcement, and the development of negative attitudes toward drug abuse. Each of these areas needs to be reviewed and studied in order to determine the overall efficacy of the DARE Program.

Additional studies also need to be undertaken to determine what, if any, long-term effects result from the program. The results of long-term studies could differ significantly from those found in a short-term analysis. Information concerning long-term results are clearly needed in order to provide accurate information as to the program's overall efficacy.

Another area in need of additional research is a study which focuses on the possible need for program expansion in the junior and senior high school curriculums. Some areas of the literature have concluded that reinforcement of these principles can prove beneficial if they are presented again in a similar format when the students are actually at the ages where substance abuse begins.

There is also a need to replicate this study to ascertain if the same results are obtained by a different researcher at a different point in time. Confirmation of these results will lead to a higher degree of certainty as to their validity, as well as a higher degree of generalizability.

Summary

The purpose of this study, among others, was to advance the body of knowledge concerning Project DARE in general, as well as ascertaining the efficacy of the program on a local basis. This purpose was achieved by (a) reviewing the literature regarding various substance abuse programs, including Project DARE and reviewing the conclusions of those studies; (b) by determining the effects of Project DARE on the student's knowledge and understanding of drugs; and (c) determining the program's overall impact on the students in a particular municipality. This researcher is of the opinion that the purpose and objectives of this study have been reached.

The study was planned and the experiment conducted so that the results could be both general, as well as specific in nature. The students who completed the DARE Program are to be commended, as their contribution to this research were invaluable in reaching the conclusions and findings of this study.

Even if nothing else has been accomplished by this study, there are several hundred students who have been exposed to a curriculum which can significantly impact their decision making process in the years to come, in a variety of areas. Additionally, dozens of public officials now have the opportunity to assess the strengths and weaknesses of the program and institute changes so that the program and it's delivery can be fine tuned to address local needs.

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ABSTRACT

A ASSESSMENT OF THE EFFECTIVENESS OF
A SUBURBAN POLICE DEPARTMENT'S
PROJECT DARE (DRUG ABUSE
RESISTANCE EDUCATION) PROGRAM
ON STUDENT KNOWLEDGE OF DRUGS, ALCOHOL,
AND TOBACCO

by

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The effect of Project DARE (Drug Abuse Resistance Education) on students' knowledge of drugs, alcohol, and tobacco in three diverse school districts was examined. Subjects selected for the study were 252 students in the fifth and sixth grade; 208 who participated in the program, and 44 who did not participate in the program.

Subjects were administered a pretest questionnaire designed to measure their knowledge of drugs, alcohol, and tobacco prior to their exposure to the DARE Program. After participating in the 16 week curriculum, the students were administered a posttest questionnaire to measure any differences. Subjects not participating in the program were administered the same pretest and posttest questionnaires during the same time.

Using a tests of proportions, by question, statistically

significant differences at the alpha level .05 were found in both the fifth and sixth grade students, as well as both male and female groups. Statistically significant differences in pretest-posttest change were also observed in two of the three school districts.

The chi-square tests of correlated proportions was also calculated by the various groups. Statistically significant differences were noted in both the experimental group as a whole, as well as the fifth and sixth grade students. Male and female students also displayed statistically significant differences, as did two of the three school districts.

The subjects participating in the DARE curriculum showed similar improvements in their overall knowledge of drugs, alcohol, and tobacco, that have been noted in previous studies. The issue of how to best strengthen this knowledge, cause its retention, and further expand it, warrants a continuing examination.

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