

THE EFFECTS OF A SMOKING EDUCATION RISK REDUCTION PROGRAM  
ON SELECTED STUDENT IMPACT MEASURES

by

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## ABSTRACT

The problem of the study was to determine the extent to which an experimental smoking education risk reduction curriculum affects resistance to persuasion skills, selected decision making skills, knowledge of the health consequences of smoking, and tobacco use including cigarette smoking among sixth grade students.

Following inservice training with the experimental curriculum, 14 Salt Lake City School District teachers and 316 subjects were randomly assigned to the experimental and control group conditions. Seven teachers and 180 subjects were assigned to the experimental group and seven teachers with 136 subjects were assigned to the control group. An additional 9 teachers and 218 subjects were selected as a nonequivalent control group.

A pretest posttest control group design with the addition of a nonequivalent control group was used in the study. Experimental group teachers implemented the educational program within their sixth grade classrooms during the 1981/1982 academic school year.

The experimental, control, and nonequivalent control group subjects' tobacco use including cigarette smoking, knowledge of the health consequences of smoking and selected decision making and resistance to persuasion skills were pretested prior to the implementation of the curriculum and/or posttested at the completion

of the 15 week instructional period. All data were analyzed using the Mantel-Haenszel, McNemer, and Pearson Chi-square statistics and analysis of covariance.

Analysis of the results revealed no significant group or gender differences on tobacco use including smoking behavior. Significant group differences were found on measures of knowledge, and decision making and resistance to persuasion skills. Results of this study were interpreted to mean that the experimental curriculum effectively de-emphasized the long-range health consequences of smoking in favor of the immediate health effects. The subjects' application of relevant knowledge in the decision making process as well as the ability to identify and recommend selected resistance to persuasion skills provide further evidence of the beneficial effects of the curriculum.

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## CHAPTER I

### INTRODUCTION

The premature onset of disease and chronic deterioration of health resulting in unnecessary disability and death has been attributed to the primary and synergistic effects of current negative health practices such as cigarette smoking, alcohol abuse, physical inactivity, poor nutrition, and stress (Belloc and Breslow, 1972; Healthy People, DHEW 79-55071, 1979). According to Dubos (1959) and Fuchs (1974), future advancements in the health status of the population will not result from improvements in medical technology or environmental engineering, but rather by the adoption of healthy lifestyles by the public.

Since the 1964 Surgeon General's "Report on Smoking and Health" which documented a relationship between cigarette smoking and premature mortality, cigarette smoking has become a major public health concern and concomitantly, the nationwide focus of disease prevention programs. Former Secretary of Health and Surgeon General, Julius B. Richmond reported, "In 1979, cigarette smoking is the single most important preventable factor contributing to illness, disability, and death in the United States" (Smoking and Health, PHS 79-50066, 1979, p. vii).

According to the 1964 Advisory Committee Report by the Surgeon

General, there is evidence that "Cigarette smoking is a health hazard of sufficient importance in the United States to warrant remedial action" (Smoking and Health, PHS 1103, 1964, p. 25). The literature is replete with epidemiological studies which document an association between cigarette smoking and premature and/or excess morbidity and mortality.

Substantiating the linkage between cigarette smoking and mortality, the Centers for Disease Control have determined that the mortality ratio: (1) increased upon comparison of smokers and nonsmokers, (2) increased with the amount smoked, (3) increased the longer an individual smoked, (4) increased the earlier an individual begins to smoke, (5) increased with age, and (6) decreased among former smokers according to length of abstinence (Smoking and Health, 1979). The major contributors to the excess mortality associated with smoking are heart disease, lung cancer, and chronic obstructive lung disease.

On the basis of probability samples of the population, the National Center for Health Statistics has determined that an association exists between cigarette smoking and premature and/or excess morbidity. Cigarette smoking has been associated with coronary disease, lung cancer, oral cancer, cancer of the larynx, cancer of the esophagus, chronic bronchitis, and low infant birthweight (Smoking and Health, 1979). A relationship between smoking and most notably cerebrovascular disease, emphysema, and peptic ulcers has also been established.

Data regarding annual smoking related deaths is significant:

295,000 from cardiovascular disease, 80,000 from lung cancer, 22,000 from other cancers, and in excess of 19,000 from chronic obstructive pulmonary disease (Smoking Programs For Youth, 1979). Furthermore, the U.S. Public Health Service estimates the annual cost of cigarette smoking at 5.8 billion dollars in health care expenditures and an additional 12-18 billion dollars in lost productivity, wages, and absenteeism (Smoking and Health, 1964).

Since the 1964 Surgeon General's Report on Smoking and Health, the prevalence of cigarette smoking among adults has declined. Findings from a National Clearinghouse for Smoking and Health Survey indicate that the estimated number of adult regular cigarette smokers decreased from 40.3 percent in 1964 to 33.8 percent in 1975 (Smoking and Health, 1979). The estimated number of adult male smokers during this period decreased 13.6 percent from 1964 to 1975. Among adult females, there was a 2.6 percent decrease during the same 10-year period.

Findings from the National Clearinghouse survey further indicate that: (1) the number of former smokers increased with age during the period 1964-1975, (2) whites had a lower prevalence of cigarette smoking than blacks, (3) individuals with a post high school education had a lower prevalence of regular cigarette smoking than their less educated counterparts, (4) the percent of reported male regular cigarette smokers decreased with family income while the inverse occurred among females, and (5) there were reportedly fewer regular smokers among white collar and professional workers than blue collar workers and the unemployed.

Cigarette smoking is a learned behavior characterized by a host of biological, psychological, social, cultural, and economic antecedents and consequences (Research on Smoking Behavior, ADM 78-581, 1977). Numerous primary, secondary, and tertiary prevention programs have been developed to address the multivariate nature of this public health problem. The paucity of data on effective prevention activities warrants further investigation of the antecedents of cigarette smoking as well as the development of theoretically sound prevention strategies designed to deter cigarette smoking among high risk populations such as school age children and youth.

#### Statement of the Problem

The problem of the study is to determine the extent to which a planned smoking education risk reduction program effects resistance to persuasion skills, selected decision making skills, knowledge of the health consequences of smoking, and tobacco use including cigarette smoking.

#### Review of the Literature

The review of the literature for the present study will be discussed in five sections. First, an overview of the smoking patterns among school age populations is presented as a basis for the identification of high risk groups. The second section is a discussion of the role of health education and the responsibilities of the schools in the prevention of smoking among youth. The variable, knowledge, as a predictor of smoking status is

examined in the third section. The fourth section focuses on decision theory, descriptive studies delineating the reasons young people consider in the decision to smoke, and the results of previous anti-smoking programs designed to affect the quality of the decision making process. The theoretical foundations of resistance to persuasion and the effects of smoking prevention programs on resistance to persuasion skills will be discussed in the final section.

#### Smoking Patterns Among Pre-Adult Populations

In recent years, five national studies have been conducted to determine the prevalence of cigarette smoking among adolescents or the pre-adult population (Teenage Smoking: National Patterns of Cigarette Smoking, Ages 12 through 18, in 1968 and 1970, 1972, HSM 72-7508; Teenage Smoking: National Patterns of Cigarette Smoking, Ages 12 through 18, in 1972 and 1974, 1976, NIH 76-931; and Teenage Smoking: Immediate and Long Term Patterns, 1979). Findings from the latter survey of teenage cigarette smoking patterns indicated that the 1968-1974 trend of increased rates had been reversed and the smoking rates for both teenage boys and girls have decreased. During the mid 1970s, the prevalence of cigarette smoking among teenage boys remained relatively constant, and the number of teenage girls reported to be regular cigarette smokers increased.

Table 1 presents smoking's prevalence rates for teenagers from 1968 to 1979. Regular male smokers decreased from 14.7 percent in 1968 to 10.7 percent in 1979 while the rate for females increased



Table 1  
 Percentage of Teenagers Who Smoke 1968 - 1979

Year	<u>Age 12-14</u>		<u>Age 15-16</u>		<u>Age 17-18</u>		<u>Summary for all Ages 19 - 18</u>	
	Male	Female	Male	Female	Male	Female	Male	Female
1968	2.9	0.6	17.0	9.6	30.2	18.6	14.7	8.4
1970	5.7	3.0	19.5	14.4	37.3	22.8	18.5	11.9
1972	4.6	2.8	17.8	16.3	30.2	25.3	15.7	13.3
1974	4.2	4.9	18.1	20.2	31.0	25.9	15.8	15.3
1979	3.2	4.3	13.5	11.8	19.3	26.2	10.7	12.7

NIH, 76-931, 1976

from 8.4 percent in 1968 to 15.3 percent in 1974. However, as the summary column for all ages indicates, smoking rates for females reflect a downward trend since the peak rate of 14.2 percent in 1974.

Despite the decreased prevalence of adult and teenage smoking cited earlier, there is evidence that smoking onset is occurring at younger ages (Teenage Smoking: Immediate and Long Term Patterns, 1979). The National Clearinghouse on Smoking and Health Screening (Chilton, 1968) determined that the median age of smoking onset for boys and girls was 13 and 14 respectively. Results of an American Cancer Society survey (Lieberman, 1969) confirmed the trend which indicated that most young people start smoking between the ages of 11-14. The National Institute on Drug Abuse (Johnston, Backman, and O'Malley, 1980, ADM 81-1066) found in a study of drug use including cigarette smoking that the greatest increase in consumption patterns occurred during sixth, seventh, and eighth grades (Table 2).

Similar trends among Utah teenagers have been found in pilot studies by Labenta (1979) and Nelson, Summerhays, and Christenson (1982). The percent of reported male and female regular smokers increased with age and grade level, and a curvilinear trend in age and grade level of initial use of tobacco were found in pilot studies by Nelson, Summerhays, and Christenson (1982). In a sample of 433 youth ages 12-17, Labenta found that 27.3 percent of subjects used tobacco; 8.1 percent of subjects had used tobacco within 30 days of completing the survey. Utah patterns of substance use are included in Table 3.

Table 2  
Percentage of Alcohol and Cigarette First Use by Grade

Grade in which substance was first used:	Percent First Use of Alcohol	Percent First Daily Use of Cigarettes
6th	8.0	3.0
7-8th	22.2	7.2
9th	24.8	5.8
10th	19.3	4.7
11th	11.9	3.4
12th	7.0	1.7
Never Used	6.8	74.2

Johnston, Bachman, & O'Malley, 1980, ADM 81-1066

Table 3  
 Tobacco Use Patterns For Youth Ages 12-17 during 1979  
 For the State of Utah Compared with U. S. Estimates

<u>UTAH</u> <u>N=433</u>				<u>UNITED STATES</u> <u>N=2,165</u>					
Ever Used		Used Last 30 Days		Never Used	Ever Used		Used Last 30 Days		Never Used
Per- Cent	Confidence Interval	Per- Cent	Confidence Interval	Per Cent	Per- Cent	Confidence Interval	Per- Cent	Confidence Interval	Per- Cent
27.3	20.0-33.2	8.1	5.0-12.4	72.7	54.1	51.5-56.7	12.1	10.5-13.9	45.8

(Labenta, 1979)

Due to the limited success in achieving short-range behavioral outcomes and the high rates of smoking recidivism, the following recommendation by Botvin, Eng, and Williams (1980) appears appropriate:

Given the difficulty of becoming a permanent nonsmoker once the smoking habit is firmly established, the most propitious strategy for decreasing the incidence of cigarette smoking might be to prevent individuals from ever becoming regular cigarette smokers.

Generally, the earlier the intervention occurs in the growth and development scheme of an individual, the greater the probability of a favorable outcome. Adolescence appears to be the primary stage of development in which the acquisition of the smoking habit typically occurs. As previously indicated, the age of onset of experimentation with smoking is approximately 11-13 years of age.

The work of Jessor (1977, 1982) suggests that the preadolescent period of ages 11-13 represents a general period of behaviorally defined, socially defined, and personally defined developmental transitions. According to Jessor:

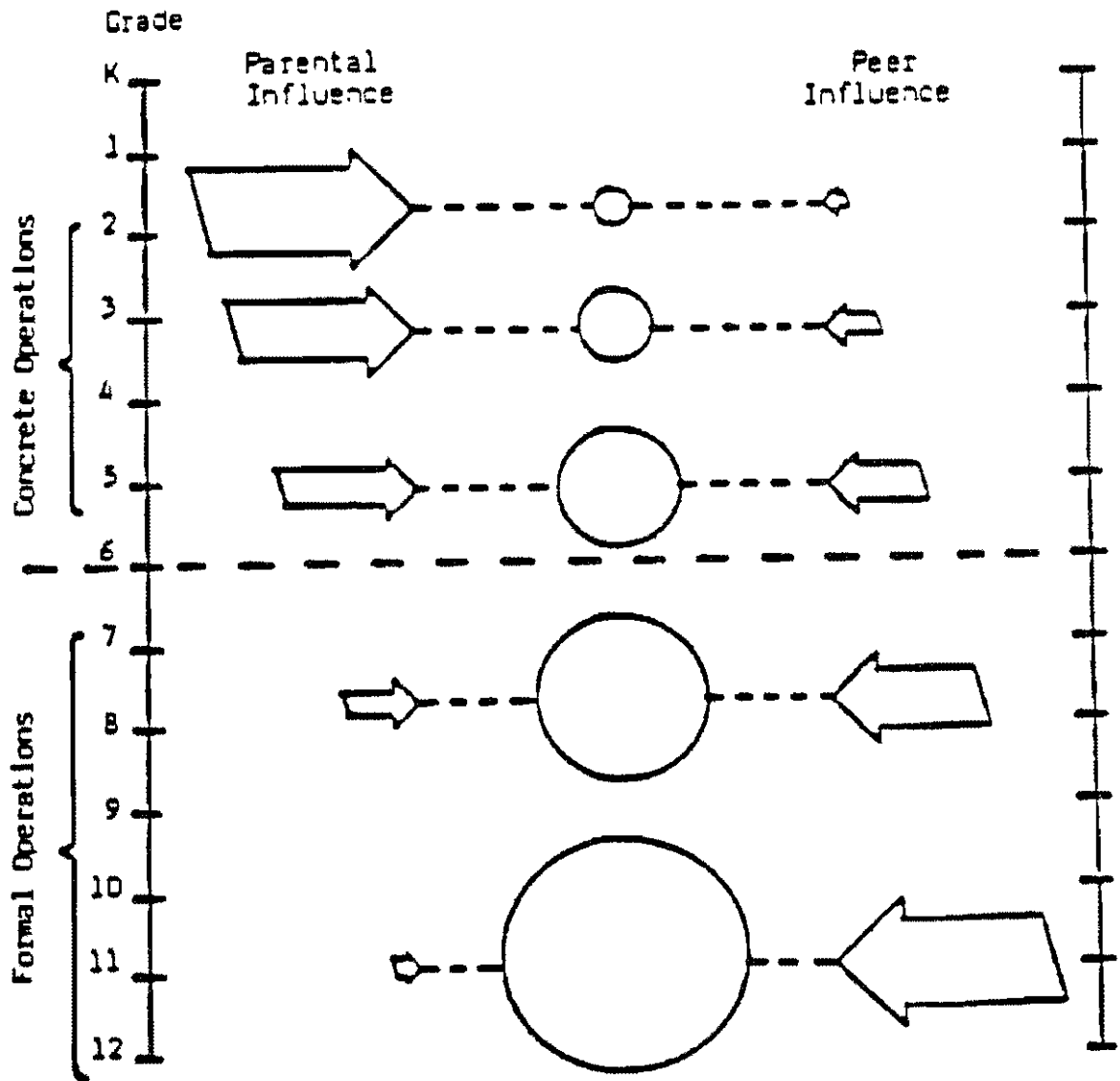
From a psychosocial perspective, adolescent transitions involve changes in social- and self-definition, new patterns of interpersonal relationships, access to new kinds of personal and social experience, an expanded repertoire of personal and social skills, membership in different social groups, admission to new social statuses, increased opportunities to gain certain rewards and to pursue certain goals, and the acquisition of new behaviors (p. 295).

At this time of "transition proneness", Jessor contends that there is an increased likelihood that the young person will engage

in any one or a constellation of "problem behaviors" including various health damaging behaviors such as cigarette smoking. Concurrent with the onset of smoking is a dramatic change in social orientation from family to peers. As illustrated in Figure 1 (Kreuter & Reagan, 1979) family impact declines and peers emerge as a major source of influence and/or information. In support of this hypotheses, Salber & Welsh (1963); and Newman (1970a, 1970b, 1971a, & 1971b) have identified peer pressure and peer smoking status as contributing factors in a young person's decision to smoke. Personally defined transitions also occur and may take the form of feelings of independence, alienation, deviance, etc.

Since it is possible to determine with some accuracy at what point this period of developmental susceptibility occurs, it should be possible to design educational strategies which help these young people to postpone the decision to smoke. This concept is critical because it has been shown that the longer an individual postpones the onset of smoking, the greater the probability that he/she will be a nonsmoker (Botvin, et al. 1980).

In dealing with problem behavior, that which adolescents will at some time experience, Jessor (1982) recommends strategies designed to delay onset. To postpone the initiation of cigarette smoking is a viable prevention strategy, because with maturity, the young person is more likely to possess the prerequisite skills, knowledge, and attitudes to handle the conditions which encourage the adoption of cigarette smoking.



Kreuter & Reagan (1979)

Figure 1. Changing Social Forces During Childhood

### Realistic Outcomes of Smoking Prevention Programs

This section of the review of literature focuses on the role of public schools in anti-smoking activities and realistic outcomes of school based smoking prevention programs. It has been argued that because schools have almost daily contact with youth, these institutions have an important responsibility to promote the health and well-being of children including efforts to prevent health damaging behaviors such as cigarette smoking. Yet, it is unclear as to what the appropriate role of smoking programs should be and what type of outcomes are expected to occur.

According to Green, Kreuter, Partridge and Deeds (1980) "Health Education is any combination of learning experiences designed to facilitate voluntary adaptations of behavior conducive to health" (p. 7). Although ultimately necessary, there are several reasons why immediate behavior change such as the prevention of smoking is an inappropriate outcome for the schools. First, it has not been clearly established which factors contribute to the onset and continuation of smoking. Second, only a proportion of the multidimensional nature of this health damaging behavior can be accounted for by the schools. According to Kolbe (1979), it is extremely difficult to determine whether appropriate health behaviors are a result of health education activities. Third, as Kreuter and Green (1978) indicate, to make immediate behavior change a criterion for determining the effects of school based prevention programs is "technically and politically naive" (p. 231). Teachers may not have the necessary programming or evaluation skills to



conduct behavioral interventions.

Given that school based anti-smoking programs may fall short in support, organization, and delivery, a more realistic outcome and therefore expectation of such efforts may be the enhancement of predisposing, reinforcing, and enabling factors contributing to smoking among youth. Kreuter, et al. (1978) suggested that two appropriate outcomes of school health education activities include: "(1) the mastery of factual health selected information and (2) the development of selected skills, the application of which is associated with health enhancing behavior" (p. 233).

The emphasis on the attainment of social and/or life skills has been a current trend in school based smoking prevention programs. Current research efforts by Botvin, et al. (1978), McAlister, (1979), and Evans, Rozell, Mittelmark, Hansen, Bane, and Havis (1978) have focused on the ability of smoking prevention programs to effect intermediate outcomes, including the quality of the decision making process and skills to resist social pressures to smoke. As Kolbe (1982) has pointed out, what we can expect from schools involved in smoking prevention is a favorable impact on the students' competencies to make informed rational decisions, the skills necessary to engage in health enhancing behaviors, and the development of behaviors conducive to health.

#### Knowledge of the Health Consequences of Smoking

Perhaps the most frequent approach to the prevention of smoking among school age populations has been the effort to enhance a young

person's knowledge of the health consequences of smoking. Most past and present anti-smoking curricula have emphasized an awareness of the immediate and long term consequences of smoking. Although programs have been able to demonstrate favorable impact evaluation results indicating improved knowledge, the value of this variable has been called into question.

Numerous studies have been conducted to assess the relationship between knowledge of the health consequences of smoking and smoking behavior. Beckerman (1963); Fodor and Glass, (1971); Robinowitz and Zimmerli (1974); Botvin, et al. (1978); and Greenburg and Deputat (1978) report significant shifts in knowledge without corresponding changes in behavior. In a review of smoking prevention programs, Thompson (1978) found that among nine studies which emphasized an awareness of the health consequences of smoking, there was no reported impact on smoking behavior. Finally, few studies have been able to demonstrate that smokers and nonsmokers differ with respect to their understanding of the health hazards associated with smoking (Fodor and Glass, 1971; and Allegrante, O'Rourke, and Tuncalp, 1977-1978).

Although a large majority of young people understand and acknowledge that smoking is harmful to their health (Smoking and Health, 1979), this knowledge does not appear to be a sufficient behavioral deterrent. At present, research indicates that facts alone will not prevent young people from smoking. The use of instructional programs which focus exclusively on the health consequences of smoking can be expected to have minimal impact.

Knowledge of the health consequences is a proper and necessary focus of an anti-smoking program. Yet this knowledge probably gains greater efficacy when combined with other predisposing factors. This is a crucial point which merits further elaboration.

In an evaluation of the School Health Curriculum Project, Lammers, Kreuter and Smith (1982) found no significant differences between experimental and control groups in general health knowledge. However, with further analysis the researcher concluded that the assessment of knowledge gain measured in the form of recall was not as relevant for the subject as knowledge applied. Specifically, Lammers found that experimental subjects were able to apply more information in the decision making process. It was assumed that a greater reservoir of information enhanced the quality of the decision making process. In support of Lammers' findings, Kreuter and Christenson (1981) concluded:

Knowledge is necessary but not sufficient to elicit change. The command of relevant knowledge, along with the ability to apply that knowledge, should be a fundamental outcome of any school health education offering (p. 50-51).

#### Rational Decision Making Skills

Decision making has been defined by Kime, Schaadt, and Tritsch (1977) as "The intellectual process of responding to circumstances by making a selection from alternatives" (p. 126). It is a process of analytical thinking derived largely from earlier work in the field of economics. Numerous models of the decision making process have been conceptualized and are summarized in the following.

The decision making paradigm identified by Janis and Mann (1979)

has been interpreted to mean that in arriving at a rational decision, the individual must possess the information processing skills necessary to: (1) clarify the decision to be made, (2) consider the available alternatives, (3) obtain the necessary facts and information, (4) consider the consequences of each alternative, (5) seek out new information to evaluate the alternatives, (6) reexamine the alternatives in light of the information obtained, and (7) choose the best alternative, act out the decision, and accept responsibility for the consequences. A similar, yet more general model of values clarification (Simon, Howe, & Kirschenbaum, 1972) indicated that decisions include cognitive and affective elements.

Applegate and Evans (1978) have developed a decision making model for children. This model included: (1) the recognition of the problem to be resolved or the decision to be made, (2) the consideration of positive and negative consequences, (3) identification and evaluation of relevant information, (4) identification and evaluation of the source of information considered in the decision making process, (5) the consideration of a wide range of information, (6) assessing the salience of information (7) formulating a decision, and (8) providing a justification for the decision.

In formulating a decision making model which accounts for the adoption and diffusion of innovations, Rogers and Shoemaker (1971) have proposed a five stage adoption process: awareness, interest, evaluation, trial, and adoption. This model differs slightly from

other decision making models in that the selection/acceptance of a new idea, object, or practice is required i.e., cigarette smoking.

According to Iverson (1981), studies which examine decision making as a variable focus primarily on the process of making a decision rather than the quality of the decision itself. That is, decisions should be evaluated in terms of how well a rational process was applied, not on the basis of the rightness or wrongness of the choice as judged by others.

Because of developmental differences, it is assumed that the decision making activities engaged in by adults and children differ with respect to the type and quality of decisions made. De la Sota, et al., (Iverson, et al., 1980) has conceptualized three types of decisions which include: (1) "I" make my own decisions, (2) "we" make the decisions, and (3) "others" make decisions. Because of development, children are more frequently involved in decisions made by others than decisions made on their own. Unfortunately, some decisions made by others have adverse outcomes including the potential for health damaging consequences. Therefore, it is important that young people be instructed how to make rational decisions free of outside forms of influence.

Hammes (1981) suggested that the paucity of evaluation research on decision making indicated that health education and, more specifically, smoking prevention programs have not identified decision making as an important impact variable, have failed to apply the process in curriculum format, and/or have found the evaluation of decision making a complicated task.

Levitt and Edwards (1970) and Levitt (1971) have found qualitative differences in the subject areas young people consider in formulating a decision to smoke. Findings by Levitt (1971) indicated that reasons for smoking frequently included statements regarding habit, emotional improvement, peer influence, imitation of adults, eating substitutes, and the desire to impress others. Reasons for not smoking included beliefs about health effects, parental influence, undesirable effects, being too young, and moral and/or ethical considerations. The results indicate that psychological considerations, i.e., dependence, and emotional improvement, increased among grade levels. Social concerns most notably the behavior of adults, siblings, and significant others were considerations which declined with higher grade levels. According to Levitt (1971), a curvilinear trend was found with peer influence which peaked during the middle grades and declined through the twelfth grade.

Research by Salber, et al. (1963); Lieberman (1969); Levitt (1971); and Newman (1970b, 1971b) indicate that a majority of young people include among their reasons for not smoking health considerations, cost, aesthetics, lack of pleasure, and parental influence. The most frequently cited reasons for smoking reported by these investigators included pleasure, tension release, peer group conformity, and adult imitation.

Duryea (1979) determined that although there were no differences in the types of value categories considered between older and younger students, the salience of the categories

differed. Further, this investigator found that the type of considerations differed between subjects whose behavioral intention was not to smoke and subjects whose intention was undecided. More social reasons were considered among subjects whose intention was to smoke. Finally, a wider range of information in making a decision was considered among subjects who either chose not to smoke or who were undecided.

In an evaluation of the School Health Curriculum Project, Lammers (1980) found that experimental subjects differed from control group subjects in the following areas: a lower declared intention to smoke, higher frequency of health reasons cited for not smoking, higher total number of reasons for not smoking, and the decision to smoke.

The focus on smoking prevention programs should be primarily based on giving children information, skills, and experiences that will enable them to intelligently make those health related decisions that are most likely to be made in coming years. The previous research indicated that the decision making skills of young people can be evaluated and favorably influenced through health education strategies.

#### Resistance to Persuasion

The smoking habits of young people appear to be greatly affected by various forms of social influence including persuasive attempts by peers, adults, and the media to smoke. As previously mentioned, research indicates that a prominent reason for smoking

was peer group membership. Further evidence of the role of social influence includes research which indicates that adolescent smoking is more prevalent within families where the parent smokes (Public Health Service, 1968; Lieberman, 1969; Wohlford & Giammona, 1970; Allegrante, 1975; Bergen & Olesen, 1963; Teenage Smoking: Immediate and Long Term Patterns, 1979), and/or siblings who smoke (Teenage Smoking: Immediate and Long Term Patterns, 1979). The smoking patterns of peers has consistently been related to a teenager's smoking habits (Allegrante, et al. 1975; Rudolph, 1976). In fact, the smoking status of one's peers may be the best predictor of whether or not a young person has ever smoked.

According to a National Cancer Institute publication entitled "Smoking Programs for Youth" (1980):

In order to develop effective smoking prevention and cessation programs for young people, it is important to understand the predominant reasons why young people begin to smoke in the first place, why they continue to smoke once they start, and how these influences can be counteracted." (p. 4)

A relatively recent method of counteracting these influences has been the use of resistance to persuasion skills. McGuire (1964) has identified four current approaches to inducing resistance to persuasion. First, the behavioral commitment approach creates resistance to persuasion by any of the following methods: (1) formulating a private decision, (2) a public announcement of a personal decision, (3) acting on the basis of a decision, and (4) being externally committed to the decision. A second approach to inducing resistance includes the anchoring of beliefs to other



cognitions, i.e., values, beliefs, and the beliefs of reference groups. Thirdly, developing resistant cognitive states may be effective in lessening the effects of persuasion. For example, effecting changes in anxiety level, aggressiveness, self-esteem, and ideological commitments have been considered useful in resisting influence attempts. Finally, prior training in resisting persuasive communications has been employed. From this latter approach, McGuire developed the theory of psychological inoculation.

Derived from the medical model of inoculation, McGuire (1961) found that pretreatments to persuasive communications possessed an immunizing effect. The resistance resulted not only from prior exposure to a persuasive communication, but also the motivation and practice in defending challenged beliefs. Of critical importance in the inoculation effect were supportive and refutational defenses. A supportive defense was believed to bolster the individual's belief system, a refutational defense was designed to counteract the persuasive communication. Although forewarning or prior exposure to a persuasive communication enhanced resistance, three supportive/refutational defenses should also be considered: idiosyncratic credits, recruiting an ally, and delaying a decision--avoidance.

According to Hollander (1958), idiosyncratic credits are the attributes, skills, or qualities of an individual considered desirable by significant others. This favorable impression or credits, as they have been called, may be used by an individual to gain acceptable deviance from group norms. Although these credits may be expended, the utilization of credits depends on the

individual's awareness of his/her value within a group.

Generally, research indicates that individual conformity to a group may be diminished if one is somehow able to maintain his/her own beliefs. Asch (1956) has found that if an individual can recruit an ally--enlist the aid of a person who holds similar beliefs or who disagrees with group beliefs, resistance to persuasive group communication is enhanced. The majority need not be large to elicit a persuasive effect. However, reducing the majority opinion through the use of an ally may counteract two frequent reasons for compliance: the fear of being wrong and/or rejected by the group.

Avoidance, or in particular, delaying a decision where there is pressure to comply or conform may be an effective method of resisting social influence. According to Janis and Mann (1977), in situations where there is a high degree of conflict about a decision, few alternative choices, feelings of inevitability, and/or no repercussions for postponing a decision to comply or conform, delaying the decision may be an effective resistance skill.

This cursory review of resistance skills identified a variety of strategies for educational programs designed to teach young people how to avoid social pressures to smoke. In fact, several innovative anti-smoking programs have taken this approach to delay smoking onset among school age populations.

In an evaluation of resistance to persuasion skills taught in a smoking education curriculum, Hammes (1980) found significant differences between experimental and control group sixth grade

subjects' ability to discriminate selected resistance skills. A pilot study conducted by Nelson, Christenson, Kreuter, and Hammes (1981) determined that sixth grade students were capable of learning and applying resistance skills in a hypothetical situation. These investigators determined in the preliminary analysis that there was an association between the use of resistance skills and peer group conformity. Evans, et al. (1978) have developed a curriculum which teaches young people to recognize and resist peer, adult, and media pressures to smoke. Although the evaluation of resistance to persuasion skills were not reported, significant differences in smoking behavior were observed between experimental and control group subjects. McAlister et al. (1979) have also applied the inoculation theory and found that the prevalence of smoking decreased following implementation of a curriculum which emphasized repeated practice in resisting the pressures to smoke.

Research findings on compliance and conformity suggest that social pressures may adversely influence decisions or interfere with the ability to make rational decisions. The relationship between family, sibling, and peer smoking behavior and the person's own smoking habits, the frequently cited reasons for smoking, and the developmental characteristics of high risk populations, justify continued efforts to develop viable methods of resisting social pressures to smoke.

#### Summary of the Review of Literature

The previous discussion represents a cursory review of the

theoretical underpinnings of the educational methodology discussed in this study. Children ages 11-13 experience a variety of developmental transitions and therefore represent a logical target population upon which to focus an educational program designed to delay the onset of smoking. As discussed earlier, smoking onset frequently occurs when a young person makes a choice to smoke under considerable peer, adult, and media pressure. At this stage of development, the choice to smoke was made in the absence of decision making and resistance to persuasion skills. Thus, programs which enable young people to gain competency in those health skills may affect not only the quality of the decision making process but also the ability to delay the onset of health damaging behaviors such as cigarette smoking.

#### Hypotheses

The following hypotheses were stated in the null form and their several components were tested at the .05 level of significance.

1. There will be no significant group differences between experimental, control, and nonequivalent control group subjects on the following variables: tobacco use, including smoking behavior, knowledge of the health consequences of smoking, selected decision making skills and resistance to persuasion skills.
2. There will be no significant sex differences by group on the dependent measures of tobacco use, including smoking behavior and knowledge of the health consequences of smoking.

## CHAPTER II

### METHODS

This chapter describes the methods used in the study. For organizational purposes the methods are described in two sections: preliminary procedures and operational procedures. The preliminary procedures were those taken prior to the implementation of the experimental treatment and data collection phase of the study; operational procedures were those undertaken to conduct the study.

#### Preliminary Procedures

The preliminary procedures included:

1. Development of the Smoking Education Risk Reduction Curriculum.
2. Construction of the Inservice Teacher Training Protocol.
3. Obtaining approval from the Review Committee for Research with Human Subjects.
4. Development and/or selection of instruments.
  - a. Development of knowledge test.
  - b. Selection of decision making instrument.
  - c. Selection of resistance to persuasion instrument.
  - d. Construction of the smoking behavior inventory.

e. Design of the inservice teacher training evaluation instruments.

5. Pilot study of the curriculum and instrumentation.

#### Development of the Smoking Education Risk Reduction Curriculum

Several important principles guided the development of the Smoking Education Risk Reduction Curriculum which included:

1. The scope and sequence of the instructional unit must be brief so that it may be easily integrated into the sixth grade curriculum. It is unreasonable to expect teachers to implement a comprehensive smoking curriculum when so many other health and nonhealth topics demand their attention.

2. The curriculum must be easy to sell to school officials who are frequently inundated with outside requests. The curriculum must be considered more effective and efficient than existing alternatives.

3. The smoking curriculum should avoid controversy and appeal to the parents of school age children. The diffusion of instructional content and methodologies from the school to the home is desirable.

4. Curriculum costs including training and equipment should be minimal.

5. An educational diagnosis of the predisposing, reinforcing, and enabling factors contributing to smoking onset should be an integral part of the curriculum development process.

6. Outcomes of the curriculum should be realistic and measurable.

7. The acquisition of generic life skills applicable to health and nonhealth school subjects should be the focus of the curriculum.

8. Because a variety of innovative smoking prevention curriculums targeted for school populations exist, a "re-invention of the wheel" is unwarranted. Therefore, considerable effort must be made to integrate and/or expand upon existing teaching/learning strategies, materials, etc. in the development of the Smoking Education Risk Reduction Curriculum.

The Smoking Education Risk Reduction Curriculum emphasized a combination of didactic and experiential learning activities for sixth grade students focusing on: (1) The Health Consequences of Smoking, (2) Health Decision Making Skills, and (3) Resisting Peer, Adult, and Media Pressures to Smoke. Each of the three components of the curriculum were comprised of an educational goal, learning outcomes, teaching/learning strategies, learning content, instructional materials, resources, and evaluation methods. The specific goals and objectives of the curriculum have been identified in Appendix A. The core concepts, including essential learning outcomes and teaching strategies, were based upon an assessment of the critical antecedents of smoking and the integration of selected aspects of the following contemporary school based anti-smoking programs (Smoking Programs for Youth, 1980).

1. "New Hampshire Lung Association's Biofeedback Program"

This instructional program targeted for students in grades 7-12 focuses on the immediate physiological effects of cigarette smoking. Using biofeedback instrumentation, students measure the

immediate effects of smoking on hand steadiness, skin temperature, pulse, blood pressure, and carbon monoxide levels in the lungs. Following the experiential lessons, students formulate conclusions regarding the relationship of cigarette smoking to general health.

2. "Counseling Leadership About Smoking Pressures" (Project CLASP)

This curriculum designed for students in grades 7 and 8 focuses on the prevention of cigarette smoking through the recognition of and resistance to prosmoking influences. High school students provide classroom instruction on the health consequences of smoking and facilitate discussions and role-play strategies designed to enhance the development of resistance to persuasion skills.

3. "Life Skills Training"

Administered by high school students, the emphasis of this anti-smoking curriculum is on the development of selected health skills among 8th grade students. The content areas emphasized in the 15-week instructional unit included: communication skills, decision-making skills, self-image, assertiveness training, etc.

4. "School Health Curriculum Project"

Included within this health education curriculum designed for students in grades 4-7 are instructional units which address body systems, their associated diseases and methods of prevention. The effects of cigarette smoking on each body system are emphasized. The goal of the experiential curriculum is to develop an understanding of and appreciation for body systems including preventive health actions.



#### 5. "Health Network"

Produced by the American Cancer Society, this multimedia instructional unit is designed to assist students in making decisions about their health with particular emphasis on cigarette smoking.

#### 6. "You and Your Health"

This is an elementary school textbook series which examines the physical, social, personal, and cultural aspects of health. General health effects of smoking and reasons for smoking are discussed in grades 5 and 6.

Because schools represent sites with a rich potential for prevention activities aimed at youth, these institutions have been deluged with outside requests. This flood of interest has caused many school administrators to become wary and justifiably hesitant about responding to new programs. Therefore it was necessary to develop a process of informing and educating school officials about the purpose and goals of the curriculum and to reduce to a minimum those inconveniences to school personnel and students. The methodology employed to initiate school district participation and support included the following step-wise sequence of procedures:

Step 1. Personal contact was made with the Health Education Specialist representing the State Office of Education. This person was apprised of the project and wrote a letter of support.

Step 2. Local Health district Community Health Education specialist (CHES) identified the elementary curriculum specialist in their district and made a telephone and personal contact to

introduce the curriculum concepts.

Step 3. Within 24 hours of the above contact the curriculum specialist was then contacted by the authors of the curriculum to further discuss the project. During this conversation, a meeting was arranged between the local CHES, the curriculum director, and the curriculum specialist at the local district where the project would be implemented.

Step 4. Formal letters were sent to each curriculum specialist further describing the project and confirming the projected meeting.

Step 5. At the meeting, the project was reviewed in detail and the local level commitments clearly presented. Voluntary participation was emphasized and project staff pointed out how every effort would be made to maximize teacher and student growth with a minimum of disruption and inconvenience. By having the curriculum author in attendance, authoritative responses to questions by the district people could be given. At this meeting, arrangements were made for a final meeting with the district superintendent, and, in some instances other administrative staff and principals.

Step 6. Once the project received district local level approval, a meeting was scheduled for all 6th grade teachers during which time the project was explained to them and they could, voluntarily, participate. At this time, logistical factors were worked out regarding hours, days, and place of the teacher training component.

### Construction of the Inservice Teacher Training Protocol

The purpose of the inservice teacher training program was twofold. First, the inservice program was designed to familiarize teachers with the theoretical foundation, instructional methodology, materials, and content of the curriculum. Secondly, the inservice education of participating teachers served to enhance health education competencies considered essential to the implementation of the curriculum. Too often, the untrained teacher has been pressed into teaching health. The inservice teacher training program or workshop conducted by the author of the curriculum required approximately 12 hours of instruction and followed the protocol outlined in Appendix B.

### Obtaining Approval from the Review Committee for Research with Human Subjects

In accordance with University of Utah policy, permission from the Review Committee for Research with Human Subjects was required prior to the data collection phase of the study. This requirement included the submission of information delineating the purpose of the study, research methods, informed consent procedures, and documentation of potential risks and benefits to participating subjects. Approval to conduct the study was obtained from the committee.

### Development and Selection of Instruments

As previously stated, there are a variety of reasons for conducting an evaluation of a curriculum designed to prevent smoking onset among school age youth. The basic evaluation requirements should include process, impact, and outcome measures. Therefore a series of instruments were needed to conduct the various levels of formative and summative evaluation. This section describes those evaluation instruments.

Included in the formative evaluation of the curriculum was an appraisal of teacher knowledge of curriculum content and an assessment of the inservice teacher training workshop. Support for this level of evaluation was provided by the publication entitled *Smoking Programs for Youth* (1980). A teacher knowledge test was constructed to assess the participant's understanding of the curriculum content before and after the inservice component of the study (Appendix C). A teacher training workshop evaluation instrument was also developed (Appendix D).

A summative evaluation or product evaluation is concerned with outcomes. Since a major function of this study was to determine the efficacy of an experimental curriculum, the following evaluation instruments were employed:

1. Smoking Education Risk Reduction Inventory. This twenty-three item fixed response questionnaire was designed to reveal epidemiological indicators of health risk including the incidence, prevalence, onset, duration, and consumption patterns

related to cigarette smoking (Appendix E). The instrument also provided information concerning peer and family smoking behavior and selected demographic variables. The questionnaire content and format was based on the surveillance of common data items established by Freston (1981) and is considered to have strong content validity.

2. Smoking Information Test. This test is a twenty-five item true/false questionnaire designed to assess student knowledge of the health consequences of smoking (Appendix F). Test items were constructed to evaluate student's ability to recall and evaluate information learned from classroom instruction. A jury of experts comprised of State Department of Health personnel determined that the instrument had content validity. A total correct score (interval level data) was computed for each subject. Using a sample of 350 sixth grade subjects (see "Pilot Study" section in this chapter), a test/retest reliability coefficient of .71 was computed. Alpha coefficients for the pretest and posttest measurements were .70 and .67 respectively. Using the Flesh Readability Index, the knowledge test was deemed to have a seventh grade reading level; for this reason the questionnaire was read to all subjects.

3. Health Decision Making Index. A modification of the decision making instrument developed by Duryea (1981) was used to assess selected dimensions of the decision making process (Appendix G). The open-ended questionnaire provided for student responses regarding: initial considerations in the decision to smoke, other

considerations, the salience of the information considered, the decision to smoke, and behavioral intention to smoke. Responses to the open-ended questionnaire were coded according to 26 master value categories established by Duryea (1979). The original instrument was evaluated by a jury of experts and reported to have strong content validity.

4. Hey, Karen, Want a Cigarette? A modification of the resistance to persuasion instrument developed by Hammes (1980) was used to assess student knowledge of and ability to discriminate selected resistance to persuasion skills (Appendix H). The evaluation instrument consisted of three separate scenarios depicting young people resisting peer pressures to smoke. Each scenario was scripted so that the actors characterized qualitatively different responses to peer pressures. The instrument has been modified to include a final ranking of each actors ability to resist peer pressures to smoke. Because of the potential testing/teaching effect derived from viewing the videotape, the instrument was administered during the posttest only.

#### Pilot Study

During the 1981/1982 school year the Smoking Education Risk Reduction Curriculum and Inservice Teacher Training Protocol was pilot-tested in the Washington School District in Southwestern Utah. Approximately 350 students and 14 sixth grade teachers participated in the pilot test. One-half of the sample of teachers

of intact classrooms were randomly assigned to the short-term control group. At the completion of the inservice teacher training program, participating sixth grade student subjects were pretested. Teachers randomly assigned to the experimental group were instructed to implement the curriculum according to a mutually agreed upon schedule. Following the completion of the curriculum in December 1981, sixth grade student subjects were posttested. Major findings from the pilot study included:

1. The protocol for obtaining school district approval and participation in the program was successfully followed.
2. Teacher support and enthusiasm for the curriculum was very favorable as evident by the percent of volunteer teacher participants.
3. The inservice teacher training protocol was favorably evaluated and required no major changes in format or content.
4. The schedule for the implementation of the curriculum was generally adhered to by participating teachers.
5. Precautions should be taken to avoid contamination of the experimental and control groups by outside influences.
6. Problems with audiovisual equipment were encountered by students. Data collection procedures were virtually problem free.
7. Participating teachers possessed a favorable expectation of the curriculum content and methodology and indicated a preference to continue with the project in the future.
8. No problems or concerns were reported among school or district officials.

### Operational Procedures

The operational procedures for the present study included:

1. Research Design
2. Subjects
3. Implementation of the Smoking Education Risk Reduction

Curriculum

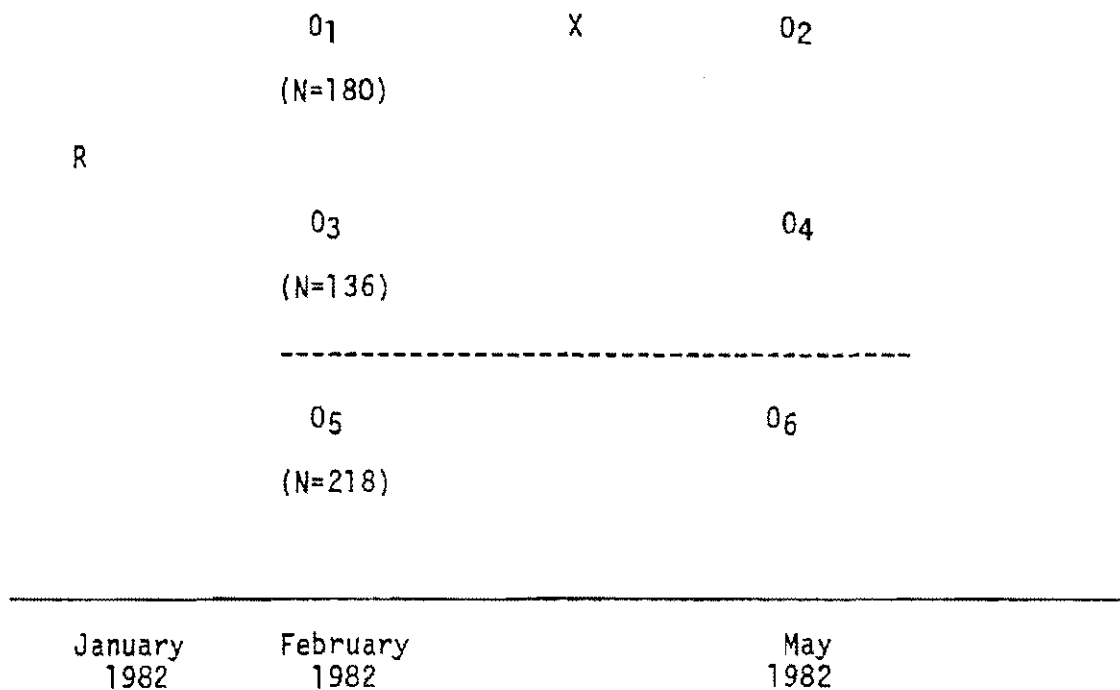
4. Data Collection
5. Statistical Analysis

### Research Design

A pretest-posttest control group design was utilized in the present study (Campbell & Stanley, 1963). The design included a convenience sample of intact classrooms randomly assigned to experimental and control groups. The research design is illustrated in Figure 2.

The experimental and control groups completed both pretest and posttest measures. In order to minimize the reactive effects of the experimental arrangements, both experimental and control group teachers were trained in the use of the curriculum. However, only those teachers randomly assigned to the experimental group implemented the curriculum. According to Campbell and Stanley (1963), this design controls for the major threats to internal validity. This design also allows for the statistical analysis and control for initial group differences by use of gain scores and/or analysis of covariance.





R = Random assignment of intact classrooms

X = Experimental Treatment: Smoking Education Risk Reduction Curriculum

01 and 02 = Pretest and posttest measurements of experimental group

03 and 04 = Pretest and posttest measurements of control group

05 and 06 = Pretest and posttest measurements of nonequivalent control group

Figure 2 Study Design

The major threat to external validity posed by this design is the interaction effects of testing and the experimental treatment (Campbell and Stanley, 1963). Control for the interaction effect may be achieved through the use of nonpretested groups.

To strengthen the design and the generalizability of the results, a nonequivalent control group of sixth grade classes from a school district in close geographical proximity to the participating sample was also added. Analysis of the differences in results due to volunteer participation in the experimental treatment were possible through the addition of the nonequivalent control group.

### Subjects

Sixth grade teachers in the Salt Lake City School District received during the Spring Semester of the 1981/1982 academic school year an invitation (Appendix I) to participate in the study. The invitation included a brief description of the purpose of the study offer of two free credit hours of continuing education credit and payment for classroom substitute teachers for those who registered to participate in the study.

Fourteen district sixth grade teachers from 11 schools and approximately 450 students volunteered to participate in the study. During the inservice teacher training component, the teachers were matched on sex, previous history of classroom instruction on smoking, and grade level of students. Some teachers were assigned a

fifth and sixth grade classroom split. Teachers in matched pairs were then randomly assigned to the experimental or control group.

The experimental and control group were each comprised of seven sixth grade teachers of which there were five females and two males. Included in each group was one teacher who had provided some instruction to his/her students on smoking. Finally, the experimental and control group each contained two teachers who were assigned to a combined or "split" classroom of fifth and sixth grade students.

The nonequivalent control group included nine sixth grade teachers from four schools in the Granite School District. Within the nonequivalent control group, there were six male and three female teachers, and approximately 230 student subjects. A list of the participating teachers and their group assignments is provided in Appendix J.

In the present study, differences existed in the size of the invited sample, accepting sample, and data producing sample (Table 4). For reasons to be discussed in greater detail in the section entitled Statistical Analysis, a random sample of the data producing sample was also selected to control for teacher effects and to define the unit of analysis as the student.

Implementation of the Experimental  
Treatment: The Smoking Education  
Risk Reduction Curriculum

The Smoking Education Risk Reduction Curriculum was implemented following the inservice teacher training workshop by experimental

Table 4

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 Invited, Accepting, and Data Producing Samples
 

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## Invited Sample

Sixth Grade Teachers . . . . .	=	65
Schools . . . . .	=	37
Students . . . . .	=	1625 (estimate)

## Accepting Sample

Sixth Grade Teachers . . . . .	=	23
Schools . . . . .	=	16
Students . . . . .	=	623

## Data Producing Sample

Sixth Grade Teachers . . . . .	=	23
Schools . . . . .	=	16
Students . . . . .	=	534

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group teachers only. The curriculum was implemented beginning February 10, 1982, and was to be completed by May 28, 1982. The schedule for the completion of the three instructional units of the curriculum was as follows: (1) The Health Consequences of smoking--March 12, 1982, (2) Health Decision Making Skills--April 9, 1982, and (3) Resisting Peer, Adult, and Media Pressures to Smoke--May 28, 1982. In order to ensure compliance with this schedule, films, equipment, and other instructional materials were distributed only during designated periods. Further, teachers were informed that selected copies of student assignments would be collected at the completion of the study. The curriculum required approximately 12-15 hours of classroom instruction with 4-5 hours per unit of instruction. Additional time was required of participating students to complete homework assignments. A copy of the Smoking Education Risk Reduction Curriculum can be obtained from the researcher.

#### Data Collection

Proceeding the inservice teacher training workshop, student subjects within the designated experimental, control and nonequivalent control groups were pretested. Prior to the administration of the pretest measurements, participating teachers were instructed to distribute letters of informed consent to the parents of participating subjects (Appendix K). Pretest measurements were administered by Utah State Department of Health employees during the period February 8-18, 1982.

The posttest measurements were collected during the period May 10-20, 1982. Procedures identical to the pretest were followed during the posttest. There were no significant structural or organizational changes in the instrumentation or testing procedures.

Procedures for the administration of pretest and posttest instruments are described in the following sequence.

1. The testing administrators described to the student subjects the purpose of the evaluation.

2. Evaluation instruments were distributed to each student subject according to a pre-assigned identification number.

3. The testing administrators gave verbal instructions on how to complete the evaluation instruments.

4. The testing administrators read each question and response where appropriate. Instruments were administered in the following order: (1) Health Decision Making Index, (2) Smoking Information Test, (3) Smoking Education Risk Reduction Inventory, and (4) Hey, Karen, Want a Cigarette?

5. At the completion of the evaluation period, testing administrators collected all evaluation instruments. Procedures for data collection required approximately 40 minutes.

#### Statistical Analysis

The statistical analysis of the data was determined by the nature of the variable measured, the instrument used, and the type of data generated. In accordance with the research hypotheses, the analysis addressed questions of difference and association among and between dependent variables.

In order to control for teacher effects as an intervening or confounding variable in this study, a variety of precautions were taken. First, both experimental and control group teachers were trained in the use of the experimental curriculum. Second, teachers were randomly assigned to experimental and control groups.

According to Campbell and Stanley (1963), an analysis of covariance is an appropriate statistic for determining group differences when intact classrooms rather than individual subjects are assigned to groups. The analysis of mean group differences in knowledge as determined by an individual subject's total correct score on the Smoking Information Test, gender and test differences was accomplished by an analysis of covariance.

The "Health Decision Making Index" (Duryea, 1979) generated nominal and ordinal level data which evaluated the subject's: (1) ability to use a wide range of information in the decision making process, (2) perceived salience of the information considered in the decision making process, (3) actual decision, and (4) future probability of smoking--behavioral intent. The Pearson Chi-square Statistic was used to assess differences between groups in the frequency of reasons cited and the decision to smoke. The "Smoking Education Risk Reduction Inventory" provided nominal and ordinal level demographic and smoking behavior data. The analysis of differences between groups on selected dimensions of smoking behavior were computed using the McNemar Chi-square Statistic.

"Hey, Karen, Want a Cigarette?" (Hammes, 1981) provided ordinal

level data as a measure of a subject's ability to analyze and discriminate between levels of resistance to persuasion. A Mantel-Haenszel Chi-square statistic was computed to determine group differences. In addition to the analysis of group differences, similar statistical procedures were followed in the analysis of differences between male and female subjects on the dependent variables.



## CHAPTER III

### RESULTS

The results of the study are described in this chapter based on tests of the several components of the stated hypotheses. Following a restatement of the two hypotheses, results are presented according to the dependent variables in the following order:

1. Tobacco use including cigarette smoking
2. Knowledge of the health consequences of smoking
3. Decision making skills
4. Resistance to persuasion skills.

Data for each dependent variable are presented at two levels: first, as a function of potential group differences, and, second, as a function of differences due to gender within the three groups. An exception to the comparison of gender differences by group is made on the decision making and resistance to persuasion components where comparisons by sex were calculated for the entire study sample without controlling for groups.

#### Analysis of Experimental, Control, and Nonequivalent Control Group Differences on the Several Variables

Hypothesis 1: There will be no significant group differences between experimental, control, and nonequivalent control group

subjects on the following variables: tobacco use, including smoking behavior, knowledge of the health consequences of smoking, selected decision making skills and resistance to persuasion skills.

Hypothesis 2: There will be no significant sex differences by group on the dependent measures of tobacco use, including smoking behavior and knowledge of the health consequences of smoking.

#### Tobacco use including cigarette smoking

The prevalence of smoking among experimental, control, and nonequivalent control group subjects was determined from data collected on Question number 13 in the Smoking Risk Reduction Inventory: "Have you ever smoked a cigarette, cigar, pipe or chewed tobacco?" and Question number 20: "What kind of smoker are you?" Based on self-report, the rates of tobacco use (Question 13) among experimental, control, and nonequivalent control group subjects were at pretest: 22.8%, 27.5%, and 28.2% and at posttest: 25.5%, 29.8%, and 26.8% respectively.

The rates of cigarette smoking (based on responses to Question 20) were similar to the percentage of subjects who reported using tobacco. The percent of experimental, control, and nonequivalent control group subjects who have smoked cigarettes was at pretest: 19.7%, 21.5%, and 20.6%, and at posttest: 23.8%, 25.6%, and 21.9% respectively.

The McNemer Chi-Square analysis revealed that there were no significant differences ( $p > .05$ ) between pretest and posttest observations, and no significant differences between experimental,

control, and nonequivalent control group rates of smoking behavior and tobacco use. Neither were there significant differences between the rates of cigarette smoking and tobacco use for male and female subjects. As a result, the null hypothesis for this dependent variable was accepted for group and sex.

#### Knowledge of the Health Consequences of Smoking

Experimental, control, and nonequivalent control group subjects' pretest and posttest results on the 20 item true/false Smoking Information Test, including sex comparisons, are reported in Table 5. Results of the analysis of covariance, testing for the main effects of group and sex, revealed that significant differences ( $p < .01$ ) in posttest knowledge scores existed between the experimental and non-equivalent control groups (Tables 6 and 7). In each case scores for the experimental group were higher. No significant differences were found between sexes. The null hypothesis for group differences in the knowledge component was rejected but was accepted for sex differences.

#### Health Decision Making Skills

A modification of the Health Decision Making Index (Duryea, 1980) was used to determine the effects of the experimental curriculum on selected decision making skills. Since the index generates frequency data, chi-square analyses were used to test potential group and gender differences in selected aspects of decision making skills as measured by the six steps in the index.

Table 5  
 Smoking Information Test: Summary of  
 Pretest and Posttest Results

	Experimental		Control		NE Control	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Pretest						
Male	11.51	3.44	11.76	2.15	12.42	3.15
Female	11.36	3.19	11.59	2.77	12.10	2.94
Posttest						
Male	13.85	2.56	12.39	12.29	13.14	12.63
Female	13.63	1.89	2.00	2.15	2.25	2.11

Table 6  
Smoking Information Test Results:  
Analysis of Covariance

Source	SS Corrected	F
Group	42.51	4.67*
Gender	13.31	2.93 NS
Covariate	97.12	21.36*
Covariate * Sex	8.89	1.95 NS
Covariate * Group	12.35	1.36 NS

\*  $p < .01$

Table 7  
Summary Matrix of Group Differences on Smoking  
Information Variable Based on Analysis  
of Covariance

Source	Experimental Group	Control Group	Non-equivalent Control Group
Experimental Group	-	.0001	.0001
Control Group	.0001	-	.067
Non-equivalent Control Group	.0001	.067	-

The analyses revealed but one significant difference between the experimental group and the two control groups. Experimental subjects cited "future" concerns as a reason in their decision not to smoke at a significantly ( $p < .05$ ) less frequent rate than either control or non-equivalent control subjects (Table 8). As a result of that significant finding, the decision making skills component of the null hypotheses was rejected.

Several significant gender differences were found when categories of reasons for not smoking were compared. Significantly more males than females identified "cardiovascular" and "longevity" reasons for not smoking and females significantly more "getting caught" and "religious" reasons (Table 9). It is important to note that gender differences calculated by chi-square analysis did not differentiate between groups; therefore, such differences may be considered as generally descriptive but are not a function of the treatment.

#### Resistance to Persuasion Skills

A modification of the instrument entitled "Hey, Karen, Want a Cigarette?" (Hammes, 1981) was used to assess the subject's ability to identify and recommend selected resistance to persuasion skills. A Mantel-Haenszel Chi-square Summary statistic was computed to determine if there were significant differences between experimental, control, and nonequivalent control group results.

In Item 1, subjects were required to evaluate a videotape of three actors resisting peer pressures to smoke. For purposes of

Table 8  
"Future" Reasons for Not Smoking: Analysis  
of Group Differences

Response	Control	Experimental	NE Control
Yes	15	6	23
No	124	146	184

$\chi^2 = 5.08$        $\chi^2 = 6.05$   
 $p < .05$        $p < .05$



Table 9  
Reasons for Not Smoking: Analysis of  
Gender Differences

Response	Cardiovascular		Longevity		Getting Caught		Religion	
	Male	Female	Male	Female	Male	Female	Male	Female
Yes	16	7	39	23	71	162	85	149
No	218	232	195	216	102	137	109	130
	$\chi^2 = 3.91$		$\chi^2 = 5.15$		$\chi^2 = 7.76$		$\chi^2 = 4.21$	
	$p < .05$		$p < .05$		$p < .01$		$p < .05$	

analysis of group differences, responses to this question were collapsed as follows: "excellent" with "good" and "fair" with "poor." The data in Item 2 consisted of the subject's ability to identify each actor's use of resistance to persuasion skills, i.e., idiosyncratic credits, recruiting an ally, or delaying the decision to smoke. Group differences in the total number of "resistance skills," "other," and "nothing" responses identified were analyzed. In Item 3, subjects were asked to recommend methods/resistance skills each actor could use to resist peer pressure to smoke. The group differences in the frequency of "resistance skills," "other," and "perfect" responses recommended were analyzed using the Mantel-Haenszel Chi-square Summary statistics.

In Item 1, there were no significant differences between experimental, control, and nonequivalent control groups on the assessment of each actor's ability to resist peer pressures to smoke.

The Mantel-Haenszel Summary statistics revealed that there were significant differences between experimental, control, and nonequivalent control group subjects' ability to both identify (Item 2) and recommend (Item 3) selected resistance to persuasion skills (Table 10). That is, experimental subjects identified significantly more specific skills than either control ( $X^2 = 5.93$   $p < .05$ ) or nonequivalent control subjects ( $X^2 = 6.58$   $p < .05$ ). Experimental subjects were also able to recommend significantly more correct skills when asked "What other things, if any, do you think (the actor) could have done better to resist the pressures to

Table 10  
 Analysis of Group Differences in the Ability to  
 Identify and Recommend Resistance Skills

	Control	"Item 1" Exp.	NE Control	Control	"Item 2" Exp.	NE Control
Male	38	83	30	24	51	14
Female	64	86	62	30	48	44
		$\chi^2 = 5.93$	$\chi^2 = 6.58$		$\chi^2 = 5.39$	$\chi^2 = 10.13$
		$p < .05$	$p < .05$		$p < .05$	$p < .01$

smoke?" than either control ( $\chi^2 = 5.39, p < .05$ ) or nonequivalent control subjects ( $\chi^2 = 10.13, p < .01$ ). The null hypothesis for group differences on the resistance to persuasion component was rejected.

In Table 11, results of the chi-square analysis revealed significant differences between male and female subjects' ability to identify ( $\chi^2 = 5.92, p < .05$ ) and also recommend resistance skills ( $\chi^2 = 10.10, p < .01$ ). As was the case in the analysis of gender differences for the decision making component, these gender differences were not assessed as a function of the treatment and, therefore, no decision was made with regard to the research hypotheses.

Table 11  
 Analysis of Gender Differences in the Ability to  
 Identify and Recommend Resistance Skills

	<u>"Item 1"</u>		<u>"Item 2"</u>	
	Male	Female	Male	Female
Control	39	64	24	30
Experim.	83	86	51	48
NE Control	30	62	14	44

$\chi^2 = 5.92$	$\chi^2 = 10.10$
$p < .05$	$p < .01$

## CHAPTER IV

### DISCUSSION

The purpose of this study was to determine the extent to which an experimental smoking education risk reduction curriculum affects health knowledge, selected decision making and resistance to persuasion skills, and tobacco use including cigarette smoking among sixth grade students. The study was conducted using a pre-test posttest control group design with the addition of a nonequivalent control group. Participating Salt Lake City School District teachers were randomly assigned to either the experimental or control group conditions. Sixth grade teachers from the Granite School District comprised the nonequivalent control group. The sixth grade subjects assigned to the experimental group participated in the experimental treatment program on smoking prevention during the Spring semester of the 1981/1982 academic school year.

Analysis of the results revealed no significant group or gender differences on tobacco use including cigarette smoking. However, significant group differences were found on measures of knowledge and selected decision making and resistance to persuasion skills. The following conclusions and recommendations are based on the results obtained.

### Conclusions and Recommendations

Results of this study indicated that approximately 27 percent of all subjects reported having used some form of tobacco and approximately 23.5 percent have smoked cigarettes. The subjects' self-reported rates of tobacco use are consistent with prevalence estimates for Utah adolescents ages 12-17 (Labenta, 1979). The 23.5 percent "experimental smoking" rate may appear to be considerably higher than expected in light of national figures (see Page 8) indicating that the grade of first daily use of cigarettes for the 11-12 year old age cohort is less than 3 percent. Virtually all national smoking estimates are derived from some measure of "regular use," whereas the present study includes any level of use including one time experimentation. The reason for using the latter approach was twofold: (1) smoking is a complex behavior with several levels of use and needs to be studied in light of that complexity, and (2) delimiting the present study to "regular smoking" would make it virtually impossible from a statistical standpoint to detect program effects since the prevalence rates for 11-12 year old age cohorts is so low, less than 3 percent (Labenta, 1979).

Results of the present study revealed no significant group and gender differences in the prevalence rates of tobacco use and cigarette smoking. The number of subjects who reported having used tobacco or smoked cigarettes remained relatively stable over time and did not appear to be influenced by the experimental conditions in this study.

Consequently, it seems unreasonable to expect behavioral changes of this nature not only because the time framework is so brief, but because smoking behavior is shaped and reinforced by many factors of which the school classroom is but one. If this intervention were to have an effect, it would not be detected until the subjects entered the intermediate grades. Finally, due to the higher than anticipated prevalence rates, the recency of smoking and the frequency of former smokers should be considered as future criteria for determining program impact.

Previous studies have been able to demonstrate significant gains in subjects' knowledge of the health consequences of smoking. Results from the present study corroborate that trend in that experimental subjects demonstrated significantly higher knowledge gains than either the control or nonequivalent control subjects. This finding may be explained by the use of a knowledge text specifically constructed to measure the learning outcomes identified in the smoking education risk reduction curriculum. For example, scores on the test items measuring the students' knowledge of the immediate effects of smoking clearly differentiated between experimental and control group subjects. The group differences in knowledge scores emphasize the need for sensitive measures of program impact. Assessment of different cognitive tasks across dependent measures is also warranted.

Although no differences were found between the subjects' decision to smoke, the results of the study were interpreted to suggest that quantitative differences existed in the nature of the



reasons cited for not smoking. Significantly more control and non-equivalent control group subjects than experimental subjects cited "future" concerns as a reason for not smoking. This finding may be interpreted to mean that the experimental curriculum, as developed, effectively deemphasized the long range health consequences of smoking in favor of more immediate effects.

Adolescent cognitive development literature (Elkind, 1980) suggests that children are more apt to attend to concepts that have immediate and personal meaning than those with long range future effects. Accordingly, exposure to biofeedback experiences demonstrating the immediate effects of tobacco on certain physiologic functions would, in theory, be more salient to adolescents than warnings of cancer "when you're 65."

The significant decrease in the importance of the "future" dimension in experimental subjects' decision making suggests that the curriculum did affect their decision making calculus. The finding of knowledge applied to a decision is similar to that reported by Lammers et al. (1982).

Independent of treatment effects, related findings indicated gender differences existed in the reasons cited for not smoking. Male subjects identified significantly more health and fewer moral reasons than females. Developmental differences between the sexes may account for this result. The finding may also reflect the influences of demographic or social characteristics of the subjects' in this study.

This study measured the effects of the experimental curriculum

on selected decision making skills of sixth grade subjects. Although application of relevant knowledge in the decision making process is an important program effect, additional research is needed to distinguish between the assessment of prerequisite decision making skills and the decision making process. In addition to quantitative assessments of the decision making process, further research is needed which provides a conceptual and/or procedural framework for determining qualitative differences in the decision making process.

The development of resistance to persuasion skills among sixth grade students was a major goal of the smoking education risk reduction curriculum. The possession of such skills was assumed to help "nurture" young people through a period of developmental susceptibility where peer, media, and/or adult pressures to smoke are considered salient influences on behavior.

The results of the present study strongly suggest that the experimental curriculum was effective in teaching sixth grade students selected resistance to persuasion skills. Experimental subjects were able to identify and recommend significantly more resistance skills than the control and nonequivalent control group subjects. These results are consistent with previous research by Hammes (1981) who found that following exposure to a modified version of this curriculum, subjects were able to discriminate resistance skills better than control group subjects. That experimental subjects in this study were able to discriminate and evaluate resistance to persuasion skills is an important outcome for

smoking prevention programs and a potential indicator of reduced susceptibility to smoking onset.

Related findings indicated that female subjects performed significantly better in the identification and recommendation of resistance skills than male subjects. Although general differences in the developmental characteristics of male and female subjects may account for the results, patterns of social interaction may have also affected the outcome.

Results of the present study suggest that future evaluations of program impact test for the generalizability of resistance to persuasion and decision making skills across health education content/topic areas. Such generic skills should also be further examined as criteria for distinguishing developmental and/or problem behaviors. For example, the differences in the resistance to persuasion and decision making skills between smokers and nonsmokers merits further investigation.

#### Summary

As a result of the collective findings of this study, the smoking education risk reduction curriculum may be viewed as an effective and efficient educational addition to the elementary school health education curriculum. Findings of this study indicate that the curriculum favorably influenced the health knowledge and selected decision making and resistance to persuasion skills of sixth grade students. The curriculum provides evidence that the theoretical principles of health education may be applied with

beneficial results. This smoking prevention program demonstrates that with modest time, material, and training requirements, realistic and measurable outcomes can be obtained. Despite previous statewide efforts to educate youth about smoking and health and the potential effects of control group contamination, treatment effects were observed. Although the use of a "true" experimental design in a school population has limitations, an acceptable evaluation protocol may be developed and adhered to by program participants. Finally, the impact evaluation of this experimental treatment provided important information for those individuals involved in making decisions regarding the modification, adoption, or diffusion of the smoking education risk reduction curriculum.

APPENDIX A  
UTAH SMOKING EDUCATION RISK REDUCTION CURRICULUM  
GOALS AND OBJECTIVES

### Unit 1: The Health Consequences of Smoking

Goal: Upon completion of the curriculum, students will demonstrate significant gains/increases in knowledge of the health consequences of smoking.

- Objective 1: Students will examine the health enhancing and health damaging effects of personal health habits.
- Objective 2: Students will understand the concept of stress and the effects of stress on personal health and well-being.
- Objective 3: Students will recall the immediate effects of smoking a cigarette and why the effects occur.
- Objective 4: Students will be able to list the long range or delayed effects of smoking.
- Objective 5: Students will be able to identify the myths and realities of what cigarettes can and cannot do.

### Unit 2: Health Decision Making Skills

Goal: Upon completion of the curriculum, students will demonstrate significant gains/increases in decision making skills.

Goal: Upon completion of the curriculum, students will formulate a personal decision regarding utilizing selected decision making skills.

- Objective 1: Students will understand the decision making process and the meaning of a rational decision.
- Objective 2: Students will be able to accurately define and use in written and oral presentations the following terms: rational, relevant, credible, and probability.
- Objective 3: Students will be able to identify the four basic elements of a rational decision.

Objective 4: Students will apply basic decision making skills to the topic of cigarette smoking.

Objective 5: Students will utilize the decision making process and formulate a personal decision regarding smoking.

### Unit 3: Resisting Peer, Adult, and Media Pressures to Smoke

Goal: Upon completion of the curriculum, students will demonstrate significant gains/increases in their ability to evaluate and apply resistance to persuasion skills.

Objective 1: Students will analyze media pressures to smoke including the ability to identify persuasive techniques.

Objective 2: Students will identify and analyze adult pressures to smoke.

Objective 3: Students will identify the effects of persuasion and peer pressure on their behavior.

Objective 4: Students will develop specific skills to resist peer, adult, or media pressures to smoke.

Objective 5: Students will apply selected resistance to persuasion skills in practice role play sessions.

APPENDIX B  
INSERVICE TEACHER TRAINING PROTOCOL



- I. Program Orientation
  - A. Introduction of program staff and participating teachers
  - B. Registration
  - C. Program goals and objectives
  - D. Workshop and program agenda
  - E. Responsibilities of participating teachers
  - F. Pretest of teacher knowledge and assessment of program barriers.
  
- II. Teacher's Manual/Curriculum Overview
  - A. Presentation of curriculum format
  - B. Discussion of curriculum content, methodology, and evaluation
  - C. Underlying theoretical concepts
  
- III. Health Consequences of Smoking (Learning Strategies 1-5)
  - A. Health consequences of tobacco consumption
    - 1. Contents of tobacco smoke
    - 2. Immediate effects of smoking
    - 3. Long term effects of smoking
  - B. Social consequences
    - 1. Work productivity/absenteeism
    - 2. Health care costs
  - C. Psychological consequences
    - 1. Self-respect
    - 2. Aesthetic considerations
  - D. Legal consequences

- IV. Rational Decision Making Skills (Learning Strategies 1-5)
  - A. Elements of a rational decision
  - B. The rational decision making process
  - C. Personal application of the decision making process
  
- V. Resisting Peer, Adult, and Media Pressures to Smoke (Learning Strategies 1-5)
  - A. Resistance to persuasion skills
  - B. Media pressures to smoke
  - C. Adult pressures to smoke
  - D. Peer pressures to smoke
  
- VI. Inservice Evaluation and Program Scheduling
  - A. Posttest teacher knowledge
  - B. Confirm program implementation schedule
  - C. Schedule classroom testing and educational boosters
  - D. Disseminate instructional materials and handouts

APPENDIX C  
SMOKING/ALCOHOL KNOWLEDGE INVENTORY

Direction: Mark appropriate space on computer answer sheet.

1. About 20% of the alcohol you consume is absorbed through your stomach. Where is the 80% absorbed?
  - A. Breath
  - B. Small Intestine
  - C. Liver
  - D. Bladder
  - E. Pancreas
  
2. Alcohol affects behavior through which part of the body?
  - A. Spinal Cord
  - B. Lungs
  - C. Muscles
  - D. Brain
  - E. Circulatory System
  
3. Which of the following factors affect the absorption rate of alcohol in the body?
  - A. Food in stomach
  - B. Amount of alcohol consumed
  - C. Emotional state
  - D. All of the above
  - E. A & B
  
4. The greater the weight of the body muscle of an individual, the lower will be their blood-alcohol concentration resulting from a given amount of alcohol.
  - A. True
  - B. False
  
5. What is the condition requiring increasing amounts of alcohol to achieve the desired effect as formerly achieved by smaller quantities of alcohol?
  - A. Tolerance
  - B. Dependence
  - C. Addiction
  - D. Withdrawal
  - E. Anesthesia

Pretest \_\_\_\_\_

Posttest \_\_\_\_\_

6. A person's mood can influence the way they react to the effects of alcohol.
  - A. True
  - B. False
7. Which disease is most frequently associated with prolonged drinking and causes damage to functioning liver cells?
  - A. Korsakoff's Syndrome
  - B. Cirrhosis
  - C. Sclerosis
  - D. Cancer
  - E. Halitosis
8. Approximately how long does it take to oxidize 1 1/2 ounces of alcohol?
  - A. 1/2 hour
  - B. 1 hour
  - C. 1 1/2 hours
  - D. 2 hours
  - E. 3 hours
9. The cancer causing agent in tobacco smoke is--
  - A. Nicotine
  - B. Tar
  - C. Carbon Monoxide
  - D. Carbon Dioxide
  - E. Ethenol
10. A disease caused by smoking which destroys the alveoli of the lungs is--
  - A. Bronchitis
  - B. Asthma
  - C. Emphysema
  - D. Arthritis
  - E. Pheumonia
11. Death rates for former smokers are approximately the same as those who continue to smoke.
  - A. True
  - B. False
12. Cigarette smoke causes the heart and blood pressure to decrease.
  - A. True
  - B. False
13. Cigarette smoke causes the skin tmeprature to decrease.
  - A. True
  - B. False

14. Which of the following conditions is not associated with cigarette smoking?
- A. Arteriosclerosis
  - B. Bronchitis
  - C. Amblyopia
  - D. Buerger's Disease
  - E. Hepatitis
15. Pipe and cigar smoke contain--
- A. More tar and nicotine than cigarettes
  - B. Less tar and nicotine than cigarettes
  - C. Approximately the same amount of tar and nicotine as cigarettes
  - D. Pipe and cigar smoke do not contain tar.
16. The best prediction of cigarette smoking among young people is--
- A. Parent behavior
  - B. Self-esteem
  - C. Alcohol use
  - D. Peer behavior
  - E. Delinquency
17. The three important concepts in rational decision making are--
- A. Wide range, consequences, and values
  - B. Rationale, relevant, and credible
  - C. Values, beliefs, and attitudes
  - D. Clarification, validation, and action
  - E. None of the above
18. An expert is one who is--
- A. Knowledgeable and trustworthy
  - B. Reputable
  - C. Has nothing to gain by convincing you
  - D. A & B
  - E. A & C
19. The intent of resistance and persuasion skills is to--
- A. Learn how to say no
  - B. Validate and support a personal decision
  - C. Weaken peer group memberships
  - D. A & B
  - E. A & C
20. Which of the following is an effective verbal response to resist peer group persuasion to smoke or drink?
- A. "Are you going to smoke?"
  - B. "Do I have to smoke to be your friend?"
  - C. "Not now. Maybe later."
  - D. B & C
  - E. All of the above

21. Which of the following is an example of using idiosyncratic credits to resist persuasion?
- A. "You guys are my friends and I don't think you want me to do something I don't want to do."
  - B. "Not now. Maybe later."
  - C. "Do you think I should smoke?"
  - D. "I don't feel like it right now."
  - E. All of the above are example of idiosyncratic credits.
22. Transition Proneness refers to--
- A. Adult pressure to comply
  - B. Developmental susceptibility
  - C. Progression from experimental to regular drug use
  - D. Marketing strategies
  - E. None of the above
23. To recruit an ally, which of the following verbal responses is appropriate?
- A. "I like you guys and I want to be around you, but not if I have to smoke or drink."
  - B. "Yes, I mind if you smoke."
  - C. "Not now. Maybe later."
  - D. All of the above
  - E. None of the above.
24. Use of resistance skills has which of the following intended effects?
- A. Disrupt peer group connection
  - B. Destroy peer group friendships
  - C. Validate personal decisions
  - D. Disclaim the opinions of others
  - E. Inform others of their mistakes
25. The ability to make the best health related decision is contingent on--
- A. Knowledge of dangers and risks associated with a disease
  - B. Skills related to self-understanding
  - C. Understanding the decision-making process
  - D. Both A & C
  - E. All of the above

APPENDIX D  
INSERVICE TEACHER TRAINING WORKSHOP EVALUATION



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School District \_\_\_\_\_ Date \_\_\_\_\_

UTAH SMOKING EDUCATION RISK REDUCTION PROGRAM  
Bureau of Health Promotion/Protection  
Utah State Department of Health

Directions: Please complete the enclosed evaluation form. This assessment will provide the program with viable suggestions for improvement. Please do not put your name on this evaluation. Thank you.

1-Teacher Inservice/Curriculum Content  
Evaluation

Please circle the best response to each statement

<u>Content</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
1. I completely understand this curriculum content.	1	2	3	4	5
2. The curriculum was presented well.	1	2	3	4	5
3. The curriculum is relevant.	1	2	3	4	5
4. I feel competent in teaching the content of this curriculum.	1	2	3	4	4

<u>Methodology</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
5. I completely understand the instructional methods used in this curriculum.	1	2	3	4	5
6. I feel competent in my use of the instructional methods of this curriculum.	1	2	3	4	5
7. The instructional methods selected are relevant.	1	2	3	4	5
8. The instructional methods used in this curriculum were presented well.	1	2	3	4	5

- 
- A - Strongly Disagree  
 B - Disagree  
 C - Neutral  
 D - Agree  
 E - Strongly Agree

	<u>Theory</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
9.	I understand the underlying theory of this curriculum.	1	2	3	4	5
10.	The curriculum theory was presented well.	1	2	3	4	5
11.	I feel competent using the theory of this curriculum.	1	2	3	4	5
12.	The theoretical foundation of this curriculum is relevant.	1	2	3	4	5

Materials/Resources

13.	The materials used in this curriculum were presented properly in the inservice	1	2	3	4	5
14.	I completely understand the rationale used for the materials in this curriculum.	1	2	3	4	5
15.	The materials used in this curriculum are relevant.	1	2	3	4	5
16.	I feel competent using the materials provided in this curriculum.	1	2	3	4	5

Evaluation

17.	I completely understand the evaluation strategies of the curriculum.	1	2	3	4	5
18.	The evaluation component of this curriculum was presented well.	1	2	3	4	5
19.	The evaluation techniques used in this curriculum are relevant.	1	2	3	4	5
20.	I feel competent using the proposed evaluation strategies of this curriculum.	1	2	3	4	5

- 
- A - Strongly Disagree  
 B - Disagree  
 C - Neutral  
 D - Agree  
 E - Strongly Agree

## 2-Facilitator Evaluation

<u>Overall, the instructor of the inservice:</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
21. Was enthusiastic.	1	2	3	4	5
22. Was humorous.	1	2	3	4	5
23. Welcomed questions.	1	2	3	4	5
24. Made good use of examples.	1	2	3	4	5
25. Had an interesting style of presentation.	1	2	3	4	5
26. Was well informed on the subjects presented.	1	2	3	4	5
27. Gave clear explanations and directions.	1	2	3	4	5
28. Had positive regard for the student.	1	2	3	4	5
29. Invited criticism.	1	2	3	4	5
30. Stimulated interest in subject matter.	1	2	3	4	5

## 3-Workshop Procedures/Format

31. The objectives of this workshop were clear.	1	2	3	4	5
32. The inservice teacher training workshop was properly organized.	1	2	3	4	5
33. The inservice teacher training workshop provided for group interactions.	1	2	3	4	5
34. The workshop provided teachers with an appropriate means of reimbursement (credit) for participation.	1	2	3	4	5
35. Overall, the workshop was conducted most effectively.	1	2	3	4	5

- A - Strongly Disagree  
 B - Disagree  
 C - Neutral  
 D - Agree  
 E - Strongly Agree

36. Do you feel the strategies of this curriculum will work?  
       \_\_\_\_\_ Yes                    \_\_\_\_\_ No                    \_\_\_\_\_ Undecided
37. Would you be able to use these concepts in another classroom subject?  
       \_\_\_\_\_ Yes                    \_\_\_\_\_ No                    \_\_\_\_\_ Undecided
38. Would you use this program three years from now?  
       \_\_\_\_\_ Yes                    \_\_\_\_\_ No                    \_\_\_\_\_ Undecided
39. Circle the areas of the curriculum which you feel need improvement:  
       Objectives                    Goals                    Evaluation  
       Methodology                  Materials                  Other \_\_\_\_\_
40. Provide reasons for any poor ratings given in the following areas:  
 Workshop Content: \_\_\_\_\_  
 Workshop Facilitator: \_\_\_\_\_  
 Workshop Procedures/Format: \_\_\_\_\_
41. Assign points according to the importance you would give to the three components of this evaluation so that the total score equals 100.  
       Workshop Content:                    \_\_\_\_\_ Points  
       Workshop Facilitator:                \_\_\_\_\_ Points  
       Workshop Procedures:                \_\_\_\_\_ Points

APPENDIX E  
SMOKING EDUCATION RISK REDUCTION INVENTORY



8. \_\_\_\_\_ Have you ever been offered a cigarette, cigar, pipe, or chewing tobacco?  
A. Yes  
B. No
9. \_\_\_\_\_ Do you carry cigarettes with you?  
A. I never carry cigarettes with me.  
B. I rarely carry cigarettes with me.  
C. Occasionally I will carry cigarettes with me.  
D. I always carry cigarettes with me.
10. \_\_\_\_\_ Have you ever purchased cigarettes, cigars, pipe, or chewing tobacco?  
A. Yes  
B. No
11. \_\_\_\_\_ How many people your age living in the U.S. do you think smoke?  
A. All (100%)  
B. Most (75%)  
C. Half (50%)  
D. Some (20%)  
E. Few (less than 25%)  
F. None (0%)
13. \_\_\_\_\_ Have you ever smoked a cigarette, cigar, pipe, or chew tobacco.  
A. Yes  
B. No
14. \_\_\_\_\_ What brand of cigarette do you, or did you, smoke?  
\_\_\_\_\_
15. \_\_\_\_\_ Does the cigarette you smoke, or use to smoke, have a filter?  
A. Yes  
B. No  
C. I have never smoked.
16. \_\_\_\_\_ What type of cigarettes do you, or did you, smoke?  
A. Regular  
B. King Size  
C. 100s  
D. I have never smoked.
17. \_\_\_\_\_ How old were you when you first smoked a cigarette, cigar, pipe, or chewed tobacco?  
A. 10 years old or younger  
B. 11 years old  
C. 12 years old  
D. 13 years old  
E. 14 years old  
F. 15 years old  
G. I have never smoked



18. \_\_\_\_\_ How long has it been since you smoked your last cigarette, cigar, pipe, or chewed tobacco?
- A. Less than 4 months
  - B. 4 months to 7 months
  - C. 8 months to 11 months
  - D. 12 months or more
  - E. I have never smoked.
19. \_\_\_\_\_ I can best be described as:
- A. A person who smoked, but doesn't smoke now.
  - B. A person who smokes 1 - 6 cigarettes a week.
  - C. A person who smokes 1 - 4 cigarettes a day.
  - D. A person who smokes 5 - 9 cigarettes a day.
  - E. A person who smokes 10 or more cigarettes a day.
  - F. I have never smoked.
20. \_\_\_\_\_ What kind of smoker are you?
- A. Experimental smoker - smoked at least a few puffs of a cigarette, but never as many as 100 cigarettes.
  - B. Former smoker - smoked at least 100 cigarettes, but have not smoked any cigarettes within the last month.
  - C. Current occasional smoker - smoked at least 100 cigarettes and smoking now on a regular basis, but less than one cigarette per week.
  - D. Current regular smoker - smoked at least 100 cigarettes and smoking now on a regular basis, one or more cigarettes per week or one or more cigarettes per day.
  - E. I have never smoked.

APPENDIX F  
SMOKING INFORMATION TEST

Student ID#: \_\_\_\_\_ Teacher ID#: \_\_\_\_\_ Date: \_\_\_\_\_

We would like to find out how well you know the facts about smoking. Each statement is either true or false. If you think that the statement is true, mark TRUE. If you think that the statement is false, mark FALSE. Please answer every statement.

EXAMPLE:

There are more than three brands of cigarettes sold.  
 --if this is true, check the space labeled TRUE. TRUE \_\_\_\_\_  
 --if this is false, check the space labeled FALSE. FALSE \_\_\_\_\_

Now do the rest of the statements in this way.

- |   |                           |
|---|---------------------------|
| 1. Smoking decreases stress.  | TRUE _____<br>FALSE _____ |
| 2. Young people usually smoke their first cigarette in a group--with friends.         | TRUE _____<br>FALSE _____ |
| 3. Cigarettes which are high in nicotine are usually low in tar.                      | TRUE _____<br>FALSE _____ |
| 4. Emphysema is a condition which affects eye sight among smokers.                    | TRUE _____<br>FALSE _____ |
| 5. Smoking a cigarette slows down the heart rate.                                     | TRUE _____<br>FALSE _____ |
| 6. Smoking cigarettes improves the appetite and makes you hungry.                     | TRUE _____<br>FALSE _____ |
| 7. Chronic Bronchitis is a condition which irritates and inflamates the air passages. | TRUE _____<br>FALSE _____ |
| 8. Smoking increases your chances of lung cancer.                                     | TRUE _____<br>FALSE _____ |

9. Smoking a cigarette lowers the body's temperature. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
10. There are more people who smoke than people who do not smoke. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
11. Nicotine is the chemical substance in a cigarette which causes cancer. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
12. Smokers have fewer heart attacks than nonsmokers. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
13. Smoking a cigarette makes your blood pressure go up. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
14. A person is more likely to smoke if their parents smoke than if their friends smoke. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
15. Less than half of the leading causes of death in U.S. today are caused by cigarette smoking. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
16. Smoking a cigarette will improve hand steadiness. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
17. Pipe and cigar smoke contains more nicotine and tar than do cigarettes. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
18. Young people who make rational decisions are more likely to be pressured by their friends to smoke. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
19. An effective way to resist the pressures to smoke is by recruiting an ally. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_
20. Death rates, illness rates, and medical costs are at their lowest among people who never start to smoke. TRUE \_\_\_\_\_  
FALSE \_\_\_\_\_

APPENDIX G  
HEALTH DECISION MAKING INDEX

Student ID#: \_\_\_\_\_ Teacher ID#: \_\_\_\_\_ Date: \_\_\_\_\_

You are in a situation in which you can smoke a cigarette without anyone knowing but yourself and two of your best friends.

STEP I What is the first thing that you think about in this situation?

---



---

STEP II What are some of the other things you would think about in choosing to smoke or not to smoke? (List as many as you can).

1 _____	5 _____
2 _____	6 _____
3 _____	7 _____
4 _____	8 _____

STEP III Which of the things above do you think are the most important in choosing to smoke or not to smoke? Rank in order of importance.

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

STEP IV Would you choose to smoke? YES \_\_\_\_\_ NO \_\_\_\_\_ MAYBE \_\_\_\_\_

STEP V The main reason I would make this choice is . . . . .

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STEP VI Lee is an adult. On breaks at work, after dinner, and at parties Lee usually smokes a cigarette or two.

Put a check next to only one of the statements below that best describes your future smoking behavior.

- A \_\_\_\_\_ I will never be a smoker like Lee.
- B \_\_\_\_\_ I probably won't be like Lee.
- C \_\_\_\_\_ I am not sure whether I will smoke or not.
- D \_\_\_\_\_ I think I will smoke as much as Lee.
- E \_\_\_\_\_ I will probably smoke more than Lee.

APPENDIX H

HEY, KAREN, WANT A CIGARETTE?





In just a moment, you will be watching a video tape of three students (Karen, Mike, and Val). Each of them will be pressured by their friends to smoke a cigarette.

On the following pages are three separate scoring forms. Please use these scoring forms to report how well you think each student did when pressured to smoke.

PLEASE WAIT FOR THE INSTRUCTIONS ON THE TV SCREEN  
BEFORE YOU BEGIN! THANK YOU!

#### General Information

Please circle the correct response:

Your Age	10	11	12	13	14	15
Sex	Girl			Boy		
Your Grade in School	5	6	7	8	9	

Distributed by the  
Bureau of Health Promotion  
& Risk Reduction  
Utah State Department of Health

## "KAREN"

## Item 1

Circle the word that best describes how well you think Karen handled the pressure:

EXCELLENT

GOOD

FAIR

POOR

## Item 2

List the things you think Karen did well to resist the pressures to smoke. (If you don't think Karen did anything well, write the word "NOTHING" in the last line).

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## Item 3

What other things, if any, do you think Karen could have done better to resist the pressure to smoke. (If you think Karen couldn't have done any better, write the word "PERFECT" on the last line).

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## "MIKE"

## Item 1

Circle the word that best describes how well you think Mike handled the pressure:

EXCELLENT

GOOD

FAIR

POOR

## Item 2

List the things you think Mike did well to resist the pressure to smoke. (If you don't think Mike did anything well, write the word "NOTHING" on the last line).

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## Item 3

What other things, if any, do you think Mike could have done better to resist the pressure to smoke. (If you think Mike couldn't have done any better, write the word "PERFECT" on the last line).

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"VAL"

Item 1

Circle the word that best describes how well you think Val handled the pressure:

EXCELLENT

GOOD

FAIR

POOR

Item 2

List the things you think Val did well to resist the pressure to smoke. (If you don't think Val did anything well, write the word "NOTHING" on the last line).

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Item 3

What other things, if any, do you think Val could have done better to resist the pressure to smoke. (If you think Val couldn't have done any better, write the word "PERFECT" on the last line).

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Rank who you think was the best at resisting the pressures to smoke.  
A score of 1 = "best", 2 = "second best", and 3 = "worst".



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Karen \_\_\_\_\_

Mike \_\_\_\_\_

Val \_\_\_\_\_

APPENDIX I  
LETTER TO TEACHERS

Dear Teacher:

The Utah State Department of Health in cooperation with the Salt Lake City School District, would like to invite all district sixth grade teachers to participate in a college credit workshop (free of charge) designed to assist teachers in the implementation of alcohol and smoking prevention programs in their classrooms.

As you know, the State requires that the schools provide classroom instruction on the harmful effects of alcohol, tobacco, and drugs. This workshop is part of a study designed to facilitate compliance with this mandate and to assist teachers in the development, implementation, and evaluation of a theoretically sound smoking prevention program.

In return for your participation in the workshop and implementation of the instructional package, the Utah State Department of Health will provide at no cost to the district or individual teacher (1) two hours of graduate continuing education credit, (2) inservice teacher training (total of 12 hours of instruction), and (3) classroom materials for each teacher including sufficient numbers for all participating students. The benefits will be made to teachers regardless of experimental or control group assignments.

During the past three years, the Bureau of Health Promotion and Risk Reduction has had an opportunity to develop and evaluate classroom instructional strategies designed to minimize the risks of smoking among school age children. We are confident that properly trained teachers implementing this program will benefit students in the following areas: (1) increased knowledge of the health consequences of smoking, (2) increased decision making skills, and (3) improved resistance to persuasion skills.

We encourage your voluntary participation and share in your commitment to promote the health and well-being of school age children. If you have any questions, please call 533-6120.

Sincerely,

Gary D. Nelson,  
Director, Statewide Risk  
Reduction Program



APPENDIX J  
PARTICIPATING EXPERIMENTAL AND CONTROL GROUP TEACHERS

## Experimental Group

<u>ID#</u>	<u>Teacher</u>	<u>School</u>	<u>N</u>
01	Marker	Bonneville	28
03	Beers	Uintah	68
05	Hammer	Emmerson	31
07	Parker	Ensign	14-(5th) 13-(6th)
09	Clokey	Rosslyn Heights	16-(6th) 14-(5th)
12	Aswad	Franklin	26
14	Benton	Rose Park	22

## Control Group

02	Howard	Rose Park	23
04	Silver	Beacon Heights	25
06	Kutz	Washington	17
08	Carl	Indian Hills	16
10	Giovacchini	Indian Hills	18
11	Maham	Lynn Bennion	34
13	Lambert	Beacon Heights	24

## Non-Equivalent Control Group

15	Alder	Whittier	23
16	Dennison	Whittier	29
17	Lousey	Whittier	12
18	Croft	Fox Hills	28
19	Hague	Fox Hills	25
20	Farren	William Penn	31
21	Crane	William Penn	30
22	Kearn	Morningside	27
23	Brittain	Morningside	28

APPENDIX K  
LETTER TO PARENTS

Dear Parents:

Your child is participating at school in a 12 hour alcohol/smoking risk reduction program designed to prevent/delay alcohol/smoking onset. In order for us to determine the effectiveness of our program, we are requesting permission to evaluate your child's knowledge, attitudes, decision making ability as well as resistance to persuasion skills. Approximately 40 minutes will be required for this assessment.

The information collected will permit an assessment of this program's impact and perhaps help us all as concerned citizens to understand how we may best prevent this serious health problem among young people.

For purposes of computer analysis, an identifier number will be assigned to each child's evaluation. The identifier numbers will be destroyed by your child's teacher following the evaluation. Program evaluation results will be kept on computer file with the Utah State Department of Health for a two-year period after which all records with the identifier number will be destroyed.

If you have any further questions about this project, please do not hesitate to contact the Bureau of Health Promotion and Risk Reduction, Utah State Department of Health.

If you agree to have your child participate in this evaluation, please sign this consent form and have your child return it to the teacher as soon as possible. Thank you!

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Parent or Guardian Signature

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Student Signature

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Gary D. Nelson, Director  
Statewide Risk Reduction  
Program, Bureau of Health  
Promotion/Risk Reduction,  
Utah State Dept. of Health

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## REFERENCES

- Allegrante, J. P., O'Rourke, T. W., & Tunçalp, S. A multivariate analysis of selected psychosocial variables on the development of subsequent youth smoking behavior. Journal of Drug Education, 1977-1978, 7 (3), 237-248.
- Applegate, T. P., & Evans, W. K. Making rational decisions. Salt Lake City: Concept Development Inc., 1978.
- Asch, S. E. Studies of independence and conformity: a minority of one against a unanimous majority. Psychological Monographs: General and Applied, 1956, 70 (9), 1-70.
- Beckerman, S. C. Report of an educational program regarding cigarette smoking among high school students. Journal of Maine Medical Association, 1963, 54 (3), 60-63, 74.
- Belloc, N. B., & Breslow, L. Relationship of physical health status and health practices. Preventive Medicine, 1972, 1 (4), 409-421.
- Bergen, B. J., & Olesen, E. Some evidence for a peer group hypotheses about adolescent smoking. Health Education Journal, 1963, 21 (3), 113-119.
- Biomedical computer programs (BMDP). Berkeley, California: University of California Press, 1979.
- Botvin, G., Eng, A., & Williams, C. Preventing the onset of cigarette smoking. Manuscript submitted for publication, 1980.
- Botvin, G. B., Eng, A., and Williams, C. L. Preventing the onset of cigarette smoking through life skills training. Paper presented at the 106th annual meeting of the American Public Health Association, Los Angeles, October, 1978.
- Campbell, D., & Stanley, J. Experimental and quasi-experimental designs for research. Chicago: Rand McNally Publishing Company, 1963.
- Chilton Research Services. Teenage smoking patterns. U.S. Public Health Service, National Clearinghouse on Smoking and Health, 1968.
- Dubos, R. The mirage of health. New York: Harper and Brothers, 1959.

- Duryea, P. J. E. Psychosocial factors children perceive as prominent in smoking decisions. Unpublished master's thesis, University of Utah, 1979.
- Elkind, D. Children and Adolescents. New York: Oxford University Press, 1981.
- Evans, R., Rozell, R., Mittelmark, M., Hansen, W., Bane, A., & Havis, J. Deterring the onset of smoking in children: knowledge of immediate physiological effects and coping with peer pressure, media pressure, and parent modeling. Journal of Applied Social Psychology, 1978, 55 (2), 150-156.
- Fodor, F. T., & Glass, L. H. Curriculum development and implementation of smoking research: a longitudinal study. Journal of School Health, 1971, 41 (4), 199-203.
- Fodor, J. T., Glass, L. H., & Weiner, J. M. Smoking behavior, cognitive skills, and educational implications. Journal of School Health, 1968, 38 (2) 94-98.
- Fuchs, Victor R. Who shall live. New York: Basic Books, 1974.
- Freston, M. S. Development of a survey instrument for assessing selected risk factors related to cardiovascular health. Doctoral dissertation, Salt Lake City: The University of Utah, 1981.
- Green, L. W., Kreuter, M.W., Partridge, K., & Deeds, S. Health education planning: a diagnostic approach. Palo Alto: Mayfield Publishing Co., 1980.
- Greenberg, J. S., & Deputat, Z. Smoking intervention: Comparing three methods in a high school setting. Journal of School Health, 1978, 48 (8), 498-502.
- Hammes, M. J. Decision making skills utilized in resistance to persuasion among sixth grade students. Doctoral dissertation, Salt Lake City: The University of Utah, 1981.
- Hollander, E. P. conformity, status, and idiosyncrasy credit. Psychological Review, 1958, 65 (2), 117-127.
- Iverson, D. Application of decision making theories to health education programs, unpublished manuscript, 1981. (Available from D. Iverson, Connecticut State Department of Health, Connecticut).
- Janis, I. L., & Mann, L. Decision making. New York: The Free Press, 1977.



- Jessor, R. Predicting the time of onset of marijuana use: a developmental study of high school youth. Predicting Adolescent Drug Use: A Review of Issues, Methods, and Correlates. DHEW Publication No. (ACM) 77-299, 1977.
- Jessor, R. Problem behavior and developmental transition in adolescence. Journal of School Health, 1982, 52 (5), 295-300.
- Johnston, L. D., Bachman, J. G., & O'Malley, P. M. Highlights from student drug use in America 1975-1980. National Institute on Drug Abuse, DHHS Publication No (ADM) 81-1066, 1980.
- Kime, R. E., Schlaadt, R. G., and Tritsch, L. E. Health instruction: an action approach. New Jersey: Prentice-hall, Inc., 1977.
- Kolbe, L. J. Evaluating effectiveness - the problems of behavioral criteria. Health Education, 1979, 12-16.
- Kolbe, L. J. What can we expect from school health education. Journal of School Health, 1982, 52 (3) 145-150.
- Know Your Body Curriculum. New York: American Health Foundation, 1979.
- Kreuter, M. W., & Christenson, G. W. School health education does it cause an effect? Health Education Quarterly, 1981, 8 (1), 43-45.
- Kreuter, M. W., & Green, L. W. Evaluation of school health education: identifying purpose, keeping perspective. Journal of School Health, 1978, 4, 228.
- Kreuter, M. W., & Reagan, P. A. Health education: Coming of age in the schools. Proceedings of the Planning Meeting on Cancer Education. Sponsored by the Division of Cancer Control and Rehabilitation, National Cancer Institute, 1979.
- Labenta, D. Comparisons of substance use patterns in Utah with a national sample for three ages groups. Unpublished manuscript, 1979. (Available from D. Labenta, Division of Alcoholism and Drugs, Utah State Department of Social Services, Salt Lake City, Utah, 84100).
- Lammers, J., Kreator, M. W., & Smith, B. C. The effects of the SHCP on selected aspects of fifth graders, Health Education, in press.
- Lampert, K., New, P., & New, M. The effectiveness of anti-smoking campaigns: moralistic or scientific approach. Journal of School Health, 1966, 36 (1), 34-40.
- Levitt, E. E. Reasons for smoking and not smoking given by school children. Journal of School Health, 1971, 41 (2), 101-105.

- Levitt, E. E. & Edwards, J. A. A multivariate study of correlative factors in youthful cigarette smoking. Developmental Psychology, 1970, 2 (1), 5-11.
- Lieberman Research Inc. The teenager looks at cigarette smoking, American Cancer Society, 1969.
- McAlister, A. Systematic peer leadership to discourage onset of tobacco dependency. Paper presented at the annual meeting of the American Psychological Association, 1978.
- McAlister, A., & Perry, C. Counseling leadership about smoking pressures. Unpublished manuscript, 1979. (Available from A. McAlister, School of Public Health, Harvard University, Cambridge, Massachusetts).
- McGuire, W. J. Inducing resistance to persuasion: some contemporary approaches. In L. Berkowitz (Ed.) Advances in Experimental Social Psychology, New York: Academic Press, 1964, 1, 191-229.
- McGuire, W. J. & Papageorgis, D. The relative efficacy of various types of prior belief: defense in producing immunity against persuasions. Journal of Abnormal and Social Psychology, 1961, 62 (2).
- Nelson, G., Kreuter, M. W., Christenson, G. M., & Hammes, M. J. Resisting peer pressures to smoke: development of a behavioral assessment strategy. A paper presented at the 96th Anniversary Convention of the American Association of Health, Physical Education, and Recreation, Boston, April, 1981.
- Nelson, G., Summerhays, C. K., & Christenson, G. M. Results of the Utah health risk prevalence survey. Unpublished manuscript, 1982. (Available from G. Nelson, Utah State Department of Health, P.O. Box 2500, Salt Lake City, Utah, 84110).
- Newman, I. Adolescent cigarette smoking as compensatory behavior. Journal of School Health, 1970a, 40 (6), 316-321.
- Newman, I. Peer pressure hypothesis for adolescent cigarette smoking. Journal of School Health, 1970b, 1 (2), 15-18.
- Newman, I. Ninth grade smokers: two years later. Journal of School Health, 1971a, 41 (9) 497-501.
- Newman, I. Status configurations and cigarette smoking in a junior high school. Journal of School Health, 1971b 40 (1), 28-31.

- Robinowitz, H., & Zimmerli, W. Effects of a health education program on junior high school students knowledge, attitudes, and behavior concerning tobacco use. Journal of School Health, 1974, 44 (6), 324-330.
- Rogers, E. M., & Shoemaker, F. F. Communication of Innovations, New York: The Free Press, 1971.
- Salber, E. J., Welsh, B., & Taylor, S. V. Reasons for smoking given by secondary school children. Journal of Health and Human Behavior, 1963, 4 (2), 118-129.
- Swartz, J. L., & Dubitzky, M. Research in student smoking habits and smoking control. Journal of School Health, 1967, 37 (4) 177-182.
- Simon, S., Howe, W., & Kirshenbaum, H. Values clarification. New York: Hart Publishing Company, 1972.
- Smoking Programs for Youth. National Cancer Institute, Office of Cancer Communications, 1980.
- Stone, E. The effects of a fifth grade health education curriculum model on perceived vulnerability and smoking attitudes. Journal of School Health, 1978, 48, 667-671.
- Thompson, E. L. Smoking education programs 1960-1976. American Journal of Public Health, 1978, 68 (3) 250-257.
- U.S. Department of Health, Education, and Welfare. Smoking and Health: A Report of the Advisory Committee to the Surgeon General of the Public Health Service, DHEW Publication No. (PHS) 1103, 1964.
- U.S. Department of Health, Education, and Welfare. Teenage Smoking: National Patterns for Cigarette Smoking, Ages 12-18 in 1968 and 1970, DHEW Publication No. (HSM) 72-7508, 1972.
- U.S. Department of Health, Education, and Welfare. Teenage Smoking: National Patterns of Cigarette Smoking, Ages 12-18 in 1972 and 1974, DHEW Publication No. (NIH) 76-931, 1976.
- U.S. Department of Health, Education, and Welfare. Research on Smoking Behavior, DHEW Publication No. (ADM) 78-581, 1977.
- U.S. Department of Health, Education, and Welfare. The School Health Curriculum Project, DHEW Publication No. (CDC) 78-8359, 1977.
- U.S. Department of Health, Education, and Welfare. Healthy People, The Surgeon General's Report on Health Promotion and Disease Prevention, DHEW Publication No. (DHS) 79--55071, 1979.

- U.S. Department of Health, Education, and Welfare. Smoking and Health: A Report of the Surgeon General. DHEW Publication No. (PHS) 79-50066, 1979.
- U.S. Department of Health, Education, and Welfare. Teenage Smoking: National Patterns of Cigarette Smoking, Ages 12-18 in 1972 and 1974, DHEW Publication No. (NIH) 76-931, 1976.
- Wohlford, P. Initiation of cigarette smoking: is it related to parental behavior? Journal of Consulting and Clinical Psychology, 1970, 34 (2), 148-151.
- Wohlford, P., & Giammona, S. Personality and social variables related to the initiation of smoking cigarettes. Journal of School Health, 1969, 39 (8), 544-552.

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