

DECISION MAKING, LOCUS OF CONTROL, AND
SELF-ESTEEM AS RELATED TO TOBACCO
SMOKING AND ALCOHOL DRINKING
OF EIGHTH GRADERS

by

Janet Pfeffer
///

Dissertation submitted to the Faculty of the Graduate School
of the University of Maryland in partial fulfillment
of the requirements for the degree of
Doctor of Education
1990

C.1

Advisory Committee:

Associate Professor George Eley, Chairman/Advisor
Professor Richard K. Jantz
Professor V. Phillips Weaver
Associate Professor Robert Feldman
Associate Professor Charles Johnson

Maryland
LD
3231
.M70d
Pfeffer,
J.
FOLIO

© Copyright by
Janet Pfeffer
1990

ABSTRACT

Title of Dissertation: DECISION MAKING, LOCUS OF CONTROL, AND SELF-ESTEEM AS RELATED TO TOBACCO SMOKING AND ALCOHOL DRINKING OF EIGHTH GRADERS

Janet Pfeffer, Doctor of Education, 1990

Dissertation directed by: George Eley, Associate Professor, Department of Curriculum and Instruction

This study examined decision-making factors, self-esteem, locus of control, gender, and academic placement as related to the tobacco smoking and alcohol drinking of rural eighth graders. A survey was given in the spring of 1989 to 85 students who constituted 82.5% of the available eighth-grade population in one rural middle school.

Data on decision-making factors were obtained as the responses to a hypothetical decision-making situation involving the offer of a ride to a party with a driver who had already been "partying." Self-esteem was assessed using the Rosenberg Self-Esteem Scale. Locus of control was measured using the Tobacco-Smoking Locus of Control scale and the Alcohol-Drinking Locus of Control scale which were developed by the researcher for this study. The data were analyzed using t tests, chi-square tests, and inspection of the means.

Ten decision-making factors and two clusters of factors were generated from the responses to the hypothetical situation. The factors most frequently mentioned had to do with risks to personal safety. Nonsmokers and nondrinkers were more likely to mention risks, uncertainties about party activities, and interpersonal influences in their decision making. Users, especially frequent users, were more likely to mention attractions to the party and internal influences. Females were more likely to mention risks and students with low academic placement were more likely to mention party attractions. Decision-making factors were not associated with self-esteem or locus of control.

Tobacco smoking and alcohol drinking were associated with low self-esteem and low academic placement but not with locus of control. There was a trend of higher substance-specific internal locus of control scores with increasing substance use, indicating that substance use may give young people a feeling of control over that aspect of their behavior. No association between friend locus of control and substance use was found, indicating that adolescents do not perceive themselves to be influenced by their friends in their substance use.

To my beloved parents
Gertrude and Morris Pfeffer

ACKNOWLEDGEMENTS

Many people helped me complete this dissertation; therefore with gratitude I make the following acknowledgements.

First, I thank my advisor, Dr. George Eley, for his assistance, encouragement, and support. Second, I thank the members of my committee. Dr. Richard Jantz helped with the conceptualization and writing of the dissertation. Dr. V. Phillips Weaver directed the writing of the proposal. Dr. Charles Johnson assisted with the statistical treatment. Dr. Robert Feldman assisted with the development of the survey instrument.

I appreciate the technical assistance and support of Judy Lewis, Vickie Pickett, Steve Radis, Dr. John Ryan, and, most especially, Kaitlin Waldrip. In addition, I am incredibly fortunate to have had the encouragement, expertise, and friendship of Dr. Joan Hennessey.

Finally, I want to thank my husband, David Stevens, and our children, Elizabeth and Mark, for providing support services, distraction, and love throughout the most challenging years of my life.

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
List of Tables	vii
Chapter I Introduction	1
Statement of Rationale	3
Significance	7
Purpose of the Study	9
Research Questions	9
Definitions	11
Limitations	14
Assumptions	16
Overview of Procedures	16
Summary	18
Chapter II Review of Literature	20
Adolescent Tobacco Smoking and Alcohol Drinking	22
Self-Esteem	26
History and Definition	26
Measurement of Self-Esteem	29
Self-Esteem and Health Behavior Research	32
Locus of Control	37
History and Definition	26
Measurement of Locus of Control	39
Locus of Control and Health Behavior Research	41
Decision Making	46
History and Definition	46
Measurement of Decision Making	49
Decision Making and Health Behavior Research	50
Summary	55
Chapter III Methodology	59
Research Questions	59
Sample	60
Instrumentation	62
Self-Esteem Measurement	63
Locus of Control Measurement	64
Decision-Making Factor Measurement	67
Tobacco Smoking Measurement	68
Alcohol Drinking Measurement	68
Gender and Academic Placement Measurement	69

Procedures	70
Data Analysis Procedures	73
Treatment of Discrepant Responses	73
Categorization of Decision-Making Data	75
Statistical Treatment	80
Summary	82
Chapter IV Findings	83
Analysis of Decision-Making Data	83
Analysis of Tobacco Smokers and Nonsmokers	88
Decision-Making Factors	88
Tobacco-Smoking Locus of Control	90
Alcohol-Drinking Locus of Control	91
Self-Esteem	92
Academic Placement	92
Gender	93
Analysis of Alcohol Drinkers and Nondrinkers	94
Decision-Making Factors	96
Tobacco-Smoking Locus of Control	98
Alcohol-Drinking Locus of Control	99
Self-Esteem	100
Academic Placement	100
Gender	100
Analysis of Infrequent Smokers and Frequent Smokers	101
Decision-Making Factors	102
Tobacco-Smoking and Alcohol-Drinking Locus of Control and Self-Esteem	104
Academic Placement	105
Gender	106
Analysis of Alcohol Drinkers	106
Decision-Making	108
Tobacco-Smoking and Alcohol Drinking Locus of Control and Self-Esteem	109
Academic Placement	110
Gender	110
Analysis of Decision-Making Factors	111
Locus of Control and Decision-Making	111
Self-Esteem and Decision-Making	112
Academic Placement and Decision-Making	113
Gender and Decision-Making	114
Summary	114

Chapter V	Summary, Discussion, Conclusions, and Recommendations	121
Summary		121
Summary of Procedures		122
Summary of Findings		123
Discussion of Findings		127
Extent of Tobacco Smoking and Alcohol Drinking		127
Self-Esteem		128
Locus of Control		131
Decision-Making Factors		134
Academic Placement		138
Gender		139
Summary of Discussion		140
Conclusions		141
Recommendations		142
Appendix A	Survey Instrument	147
Appendix B	Parent Consent Form	151
Appendix C	Coding Guidelines	152
Appendix D	Mean Locus of Control and Self-Esteem Scores by Tobacco and Alcohol Use	154
Appendix E	Frequency of Decision-Making Factors by Alcohol Use	161
Appendix F	Mean Locus of Control and Self-Esteem Scores by Decision-Making Factors and Clusters	163
Appendix G	Frequency of Decision-Making Factors by Academic Placement and Gender	175
References		177

LIST OF TABLES

<u>Number</u>	<u>Page</u>
1. Number of Students in Available and Sample Groups by Gender and Academic Placement	62
2. Frequency of Students by Number of Decision-Making Factors Mentioned	85
3. Frequency of Students Mentioning Each Decision-Making Factor	87
4. Frequency of Tobacco Smokers and Nonsmokers Mentioning Each Decision-Making Factor	90
5. Frequency of Tobacco Smokers and Nonsmokers by Academic Placement and Gender	94
6. Frequency of Eighth Graders' Alcohol Consumption and Drunkenness	96
7. Frequency of Alcohol Drinkers and Nondrinkers Mentioning Each Decision-Making Factor	98
8. Frequency of Alcohol Drinkers and Nondrinkers by Academic Placement and Gender	101
9. Frequency of Infrequent and Frequent Smokers Mentioning Each Decision-Making Factor	104

CHAPTER I

INTRODUCTION

Tobacco smoking and alcohol drinking among adolescents are major societal concerns (Surgeon General, 1979; Wallack & Corbett, 1987). For educators, adolescent tobacco and alcohol use poses a dual challenge: dealing with the resulting academic and social problems and helping to prevent youth from engaging in such health risk behavior. Among the many factors which have been studied in relation to adolescent tobacco smoking and alcohol drinking are self-esteem, locus of control, and decision-making skills (Duryea & Okwumabua, 1985; Green, Kreuter, Deeds, & Partridge, 1980).

Self-esteem, the evaluative facet of the self-concept, is among the variables frequently associated with adolescents' choices to engage in health risk behaviors (McAllister, 1979). Increasing students' self-esteem is cited as an important goal in health education (National Professional School Health Organizations, 1984). There is disagreement, however, among researchers on the extent and the importance of the relationship between adolescent self-esteem and tobacco and alcohol use.

Locus of control concerns the influences on people's beliefs about what happens to them. Three independent variables constitute locus of control: internal orientation, influence of others, and dependence on chance. Health educators frequently seek to influence and/or measure locus of control as an indicator of the extent to which people have internalized responsibility for their own health (Hearne & Klockars, 1988; Wallston & Wallston, 1978).

Providing people with the skills to make and act upon rational decisions is a primary goal of health educators (Kolbe, Iverson, Kreuter, Hochbaum, & Christensen, 1981). Duryea and Okumabua (1985) noted, however, in an exploratory study of the health decision-making variables of ninth graders that "little data in the field of health education address the inner cognitive dynamics of health decision-making in youth--regardless of the basis for that decision" (p. 900).

Few studies were located in the literature which examined the tobacco smoking and alcohol drinking of adolescents in relation to their decision-making processes, or which examined locus of control, self-esteem, or other measures of self-concept in regard to decision making and tobacco and alcohol use. School health educators, however, emphasize influencing

students' self-esteem and locus of control orientations in the attempt to influence health behavior choices. Thus it is important to explore the relationships among the self-esteem, locus of control, and decision-making factors of adolescents who make various choices in their tobacco smoking and alcohol drinking.

Statement of Rationale

Both the negative consequences and the extent of adolescent tobacco and alcohol use are causes for concern. Tobacco smoking and alcohol drinking are widespread and the proportion of students who use these substances increases through the high school years. The 1986-87 Survey of Drug Use Among Maryland Adolescents (Maryland Department of Health and Mental Hygiene, 1987) indicated that 7.8% of 8th graders, 14.6% of 10th graders, and 17.6% of 12th graders were smoking tobacco at least several times a week, and 4.4% of 8th graders, 8.2% of 10th graders, and 11.3% of 12th graders were drinking alcohol at least several times a week. By the 12th grade, 56% of students reported using alcohol at least monthly, up from 23.6% in the 8th grade.

The 1987 survey indicated that smoking and alcohol drinking in Maryland also vary with gender and with

academic achievement. The proportion of students who smoke cigarettes is somewhat greater among females. The proportion of students who drink alcohol at least monthly is greater among males, with a 5% difference in the 8th and 10th grades and a 13% difference in the 12th grade. At least monthly use of any drug is reported by approximately 9% of 8th graders who consider themselves excellent or good students, 17% of average students, 23% of fair students, and 41% of failing students.

Along with the hazardous physical, mental, social, and legal consequences of drug use, alcohol is associated with half of all traffic fatalities, the leading cause of adolescent death. Smoking is the single major preventable cause of disease and death in the United States (Surgeon General, 1979).

Numerous factors have been associated with adolescent tobacco and alcohol use in addition to grade level, gender, and academic achievement. A major factor associated with heavy or frequent adolescent tobacco smoking and alcohol drinking is low self-esteem (McAlister, 1979). McAlister noted that "the skills necessary to fully overcome substance abuse probably extend beyond assertiveness toward competence in more general abilities of self-management, particularly

those which help people manage anxiety and gain self-esteem" (p. 203).

Kaplan, Martin, and Robbins (1984) presented a multivariate model of the pathways to adolescent drug use. They found that self-derogation led to the development of deviant patterns as a method of assuaging feelings of self-rejection. The deviant patterns adopted by adolescents consisted of rejecting the conventional values of society and affiliating with peer groups that engaged in deviant behaviors such as substance use. Kandel (1980) concurred with Kaplan, Martin, and Robbins that "future drug users ... exhibit traits, values, and behaviors indicative of unconventionality and rejection of social institutions" (p. 266). He found that peer-related variables were among the strongest predictors of adolescent drug use.

Duryea and Okumabua (1985) noted that adolescent substance use decisions may relate to generalized deviant behavior, lack of adult support networks, or maladaptations to life stresses. More research is needed on adolescent health decisions to determine not only which factors or combination of factors influence the choices adolescents make, but also how the decision-making processes of adolescents work.

Relatively few studies exploring the relationships between adolescent self-esteem and/or locus of control

and tobacco smoking or alcohol drinking were found in the literature, and there was disagreement among researchers about the existence, validity, and importance of observed relationships between locus of control and self-esteem scores and tobacco and alcohol use. While other variables such as health attitudes, health values, and social factors were examined in some of these studies, none of the studies also examined the variables involved in decision making.

Difficulties in the measurement of self-esteem and locus of control have been noted (Hearne & Klockars, 1988; Wylie, 1979). Rotter (1982) proposed that measures specific to the behavior of interest be used when dealing with locus of control. Several researchers in the field of adolescent self-concept have proposed that open-ended formats be used in place of instruments which are reactive in nature to gain information on the salience, or importance to the respondent, of the factors being measured (McGuire & McGuire, 1981; Rosenberg, 1979). Duryea and Okumabua (1985) used an open-ended approach in an exploratory study of the decision-making variables of ninth graders: Students were asked to list the kinds of things they would think about in making a decision whether or not to drive with a friend who had been drinking. They found that more than half of the

cognitions listed were social in nature, and recommended that further research be undertaken.

Significance

One of the major goals of school health educators is to provide students with the skills to make and act upon health-related decisions. Underlying the provision of health knowledge and skills is the hope that students will make health-enhancing choices. Little is known, however, about the decision-making processes in adolescents that may affect health. This study examined the decision-making factors of eighth graders who reported a range of tobacco smoking and alcohol drinking in an exploratory fashion. An open-ended format was used to gain insight into the factors that may lead to health-enhancing and health-risking decisions. The self-esteem and the tobacco-smoking and alcohol-drinking locus of control of eighth graders who reported a range of tobacco smoking and alcohol drinking was also examined, for two reasons: to see if and how self-esteem scores and behavior-specific measures of locus of control were related to substance use, and to see if and how self-esteem and locus of control were related to decision making.

Four purposes were to be served by examining decision-making factors, self-esteem, and locus of control in relation to tobacco smoking and alcohol drinking of eighth graders. First, analysis of data on the decision-making factors of eighth graders who reported a range of tobacco smoking and alcohol drinking and who varied by gender and academic placement would provide insight into the thought processes of students who engaged in these behaviors to various extents.

Second, locus of control instruments specific to tobacco smoking and alcohol drinking were developed for this study. Analysis of the data on substance-specific locus of control of students who reported a range of tobacco smoking and alcohol drinking would lead to recommendations about locus of control measurement and the usefulness of locus of control change as a goal of school health education.

Third, analysis of the data on self-esteem of students who reported a range of tobacco smoking and alcohol drinking and who varied by gender and academic placement would lead to conclusions about the role of self-esteem and to recommendations about classroom efforts to improve students' self-esteem.

Fourth, analysis of the relationships among locus of control, self-esteem, and the decision making of

eight graders would provide insight into some of the factors that interact with and perhaps influence behavior choices.

The implications of the findings of this study for school health education are twofold. A better understanding of the decision-making factors of adolescents will enable educators to emphasize transmission of the knowledge and/or skills that are associated with health-enhancing choices. Second, discovering relationships among tobacco smoking and alcohol drinking, self-esteem, locus of control, and decision making may lead to recommendations for educators in planning curricula that focus on changing these variables.

Purpose of the Study

The purpose of this research was to investigate decision-making factors, self-esteem, locus of control, gender, and academic placement as related to the tobacco smoking and alcohol drinking of rural eighth graders.

Research Questions

The following research questions were addressed:

1. How do tobacco smokers and nonsmokers differ in respect to

- (a) decision-making factors
- (b) tobacco-smoking locus of control
- (c) alcohol-drinking locus of control
- (d) self-esteem
- (e) academic placement
- (f) gender

2. How do alcohol drinkers and nondrinkers differ in respect to

- (a) decision-making factors
- (b) tobacco-smoking locus of control
- (c) alcohol-drinking locus of control
- (d) self-esteem
- (e) academic placement
- (f) gender

3. How does the extent of tobacco usage relate to

- (a) decision-making factors
- (b) tobacco-smoking locus of control
- (c) alcohol-drinking locus of control
- (d) self-esteem
- (e) academic placement
- (f) gender

4. How does the extent of alcohol usage relate to

- (a) decision-making factors
- (b) tobacco-smoking locus of control

- (c) alcohol-drinking locus of control
- (d) self-esteem
- (e) academic placement
- (f) gender

5. How do the decision-making factors of rural eighth graders differ in respect to

- (a) tobacco-smoking locus of control
- (b) alcohol-drinking locus of control
- (c) self-esteem
- (d) academic placement
- (e) gender

Definitions

For the purposes of this study, the following terms were defined:

1. Decision-making factors are those factors which influence an individual's choices or decisions in situations which could affect his or her health or safety. Data on decision-making factors were gathered by asking students what kinds of things they would think about in making a decision that could affect their health or safety in a hypothetical situation. The open-ended responses were subject to content analysis. Ten factors were identified and selected for

analysis in this study. Two clusters of factors were also used in data analysis.

Four factors involved risk to the individual: The Accident Risk factor involved risks of accident, injury, or death from accepting the ride; the Mistrust of Driver factor involved risks of riding with an untrustworthy or unknown driver; the Party Risks factor involved risks associated with the party; and the Coercion factor involved the possibility of pressure or force to use drugs or engage in other undesirable activities.

Three factors involved interpersonal influences and contained references to the opinions or the activities of others: Authority Influences, Friend Influences, and Peer Influences. The Internal Influences factor contained references to the individual's thoughts, desires, or beliefs. The Party Attractions factor contained references to enjoyable aspects of the party. The Party Considerations factor contained references to uncertainties about activities at the party.

The operationalization of these factors is presented in Chapter III.

2. Tobacco-smoking locus of control consists of an individual's beliefs about the extent to which his or her tobacco smoking is influenced by his or her own

actions (internality) and by friends, as measured by the Tobacco Smoking Locus of Control Scale. This instrument contains two independent subscales to measure internal locus of control and friend locus of control for tobacco smoking.

3. Alcohol-drinking locus of control consists of an individual's beliefs about the extent to which his or her alcohol drinking is influenced by his or her own actions (internality) and by friends, as measured by the Alcohol Drinking Locus of Control Scale. This instrument contains two independent subscales to measure internal locus of control and friend locus of control for alcohol drinking.

4. Self-esteem is the evaluative component of the self-concept, consisting of the individual's self-acceptance or sense of self-worth, as measured by the Rosenberg Self-Esteem Scale. Self-esteem is a global concept, based on the individual's assessment of those qualities which he or she deems important, and does not necessarily reflect the individual's self-concept in specific areas, such as mathematical ability or physical attractiveness (Rosenberg, 1979).

5. Tobacco smoking data were obtained from student self-reports on the survey instrument. Tobacco smoking was measured by asking students how often they generally smoked: (a) never (b) a few times a month,

(c) a few times a week, (d) every day.

6. Alcohol drinking data were obtained from student self-reports on the survey instrument. Alcohol drinking was measured in two ways: The number of days on which the student had a drink during the past 30 days was categorized as (a) none, (b) 1-8 days, (c) 9-14 days, (d) 16-24 days, (e) 25-30 days. The number of times the student had been drunk since the beginning of December was categorized as (a) never, (b) 1-3 times ever, (c) 1-3 times a month, (d) 1-2 times a week, (e) more than twice a week.

7. Academic placement was indicated by student self-reports of the language arts sections in which they were enrolled. The six academic levels were designated by the school as "A" (for the highest-placement section) through "F" (for the lowest-placement section). Students were grouped in language arts sections when they entered the middle school on the basis of their previous year's grades. Any subsequent movement from one section to another was based on teacher recommendation.

Limitations

This study had the following limitations:

1. The sample for this study was drawn from one middle school in rural Maryland.

2. The size of the sample was limited by the number of students in the school for whom parental permission was obtained.

3. The sample size was further limited by the number of students who were present in school during the week in which the survey was administered and who appropriately completed the survey.

4. The sample population contained more females and more higher-placement students than the available eighth-grade population.

5. The survey was administered during the last week of school when students had just finished final examinations and may have been fatigued or disinterested in further testing.

6. The survey was administered to students by their classroom teachers under conditions which were not strictly controlled.

7. The survey instrument requested students to respond in writing to an open-ended question, and some students may have lacked the skills or the motivation to respond.

Assumptions

The following assumptions were made in this study:

1. It was assumed that all of the responses of the students on the survey instrument were honest and actually reflect the extent of their tobacco smoking and alcohol drinking.

2. It was assumed that the decision-making situation elicited the factors that eighth graders consider when making decisions.

3. It was assumed that the Tobacco-Smoking Locus of Control Scale measured internal locus of control and friend locus of control.

4. It was assumed that the Alcohol-Drinking Locus of Control Scale measured internal locus of control and friend locus of control.

5. It was assumed that the Self-Esteem Scale measured self-esteem.

Overview of Procedures

The population of this study consisted of students in one rural middle school who were enrolled in the eighth grade in the spring of 1989. Parental permission was obtained in May and the survey instrument was administered by eighth-grade teachers in early June. The sample population consisted of 85

students, representing 82.5% of the available population.

The survey gathered information on decision-making factors, self-esteem, tobacco-smoking and alcohol-drinking locus of control, academic placement, and student gender. Data on decision-making factors were obtained as the responses to a hypothetical decision-making situation involving the offer of a ride to a party with a driver who was described as having already been partying.

Self-esteem was measured using the Self-Esteem Scale, which measures global self-esteem by asking respondents to strongly agree, agree, disagree, or strongly disagree with 10 statements such as "I am able to do things as well as most other people." The reliability of the instrument is reported to be from .85 to .88. The instrument was scored as a four-point Likert scale (Rosenberg, 1979).

Locus of control was measured using the Tobacco-Smoking Locus of Control Scale and the Alcohol-Drinking Locus of Control Scale which were developed by the researcher for this study. Both instruments contain three items in each of two subscales: internal locus of control and friend locus of control. Tests for reliability and validity were

performed in the winter of 1989. The subscales were scored as four separate Likert scales.

Self-report data on tobacco smoking, alcohol drinking, academic placement, and gender were gathered with five multiple-choice questions.

The data from the first two research questions, how the tobacco smoking and alcohol drinking, respectively, of users and nonusers differed in respect to each of the other variables, were analyzed using t tests and chi-square tests. The data from the third and fourth research questions, how the extent of tobacco smoking and alcohol drinking, respectively, related to the other variables, were analyzed using chi-square tests and inspection of the means. The data from the fifth question, how decision-making factors differed with locus of control, self-esteem, gender, and academic placement, were analyzed using t tests, inspection of the means, and chi-square tests. Where data and/or number of subjects were insufficient to use statistical tests, percentages were reported and visual comparisons were made.

Summary

This chapter has presented the purpose and rationale for and significance of conducting this study

to examine self-esteem, locus of control, decision-making factors, academic placement, and gender of eighth-grade students in relation to their tobacco smoking and alcohol-drinking behavior. Five research questions were asked; terms were defined; and limitations and assumptions were presented. A brief overview of the procedures used to conduct the research was also given.

CHAPTER II

REVIEW OF THE LITERATURE

One of the major health-related problems facing society is substance abuse, particularly among adolescents. The two drugs most widely used by adolescents are tobacco and alcohol. This review focuses on adolescent tobacco smoking and alcohol drinking and on the three related factors of self-esteem, locus of control, and decision making.

Self-esteem, locus of control, and decision making were selected for review from among the numerous variables associated with adolescent drug use because of their perceived importance. McAlister (1979) noted in his summary of the factors associated with extensive drug and alcohol use among adolescents that "the skills necessary to fully overcome influences toward substance abuse probably extend beyond assertiveness toward competence in more general abilities of self-management, particularly those which help people manage anxiety and gain self-esteem" (p. 203).

The development of the attitudes and skills to resist drug use has been related to peer and parental role modeling and social groupings with deviant subcultures. Kandel (1980) noted the importance of

social bonding and the peer group in relation to the drug and drinking behavior of youth: "[The] extent of perceived drug use in the peer group, self-reported drug use by peers, and perceived tolerance for use are all strong predictors of a youth's subsequent initiation into use of alcohol, marijuana, or other illicit drugs" (p. 269). Such interpersonal influences, along with internal orientation, are components of locus of control, and are expected to have an impact on health behavior.

Possessing effective decision-making skills is considered to be of critical importance in adolescent health choices. The acquisition of decision-making skills is the focus of comprehensive school health education (National Professional School Health Organizations, 1984): The objectives of health education are to assist students in making the kinds of decisions that lead to the best possible health. In regard to drug abuse, the goals set forth by the Drug Abuse Council to decrease adolescent drug use included improving self-concept, increasing participation in meaningful alternatives to drug use which lead to improved self-image, and improving decision-making skills (Rockett, 1981). Wallack and Corbett stated in their 1987 overview of epidemiological, program, and policy trends in adolescent tobacco, alcohol, and

marijuana use that the trend in prevention has been to provide programs "focusing on enhanced self-esteem, interpersonal skills, and techniques for decision-making and problem-solving" (p. 233).

The first section of this review of the literature presents data on the prevalence of tobacco smoking and alcohol drinking among adolescents. The next three sections cover self-esteem, locus of control, and decision making. Definitions, measurement issues, and reviews of research related to tobacco smoking and alcohol drinking are presented for each factor.

Adolescent Tobacco Smoking and Alcohol Drinking

The health risks of tobacco smoking and alcohol drinking have been well documented, as has the relationship between adolescent drinking and automobile accidents (McAlister, 1979). Recently, particular risks for adolescents who engage in tobacco smoking and alcohol drinking are becoming apparent. For example, adolescent smokers have been shown to be at increased risk of acute respiratory illnesses and chronic respiratory symptoms (Alexander & Klassen, 1988). Not surprisingly, young people who misuse alcohol tend to be overrepresented among adult problem drinkers and alcoholics (Dielman, Shope, Leech, & Butchart, 1989).

The 1986-87 survey of substance abuse among Maryland adolescents gathered data on the proportions of eighth, tenth, and twelfth graders who smoke tobacco and drink alcohol. Among eighth graders, 13.7% reported smoking tobacco at least monthly, and were termed current smokers, and 7.8% reported smoking at least several times a week, and were termed frequent smokers. By the twelfth grade, 23.6% of the students were current smokers and 17.6% were frequent smokers. Alcohol drinking was reported by 23.6% of eighth graders at least monthly (current drinkers) and 4.4% at least several times a week (frequent drinkers). By the twelfth grade, 56.0% of students were current drinkers and 11.3% were frequent drinkers. (Maryland Department of Health and Mental Hygiene, 1987).

The rates of cigarette smoking and alcohol drinking in three rural counties similar to the county studied in this research are different than the rates in the state overall. The rates of cigarette smoking are lower among eighth graders in the three counties, and the rates of both current and frequent alcohol drinking are higher among eighth graders in the three counties, compared to the state averages (Maryland Department of Health and Mental Hygiene, 1987).

Data collected in 1987 as part of an extensive health survey in the county studied in this research

indicated a similar rate of smoking and a higher rate of drinking among eighth graders compared to the state or neighboring counties. Twenty-one percent of county eighth graders reported smoking, compared to a total of 21.5% in the state and 40% reported drinking, compared to a total of 28.0% in the state (Johns Hopkins University, 1987).

Research in the county studied by this investigator and in an adjoining county performed in 1984 revealed similar rates of smoking but much higher rates of drinking than in the state. It was found that 14.4% of the rural eighth graders were current smokers and 8.9% were frequent smokers; 57% of eighth graders reported current use of beer or wine and 14.2% reported frequent use of beer or wine (Alexander & Klassen, 1988).

The Maryland survey collected data on drug use by gender and by self-reported academic achievement. Among eighth graders, 13.8% of males and 17.2% of females reported smoking cigarettes at least monthly, and 27.5% of males and 22.7% of females reported using alcohol at least monthly. The percentages of eighth graders reporting at least monthly use of any drug varied with self-reported academic achievement: 9.1% of excellent students, 8.9% of good students, 16.8% of average students, 23.2% of fair students, and 41.1% of

falling students reported drug use at least monthly (Maryland Department of Health and Mental Hygiene, 1987).

The inverse correlation between use of drugs and academic achievement was reported by Marston, Jacobs, Singer, Widaman, and Little (1988). The researchers identified 77 students who reported no use of any drugs in a sample of 843 9th through 12th graders. The nonusers reported better academic achievement, along with generally better physical and mental health.

Data were also collected in the Maryland 1986-87 survey on the frequency of a variety of alcohol-related problems among students. Among eighth graders, 16.1% of the students reported problems, compared to 45.7% of the current drinkers and 76.8% of the frequent drinkers. Among the problems for which data were collected, absenteeism from school was 5.5% among all students, 17.2% among current drinkers, and 39.7% among frequent drinkers. Health problems were reported by 3.1% of all students, 8.2% of current drinkers, and 13.5% of frequent drinkers. Family problems were reported by 4.6% of all students, 12.7% of current drinkers, and 28.6% of frequent drinkers.

Alexander and Klassen (1988) examined absenteeism rates among students reporting various frequencies of tobacco and alcohol use in two rural counties. They

found that frequent cigarette smokers had a 2.68 greater risk of absenteeism, adjusting for illness frequency and learning problems. They did not, however, find a relationship between alcohol drinking and absenteeism.

Self-Esteem

History and Definition

Three of the multitude of terms used to describe how individuals conceptualize themselves were predominant in the literature. Self-concept is generally used as an inclusive term, whereas self-esteem and self-efficacy are evaluative components of individuals' views of themselves, with self-efficacy mediating self-esteem.

Rosenberg (1979) viewed self-concept as the totality of thoughts and feelings that an individual has about him- or herself, consisting of perceptions of the extant self, the desired self, and the presenting self. Two aspects of the extant self-concept are self-confidence, the individual's expectation of future success, and self-esteem, the individual's self-acceptance or sense of self-worth. Global self-esteem is based on the individual's assessment of those qualities which he or she deems important;

global self-esteem does not necessarily reflect the individual's self-concept in specific areas, such as mathematical ability or physical attractiveness.

Self-esteem is a critical aspect of the self-concept. Wylie (1979) reviewed several thousand studies on the self-concept and described overall self-esteem as one of the three components of the self-concept. Both Rosenberg and Wylie noted that the vast majority of studies on self-concept have actually dealt with self-esteem. Rosenberg posited that this emphasis probably reflects the relationship between self-esteem and emotional health (Rosenberg, 1979).

The connection between self-esteem and emotional health was pointed out by Coopersmith (1967). Coopersmith researched the antecedents of self-esteem and defined self-esteem as the evaluation an individual makes of him- or herself, consisting of perceptions of competence or capability, significance to others, success, and personal worth. Coopersmith reinforced the importance of self-esteem in his conclusion that "determining the basis or bases a given individual employs in judging his worth may well be a crucial step in determining the source of his difficulties and in guiding therapeutic efforts" (p. 262).

In the process of individually administering their self-esteem scales to several thousand youth,

Coopersmith (1967) and Rosenberg (1965,1979) each drew conclusions about the origins of the self-concept or self-esteem that embody aspects of psychoanalytical, social psychological, and phenomenological theories of development. Coopersmith studied the antecedents of self-esteem in 10- to 12-year-old boys using a 50-item self-report scale, teacher observations, clinical evaluations, and interviews with mothers. The latter three measures were used with 85 high or low self-esteem youth selected from among 1748 schoolchildren who were given the Coopersmith Self-Esteem Inventory. Coopersmith found that the antecedents of high self-esteem included total or almost total parental acceptance, limits which were clearly defined and enforced and thus enabled realistic self-evaluation, and respect and latitude within the limits.

Rosenberg (1979) studied the global self-esteem of several thousand youth in Baltimore and New York State. He theorized that the self-concept is derived from the appraisals of others, social comparisons, self-attributions, and the psychological centrality or importance of factors to the individual. Rosenberg stressed the significance of an individual's values in determining his or her self-esteem: "A person's global self-esteem is based not solely on an assessment of his

constituent qualities but on an assessment of the qualities that count" (p. 18).

Self-efficacy, a component of the self-concept which has become the focus of the social learning theorists, is thought to be related to the development of self-esteem (Bandura, 1982; Rotter, 1982). Self-efficacy consists of an individual's judgments of how well he or she will deal with situations (Bandura, 1982) and can be regarded as the individual's internal sense of confidence (Parcel and Baranowski, 1981). Abramson, Seligman, and Teasdale (1978) related low self-efficacy to a sense of helplessness. When mediated by internal attributions of failure, low self-efficacy can lead to low self-esteem.

Measurement of Self-Esteem

Weaknesses in the extensive literature on self-concept and self-esteem have resulted from difficulties in operationalizing variables and in developing valid and reliable measuring instruments (Wylie, 1979). One problem was that most of the self-concept studies actually measured self-esteem, which is only one aspect of the self-concept (Rosenberg, 1979). Two other weaknesses that threatened the validity of instruments that measure

self-esteem were their reactive nature and the possible lack of salience (Juhasz 1985; McGuire & McGuire, 1981).

Several researchers tested the validity of the existing measures of self-concept by comparing two or more different instruments. Marsh and Smith (1982) used multitrait-multimethod analyses on the Sears Self-Concept Inventory and the Coopersmith Self-Esteem Inventory, both of which are multidimensional and evaluative. They concluded that the two measures do not appear to be dealing with the same construct. The Coopersmith subscales had little discriminant validity and were less reliable, less stable over time, and not substantiated by factor analysis.

Byrne (1983) tested four instruments by giving 929 high school students the Coopersmith General Self-Concept and Academic Self-Concept scales, the Rosenberg Self-Esteem Scale, and the Brookover Self-Concept of Ability Scale in October and the following April. She found that the stability over time of the Coopersmith General, Rosenberg, and Brookover scales was acceptable; both convergent and discriminant validity existed between the Coopersmith General and the Rosenberg scales; and convergent validity existed between the Coopersmith Academic and the Brookover Academic scales.

Juhasz (1985), McGuire and McGuire (1981), and Rosenberg (1979) proposed that measures of self-esteem should examine the salience of the instruments' items for the individual. McGuire and McGuire (1981) proposed and investigated the use of spontaneous open-ended measures of self-concept rather than reactive measures because the latter provide no information on salience. In research with schoolchildren, they found that only seven percent of the responses to the query "Tell me about yourself" were evaluative, in contrast to the emphasis in the literature on the measurement of self-esteem. McGuire and McGuire strongly recommended the use of spontaneous self-concept measures:

We admit that spontaneous self-concept probes evoke unwieldy data and provide a lower information-to-noise ratio regarding any specific a priori dimension; however, these disadvantages are outweighed in many cases by the fact that the spontaneous self-concept provides information regarding an important neglected area of self-concept inquiry, namely, the issue of what is salient in the person's self-concept. It allows investigating the extent to which people think of themselves on various dimensions, rather than just ... where people would place themselves on a

researcher-specified dimension were they ever to think about it. (p.169)

In contrast to the expectations of McGuire and McGuire, Marsh (1986) and Juhasz (1986) reported few significant findings in researching importance ratings in self-esteem. Marsh administered the Self Description Questionnaire III to 808 late adolescents and young adults along with measures of the perceived importance of the various items on the instrument. He found that although some people had high self-concepts in the areas that they perceived to be more important, self-esteem was not predicted by importance ratings. Juhasz (1986) sought information on spontaneous self-concept by giving two open-ended questions to approximately 200 seventh- and eighth-grade girls in classroom settings. The written responses were quite limited. Juhasz concluded with cautions about the methodological difficulties in spontaneous self-concept research.

Self-Esteem and Health Behavior Research

A number of researchers have found significant relationships between self-esteem and tobacco, alcohol, and other drug use. Some of these results, however, were considered too small to be of practical

significance. A chronological review of seven studies follows.

Kaplan, Martin, and Robbins (1984) conducted a longitudinal study to explore relationships among self-derogation, peer influence, weakening of social controls, and early substance use. Instruments measuring self-derogation, social control, and drug use were administered to 3,052 Junior high students in three consecutive years. Regression analysis indicated that self-derogation was associated with perceived rejection by peers, family, and school. Students with high self-derogation in the first year tended to have high self-derogation in the second and third years and increased drug use by the third year. Kaplan et al. concluded that self-derogation predicts drug use in two different ways:

First, it leads to the loss of motivation to conform to the normative expectations of one's membership groups, which in turn leads to deviant associations and the adoption of deviant patterns. And second, early self-derogation predicts later self-derogation--this continuation of the self-esteem motive disposes the person to adopt deviant patterns that might assuage the self-rejecting feelings. (p. 279)

The researchers proposed a multivariate model for the interactions between social bonding, peer influence, and self-derogation with early drug use: Each construct appeared to play an independent, primary, and intervening role.

In contrast to the emphasis on social factors examined by Kaplan et al., Dielman, Leech, Lorenger, and Horvath (1984) examined the relationships between health locus of control and self-esteem as related to adolescents' behavior and intentions in regard to drug use. An attitudes and behavior questionnaire was administered to 246 fifth graders and 265 sixth graders to determine health locus of control, self-esteem, and current behavior and intentions with regard to the use of cigarettes, alcohol, and marijuana. The instruments included 17 items from the Coopersmith Self-Esteem Inventory. High self-esteem was found to be associated with less current or intended substance use, but the researchers concluded that the relationships were too small to provide direction for interventions.

To further explore the relationships between self-esteem, locus of control, peer pressure, and adolescent substance abuse, Dielman, Campanelli, Shope, and Butchart (1987) did a longitudinal study with a treatment group of 1,753 and a control group of 836 fifth and sixth graders. Variables were measured with

an instrument containing 17 items from the Coopersmith Self-Esteem Inventory and 8 items on susceptibility to peer influence. In accord with the conclusions of Kandel (1980) and other researchers on social bonding, the pretest data revealed that susceptibility to peer pressure is more central to adolescent tobacco, alcohol, and marijuana use than either locus of control or self-esteem.

In contrast to Dielman and his colleagues, Lamarine (1987) concluded that self-esteem may be a significant predictor of health attitudes and behavioral intentions among Native American children. Lamarine surveyed 291 Native American children in the fourth through sixth grades. Information was gathered on self-esteem using a modification of the Coopersmith Self-Esteem Inventory and on health attitudes using a 15-item Health Attitude Inventory which assessed knowledge, attitudes, and behavioral intentions in regard to tobacco and alcohol use and three other health behaviors. There was a small but significant correlation (.31 using the Pearson Product Moment) between self-esteem and health attitudes, which decreased with age and was greater for females. A stepwise multiple regression indicated that nine percent of the variance in health attitudes was attributed to self-esteem.

Evidence that low self-esteem is associated with intentions to smoke, and is therefore antecedent to smoking, was obtained by Murphy and Price (1988). The Rosenberg Self-Esteem Scale and nine items on parental smoking and student behavior and intentions regarding smoking were administered to 1513 eighth graders. The mean self-esteem score was 30.7. There was a progressive decrease in self-esteem score with amount smoked: Nonsmokers had a mean self-esteem score of 31.5, whereas students who reported smoking daily had a mean score of 28.7.

Further evidence that self-esteem is related to smoking and drinking was obtained by Young, Werch, and Bakema (1989). These researchers noted that inconsistencies in the findings on self-esteem in relation to drug use may stem from the lack of consensus on the conceptualization and operational definition of self-esteem. They examined home, school, and peer self-esteem, using the 30-item Hare Self-Esteem Scale, in relation to use and intentions to use caffeine, smoking and chewing tobacco, alcohol, and illegal drugs. A total of 2032 students in grades four through nine were surveyed. Results revealed significant relationships between home and school self-esteem and almost every measure of drug use or intentions. High scores for school and home

self-esteem were associated with nonuse, less use, and intentions to not use smoking tobacco and alcohol. There were no significant relationships with peer self-esteem.

Locus of Control

History and Definition

Locus of control is a construct derived from social learning theory. In social learning theory, an individual's behavior in a particular psychological situation is predicted by his or her expectancy of the consequences or reinforcements of the behavior and the value of the reinforcements. Rotter (1982) theorized that individuals have the expectancy that the reinforcements resulting from their own behavior are either under their own control or are under the control of outside forces such as luck, fate, or powerful others. These expectancies were referred to as internal or external locus of control.

The initial concept of internal-external locus of control explicated by Rotter in the 1950s was expanded by Levinson (1974) to contain three components after early studies yielded inconsistent results. Multidimensional locus of control consists of three independent constructs: internal-external locus of

control, the influence of powerful others, and the influence of chance. These three components were used in the conceptualization and operationalization of health locus of control (Wallston, Wallston, & DeVellis, 1978) and children's health locus of control (Parcel & Meyer, 1978).

The relevance of locus of control to health behavior was examined by B. S. Wallston and K. A. Wallston in a review of the literature (1978). Locus of control was found to be relevant to the prediction of preventive health behaviors, though there was a lack of consistency in the research. Wallston and Wallston noted that "locus of control is only one of a complex of factors (e.g., the value of health; motivation; social supports; previous behavior; perceived costs and benefits of special actions), which individually or in interaction with one another explain the variance in health-related behaviors" (p. 113). Implications for the use of locus of control and its measurement included evaluation of health education programs which emphasize responsibility; provision of programs which train people to be more internal in their locus of control orientation; and design of health education programs tailored towards participants' locus of control beliefs.

Parcel and Meyer (1978) noted that the application of social learning theory to the study of children's health behavior may influence health education programs. Internal health locus of control should be reinforced, for example, if it is found that internality is necessary for children to assume responsibility for certain health behaviors. Reinforcing internal health locus of control might lead school health education programs to focus on teaching skills, rather than content, so that children learn to apply decision-making skills successfully to health behavior. "If children learn to apply decision-making skills to health behavior, have an opportunity to practice these skills, and experience success, then it may be more likely that health education will contribute to individuals' ability to assume more responsibility for their health". (p. 158)

Measurement of Locus of Control

Instruments to measure locus of control specific to health behavior were developed by Wallston, Wallston and DeVellis (1978) and by Parcel and Meyer (1978). Wallston et al. created the Multidimensional Health Locus of Control (MHLC) scales incorporating subscales for internal, powerful other, and chance

locus of control subsequent to working with a unidimensional instrument which measured only internal-external locus of control. The MHLC scale contains six items in each of the three subscales. Examples of items are as follows: When I get sick I am to blame (internal); health professionals keep me healthy (powerful others); no matter what I do, if I am going to get sick, I will get sick (chance).

Parcel and Meyer (1978) developed a multidimensional health locus of control instrument for children through age 12. The 20 items on the Children's Health Locus of Control (CHLC) scale also measure the constructs of internal, powerful other, and chance locus of control, and are conceptually similar to the items on the MHLC scale.

The CHLC scale was critiqued by Hearne and Klockars in 1988. Research with 156 sixth-grade students in Washington State and 390 sixth-grade students in New York State using the CHLC indicated that the children's scale does not fit the theoretical model, as does the adult MHLC scale. Hearne and Klockars concluded that the scale is unsuitable for students in the sixth grade, who have become more internal than younger students. In his rejoinder to the critique, Parcel (1988) stated that he has

consistently recommended that the CHLC scale not be used with adolescents.

Rotter (1982) suggested that specific measures of locus of control be developed for use with people who have specific behavior patterns, and especially when seeking practical applications. Short, behavior-specific locus of control instruments such as the four-item Weight Locus of Control scale developed by Saltzer (1978), for example, are easy to administer. The Weight Locus of Control scale was found to be as successful in predicting weight loss intentions as was the MHLC scale in predicting general health-related behavior. K. A. Wallston and B. S. Wallston (1978) proposed that the MHLC scale is a middle ground between generalized and specific instruments for locus of control measurement.

Locus of Control and Health Behavior Research

Several researchers have examined health locus of control and the related concepts of powerlessness and peer influence in relation to adolescent drug behavior, attitudes, and/or intentions. Relationships between cigarette smoking and external locus of control and between aspects of locus of control such as powerlessness or peer influences and drug use were

reported in literature. No significant relationships were found, however, between drug use and locus of control as measured by the CHLC scale.

A relationship between cigarette smoking and external locus of control was found by Clarke, MacPherson, and Holmes (1984). The researchers administered a children's locus of control scale that measured internality-externality to 1307 seventh-grade students. Pearson Correlation Coefficients between smoking status and externality were .19 for boys and .25 for girls. In addition, an analysis of variance indicated that students with the behavioral intention to not smoke were significantly more internal than smokers or students who intended to smoke. Clarke et al. hypothesized that smoking is a way that young people who feel powerless and fatalistic may demonstrate their control in a rewarding manner. The researchers suggested that if indeed such young people are more vulnerable to smoking, then health education interventions should be concentrated on youngsters with external characteristics.

The findings of Newcomb and Harlow (1986) substantiated those of Clarke et al. in regard to the association between powerlessness and drug use. The researchers studied perceived loss of control and personal efficacy, which are similar to locus of

control. A random telephone survey administered to 376 students ages 12, 15, and 18 contained three items each on perceived loss of control and meaningless in life, and questions on stressful life events. Newcomb and Harlow found that these factors accounted for a small-to-moderate amount of variance in the drug use of the students. Especially for younger adolescents, perceived lack of personal efficacy mediated the effects of stress on drug use. The researchers reported that "the more uncontrollable negative life events experienced by the teenager, the less personal control they experienced and the more they felt others were in control of their lives" (p. 574).

Neither Dielman and his colleagues (1984, 1987) nor Lamarine (1987) found significant associations between young people's drug use and health locus of control using the CHLC scale. Dielman, Leech, Lorenger, and Horvath (1984) studied health locus of control and self-esteem as related to adolescent tobacco, alcohol, and marijuana use and intentions by surveying 246 fifth-grade and 265 sixth-grade students. Stepwise multiple regression analysis was used to predict health behavior and intentions from locus of control and self-esteem. The researchers found that the health locus of control measure had little relationship to health behavior and intentions.

In a follow-up study to the 1984 research, Dielman, Campanelli, Shope, and Butchart (1987) did a longitudinal analysis of data from 2589 fifth- and sixth-grade students who were surveyed on their health locus of control, self-esteem, and susceptibility to peer pressure. The researchers found that susceptibility to peer pressure was more central to adolescent substance use and misuse than was locus of control or self-esteem.

Similar results regarding health locus of control were obtained by Lamarine (1987) who surveyed 291 Native American children in the fourth through sixth grades. Information was gathered on health locus of control using nine items from the 20-item CHLC. Lamarine found virtually no correlation between health locus of control and health attitudes toward tobacco or alcohol use and three other health behaviors.

The influence of powerful others is assessed on health locus of control scales with references to health professionals, teachers, and parents. Researchers have found, however, that peers exert powerful influences on adolescent drug use and intentions. Attachment to friends, peer susceptibility, and the drug use of peers have been found to correlate with young people's drug use.

Cigarette smoking was positively correlated with attachments to friends and negatively associated with commitment to education and beliefs about societal norms in research by Krohn, Massey, Skinner, and Lauer (1983). The researchers studied social bonding and adolescent cigarette smoking in a longitudinal analysis of 1,405 students in seventh through 12th grades. Social bonding theory posits that the constraints of society prohibit deviant behavior. These constraints include attachments to significant others, commitment to and participation in conventional activities, and involvement and belief in the norms of society. Bonding variables accounted for 33 to 34% of the variance in drug use.

Similar results were obtained in subsequent research. Krohn, Naughton, Skinner, Becker, and Lauer (1986) hypothesized that adolescents who are unsuccessful in and dissatisfied with school and family are more likely to smoke because they are susceptible to peers with values that are contrary to the societal norms. They found in a survey of 1,180 9th through 12th graders that the best predictor of smoking was association with friends who smoke. Factors which predicted friendships with smokers included lack of participation and success in school and lack of family participation and supervision.

Peer influence as measured by perceived acceptance or rejection by peers was studied by Kaplan, Martin, and Robbins (1984) and Young, Werch, and Bakema (1989). Kaplan et al. conducted a longitudinal study to explore relationships among self-derogation, peer influence, weakening of social controls, and early substance use, as reported in the section on research on self-esteem. Regression analysis indicated that self-derogation was associated with perceived rejection by peers, family, and school. Students with high self-derogation in the first year tended to have high self-derogation in the second and third years and increased drug use by the third year.

Young, Werch, and Bakema (1989) reported that low home self-esteem and school self-esteem were associated with greater use and intentions to use tobacco, alcohol, and other drugs, but did not find any associations between peer self-esteem and substance use. They pointed out, however, that peer self-esteem and peer pressure may be two different constructs.

Decision Making

History and Definition

Three approaches to the development of critical thinking and decision making were distinguished by

Silver (1976) in his analysis of the moral development of children: psychoanalytic, cognitive-developmental, and social learning theory. In the psychoanalytic approach, derived from Freud and Erikson, it is postulated that children incorporate the values of their parents at an early age. During the stage of adolescence, decision making is implicit in the questioning, searching for a new sense of sameness and continuity, and choice of role models and behaviors.

The cognitive-developmental approach is derived from the work of Piaget and Kohlberg. As adolescents develop to the stage of formal operations, they become able to think abstractly and apply operations to operations. The advanced phase of formal operations involves the development of problem-solving abilities. Kolbe, Iverson, Kreuter, Hochbaum, and Christensen (1981) applied the findings of Piaget and Kohlberg to the issue of whether to inculcate and train children to perform specified health behaviors or to educate for competent decision making. Since children do not develop formal reasoning ability until age 12 or later, preadolescents are not yet able to engage in abstract reasoning and to consider all the possibilities and consequences involved in making decisions. Hence Kolbe et al. proposed that health education for young children should consist of information and

recommendations for carrying out healthy practices; decision-making paradigms should begin in early adolescence when formal reasoning begins to develop.

Social learning theory is an integration of classical learning theory and cognitive theories. Of the three approaches to the development of decision making, social learning theory has been the most extensively used as the theoretical framework for interventions in health. For example, the social learning strategies used for instructing students in decision making in smoking prevention programs include role modeling by others, goal setting, self-monitoring, contracting, behavioral rehearsal, and reinforcement (Schinke & Gilchrist, 1983).

Janis and Mann (1977) elaborated five stages of decision making based on observations of people who carefully work out solutions with which they can live. The stages are (a) appraising and accepting the challenge, (b) searching for and surveying the alternatives, (c) weighing the alternatives, (d) deliberating about and becoming committed to a decision, and (e) adhering to the decision despite possible negative feedback. The Janis-Mann model excludes other styles of decision making, however, and is not necessarily applicable to children and

adolescents at their various stages of cognitive development.

The Janis-Mann model might be considered the rational style of decision making; other styles are the intuitive style, which involves fantasies, feelings and emotional self-awareness, and is often impulsive; and the dependent style, which involves compliance with authority and/or denial of personal responsibility (Phillips, Paziienza, & Ferrin, 1984). Adolescents use pieces of each type of decision-making style.

Schvanevelt and Adams (1893) noted that adolescents are ambivalent about planning and deciding, and are influenced in their decision making by a variety of factors, such as peers, parents, education and the media. Often, the decision-making mode used by adolescents is the "good enough" model, based largely on intuition and a limited survey of alternatives and consequences.

Measurement of Decision Making

Duryea and Okwumabua (1985) pointed out in their descriptive study of adolescent health decision making that "...little data in the field of health education address the inner cognitive dynamics of health decision making in youth" (p. 900). They noted that there is a

lack of an empirical foundation for measuring and evaluating such dynamics, and recommended that further research should focus on creating measures which more precisely describe students' decision making related to health.

Decision Making and Health Behavior Research

Only two research studies which examined adolescent decision making in relation to drug use were located in the literature (Duryea & Okumabua, 1985; Hammes & Duryea, 1986). The lack of empirical support for a relationship between decision making and adolescent drug use is in contrast to the wide support for focusing on decision making in drug prevention and health education in general. For example, Kolbe, Iverson, Kreuter, Hochbaum, and Christensen (1981) proposed that the focus of health education should be decision making: The appropriate goal for health education is the acquisition of decision-making skills, including the knowledge upon which to base decisions and the behavioral skills with which to carry decisions out.

As a result of the paucity of research in this area, Duryea and Okwumabua (1985) took an open-ended approach in a descriptive study to explore the health

decision-making variables of adolescents. They asked 43 ninth graders to express their thoughts about whether or not they would attend a drinking party and why. They also gathered data on the students' future health choices. The factors in the decisions of both the health-risking and the health-promoting students were primarily social as opposed to personal or health-related, once again lending credence to social bonding theory.

The dynamics of decision making among adolescents was examined by Hammes and Duryea (1986). The researchers explored the premise that adolescents with more abstract thought processes have more refined decision-making processes. Ninety-four 8th through 12th graders were given an open-ended cognitive measure and four questions about their decision making. There were no significant differences among students who made health-promoting or health-risking decisions or who had different cognitive styles, but abstract thinkers identified more possible decisions that might be made in a hypothetical situation and were less likely to decide instantly.

A number of researchers have evaluated classroom interventions based on social learning theory. Botvin and Eng (1980) provided 10 sessions of skills training to 281 eighth, ninth, and tenth graders.

Their goals were to provide resistance skills for direct pressure, increase self-confidence to resist indirect pressure, help with social anxiety, and increase knowledge of the short- and longterm consequences of smoking. The intervention resulted in fewer new smokers during the following year.

Duryea (1983) provided training in resisting pressures to use alcohol to 155 ninth graders. The training emphasized developing skills to refute threatening arguments in favor of alcohol use. Pre- and posttests of knowledge, ability to refute arguments, compliance, attitudes, and behavior revealed that students in the treatment groups performed better than controls on all but one variable. Duryea concluded that students "need to develop a more positive self-assurance they can apply in socially pressurized situations" (p. 255). One way to help develop self-assurance is through practice in dealing with external threats.

Schinke and Gilchrist (1983) provided interpersonal skills training and factual information to try to prevent the onset of smoking among adolescents. They also included problem solving and decision making in the eight sessions which were presented to 56 sixth graders. Evaluation using self-reports and student ratings of videotaped behavior

showed improved problem-solving, decision-making, and interpersonal communication skills and lowered rates of beginning cigarette use.

Recent developments in substance abuse prevention research were summarized by Botvin (1986), who differentiated between the social influence model and the personal and social skills model. The social influence model emphasizes developing awareness of peer and family influences, correcting misperceptions of social norms, and acquiring specific skills, such as refusal techniques. In addition, social influence programs utilize peer leaders. The personal and social skills training model emphasizes more general behaviors such as problem-solving skills, cognitive skills for resisting personal and media pressure, self-control and self-esteem enhancement, stress management skills, and assertiveness and other communication skills. Botvin reviewed 20 studies and concluded that both approaches were successful: All of the studies demonstrated significant reductions in smoking behavior. The social influence studies resulted in a reduction of from 33% to 39% in the proportion of students beginning to smoke, and reductions in the prevalence of experimental and regular smoking as well. Two of the personal skills training studies resulted in reductions of from

42% to 75% in experimental smoking as well as prevention of initiation.

Evidence contrary to Botvin's conclusion about the effectiveness of personal skills models has been presented by Hansen, Johnson, Flay, Graham, and Sobel (1988). Hansen et al. provided a 12-session social influence program to 25 classes and a 12-session affective (personal skills) program to 24 classes, with a control group of 36 classes. They found that the social influence program caused a significant reduction in tobacco smoking onset at both one and two-year posttests, and a reduction in alcohol consumption at the level of two or more drinks in 30 days. Students in the affective program, in contrast, actually had higher levels of initiation of substance use, compared to the control group. The researchers concluded that social influence approaches were more efficacious than affective approaches; the latter were not at all helpful when used alone. Hansen et al. hypothesized that to explain the failure of the affective program "It is possible for instance that subjects ... may actually come to see drugs as a means of coping with stress and enhancing self-esteem" (p. 151).

A host of difficulties in evaluating classroom interventions to change drug behavior were pointed out by Dielman, Shope, Leech, and Butchart (1989). One

concern, which was the focus of their research, was to separate those students who were already using alcohol from those who were not in data analysis. A social learning-based prevention program was administered to fifth and sixth graders. Data on the amount and frequency of alcohol use, prior experience with alcohol, and three measures of alcohol misuse were collected before and at three intervals following the intervention.

Analyses of covariance examining treatment group and prior drinking of 791 fifth graders and 714 sixth graders revealed that the intervention was effective in lowering the rate of alcohol use and misuse among sixth graders with prior alcohol use. (An incidental but interesting finding was that students who reported prior supervised use also had higher rates of unsupervised use, leading to questions about the wisdom of allowing young people to drink.) The research provided support for the use of prevention programs with students who have already begun experimenting with drugs.

Summary

This literature review provided background on the problem of tobacco and alcohol use among adolescents

and on self-esteem, locus of control, and decision making, particularly in regard to adolescent substance use. There were four sections to the literature review. First, data on the extent of tobacco smoking and alcohol drinking among adolescents and on the deleterious effects of the use of these substances were presented. This was followed by sections on history and definitions, measurement issues, and relevant research studies for each of the variables being investigated: self-esteem, locus of control, and decision making. A summary of the review follows.

1. The percentages of eighth-grade students who reported smoking tobacco in the rural area where this study was conducted and the state were similar, but eighth graders in the rural area reported drinking alcohol more frequently than students in the state overall.

2. Use of any drug varied inversely with reported academic achievement: the better the achievement, the smaller the proportion of students using drugs.

3. Self-esteem was defined as the individual's self-acceptance or sense of self-worth.

4. Weaknesses in the measurement of self-esteem included difficulties in conceptualization and operationalization of the variable. An open-ended approach was recommended by several researchers to more

accurately identify salient aspects of the self-concept.

5. The Rosenberg Self-Esteem Scale was found acceptable in terms of stability and validity.

6. The conclusions of researchers about the relationship between self-esteem and substance use were mixed: some researchers concluded that the correlation between self-esteem and drug use was important, while others concluded that the relationship was too small to be meaningful.

7. Researchers found support for the importance of peer influences in drug use decisions of adolescents.

8. Locus of control was defined as the individual's expectancy that the results of one's behavior are under one's own control and/or are the result of outside forces, such as other people or chance.

9. Locus of control instruments have been developed which are specific to health and to children's health; it was recommended that instruments be made more specific to the behavior under investigation.

10. Relationships between cigarette smoking and external locus of control and between both powerlessness and peer influences and drug use were reported, but not between young people's drug use and

locus of control as measured with the Children's Health Locus of Control scale.

11. It was recommended that decision-making skills be taught to students when they enter early adolescence and noted that adolescents might not be likely to use the rational approach to making decisions.

12. There was a lack of empirical data on adolescent decision making related to health. One study used an open-ended approach and found that adolescents' concerns were largely social.

13. Social learning strategies helped to delay the onset and/or the increase in tobacco and alcohol use by young adolescents.

14. Social learning strategies that provide specific resistance skills were found to be more efficacious than affective or personal skills approaches and were recommended for use in drug prevention programs.

CHAPTER III

METHODOLOGY

This research was conducted to investigate decision-making factors, self-esteem, locus of control, gender, and academic placement in relation to the tobacco smoking and alcohol drinking of rural eighth graders. This chapter describes the characteristics of the total and sample populations, the content of the survey instrument, and the procedures used to recruit subjects and collect and analyze the data.

Research Questions

Data were collected to answer the following research questions:

1. How do tobacco smokers and nonsmokers differ in respect to

- (a) decision-making factors
- (b) tobacco-smoking locus of control
- (c) alcohol-drinking locus of control
- (d) self-esteem
- (e) academic placement
- (f) gender

2. How do alcohol drinkers and nondrinkers differ in respect to the above-mentioned variables?

3. How does the extent of tobacco usage relate to the above-mentioned variables?

4. How does the extent of alcohol usage relate to the above-mentioned variables?

5. How do the decision-making factors of rural eighth graders differ in respect to

- (a) tobacco-smoking locus of control
- (b) alcohol-drinking locus of control
- (c) self-esteem
- (d) academic placement
- (e) gender

Sample

This study was conducted in the spring of 1989 at a middle school in rural Maryland with an enrollment of 108 eighth-grade students. One hundred and three eighth-grade students were available to participate in the study; five of the 108 students were unavailable because of placement in alternative or special education settings. The sample consisted of 85 students, or 82.5% of those available and 78.7% of the eighth-grade enrollment. Of the 18 students who were not included in the sample, seven (6.8%) chose not to

participate, 10 (9.7%) did not return parental consent forms, and one student completed the survey instrument incorrectly and was eliminated from the sample.

The sample contained proportionately more females and more higher-placement language arts students than the available group, as summarized in Table 1. Chi-square tests, which were performed to see if significant differences existed between the two groups in gender or in academic placement, were not significant at the .05 level. The frequencies and percentages are shown in Table 1.

Table 1

Number of Students in Available and Sample Groups by
Gender and Academic Placement

Characteristic	Students			
	Available		Sample	
	N = 103		N = 85	
	n	%	n	%
Gender				
Male	48	46.6	37	43.5
Female	55	53.4	48	56.5
Academic Placement				
Higher	63	61.2	57	67.1
Lower	40	38.8	28	32.9

Instrumentation

The questionnaire used to gather the data for this study consisted of three scales, an open-ended question on decision making, and five multiple-choice questions. The Self-Esteem Scale (Rosenberg, 1965) was used to measure global self-esteem. The Tobacco-Smoking Locus of Control scale and the Alcohol-Drinking Locus of Control scale were developed and piloted by the researcher to measure internal and friend locus of

control. An open-ended question asking students to respond to a hypothetical decision-making situation was adapted from the exploratory research of Duryea and Okumabua (1985) and used to elicit decision-making factors. In addition, a total of five questions were included to determine gender, language arts section, and extent of tobacco smoking and alcohol drinking. A copy of the complete instrument is included in Appendix A.

Self-Esteem Measurement

The Self-Esteem Scale assessed global self-esteem by asking respondents to strongly agree, agree, disagree, or strongly disagree with 10 statements such as "I am able to do things as well as most other people." The instrument was scored as a four-point Likert scale, yielding a summed score. The reliability of the instrument was reported to be from .85 to .88 (Rosenberg, 1979). Research by Byrne (1983) indicated that both convergent and discriminant validity existed between the Coopersmith General Self-Esteem Inventory and the Rosenberg Self-Esteem Scale. The Self-Esteem Scale was selected for use in this research because of its brevity, low reading level, and widespread use in research with adolescents.

The wording on two of the items in the Self-Esteem Scale was simplified after a pilot study and discussion of the survey instrument with four ninth-grade students. The phrase "at least on a equal plane with others" was changed to "at least equal with others" and the phrase "I am inclined to feel that I am a failure" was changed to "I tend to feel that I am a failure." These changes were made to assist eighth-grade students in understanding the items.

Locus of Control Measurement

Locus of control was measured using the Tobacco-Smoking Locus of Control scale and the Alcohol-Drinking Locus of Control scale which were developed and validated by the researcher for this study. Both instruments contain three items in each of two scales: internal locus of control and friend locus of control. Each scale was scored as a five-point Likert scale, with summed scores. Possible scores ranged from 3, indicating an external orientation or minimal influence of friends, to 15, indicating maximal internal orientation or maximal influence of friends.

Alpha reliability coefficients for each scale and various interscale correlations were measured in a pilot study with 43 ninth-grade students in the winter

of 1989. The Alpha reliability coefficient was .70 for the internal scale of the Tobacco-Smoking Locus of Control scale and .77 for the friend scale of the Tobacco-Smoking Locus of Control scale. The Alpha reliability coefficient was .71 for the internal scale of the Alcohol-Drinking Locus of Control scale and .89 for the friend scale of the Alcohol-Drinking Locus of Control scale.

Internal locus of control was measured by asking students to indicate how strongly they agreed or disagreed with statements such as "I am responsible for my own smoking." The construct of internal locus of control was developed by Levinson (1974) and applied to health situations by Wallston, Wallston and DeVellis (1978) and to children's health by Parcel and Meyer in the Children's Health Locus of Control scale (1978).

Ninth graders in the pilot study were administered the Children's Health Locus of Control scale as well as the Tobacco-Smoking and Alcohol-Drinking Locus of Control scales: Interscale correlations were calculated to measure the validity of the construct of internal locus of control. The correlations between the internal scales of the Tobacco-Smoking Locus of Control scale and the Children's Health Locus of Control scale, between the internal scales of the Alcohol-Drinking Locus of Control scale and the

Children's Health Locus of Control scale, and between the internal scales of the Alcohol-Drinking Locus of Control scale and the Tobacco-Smoking Locus of Control scale were all significant at the .01 level.

The construct of friend locus of control was developed for the Tobacco-Smoking and Alcohol-Drinking Locus of Control scales in view of the relationships among substance use and perceived and actual substance use of peers (Kandel, 1980). To measure friend locus of control, students were asked to indicate how strongly they agreed or disagreed with statements such as "If I drink, it has a lot to do with my friends." Friend locus of control was used as an alternative to the powerful other locus of control construct which was developed by Levenson (1974) and applied to health by Wallston, Wallston and DeVellis (1978) and Parcel and Meyer (1978). Whereas the friend locus of control scale measures the influence of friends, powerful other locus of control measures the influence of authority figures such as health professionals, teachers, and parents.

In the pilot study in the winter of 1989, a significant correlation at the .01 level was found between the friend locus of control scales of the Tobacco-Smoking and Alcohol-Drinking Locus of Control scales. There were no significant correlations between

the friend scale of either the Tobacco-Smoking or Alcohol-Drinking Locus of Control scale and the powerful other scale of the Children's Health Locus of Control scale. The lack of correlation between friend locus of control and powerful other locus of control supported the expectation that two different constructs were being measured.

Decision-Making Factor Measurement

Data on decision-making factors were obtained as responses to a hypothetical decision-making situation. The following scenario was adapted from exploratory research on the health decision-making of ninth grade students (Duryea and Okumabua, 1985):

Next week you are going to a rock concert with your friends. Everyone, including your friends, will be doing things to have a really good time during the concert. After the concert you will all be invited to a nearby party. A member of the crowd who has been partying already offers you a ride to the party.

Students were then asked "What kinds of things would you think about in making your decision about whether or not to accept the ride and go to the party? Please list as many things as you can think of." The

situation was pilot tested with 20 ninth graders in the winter of 1989 and in a group interview with four ninth graders thereafter. As a result of the pre-testing, sixteen lines were provided for written responses, with numbers listed on alternate lines to allow sufficient space for individual responses.

Tobacco Smoking Measurement

One question was included to assess use of tobacco. Students were asked how many cigarettes they generally smoked: (a) none, (b) a few each month, (c) a few each week, (d) every day. The two higher frequencies of smoking were collapsed into one cell for analysis of the extent of tobacco usage because of the small number of students reporting each of these frequencies. Students were then grouped as nonsmokers, infrequent smokers, and frequent smokers.

Alcohol Drinking Measurement

Two questions were used to assess use of alcohol. Students were asked on how many days during the past 30 days they had had a drink: (a) none, (b) 1-8 days, (c) 9-14 days, (d) 16-24 days, (e) 25-30 days. Students were also asked the number of times they had gotten drunk or very, very high since the beginning of

December: (a) never, (b) 1-3 times ever, (c) 1-3 times a month, (d) 1-2 times a week, (e) more than twice a week. The three highest frequencies of drinking during the past 30 days were collapsed into one cell for analysis of the extent of alcohol drinking because of the small number of students reporting each of these frequencies, as were the three highest frequencies for the number of times of getting drunk or very, very high. Students were then grouped as infrequent or frequent drinkers and as students who were seldom or often drunk. Students who had neither gotten drunk since December nor had a drink in the past 30 days were grouped as nondrinkers, whereas students who had engaged in either or both behaviors were grouped as drinkers.

Gender and Academic Placement Measurement

Self-report data on gender and academic placement were gathered on the survey instrument by having students check appropriate responses. Academic placement was assessed by having students indicate their language arts section letter. The school has designated "A" as the highest-placement section, ranging to "F" as the lowest-placement section. Students from the six language arts sections were

placed in two groups for data analysis to avoid empty and extremely small cell sizes in the chi-square analyses. The students in the three higher-placement sections were placed in the high placement group, and those in the three lower-placement sections were placed in the lower-placement group. A copy of the complete instrument is included in Appendix A.

Procedures

Permission to conduct the study was received from the Board of Education of a school system in rural Maryland. The principal of the middle school selected for participation suggested that the survey be administered during the last two weeks of the spring semester after the Memorial Day weekend. It was further suggested that parental consent forms be distributed by the eighth-grade science/health teacher. (A copy of the parental permission form is included in Appendix B.) The science teacher agreed to distribute and collect permission letters and to arrange with other eighth-grade teachers to administer the survey to all of the students simultaneously on the second of June.

The letter requesting parental permission for students to take part in this study was distributed to

103 eighth-grade students during the first week of May 1989. Eighty-five letters were returned to the science teacher within the next two weeks. Students who had not returned consent forms were then asked to address envelopes to their parents. Thirteen permission letters containing stamped return envelopes were mailed home and eight additional responses were received.

Of the 103 students invited to participate in the survey, 85 completed the survey instrument appropriately, seven declined, ten did not respond, and one responded to the survey inappropriately and was eliminated from the sample. The majority of the students were given the survey on the second of June; nine students who were absent were given the survey on the next possible occasion the following week.

On the day before survey administration, four eighth-grade teachers met with the researcher to review administration procedures. The teachers agreed to seat students as far apart as possible, to read the information on the cover sheet with the students, to refrain from walking around during testing, and to have students remain in their seats when finished with the survey booklet closed. The teachers were told to answer any questions about the instructions or wording of items using the same language as was used on the surveys. In addition, the teachers were asked to point

out to the students that there were no identifying numbers on the surveys and that the teacher would collect the completed surveys and place them in a sealed envelope to be given to the researcher.

On the recommendation of the eighth-grade teachers, the survey items were read aloud to the two lowest-placement language arts sections to ensure that the students understood the questions. Students in the higher sections took the survey silently. The survey was administered to all those students present on the second of June at the beginning of their regular third period classes. Students in the three lower-placement language arts sections completed the survey in their language arts classes which met third period. Students in the higher-placement language arts sections completed the survey in three other third period classes. Survey administration took approximately 25 minutes. No questions or problems were reported to the researcher. Nine students who were absent were given the survey individually or in small groups one week later by the science teacher.

Data Analysis Procedures

Treatment of Discrepant Responses

Seventy-two students responded appropriately to all of the items on the survey. Fourteen students provided incomplete or ambiguous responses on one or two items each. One of these students did not answer two of the three questions on use of tobacco and alcohol and thus was eliminated from the sample population. Four of the students did not write any responses to the decision-making situation. These four students remained in the sample population and were coded as "no response" on each of the decision-making factors. Three students neglected to circle a response on one of the 10 items on the Self-Esteem Scale. In each case the missing item was assigned the average of the other nine items to enable calculation of a summed score based on 10-items. One student circled both "agree" and "disagree" on the ninth item on the Self-Esteem Scale and gave no response on the tenth item. "Agree" was assigned to the tenth item and "disagree" to the ninth item, which was consistent with the student's responses to the previous eight items on the scale.

Ambiguous responses were provided by five students who either circled two responses or provided written

responses on one of the items on the survey instrument. One student circled both "disagree" and "strongly disagree" on one item on the friend scale of the Alcohol-Drinking Locus of Control scale. The value "disagree" was assigned to be consistent with the student's other two responses on this scale. A second student circled both "strongly agree" and "disagree" on one item of the internal scale of the Tobacco-Smoking Locus of Control scale. This item was assigned the value "unsure". Three students indicated that they were undecided on one or two items each on the Self-Esteem Scale. The students either circled both "agree" and "disagree" or wrote on the survey instrument that they were unsure. These responses were coded 2.5 to represent the midpoint between "agree" and "disagree" on a scale from 1 (strongly disagree) to 4 (strongly agree).

Two students whose survey forms were received in the sealed envelope from the lowest-placement language arts section reported that they were in higher-placement language arts sections. These two responses were changed to "section F" by the researcher. (The two students who incorrectly reported their language arts sections were two of the four students who did not respond to the decision-making situation.)

Categorization of Decision-Making Data

A preliminary step in data analysis was categorization of the open-ended responses to the decision-making situation. Students had been asked to list what kinds of things they would think about in making a decision about whether or not to accept a ride and go to a party with a driver who had already been "partying." The 304 responses of the eighth-grade students were reviewed and used by this researcher to generate 10 decision-making factors and a factor for other miscellaneous responses. The generation of factors was performed by clustering similar responses; coding guidelines were then developed. The face validity of these factors was verified by a panel of four educators and health professionals who reviewed the individual responses and the coding guidelines. The panel consisted of a reading specialist with a Doctorate in Education, a counselor of adolescents with a Masters in Social Work, a nurse with Masters degrees in Psychology and Psychiatric Nursing, and a physician with a Masters degree in Public Health.

Two raters coded each of the responses of the students as one of the 10 decision-making factors or as a miscellaneous response using the coding guidelines which are included in Appendix C. The interrater

agreement was 90.1%. A third rater coded the responses for which there was disagreement, and in each instance the third rater selected one of the codes previously assigned, which was then used in the data analysis.

The 10 factors were as follows.

The Accident Risk factor contained references to the risks of accident, injury, or death in the automobile, either specified directly or alluded to by the state of the driver or inferred from references to other ways to get to the party. The coding guidelines specified that the responses mentioning the following aspects belong in this category: driver's drug intake, ability to drive, driving record, driving skills; possibility of accident, injury, death; the safety of the ride; refusal of ride; and other ways to get to the party. Examples of responses coded Accident Risk included "I would think about how drunk the person was," "ask to drive myself home if they [are] high," and "could be a bad accident."

The Mistrust of Driver factor contained references to the risk of riding in an automobile with an untrustworthy or unknown driver. The coding guidelines specified that responses mentioning the following aspects belong in this category: how well known to the respondent, responsible, or trustworthy the driver is; possibility of not going directly to the party or not

going to the party at all; licensing of driver or other legal aspects of the car; possibility of drugs in the car. Examples of responses coded as Mistrust of Driver were "who the person is," "Is he going straight to the party," and "If they are someone I can trust."

The Coercion factor contained references to the risk of being pressured into using drugs, having sex, or committing a crime. Coding guidelines specified that responses mentioning pressure or force to use drugs, to have sex, or to commit crimes be included in this category. An example of a response coded as Coercion was "you'd probably be pressured into doing something you don't want to do."

The Party Risks factor contained references to other risks associated with the party. The coding guidelines specified that responses mentioning the following aspects be placed in this category: disapproval of drugs, alcohol, tobacco, at parties; possible negative consequences of the party, such as trouble with the law or sickness; disapproval of attending the party of a stranger; decision to not attend the party; possibility of not getting safely home from the party. Examples of responses coded as Party Risks were "there might be many drugs at the party" and "I wouldn't go if I knew the people at the party had drugs."

The Party Attractions factor contained references to anticipated enjoyment at the party. The coding guidelines specified that responses mentioning fun at the party, anticipated party activities, or a decision to attend the party be placed in this category. Examples were "would be fun," "I love to party so I have to go," and "meet new people there."

The Party Considerations factor contained statements expressing uncertainty about what would be happening at the party. The coding guidelines specified that the following aspects be placed in this category: uncertainty about drugs or alcohol being at the party; uncertainty about who will be at or who is hosting the party; uncertainty about how the person will get home; and uncertainty about knowing what will happen. An example of a response coded as Party Considerations was "Is there going to be drugs and alcohol there?".

Three factors involved the influences of other people: authorities, friends, and peers. Coding guidelines for the Authority Influences factor specified responses which mentioned adults or other authority figures, such as "is there going to be a parent there?" and "tell my parents where I'm going just in case." The Friend Influences factor included responses which mentioned what friends will be doing or

thinking, such as "friends be there." The Peer Influence factor included responses which mentioned what others will be doing or thinking, such as "who else will be in the car."

The last of the 10 factors was that of Internal Influences. The coding guidelines specified that responses which mentioned the student's own desires or abilities be included in this category. Examples were the responses "do I really want to get there" and "I know how to take care of myself." Responses which specified whether or not the respondent would accept the ride or attend the party were not classified as Internal because of lack of information on the reason for the decision.

Other responses which did not fit into any of the 10 decision-making factors consisted of references to logistics, such as time or distance; other characteristics of the driver; comments; and any other miscellaneous responses. An example of a response which was placed in this factor was "will the mall be open." The content of these responses was quite divergent and the Other Responses factor was not included in the data analysis.

In addition to the 10 factors generated from the students' responses, two clusters of factors were formed for analysis. The Risk cluster consisted of

four factors: Accident Risk, Mistrust of Driver, Coercion, and Party Risks. This cluster was created to serve as a more generalized measure of perception of risk. The Social Influences cluster consisted of three factors: Authority Influences, Friend Influences, and Peer Influences. This cluster was created to provide an indication of the importance of interpersonal influences.

Statistical Treatment

The microcomputer software program Number Crunching Statistical System (Hintze, 1987) was used to analyze the data. The .05 level of significance was used in the analyses. To answer research questions 1 and 2, how smokers and nonsmokers and drinkers and nondrinkers, respectively, differed in respect to the six variables being studied, the following methods were used. T tests were used to compare the parametric data on self-esteem, tobacco-smoking locus of control, and alcohol-drinking locus of control of users and nonusers of each substance. Chi-square tests were used to compare the categorical data on academic placement, gender, and decision-making factors of users and nonusers of each substance.

To answer research questions 3 and 4, how the extent of tobacco smoking and alcohol drinking, respectively, related to the six variables, the following methods were used. Because of the small cell frequencies, inspection of the means was used to compare self-esteem, tobacco-smoking locus of control, and alcohol-drinking locus of control of infrequent and frequent smokers, infrequent and frequent drinkers, and students who were seldom and often drunk. The two highest-frequency categories for smoking and the three highest-frequency categories for alcohol drinking and drunkenness were combined because of the low numbers of students in the individual categories. Chi-square tests were used to compare the academic placement, gender, and decision-making factors of light and heavy smokers, infrequent and frequent drinkers, and students who were seldom and often drunk. It is possible that actual differences between groups were overlooked because of the small sample sizes.

To answer research question 5, how the decision-making factors related to locus of control, self-esteem, academic placement, and gender, the following methods were used. T tests and inspection of the means were used to compare the tobacco-smoking and alcohol-drinking locus of control and self-esteem of students who mentioned and did not mention the various

decision-making factors. Chi-square tests were performed to compare the academic placement and gender of students who mentioned and did not mention the various decision-making factors.

Summary

This chapter described the setting for the study as a middle school in rural Maryland. The sample population of 85 eighth graders contained slightly more females and more higher-academic placement students than the available population. A description of the survey instrument was presented, including the development of the Tobacco-Smoking and Alcohol-Drinking Locus of Control scales. The procedures used for survey administration were explained.

The chapter also described the analysis of the data, which began with the handling of incomplete or ambiguous responses, and the categorization of the open-ended responses to the decision-making situation into 10 factors for analysis. The statistical analyses used to examine the data and answer the research questions were presented.

CHAPTER IV

FINDINGS

The purpose of this study was to examine decision-making factors, self-esteem, locus of control, academic placement, and gender in relation to the tobacco smoking and alcohol drinking of rural eighth-grade students. Five research questions were asked about the relationships among these variables and tobacco smoking and alcohol drinking. Data were gathered with a survey which was administered to 85 eighth graders in the spring of 1989.

This chapter presents the findings of the study. It is divided into six major sections. The first section presents the data from the decision-making situation, followed by a section for each of the five research questions.

Analysis of Decision-Making Data

In the decision-making question on the survey, students were asked what kinds of things they would think about in deciding whether or not to accept a ride and go to a party with someone who has been "partying" already. Ten factors relating to decision-making and a

category for other responses were generated from the responses of eighth graders to this question. Four of the factors involved possible risks to the individual: risk of accident or injury in the automobile (accident risk), risks associated with an unknown or untrustworthy driver (mistrust of driver), risks of attending the party (party risks), and pressure or force to use drugs, have sex, or break the law (coercion). Two factors involved aspects of the party other than risks of attending: uncertainties about the party (party considerations) and anticipated enjoyment of party activities (party attractions). Three of the factors involved the influence of others: authority influences, peer influences, and friend influences. The tenth factor involved references to the individual's desires or abilities (internal influences). Responses which did not fit into any of these factors were grouped in a separate category as other responses.

Seven of the 10 decision-making factors were grouped into two clusters for additional analysis. Accident risk, mistrust of driver, party risks, and coercion were grouped as the risk cluster. Authority influences, peer influences, and friend influences were grouped as the social influences cluster. In contrast,

party considerations, party attractions, and internal influences were considered as individual factors only.

A total of 304 responses were provided from which the factors were generated. Some students wrote as many as eight responses; others wrote none at all. The number of different factors mentioned by students (excluding the category of other responses) ranged from none to six, with most students mentioning one or two factors. The frequency with which students mentioned various numbers of decision-making factors is shown in Table 2.

Table 2

Frequency of Students by Number of Decision-Making Factors Mentioned

Number of factors	Students	
	n	%
0	5	5.9
1	25	29.4
2	38	44.7
3	8	9.4
4-6	<u>9</u>	<u>10.6</u>
	85	100.0

There was great variation in the number of students mentioning each of the factors. The range was from 63 students who mentioned the accident risk factor to four students who mentioned friend influences. In addition to the 10 decision-making factors, 17 students gave responses which were coded as other responses. The number and percentage of students mentioning each of the 10 factors are shown in Table 3.

Table 3
Frequency of Students Mentioning Each Decision-Making Factor

Factor	Students	
	N = 85	
	n	%
Accident risk	63	74.1
Mistrust of driver	26	30.6
Party considerations	16	18.8
Party attractions	12	14.4
Authority influences	11	12.9
Coercion	9	10.6
Party risks	9	10.6
Internal influences	9	10.6
Peer influences	6	7.1
Friend influences	4	4.7

Seventy-one students, or 83.5%, mentioned at least one of the four factors involving risk which comprise the risk cluster. Sixteen students, or 18.8%, mentioned one or more of the three interpersonal influence factors which comprise the social influence cluster.

Analysis of Tobacco Smokers and Nonsmokers

Research Question One: How do tobacco smokers and nonsmokers differ in respect to (a) decision-making factors, (b) tobacco-smoking locus of control, (c) alcohol-drinking locus of control, (d) self-esteem, (e) academic placement, and (f) gender?

Chi-square tests were used to compare the 20 students who smoke tobacco with the 65 who do not on each of the decision-making factors and clusters and to compare smokers and nonsmokers by academic placement and by gender. Yates values were used when there were small expected frequencies. T tests were used to compare smokers and nonsmokers on the basis of tobacco-smoking locus of control, alcohol-drinking locus of control, and self-esteem scores. The study produced the following findings.

Decision-Making Factors of Tobacco Smokers and Nonsmokers

In the decision-making question on the survey, students were asked what kinds of things they would think about in deciding whether or not to accept a ride to a party with someone who has been partying already. The numbers and proportions of smokers and nonsmokers mentioning each decision-making factor are shown in

Table 4. Of the 10 decision-making factors generated from the data analysis, two were significantly different between smokers and nonsmokers. More nonsmokers mentioned party considerations, $\chi^2(1, N = 85) = 4.56, p < .05$, and more smokers mentioned attractions to the party, $\chi^2(1, N = 85) = 3.86, p < .05$. In addition, when the social influences cluster was compared for smokers and nonsmokers, the difference was significant, $\chi^2(1, N = 85) = 5.99, p < .05$. All of the 16 students who mentioned friend influences, peer influences, and authority influences were nonsmokers. Party risks and coercion were mentioned more often by nonsmokers, as was the risk cluster (mentioned by 87.7% of the nonsmokers and 70.0% of the smokers) but these differences were not significant. The only factor, in addition to party attractions, which was mentioned by proportionally more smokers was internal influences.

Table 4

Frequency of Tobacco Smokers and Nonsmokers Mentioning
Each Decision-Making Factor

Factor	Smokers		Nonsmokers	
	N = 20		N = 65	
	n	%	n	%
Accident risk	14	70.0	49	75.4
Mistrust of driver	6	30.0	20	30.8
Coercion	1	5.0	8	12.3
Party risks	1	5.0	8	12.3
Party considerations*	0	0.0	16	24.6
Party attractions*	6	30.0	6	9.6
Friend influences	0	0.0	4	6.2
Peer influences	0	0.0	6	9.2
Authority influences	0	0.0	11	16.9
Internal influences	4	20.0	5	7.7

* $p < .05$

Tobacco-Smoking Locus of Control of Tobacco Smokers and
Nonsmokers

Two scales compose the Tobacco-Smoking Locus of Control scale: internal locus of control and friend

locus of control. Students responded to three items for each scale. Possible scores on both internal and friend locus of control ranged from 3 to 15, with higher scores indicating stronger internal orientation or stronger perceived influence of friends, respectively. The findings on locus of control are summarized in Appendix D, Table D-1. The mean scores on the internal scale were 13.7 for smokers and 13.0 for nonsmokers. These high scores indicate a strongly internal orientation for both smokers and nonsmokers. The mean scores on the friend scale were 7.6 for smokers and 6.8 for nonsmokers. No significant differences were found on either the internal or the friend tobacco-smoking locus of control scale using t tests with 83 degrees of freedom at the .05 level of probability.

Alcohol-Drinking Locus of Control of Tobacco Smokers and Nonsmokers

Two scales comprise the Alcohol-Drinking Locus of Control scale: internal locus of control and friend locus of control. Possible scores for each scale ranged from 3 to 15, with higher scores indicating stronger internal orientation or greater perceived influence of friends. The findings for alcohol

drinking locus of control are summarized in Appendix D, Table D-1. Mean scores on the internal scale were 13.2 for smokers and 13.1 for nonsmokers, indicating a strong internal orientation for both smokers and nonsmokers. Mean scores on the friend scale were 6.9 for smokers and 7.7 for nonsmokers. T tests indicated no significant differences between the two groups.

Self-Esteem of Tobacco Smokers and Nonsmokers

The Rosenberg Self-Esteem Scale was used to measure global self-esteem. Possible scores ranged from 10 to 40, with lower values indicating lower self-esteem. Nonsmokers had a mean self-esteem score of 30.5; smokers had a mean self-esteem score of 26.4. A t test performed to compare the self-esteem of smokers and nonsmokers was significant, $t(83) = -2.79$, $p < .05$, indicating that nonsmokers have higher self-esteem scores than smokers. Self-esteem scores are summarized in Appendix D, Table D-1.

Academic Placement of Tobacco Smokers and Nonsmokers

The distribution of the sample population in language arts sections was 18 students in section A, 17 in section B, 22 in section C, 14 in section D, 10 in section E, and 4 in section F. The higher-placement

group used in data analysis contained the 57 students in sections A, B, and C. The lower-placement group contained the 28 students in sections D, E, and F.

The numbers and percentages of smokers and nonsmokers in each group are reported in Table 5. A chi-square test to compare the academic placement of tobacco smokers and nonsmokers was significant, with proportionally more nonsmokers in the higher-placement language arts sections, $\chi^2(1, N = 85) = 5.76, p < .05$.

Gender of Tobacco Smokers and Nonsmokers

The proportions of males and females who reported smoking tobacco were not significantly different. Approximately 24% of the males and 23% of the females reported smoking tobacco in the past 30 days. The numbers and percentages of smokers and nonsmokers of each gender are summarized in Table 5.

Table 5
Frequency of Tobacco Smokers and Nonsmokers by Academic Placement and Gender

Variable	Smokers		Nonsmokers	
	N = 20		N = 65	
	n	%	n	%
Academic placement*				
Higher	9	45.0	48	73.8
Lower	11	55.0	17	26.2
Gender				
Males	9	45.0	28	43.1
Females	11	55.0	37	56.9

* $p < .05$

Analysis of Alcohol Drinkers and Nondrinkers

Research Question Two: How do alcohol drinkers and nondrinkers differ in respect to (a) decision-making factors, (b) tobacco-smoking locus of control, (c) alcohol-drinking locus of control, (d) self-esteem, (e) academic placement, and (f) gender?

Chi-square tests were used to compare students who drink alcohol with those who do not on each of the

decision-making factors and to compare drinkers and nondrinkers by gender and by academic placement. The Yates chi-square test was used when expected cell frequencies were small. T tests were used to compare drinkers and nondrinkers on the basis of tobacco-smoking locus of control, alcohol-drinking locus of control, and self-esteem.

Two questions were used to assess alcohol consumption: Students were asked on how many days they had consumed alcohol during the past 30 days and on how many occasions they had been drunk or very, very high since December. The correlation between the two measures was .7540 ($r^2 = .5685$). Forty-five students (52.9% of the sample) were classified as nondrinkers, and 40 students (47.1%) were classified as drinkers. Nondrinkers were those students who had neither had a drink in the past 30 days nor been drunk or very, very high since December. Drinkers were those students who reported either or both of the drinking behaviors. The distribution of students by drinking status is shown in Table 6.

Table 6.

Frequency of Eighth Graders' Alcohol Consumption and Drunkenness

Drunkenness in past 5 months		Drinking in past 30 days	
		Did not drink N = 50	Did drink N = 35
Not drunk	N = 54	45 (90%)	9 (26%)
Drunk	N = 31	5 (10%)	26 (74%)

Of the 40 students who reported drinking, 17 (42.5%) also reported smoking. Of the 20 smokers, 17 were drinkers. Thus 85% of the smokers were drinkers. The study produced the following findings.

Decision-Making Factors of Alcohol Drinkers and Nondrinkers

In the decision-making question on the survey, students were asked what kinds of things they would think about in deciding whether or not to accept a ride to a party with someone who has been "partying" already. The number and proportion of drinkers and

nondrinkers mentioning each factor are reported in Table 7. Of the 10 decision-making factors identified in data analysis, two were significantly different between drinkers and nondrinkers. More nondrinkers mentioned party considerations, $\chi^2(1, N = 85) = 3.85$, $p < .05$, and more drinkers mentioned party attractions, $\chi^2(1, N = 85) = 4.38$, $p < .05$. Although the differences were not significant, proportionally more nondrinkers mentioned authority influences and party risks, and proportionally more drinkers mentioned internal influences. The differences between drinkers and nondrinkers on the risk and the social influences clusters were not significant: 88.9% of nondrinkers mentioned at least one of the four risk factors compared to 77.5% of drinkers, and 11.7% of nondrinkers mentioned at least one of the social influence factors compared to 7.0% of drinkers.

Table 7
Frequency of Alcohol Drinkers and Nondrinkers
Mentioning Each Decision-Making Factor

Factor	Drinkers		Nondrinkers	
	N = 40		N = 45	
	n	%	n	%
Accident risk	29	72.5	34	75.6
Mistrust of driver	12	30.0	14	31.1
Coercion	4	10.0	5	11.1
Party risks	2	8.0	7	15.6
Party considerations*	4	10.0	12	26.7
Party attractions*	9	22.5	3	6.7
Friend influences	2	5.0	2	4.4
Peer influences	3	7.5	3	6.7
Authority influences	3	7.5	8	17.8
Internal influences	7	17.5	2	4.4

* $p < .05$

Tobacco-Smoking Locus of Control of Alcohol Drinkers
and Nondrinkers

The findings on tobacco-smoking locus of control are summarized in Appendix D, Table D-2. The mean

scores on the internal scale for tobacco-smoking locus of control were 12.8 for drinkers and 13.5 for nondrinkers, indicating that both nondrinkers and drinkers had strong internal orientation. The mean scores on the friend scale were 7.9 for drinkers and 6.2 for nondrinkers. No significant differences were found on either scale using t tests with 83 degrees of freedom and a probability level of .05, although the higher friend score for drinkers approached significance.

Alcohol-Drinking Locus of Control of Alcohol Drinkers
and Nondrinkers

The findings on alcohol-drinking locus of control are summarized in Appendix D, Table D-2. The mean scores on the internal scale for alcohol-drinking locus of control were 13.6 for drinkers and 12.6 for nondrinkers, indicating that both drinkers and nondrinkers had strong internal orientation. The mean scores on the friend scale were 7.5 for drinkers and 7.5 for nondrinkers. No significant differences were found on either scale using t tests with 83 degrees of freedom and a probability level of .05, although the higher internal score for drinkers approached significance.

Self-Esteem of Alcohol Drinkers and Nondrinkers

The mean self-esteem score of nondrinkers was 31.3; the mean self-esteem score of drinkers was 27.6. Nondrinkers were found to have significantly higher self-esteem scores than drinkers, $t(83) = -3.04$, $p < .05$. The findings on self-esteem are summarized in Appendix D, Table D-2.

Academic Placement of Alcohol Drinkers and Nondrinkers

Sixty percent of the drinkers were in the higher-placement sections, compared to 73.3% of the nondrinkers, but the difference was not significant. The numbers and percentages of drinkers and nondrinkers in each group are reported in Table 8.

Gender of Alcohol Drinkers and Nondrinkers

The proportions of males and females who reported drinking alcohol were not significantly different as measured by a chi-square test with one degree of freedom. Almost 60% of the males, however, reported drinking alcohol compared to 40% of the females. The numbers and percentages of drinkers and nondrinkers in each group are reported in Table 8.

Table 8

Frequency of Alcohol Drinkers and Nondrinkers by
Academic Placement and Gender

Variable	Drinkers		Nondrinkers	
	N = 40		N = 45	
	n	%	n	%
<u>Academic Placement</u>				
Higher	24	60.0	33	73.3
Lower	16	40.0	12	26.7
<u>Gender</u>				
Males	21	52.5	16	35.6
Females	19	47.5	29	64.4

Analysis of Infrequent Smokers and Frequent Smokers

Research Question Three: How does the extent of tobacco usage relate to (a) decision-making factors, (b) tobacco-smoking locus of control, (c) alcohol-drinking locus of control, (d) self-esteem, (e) academic placement, and (f) gender?

Twenty students reported that they smoke tobacco. Of these students, 12 reported that they smoke a few cigarettes a month, 3 smoke a few cigarettes a week,

and 5 smoke every day. The 12 students who smoke a few cigarettes a month were classified as infrequent smokers. The two groups of students who smoke more frequently were combined to avoid extremely small cell frequencies. The eight students who smoke at least weekly were classified as frequent smokers. The data were then analyzed using chi-square tests and inspection of the means. The study produced the following findings.

Decision-Making Factors of Tobacco Smokers

The frequencies and percentages of smokers mentioning each decision-making factor are shown in Table 9. Chi-square tests indicated that there were significant differences between infrequent and frequent smokers for accident risk, $\chi^2(1, N = 20) = 9.53, p < .05$, party attractions, $\chi^2(1, N = 20) = 4.38, p < .05$, and internal influences, $\chi^2(1, N = 20) = 4.70, p < .05$. Infrequent smokers mentioned accident risk more often and party attractions and internal influences less often than did frequent smokers. The risk cluster was significantly different between infrequent and frequent smokers to the same extent as the accident risk factor. Approximately 42% of the infrequent smokers mentioned mistrust of the driver, compared to 12.5% of the

frequent smokers, but this difference was not significant. It is possible that actual differences in the mistrust of driver factor, and in other analyses in this research, were masked by small cell frequencies.

There were virtually no differences in the responses of infrequent and frequent smokers on any of the other six decision-making factors or on the social influences cluster. These six decision-making factors were mentioned only twice by any of the smokers.

Table 9

Frequency of Infrequent and Frequent Smokers Mentioning
Each Decision-Making Factor

Factor	Infrequent smokers		Frequent smokers	
	N = 12		N = 8	
	n	%	n	%
Accident risk*	12	100	2	25.0
Mistrust of driver	5	41.7	1	12.5
Coercion	1	8.3	0	0.0
Party risks	1	8.3	0	0.0
Party considerations	0	0.0	0	0.0
Party attractions*	1	8.3	5	62.5
Friend influences	0	0.0	0	0.0
Peer influences	0	0.0	0	0.0
Authority influences	0	0.0	0	0.0
Internal influences*	0	0.0	4	50.0

* $p < .05$

Tobacco-Smoking Locus of Control, Alcohol-Drinking
Locus of Control, and Self-Esteem of Smokers

The means and standard deviations for locus of control and self-esteem are summarized in Table D-3 of

Appendix D. Inspection of the mean scores of infrequent and frequent smokers on the tobacco-smoking internal and friend locus of control scales, alcohol-drinking internal and friend locus of control scales, and self-esteem scale revealed no noteworthy differences between the two groups of smokers. The small sample sizes (12 infrequent smokers and 8 frequent smokers) made the use of t tests for differences between the groups inappropriate. There was a trend in tobacco-smoking internal locus of control when the scores of nonsmokers, infrequent smokers, and frequent smokers were compared. The subscores increased with increasing frequency of smoking.

Academic Placement of Smokers

The proportion of infrequent smokers in the higher-placement language arts sections was 41.7% and the proportion of frequent smokers was 50.0%. This difference was not significant. In contrast, among students who reported never smoking, the proportion in the higher-placement language arts sections was 73.8%.

Gender of Smokers

Similar proportions of students of each gender reported not smoking at all, being in the infrequent group of smokers, and being in the frequent group of smokers: females constituted 56.9% of the nonsmokers, 58.3% of the infrequent smokers, and 52.5% of the frequent smokers. Among all females, 14.6% were in the infrequent smoking group and 8.4% were in the frequent smoking group. Among all males, 13.5% were in the infrequent smoking group and 10.9% were in the frequent smoking group.

Analysis of Alcohol Drinkers

Research Question Four: How does the extent of alcohol usage relate to (a) decision-making factors, (b) tobacco-smoking locus of control, (c) alcohol-drinking locus of control, (d) self-esteem, (e) academic placement, and (f) gender?

Students responded to two questions about their alcohol drinking: How many times have you gotten drunk or very, very high on alcohol since the beginning of December; and during the past 30 days, on how many days did you have a drink of alcohol? Fifty-four students (63.5% of the sample population) reported that they had

not been drunk or very, very high since December. Fourteen students (16.5%) reported that they had been drunk or very, very high at least once since December, and were classified as seldom drunk. Nine students (10.9%) reported the behavior one to two times a month, 3 (3.6%) reported that the behavior one to two times a week, and 5 (5.9%) reported the behavior more than twice a week. To eliminate extremely small cell frequencies, these three categories were combined to form a group of 17 students who were drunk or very, very high at least once a month, and were classified as often drunk. Chi-square tests and comparisons of the mean scores of students who were seldom and often drunk were then performed.

Of the 85 students in the study, 50 (58.8%) reported that they did not drink in the past 30 days. Twenty students (23.5%) had a drink on 1-8 days, and were classified as infrequent drinkers. Five students (5.9%) had a drink on 9-14 days, 6 (7.1%) had a drink on 16-24 days, and 4 (4.7%) had a drink on 25-30 days. The 15 students in the latter three categories who had a drink on at least 9 of the past 30 days were combined and considered frequent drinkers. Chi-square tests and comparisons of the mean scores of infrequent and frequent drinkers were then performed. The study produced the following findings.

Decision-Making Factors of Drinkers

The frequency of decision-making factors mentioned by students with different extents of drinking and drunkenness are shown in Appendix E. There was one significant difference between frequent and infrequent drinkers in response to the decision-making question on the survey. Infrequent drinkers mentioned one or more of the four factors in the risk cluster more often than did frequent drinkers (90.0% and 53.3%, respectively), χ^2 (1, $N = 35$) = 4.27, $p < .05$. Infrequent drinkers mentioned accident risk, mistrust of driver, authority influences, and the social influences cluster more often than did frequent drinkers, and frequent drinkers more often mentioned internal influences and party attractions, but these differences were not significant.

There were no significant differences between students who were seldom and often drunk, but proportionally more of the students who were seldom drunk mentioned accident risk, party considerations, and coercion and proportionally more of the students who were often drunk mentioned party attractions and internal influences. The difference between students who were seldom and often drunk approached significance for the risk cluster: 85.7% of seldom-drunk students

compared to 58.8% of often-drunk students mentioned at least one risk factor. The proportions of students mentioning the social influences cluster were similar: 7.1% of students who were seldom drunk and 11.8% of those who were often drunk. The small cell frequencies in this analysis may mask actual differences between students on the decision-making factors.

Tobacco-Smoking Locus of Control, Alcohol-Drinking
Locus of Control, and Self-Esteem of Drinkers

The means and standard deviations for locus of control and self-esteem of drinkers are reported in Table D-4 of Appendix D. Inspection of the means on the internal and friend tobacco-smoking locus of control, internal and friend alcohol-drinking locus of control, and self-esteem scales for infrequent and frequent drinkers and students who were seldom and often drunk revealed no noteworthy differences. The small sample sizes (20 infrequent and 15 frequent drinkers and 14 students who were seldom and 17 who were often drunk) made the use of t tests inappropriate. There was a trend in alcohol-drinking internal locus of control when the subscores of nondrinkers, infrequent drinkers, seldom drunk students, frequent drinkers, and often drunk students

were compared. The scores increased with increasing frequency of the behaviors.

Academic Placement of Drinkers

Among the students who reported being drunk, 64.3% of the students who were seldom drunk and 58.8% of the students who were often drunk were in the higher-placement language arts sections. Among the students who reported drinking in the past 30 days, 60.0% of both the infrequent drinkers and the frequent drinkers were in the higher-placement language arts sections. None of these results were significant.

Gender of Drinkers

Seventeen males, or 44.9% of the males in the survey sample, reported being drunk since December; 14 females, or 29.2% of the females in the survey sample, reported being drunk since December. Of the males who were drunk, 64.7% were often drunk, compared to 42.8% of the females who were often drunk. Nineteen males, or 51.4% of the males in the survey sample, reported drinking in the past 30 days; 16 females, or 33.3% of the females in the survey sample, reported drinking in the past 30 days. Of the males who drank, 57.9% reported drinking frequently, compared to 25.0% of the

females. Although proportionately more males than females drank, drank frequently, were drunk, and were often drunk, none of these differences were significant in chi-square tests with one degree of freedom. The small sample sizes may mask actual differences between males and females in drinking behavior.

Analysis of Decision-Making Factors

Research Question Five: How do the decision-making factors of rural eighth graders differ in respect to (a) tobacco-smoking locus of control, (b) alcohol-drinking locus of control, (c) self-esteem, (d) academic placement, and (e) gender.

T tests and chi-square tests were performed to compare students who mentioned and did not mention each of the 10 decision-making factors and the two clusters identified in this study.

Locus of Control and Decision-Making

T tests and inspection of the means were used to compare the mean scores on the tobacco-smoking internal and friend locus of control and the alcohol-drinking internal and friend locus of control scales for students who mentioned and did not mention each of the 10 decision-making factors and the risk and social

influence clusters. The means and standard deviations for each factor and cluster are reported in Appendix F. None of the results were significant, but the following comparisons between students who did and did not mention five of the factors and the social influences cluster were noted.

Students who mentioned coercion had lower scores on the alcohol internal scale, and students who mentioned party risks and those who mentioned party attractions had lower scores on both internal scales. Students who mentioned party risks had lower scores on the friend scales. The four students who mentioned friend influences had markedly higher scores on the friend scales. Students who mentioned the social influences cluster had higher scores on the alcohol friend scale. There were no differences in scores between the students who mentioned internal influences and those who did not.

Self-Esteem and Decision-Making

T tests and inspection of the means were used to compare the mean self-esteem scores of students who did and did not mention each of the decision-making factors and the risk and social influence clusters. There were no significant differences, but the following

differences between students mentioning and not mentioning each of the factors were noted. The means and standard deviations for each decision-making factor and cluster are reported in Appendix F. Students mentioning party risks, coercion, and internal influences had higher self-esteem scores, and students mentioning party attractions and friend influences had lower scores.

Academic Placement and Decision Making

The frequencies of decision-making factors mentioned by high and low placement students are shown in Appendix G, Table G-1. There was one significant difference in decision making between students with lower and higher academic placement: fewer of the students with higher placement mentioned party attractions than did students with lower placement, χ^2 (1, $N = 85$) = 9.08, $p < .05$. Proportionately more higher-placement students mentioned accident risk, mistrust of driver, and coercion, but these differences were not significant. Almost 88% of higher-placement students mentioned at least one factor in the risk cluster, compared to 75.0% of higher-placement students, and 17.6% of the higher-placement students

mentioned the social influences cluster, compared to 21.4% of the lower-placement students.

Gender and Decision Making

The frequencies and percentages of males and females mentioning the various decision-making factors are summarized in Appendix G, Table G-2. Males and females were significantly different in mentioning accident risk and, to the same extent, the risk cluster: more females than males mentioned this factor and cluster, $\chi^2(1, N = 85) = 7.34, p < .05$. Almost 92% of females mentioned at least one of the factors in the risk cluster, compared to 73% of males. Although not significant, the social influences cluster was mentioned by 25.0% of the females and 10.8% of the males. In addition, proportionally more females mentioned coercion, peer influences, and authority influences; proportionally more males mentioned the decision-making factors party risks, friend influences, and party attractions.

Summary

Students who reported varying use of tobacco and alcohol were compared on six variables:

(a) decision-making factors, (b) tobacco-smoking locus of control, (c) alcohol-drinking locus of control, (d) self-esteem, (e) academic placement, and (f) gender. In addition, students who mentioned and did not mention the 10 decision-making factors and the two clusters of factors which were identified in this study were compared on each of the five other variables.

The study produced the following findings:

1. Ten decision-making factors and two clusters of factors were generated from the responses of eighth graders to a hypothetical situation involving a ride to a party with a driver who has already been "partying." Accident risk was mentioned by 74.1% of the students, mistrust of driver by 30.6%, party considerations by 18.8%, party attractions by 14.4%, authority influences by 12.9%, coercion, party risks, and internal influences by 10.6% each, peer influences by 7.1%, and friend influences by 4.7%. The risk cluster was mentioned by 83.5% and the social influences factor by 18.8% of the students.

2. Two decision-making factors, one cluster of factors, self-esteem, and academic placement differed significantly between nonsmokers and smokers, while tobacco-smoking locus of control, alcohol-drinking locus of control, and gender did not.

(a) Significantly more nonsmokers than smokers mentioned party considerations.

(b) Significantly more smokers mentioned party attractions.

(c) Significantly more nonsmokers mentioned the social influences cluster: nonsmokers accounted for all mentions of authority, friend, and peer influences.

(d) Nonsmokers had significantly higher self-esteem scores than did smokers.

(e) There were significantly more nonsmokers than smokers in the higher-placement language arts sections.

(f) Although not significant, almost all mentions of party risks and coercion were made by nonsmokers, whereas smokers more frequently mentioned internal influences.

3. Two decision-making factors and self-esteem differed significantly between nondrinkers and drinkers, while tobacco-smoking and alcohol-drinking locus of control, academic placement, and gender did not.

(a) Significantly more nondrinkers mentioned party considerations.

(b) Significantly more drinkers than nondrinkers mentioned party attractions.

(c) Nondrinkers had significantly higher self-esteem than did drinkers.

(d) Nondrinkers more frequently mentioned authority influences and party risks and drinkers more frequently mentioned internal influences, although these differences were not significant.

(e) There were proportionally more nondrinkers in the higher-placement language arts sections and among females, but these differences were not significant.

4. Three decision-making factors differed significantly between infrequent and frequent smokers. A trend in the tobacco-smoking locus of control scale was noted, but not in self-esteem, academic placement, or gender.

(a) Significantly more infrequent smokers mentioned accident risk.

(b) Significantly more frequent smokers mentioned party attractions and internal influences.

(c) Mistrust of driver was mentioned more frequently by infrequent smokers but this difference was not significant.

(d) A trend of increasing tobacco-smoking internal locus of control subscores was observed as the frequency of smoking increased from no smoking to infrequent to frequent smoking.

5. One decision-making factor differed significantly between infrequent and frequent drinkers. There were no significant differences between students

who were seldom or often drunk. Trends in alcohol-drinking locus of control and gender were noted, but not in tobacco-smoking locus of control, self-esteem, or academic placement.

(a) Significantly more infrequent drinkers than frequent drinkers mentioned at least one of the factors in the risk cluster, reflecting the finding that accident risk and mistrust of driver were mentioned more often by infrequent drinkers.

(b) Authority influences were mentioned more often by infrequent than by frequent drinkers and risk factors were mentioned more often by students who were seldom drunk, compared to those who were often drunk, but these differences were not significant.

(c) More students who drank frequently and who were often drunk mentioned party attractions and internal influences, but these differences were not significant.

(d) Students who drank frequently and who were often drunk had higher scores on the alcohol-drinking internal locus of control scale, and students who drank infrequently and were seldom drunk had higher scores than nondrinkers, showing a trend of increasing internal locus of control with drinking.

(e) Although more males drank, drank frequently, were drunk, and were drunk often, compared to females, these differences were not significant.

6. One decision-making factor differed significantly for academic placement.

(a) Significantly more lower-placement language arts students mentioned party attractions than did higher-placement students.

(b) Proportionally more higher-placement students mentioned risk factors, but this difference was not significant.

7. One decision-making factor and the associated risk factor differed significantly for gender. Significantly more females than males mentioned accident risk and the risk cluster.

8. There were no significant differences in tobacco-smoking and alcohol-drinking locus of control or in self-esteem for students who mentioned or did not mention the various decision-making factors.

(a) Students mentioning coercion, party risks, and party attractions had lower scores on internal locus of control scales.

(b) Students mentioning friend influences and the social influence cluster had higher scores and students mentioning party risks had lower scores on friend locus of control scales.

(c) Students mentioning coercion, party risks, and internal influences had higher scores and students mentioning party attractions and friend influences had lower scores on the self-esteem scale.

(d) Students mentioning and not mentioning the internal influences decision-making factor had similar scores on the internal locus of control scales: all groups of students had strong internal orientations on the locus of control scales.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study examined decision-making factors, self-esteem, locus of control, gender, and academic placement as related to the tobacco smoking and alcohol drinking of rural eighth graders. The following five research questions were investigated:

1. How do tobacco smokers and nonsmokers differ in respect to

- (a) decision-making factors
- (b) tobacco-smoking locus of control
- (c) alcohol-drinking locus of control
- (d) self-esteem
- (e) academic placement
- (f) gender

2. How do alcohol drinkers and nondrinkers differ in respect to the above-mentioned variables?

3. How does the extent of tobacco usage relate to the above-mentioned variables?

4. How does the extent of alcohol usage relate to the above-mentioned variables?

5. How do the decision-making factors of rural eighth graders differ in respect to

- (a) tobacco-smoking locus of control
- (b) alcohol-drinking locus of control
- (c) self-esteem
- (d) academic placement
- (e) gender

Summary of Procedures

The study sample consisted of students who were in the eighth grade during the spring of 1989 in one rural middle school. The sample contained 85 students, representing 82.5% of the students available for study.

A survey was used to gather self-report data on student tobacco and alcohol use, decision-making factors, self-esteem, tobacco-smoking and alcohol-drinking locus of control, academic placement, and gender. Data on decision-making factors were obtained as the responses to a hypothetical decision-making situation involving the offer of a ride to a party with a driver who had already been "partying." Self-esteem was assessed using the Rosenberg Self-Esteem Scale. Locus of control was measured using the Tobacco-Smoking Locus of Control scale and the Alcohol-Drinking Locus of Control scale

which were developed by the researcher for this study. The data were analyzed using t tests, chi-square tests, and inspection of the means.

Summary of Findings

This study produced the following major findings:

1. Ten decision-making factors and two clusters of factors were generated from the responses of eighth graders to the hypothetical situation involving a ride to a party with a driver who had already been partying. The 10 factors and the percentage of the respondents mentioning each factor were as follows.

(a) Risk of accident, injury, or death from accepting the ride (accident risk, 74.1%)

(b) Risks which might result from an untrustworthy or unknown driver (mistrust of driver, 30.6%)

(c) Uncertainties about what would be happening at the party (party considerations, 18.8%)

(d) Enjoyable or anticipated aspects of the party (party attractions, 14.4%)

(e) References to authority figures (authority influences, 12.9%)

(f) Risk of pressure or force to use drugs, have sex, or commit crimes (coercion, 10.6%)

(g) Risks which might result from undesirable aspects of the party (party risks, 10.6%)

(h) References to the respondent's own desires or abilities (internal influences, 10.6%)

(i) References to what other young people will be doing or thinking (peer influences, 7.1%)

(j) References to what friends will be doing or thinking (friend influences, 4.7%).

(k) The risk cluster consisted of accident risk, mistrust of driver, party risks, and coercion (83.5%)

(l) The social influences cluster consisted of authority, peer, and friend influences (18.8%)

2. There were five significant differences between smokers and nonsmokers.

(a) More nonsmokers than smokers mentioned uncertainties about party activities (party considerations).

(b) Fewer nonsmokers than smokers mentioned enjoyable or anticipated aspects of the party (party attractions).

(c) More nonsmokers than smokers mentioned the social influences cluster of decision-making factors, which consisted of authority, friend, and peer influences.

(d) Nonsmokers had higher self-esteem than did smokers.

(e) More nonsmokers than smokers were in the higher-placement language arts sections.

3. There were three significant differences between drinkers and nondrinkers.

(a) More nondrinkers mentioned uncertainties about party activities (party considerations).

(b) Fewer nondrinkers than drinkers mentioned enjoyable or anticipated aspects of the party (party attractions).

(c) Nondrinkers had higher self-esteem scores than did drinkers.

4. There were three significant differences between infrequent and frequent smokers.

(a) More infrequent smokers mentioned the risk of accident or injury in the car (accident risk).

(b) Fewer infrequent smokers mentioned enjoyable or anticipated aspects of the party (party attractions).

(c) Fewer infrequent smokers mentioned internal influences.

5. There was one significant difference between infrequent and frequent drinkers. More infrequent drinkers mentioned the risk cluster of decision-making factors.

6. There was one significant difference in decision-making factors for students of higher and

lower academic placement. Fewer higher-placement language arts students mentioned party attractions.

7. There was one significant difference between males and females. More females mentioned accident risk than did males.

8. Other findings which were of interest to this investigator included the following.

(a) The risk cluster was more frequently mentioned by nonsmokers and nondrinkers compared to smokers and drinkers.

(b) The party considerations factor was more frequently mentioned by infrequent compared to frequent smokers and drinkers.

(c) The internal influences decision-making factor was less frequently mentioned by nonsmokers and nondrinkers and by infrequent compared to frequent drinkers.

(d) There was a trend in both tobacco-smoking and alcohol-drinking internal locus of control scores: nonusers had the lowest scores, infrequent users had somewhat higher scores, and frequent users had yet higher scores.

(e) More males drank, drank frequently, were drunk, and were drunk often, compared to females.

Discussion of Findings

Extent of Tobacco Smoking and Alcohol Drinking

The prevalence of tobacco smoking in the sample population (23.6%) was only slightly higher than that reported among Maryland adolescents (Maryland Department of Health and Mental Hygiene, 1987). Rates of smoking for eighth graders obtained by researchers in the county being studied and in nearby counties were similar to those in this study (Alexander & Klassen, 1989; Johns Hopkins University, 1987). The consistency of the rates of smoking in the state and the region with the data from this research indicates that the self-report data on tobacco smoking are reliable.

The extent of frequent drinking among eighth graders in the state of Maryland was considerably lower than in this research. Although equal proportions of students in the state and in the sample reported drinking monthly, four times as many students in this investigation reported drinking weekly. County data from the Maryland survey and data from research in the region where this study was performed, however, indicated that the rate of drinking was relatively high in this rural area (Alexander & Klassen, 1988; Johns Hopkins University, 1987; Maryland Department of Health and Mental Hygiene, 1987). The finding that 47.1% of

the sample population in this research reported drinking alcohol appears to be consistent with the data from other local studies.

Two interactions between substance use behaviors were observed in this research. Of the 20 students who reported smoking tobacco, 17 (85%) also reported drinking. It is important to target students who smoke for preventive drug education programs, both because of the consequences of smoking and because of the likelihood of alcohol use by these students. Among the students who reported having had a drink of alcohol in the past 30 days, 74% also reported having been drunk or very, very high. The frequency with which adolescents drink to get drunk underscores the importance of efforts to prevent alcohol use in this age group.

Self-Esteem

The significant differences in self-esteem scores between both smokers and nonsmokers and drinkers and nondrinkers found in this research were consistent with results reported in the literature. Kaplan, Martin, and Robbins (1984) found that self-derogation, which they identified as "the self-esteem motive" (p. 279), was associated with increased drug use of junior high

students. Dielman, Leech, Lorenger, and Horvath (1984) found that high self-esteem among fifth and sixth graders was associated with less current or intended use of tobacco and alcohol. In later research, however, Dielman, Campanelli, Shope, and Butchart (1987) concluded that susceptibility to peer pressure is more central to adolescent drug use than is the small relationship between drug use and self-esteem. Lamarine (1987), in contrast to Dielman and colleagues, concluded that self-esteem may be a significant predictor of health attitudes and behavioral intentions among Native American children. Murphy and Price (1988) also found that low self-esteem is associated with intentions to smoke, and concluded that low self-esteem is antecedent to smoking. Most recently, Young, Werch, and Bakema (1989) found that home and school self-esteem were significantly related to nonuse, less use, and intentions to not use tobacco and alcohol.

The variation in the findings from the literature about the importance of self-esteem to adolescent drug use may be related to difficulties in measurement of self-esteem. Four different self-esteem instruments were used in the six studies previously mentioned. Wylie (1979) and Young, Werch and Bakema (1989) suggested that inconsistent findings in self-esteem

research may stem from the lack of consensus on the conceptualization and operational definition of self-esteem. Young et al. proposed the use of more specific measures of self-esteem, such as individual scales for home, school, and peer self-esteem. McGuire and McGuire (1981) argued for the use of open-ended measuring instruments to acquire information on the salience of aspects of the self-concept to the individual.

The Rosenberg Self-Esteem Scale was selected for this research because of its reported stability and validity, including convergent and discriminant validity with the Coopersmith General Self-Esteem Inventory; suitability for use with young adolescents; ease of administration; and widespread use (Rosenberg, 1965, 1979; Byrne, 1983). The reliability of the self-esteem scores measured in this research was indicated by comparison with the findings of Murphy and Price (1988), who administered the Rosenberg Self-Esteem Scale to 1513 eighth graders. Nonsmokers and smokers in this research and in the Murphy and Price study had similar self-esteem scores.

Although the mean self-esteem scores of smokers and drinkers were lower than those of nonsmokers and nondrinkers in this investigation, there was no association between self-esteem scores and the

frequency of smoking, drinking, or drunkenness. This finding was in contrast to that of Murphy and Price, who found a progressive decrease in self-esteem scores with increasing frequency of smoking across five frequency categories. The lack of association between self-esteem scores and frequency of smoking or drinking in this research may be a result of the extremely small sample sizes: 20 smokers, 40 drinkers, 35 students who had had a drink in the past 30 days, and 31 students who had been drunk since December.

Locus of Control

There were no significant results in this research on the internal or friend scales for tobacco-smoking or alcohol-drinking locus of control. The scores of both nonusers and users of tobacco and alcohol indicated strong internal locus of control orientations and little perceived influence of friends in substance use decisions. Visual comparisons of the mean scores for the locus of control scales revealed a small trend for internal locus of control. Tobacco-smoking and alcohol-drinking internal locus of control scores increased with the frequency of the respective behavior.

The lack of significant associations in this research between tobacco and alcohol use and substance-specific locus of control was consistent with the studies in the literature which found no associations when utilizing measures of multidimensional health locus of control (Dielman, Campanelli, Shope, & Butchart, 1987; Lamariné, 1987). Two of the studies in the literature reported associations between adolescent drug use and external locus of control (Clarke, MacPherson, & Holmes, 1984) or perceived lack of personal efficacy (Newcomb & Harlow, 1986). The trends in substance-specific internal locus of control in this study, however, were in the opposite direction: Internal locus of control increased slightly with the extent of substance use.

The tobacco-smoking and alcohol-drinking locus of control scales were designed to incorporate as much behavioral specificity as possible, as recommended by Rotter (1982), and to avoid the difficulties identified with the Children's Health Locus of Control Scale (Hearne & Klockars, 1988). One explanation for the trend of increased scores on the internal locus of control scales as smoking and drinking increase may relate to this behavioral specificity. It has been theorized that smoking is a way that young people who feel powerless and fatalistic may demonstrate their

control in a rewarding manner (Clarke, MacPherson, & Holmes, 1984). The substance-specific internal scales may therefore be reflecting the sense of control that smokers and drinkers may feel regarding their choices of these behaviors. Findings from the decision-making question support this interpretation. Frequent smokers and to a lesser extent frequent drinkers mentioned internal influences more frequently than students who used tobacco and alcohol infrequently or not at all.

The tobacco-smoking and alcohol-drinking locus of control scales developed for this research utilized a measure of peer influence, rather than chance or powerful other/authority influence, to investigate the findings on the importance of peer susceptibility in adolescent drug use decisions (Dielman, Campanelli, Shope, & Butchart, 1987; Kaplan, Martin, & Robbins, 1984; Krohn, Massey, Skinner, and Lauer, 1983; Krohn, Naughton, Skinner, Becker, & Lauer, 1986). The finding of neither significant differences nor trends for the friend locus of control scales may reflect adolescents' perceived independence and perceived lack of conformity to their peers. Interestingly, the four students who mentioned friends on the decision-making question had substantially higher scores on the friend locus of control scales.

The lack of significant results with the locus of control scales prompted a reevaluation of the reliability of the instruments. Analyses of internal consistency were performed by correlating pairs of items with one another within each of the four scales. The correlations on the friend scales approximated the reliability achieved during the pilot test of the instruments. The correlations on the internal scales, however, were lower than those achieved during the pilot testing, suggesting the need to reexamine the instruments.

Decision-Making Factors

Students were asked on the survey instrument to list what kinds of things they would think about in deciding whether or not to go to a party with a driver who had already been partying. This open-ended format was selected, despite the cumbersome aspects of data analysis, because of the exploratory nature of the research and the desire to elicit factors which are of salience to adolescents (Duryea & Okumabua, 1985; McGuire & McGuire, 1981).

Analysis of the decision-making factors mentioned by students who differed in the extent of their tobacco and alcohol use and who differed by gender and by

academic placement revealed significant differences for accident risk, party considerations, party attractions, internal influences, the risk cluster, and the social influence cluster. Accident risk was the decision-making factor most frequently mentioned and 71 students (83.5%) mentioned at least one of the four risk factors. This finding contrasted with that of Duryea and Okumabua (1985), who reported that social factors were most frequently mentioned by ninth graders in response to a similar hypothetical situation.

Students who infrequently engaged in smoking and drinking were more likely than frequent users to mention accident risk concerns. Significantly more infrequent smokers, compared to frequent smokers, and proportionately more infrequent drinkers, compared to frequent drinkers, mentioned accident risk. In addition, significantly more females than males and proportionately more higher-placement students mentioned accident risk.

In addition to the risk of accidents during the ride to the party, nonusers and infrequent users of tobacco and alcohol were more likely than frequent users to mention other factors that related to personal risks. All of the responses that mentioned party risks and pressure were made by nonsmokers, and nondrinkers mentioned party risks more frequently than did

drinkers. Infrequent smokers and infrequent drinkers mentioned mistrust of the driver more often than frequent substance users, and students who were seldom drunk mentioned coercion more frequently than students who were often drunk. Students in the higher-placement language arts sections more frequently mentioned mistrust of the driver and coercion compared to students in the lower-placement sections. These results suggest that nonusers and infrequent compared to frequent tobacco and alcohol users, females, and students who are more academically successful are more likely to consider risks to their personal safety in decision-making.

Party considerations, which consisted of references to uncertainties about what might be happening at the party, were mentioned significantly more often by nonsmokers, compared to smokers, and by nondrinkers, compared to drinkers. In contrast, party attractions, which consisted of references to enjoyment at the party, were mentioned significantly more often by smokers, compared to nonsmokers; frequent smokers, compared to infrequent smokers; and drinkers, compared to nondrinkers. In addition, students who drank frequently and who were often drunk mentioned party attractions more than students who drank infrequently and were seldom drunk. Party attractions were

mentioned significantly more often by students in the lower-placement language arts sections, and proportionately more often by males. These results suggest that students who do not use tobacco and alcohol appear to be cautious in their decision making, tending to seek out more information or establish conditions for attending the party. Students who use tobacco and alcohol, and especially those who are frequent users, students who perform less successfully in school, and males, appear to be interested in partying.

There were four decision-making factors that referred to the influences of self or others: internal, authority, peer, and friend influences. Smokers mentioned internal influences more often than did nonsmokers, and frequent smokers mentioned this factor significantly more often than did infrequent smokers. Frequent drinkers and students who were often drunk also mentioned internal influences more often than infrequent drinkers and students who were seldom drunk. In contrast, nonsmokers accounted for all of the references to authority, friend, and peer influences, mentioning the social influences cluster significantly more than smokers. Nondrinkers compared to drinkers and infrequent compared to frequent drinkers more frequently mentioned authority

influences. Females more frequently mentioned authority and peer influences, whereas males more frequently mentioned friends. These results suggest that students who frequently smoke tobacco or drink alcohol tend to consider their own inclinations more than do nonusers or infrequent users. Nonsmokers, by contrast, appear more likely to consider the actions and opinions of others in their decisions.

Academic Placement

Students were classified in the higher academic placement or lower academic placement group based on their language arts sections. There were 57 students (67.1%) in the higher placement group and 28 students (32.9%) in the lower group, which was not significantly different from the population available for study. Two significant differences were found for academic placement. Among the students in the high placement group, fewer were smokers, and fewer mentioned party attractions. These findings are related, since significantly fewer nonsmokers mentioned party attractions.

The findings of this research on tobacco use and academic placement are in accord with those of the Department of Health and Mental Hygiene 1986-87 survey

of adolescent drug use and the research of Marston, Jacobs, Singer, Wildaman, and Little (1988). Only 9.1% of students in Maryland who reported excellent academic placement also reported drug use at least monthly, with increasing frequency of drug use as academic placement worsened. Among failing students, 41.1% reported drug use at least monthly. Marston et al. found that students who used no drugs at all reported higher academic achievement.

Gender

The sample population was 43.5% male and 56.2% female, which was not significantly different from the population available for study. There were two noteworthy differences between males and females in the results of this research. Females mentioned accident risk significantly more often than did males. Males more frequently reported drinking, drinking frequently, being drunk, and often being drunk compared to females, though these differences were not significant. The higher frequency of drinking among males is confirmed in the literature (Maryland Department of Health and Mental Hygiene, 1987). These findings support the stereotype that females are more risk-conscious and males are more risk-oriented.

Summary of Discussion

Both the smoking and drinking of eighth graders were correlated with low self-esteem scores, lower academic placement, party attractions, and internal influences in decision-making. These variables are interrelated: Low self-esteem might result from and/or lead to low academic achievement, and the lack of success in school might orient young people toward social activities, including drug use, rather than toward schoolwork. Kaplan, Martin, and Robbins (1984), and Young, Werch, and Bakema (1989) found that students who had low self-esteem in relation to school were more likely to use drugs. Kaplan et al. theorized that deviant behavior patterns are adapted to help adolescents ease their feelings of self-derogation and achieve a sense of control. Krohn, Naughton, Skinner, Becker, and Lauer (1986) found that students who were dissatisfied with and unsuccessful in school were likely to associate with drug-using friends whose values were counter to societal norms. The findings from this research that smokers and drinkers are more likely to consider party attractions and internal influences in their decision-making support these social bonding theories.

Conclusions

The findings of this study support the following conclusions.

1. The open-ended decision-making question yielded an array of factors which could be related to the extent of tobacco smoking and alcohol drinking, academic placement, and gender of eighth graders.

2. Risks, party considerations, and social influences appear to be the factors more likely to be considered by nonusers and infrequent tobacco and alcohol users in their decision making, compared to frequent users.

3. Internal influences and party attractions appear to be the factors more likely to be considered by users of tobacco and alcohol, especially frequent users, in their decision making.

4. The decision-making factors do not appear to be related to self-esteem or locus of control.

5. Tobacco smoking, and to a lesser extent, alcohol drinking appear to be related to lower self-esteem and lower academic placement.

6. Tobacco smoking and alcohol drinking were not significantly associated with substance-specific internal and friend locus of control.

7. Tobacco smokers and alcohol drinkers do not appear to perceive themselves to be influenced in their substance use by their friends or peers any more than do nonsmokers and nondrinkers. The friend locus of control scales do not support the association noted in the literature between peer susceptibility and adolescents' substance use decisions.

8. Substance use may give young people a feeling of control over that aspect of their behavior, as suggested by substance users' frequent mention of internal influences on the decision-making question, and the trend of higher substance-specific internal locus of control scores as substance use increased.

Recommendations

In this research the relationships between tobacco smoking and alcohol drinking and both low self-esteem and low academic placement were confirmed; tobacco-smoking and alcohol-drinking locus of control instruments were developed and no significant relationships between substance use and friend or internal locus of control were found; and differences in decision-making factors by extent of substance use, academic placement, and gender were discovered, using an open-ended exploratory format. The findings of this

research lead to the following recommendations for researchers and health educators:

1. It is recommended that further research be conducted on adolescent decision making. The 10 factors which were generated in this research would serve as a starting point for replicating this study with a larger sample. Replication with a substantial sample size would enable examination of the reliability of the findings and investigation of the intercorrelations among the variables. Intercorrelational analyses may reveal the relative importance of various factors in adolescent drug behavior. There are two suggestions for refinement of the decision-making question. One suggestion is that students be asked to indicate whether or not they would accept the ride to the party, along with listing the kinds of things they would think about in making that decision. Another refinement is to clearly separate the decision about accepting the ride from the decision about attending the party. These refinements would allow additional interpretation of the results. The findings from research on decision making may be applied by health educators in the following way. Decision-making skill training for drug prevention may be designed to help adolescents examine their own

motivations, and to reflect the way that adolescent health-related decisions are actually made.

2. It is recommended that young people be helped to develop high self-esteem through the schools. It seems reasonable to expect that helping young people to feel better about themselves may lead to more healthful behavior choices, given the consistent relationship between high self-esteem scores and nonuse of tobacco and alcohol. A review of the literature leads to two additional recommendations for parents and educators. The first is that programs should focus on helping children succeed as active participants in school, at home, and in the community on the premise that children who feel successful and satisfied in these conventional arenas will have less motivation to engage in deviant behaviors. The second recommendation is that self-esteem enhancement for young adolescents should be sought in conjunction with provision of skills in recognizing and responding to societal and peer pressures to use drugs.

3. It is recommended that further research be done to define, operationalize, and measure substance-specific internal locus of control. The results of this research were counter to the expectation that students who smoked tobacco and drank alcohol would have lower substance-specific internal

locus of control scores. In contrast, both users and nonusers reported high internal locus of control scores. The slight trend in higher scores on internal locus of control as tobacco and alcohol use increased may reflect the sense of control experienced by young people who choose to drink or smoke, at least in relation to those particular choices.

Health educators may apply these findings by questioning the advisability of increasing internal health locus of control as a goal of health education programs. A tentative direction suggested by this research is that health educators focus instead on helping young people to develop specific behaviors, other than drug use, that provide them with feelings of control over their lives. An increased understanding of the relationships between substance use and feelings of control, achieved through the use of reliable and valid locus of control instruments, may support this direction.

4. It is recommended that further research be done to define, operationalize, and measure substance-specific friend locus of control and peer susceptibility to see if there are any relationships between the two constructs, and to see if more refined measures of friend locus of control will differentiate between substance users and nonusers. The advantages

for health educators of a short, easily administered peer susceptibility/friend influence measure that discriminates between users and nonusers would be twofold: to help students increase their awareness of how they appear to be influenced, and to identify students who might be targeted for educational interventions.

5. The associations between substance use, self-esteem, and academic placement of eighth graders reported in this research lead to two additional recommendations for health educators. One recommendation is that students who smoke be a particular target group because of the likelihood of multiple drug use among these young people. A second recommendation is that health educators develop appropriate techniques to provide drug prevention programs for students who are more likely to have low self-esteem and be experiencing less academic success.

Appendix A
Survey Instrument

EIGHTH GRADE QUESTIONNAIRE

The questions on the next several pages are not a test. They are being asked to help researchers learn more about what is important to teach in school health classes.

This survey is anonymous. DO NOT PUT YOUR NAME ON IT. That way it will be impossible to tell who has filled in the survey. No one from this school will see any of these questionnaires.

Thank you for your cooperation and honesty.

1. What is your gender? _____ Male _____ Female

2. What is your section letter in Language Arts?

_____ A
_____ D

_____ B
_____ E

_____ C
_____ F

3. The statements below deal with your feelings about SMOKING TOBACCO. If you agree with the statement, circle A. If you strongly agree, circle SA. If you disagree, circle D. If you strongly disagree, circle SD. If you are unsure, circle U.

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
A. I am in control of whether or not I smoke.	SA	A	U	D	SD
B. If I smoke, it has a lot to do with my friends.	SA	A	U	D	SD
C. I am responsible for my own smoking.	SA	A	U	D	SD
D. Friends play a big part in whether or not I smoke.	SA	A	U	D	SD
E. Whether I smoke or not is entirely up to me.	SA	A	U	D	SD
F. My friends influence if I smoke or not.	SA	A	U	D	SD

4. The statements below deal with your feelings about DRINKING ALCOHOL. If you agree with the statement, circle A. If you strongly agree, circle SA. If you disagree, circle D. If you strongly disagree, circle SD. If you are unsure, circle U.

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
A. I am responsible for my own drinking.	SA	A	U	D	SD
B. My friends influence if I drink or not.	SA	A	U	D	SD
C. Whether or not I drink is entirely up to me.	SA	A	U	D	SD
D. If I drink, it has a lot to do with my friends.	SA	A	U	D	SD
E. I am in control of whether or not I drink.	SA	A	U	D	SD
F. Friends play a big part in whether or not I drink.	SA	A	U	D	SD



5. The statements below deal with your general feelings about yourself. If you agree with the statement, circle A. If you strongly agree, circle SA. If you disagree, circle D. If you strongly disagree, circle SD.

	Strongly Agree	Agree	Disagree	Strongly Disagree
A. On the whole, I am satisfied with myself.	SA	A	D	SD
B. At times I think I am no good at all.	SA	A	D	SD
C. I feel that I have a number of good qualities.	SA	A	D	SD
D. I am able to do things as well as most people.	SA	A	D	SD
E. I feel I do not have much to be proud of.	SA	A	D	SD
F. I certainly feel useless at times.	SA	A	D	SD
G. I feel that I'm a person of worth, at least equal with others.	SA	A	D	SD
H. I wish I could have more respect for myself.	SA	A	D	SD
I. All in all, I tend to feel that I am a failure.	SA	A	D	SD
J. I take a positive attitude toward myself.	SA	A	D	SD

6. How often do you generally smoke?

☐ never
☐ a few cigarettes a month
☐ a few cigarettes a week
☐ every day.

7. Since the beginning of December, how many times have you gotten drunk or very, very high on alcohol (not just light-headed)?

☐ never
☐ 1-3 times ever
☐ 1-3 times a month
☐ 1-2 times a week
☐ more than twice a week.



8. During the past 30 days, on how many days did you have a drink of alcohol?

- _____ none
- _____ 1-8 days
- _____ 9-14 days
- _____ 15-24 days
- _____ 25-30 days.

Please read the following paragraph and then answer the question in the space below.

Next week you are going to a rock concert with your friends. Everyone, including your friends, will be doing things to have a really good time during the concert. After the concert you will all be invited to a nearby party. A member of the crowd who has been partying already offers you a ride to the party.

What kinds of things would you think about in making your decision about whether or not to accept the ride and go to the party? Please list as many things as you can think of.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

Appendix B
Parent Consent Form

April 19, 1989

Dear Parents:

Your child _____ is invited to take part in a research study in _____ County that will help us learn more about teenagers' health. Findings from this research will be useful in guiding young people toward making healthy decisions for themselves.

The study is being conducted with the cooperation of the _____ County Health Department and the _____ County Board of Education.

Students will be given a questionnaire during the school day that will take about 15 minutes to complete. The questions deal with how teenagers feel about themselves, their tobacco and alcohol use, and how they make decisions about their health. For instance, students might be asked what they think about in a situation involving peer pressure.

No names will be put on the questionnaires. All information collected will be confidential. No one from the school or community will be able to see the information. Participation in this study is voluntary, and your child may decide not to respond at any time.

Please feel free to contact me at _____ If you have any questions.

The permission slip below is to be signed and returned by your child to his or her science teacher by next week. Please return the slip even if you do not want to be part of the study.

Sincerely,

Janet Pfeffer
Janet Pfeffer
Health Educator

I give my consent to have _____
(please print whole name) participate in the decision making study. I understand that participation is voluntary, and that my child may withdraw at any time.

signature of parent or guardian

-----OR-----

I do not give my consent to have _____
(please print whole name) participate in the decision making study.

signature of parent or guardian

Appendix C

Coding Guidelines

Please write the letter of the most appropriate category next to each comment for the 85 students. If you can not find a suitable category, write a "?". If you think two (or more) categories fit a particular comment, write down all of the appropriate letters. Thank you!

A. RISK OF ACCIDENT, INJURY, OR DEATH

mention of state of the driver: drugwise, ability to drive
 mention of possible accident, injury, death; safety of ride
 mention of driving record or driving skills of driver
 suggestion of other ways to get to the party (to avoid accident)
 states that s/he will not accept ride to party

B. RISK OF UNTRUSTWORTHY and/or UNKNOWN DRIVER

mention about not going directly to the party or not going to the party at all
 mention about how well known, responsible, or trustworthy the driver is
 mention of license or other legal aspects of car
 mention of drugs in car

C. RISKS OF ATTENDING PARTY

mention of not going to the parties of strangers
 mention of disapproval of drugs, alcohol, tobacco at party
 mention of negative consequences of the party: trouble with the law, sickness, etc
 mention of whether the person will get home safely
 mention of decision to not go to the party

D. RISK OF PRESSURE OR FORCE -- mention of pressure or force to use drugs, have sex (including rape) or commit crimes

E. UNCERTAINTY ABOUT PARTY ACTIVITIES

mention of whether or not drugs/alcohol will be at
the party
mention of who will be at the party
mention of at whose home the party is
mention of how s/he will get home
mention of not knowing what will happen

F. ATTRACTION TO PARTY ACTIVITIES

mention of fun or of anticipated party activities
mention of decision to attend party

G. FRIEND INFLUENCES -- mention of what friends will be
doing or thinkingH. PEER INFLUENCES -- mention of what others will be
doing or thinkingH. AUTHORITY INFLUENCES -- Mention of adults or other
authority figures in people's livesI. INTERNAL INFLUENCES -- Mention of own desires or
abilities

J. OTHER FACTORS OR COMMENTS

logistics such as time, distance, etc
other characteristics of driver, other considerations
miscellaneous comments

Appendix DMean Locus of Control and Self-Esteem Scores by Tobacco
and Alcohol Use

Locus of control scores range 3 to a high of 15

Self-esteem scores range 10 to a high of 40

Table D-1

Mean Scores of Tobacco Smokers and Nonsmokers for Locus
of Control and Self-Esteem

Group	M	SD	t
Tobacco-smoking locus of control			
Internal			
Smokers	13.7	1.6	1.4904
Nonsmokers	13.0	2.5	
Friend			
Smokers	7.6	3.8	.8156
Nonsmokers	6.8	3.5	

Continued

Table D-1

Mean Scores of Tobacco Smokers and Nonsmokers for Locus
of Control and Self-Esteem

Group	M	SD	t
Alcohol-drinking locus of control			
Internal			
Smokers	13.2	2.9	.1246
Nonsmokers	13.1	2.3	
Friend			
Smokers	6.9	3.8	-.6887
Nonsmokers	7.7	6.8	
Self-esteem			
Smokers	26.4	6.3	- 2.7896*
Nonsmokers	30.5	5.6	

Notes. n = 20 for smokers and n = 65 for nonsmokers

*p<.05

Table D-2

Mean Scores of Alcohol Drinkers and Nondrinkers for
Locus of Control and Self-Esteem

Group	M	SD	t
Tobacco-smoking locus of control			
Internal			1.3666
Drinkers	12.8	2.3	
Nondrinkers	13.5	2.3	
Friend			.0526
Drinkers	7.8	3.5	
Nondrinkers	6.2	3.6	
Alcohol-drinking locus of control			
Internal			.0567
Drinkers	13.6	1.5	
Nondrinkers	12.6	3.0	
Friend			.9628
Drinkers	7.5	3.6	
Nondrinkers	7.5	7.9	
Self-esteem			
Drinkers	27.5	6.4	-3.0350*
Nondrinkers	31.3	5.1	

Note. n = 40 for drinkers and n = 45 for nondrinkers

*p<.05

Table D-3

Mean Scores for Infrequent and Frequent Smokers on
Locus of Control and Self-Esteem

Group	M	SD
Tobacco-smoking locus of control		
Internal		
Infrequent smokers	13.4	1.7
Frequent smokers	14.1	1.4
Friend		
Infrequent smokers	8.8	3.8
Frequent smokers	5.6	3.2
Alcohol-drinking locus of control		
Internal		
Infrequent smokers	13.3	2.0
Frequent smokers	12.9	4.1
Friend		
Infrequent smokers	6.9	3.5
Heavy smokers	6.8	4.6
Self-esteem		
Infrequent smokers	26.4	4.1
Frequent smokers	26.4	8.9

Note. $n = 12$ for infrequent smokers and $n = 8$ for frequent smokers

Table D-4

Mean Scores for Drinkers' Locus of Control and
Self-Esteem

Group	M	SD
Tobacco-smoking internal locus of control		
Drunkenness		
Seldom	12.4	2.0
Often	13.2	3.0
Frequency of drinking		
Infrequent	13.3	2.8
Frequent	13.5	1.8
Tobacco-smoking friend locus of control		
Drunkenness		
Seldom	8.1	3.4
Often	8.0	3.9
Frequency of drinking		
Infrequent	8.4	3.4
Frequent	7.5	3.6

Continued

Table D-4

Mean Scores for Drinkers' Locus of Control and
Self-Esteem

Group	M	SD
Alcohol-drinking internal locus of control		
Drunkenness		
Seldom	13.1	1.5
Often	14.0	1.6
Frequency of drinking		
Infrequent	13.5	1.7
Frequent	14.0	1.2
Alcohol-drinking friend locus of control		
Drunkenness		
Seldom	7.6	3.2
Often	7.8	4.2
Frequency of drinking		
Infrequent	7.7	3.6
Frequent	7.9	4.0

Continued

Table D-4

Mean Scores for Drinkers' Locus of Control and
Self-Esteem

Group	M	SD
Self-esteem		
Drunkenness		
Seldom	27.3	5.5
Often	27.9	7.5
Frequency of drinking		
Infrequent	27.5	5.9
Frequent	27.8	7.3

Note. $n = 14$ for seldom drunk, $n = 17$ for often drunk,
 $n = 20$ for drinking infrequently, and $n = 15$ for
drinking frequently

Appendix EFrequency of Decision-Making Factors by Alcohol Use

Table E-1

Frequency of Students Seldom and Often Drunk Mentioning
Each Decision-Making Factor

Factor	Seldom drunk		Often drunk	
	N = 14		N = 17	
	n	%	n	%
Accident risk	11	78.6	9	52.9
Mistrust of driver	4	28.6	4	24.5
Coercion	3	21.4	0	0.0
Party risks	1	7.1	1	5.9
Party considerations	3	21.4	0	0.0
Party attractions	2	14.3	7	41.2
Friend influences	0	0.0	2	11.8
Peer influences	1	7.1	1	5.9
Authority influences	0	0.0	1	5.9
Internal influences	1	7.1	6	35.3

Table E-2

Frequency of Infrequent and Frequent Drinkers
Mentioning Each Decision-Making Factor

Factor	Infrequent Drinkers		Frequent Drinkers	
	N = 20		N = 15	
	n	%	n	%
Accident risk	17	85.0	8	53.3
Mistrust of driver	8	40.0	3	20.0
Coercion	2	10.0	0	0.0
Party risks	1	5.0	0	0.0
Party considerations	2	10.0	0	0.0
Party attractions	2	10.0	6	40.0
Friend influences	1	5.0	1	6.7
Peer influences	1	5.0	1	6.7
Authority influences	3	15.0	0	0.0
Internal influences	3	15.0	4	26.7

Appendix FMean Locus of Control and Self-Esteem Scores by
Decision-Making Factors and Clusters

Locus of control scores range from 3 to a high of 15

Self-esteem scores range from 10 to a high of 40

Table F-1

Mean Locus of Control and Self-Esteem Scores for
Students Mentioning and Not Mentioning Accident Risk

Scale	Mentioned		Not mentioned	
	N = 63		N = 22	
	M	SD	M	SD
<hr/>				
Tobacco-Smoking Locus of Control				
Internal	13.2	2.4	13.0	2.1
Friend	7.1	3.7	6.7	3.5
Alcohol-Drinking Locus of Control				
Internal	13.2	2.3	12.9	3.0
Friend	6.8	3.4	7.2	4.5
Self-Esteem				
	30.0	5.8	28.8	6.7

Table F-2

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning Mistrust of
Driver

	Mentioned		Not mentioned	
	N = 26		N = 59	
Scale	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	13.1	1.7	13.2	2.5
Friend	7.4	3.5	6.8	3.6
Alcohol-Drinking Locus of Control				
Internal	13.3	1.4	13.0	2.8
Friend	7.5	3.5	6.7	3.8
Self-Esteem				
	29.7	5.0	29.5	6.5

Table F-3

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning Coercion

Scale	Mentioned		Not mentioned	
	N = 9		N = 76	
	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	13.3	2.1	13.1	2.3
Friend	7.8	3.9	6.9	3.6
Alcohol-Drinking Locus of Control				
Internal	11.8	3.3	13.2	2.3
Friend	6.7	3.0	6.9	3.8
Self-Esteem				
	31.2	7.4	29.4	5.9

Table F-4

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning Party Risks

Scale	Mentioned		Not mentioned	
	N = 9		N = 76	
	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	12.0	3.7	13.3	2.1
Friend	6.0	4.6	7.1	3.5
Alcohol-Drinking Locus of Control				
Internal	12.0	2.4	13.2	2.4
Friend	6.0	4.6	7.1	3.6
Self-esteem				
	31.6	4.0	29.3	6.2

Table F-5

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning Party
Considerations

Scale	Mentioned		Not mentioned	
	N = 16		N = 69	
	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	13.6	2.2	13.1	2.3
Friend	7.1	4.3	6.9	3.4
Alcohol-Drinking Locus of Control				
Internal	13.4	2.2	13.0	2.5
Friend	7.6	4.6	6.8	3.5
Self-Esteem				
	29.8	7.5	29.5	5.7

Table F-6

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning Party
Attractions

Scale	Mentioned		Not mentioned	
	N = 12		N = 73	
	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	12.4	3.4	13.3	2.1
Friend	7.7	4.4	6.9	3.5
Alcohol-Drinking Locus of Control				
Internal	12.1	3.7	13.2	2.2
Friend	6.9	3.7	6.9	3.5
Self-Esteem				
	27.0	7.8	29.9	5.6

Table F-7

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning Authority
Influences

	Mentioned		Not mentioned	
	N = 11		N = 74	
Scale	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	12.7	2.5	13.2	2.3
Friend	6.3	2.7	7.1	3.7
Alcohol-Drinking Locus of Control				
Internal	12.9	2.9	13.1	2.4
Friend	7.5	3.3	6.8	3.8
Self-Esteem				
	29.7	6.8	29.6	5.9

Table F-8

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning Friend
Influences

	Mentioned		Not mentioned	
	N = 4		N = 81	
Scale	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	13.5	1.7	13.1	2.3
Friend	10.0	2.2	6.8	3.6
Alcohol-Drinking Locus of Control				
Internal	14.0	2.0	13.0	2.5
Friend	11.3	3.8	6.7	3.6
Self-Esteem				
	24.6	5.4	29.8	6.0

Table F-9

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning Peer Influences

	Mentioned		Not mentioned	
	N = 6		N = 79	
Scale	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	13.7	1.5	13.1	2.4
Friend	6.8	3.4	7.0	3.6
Alcohol-Drinking Locus of Control				
Internal	13.7	1.5	13.1	2.4
Friend	7.3	4.2	6.9	3.7
Self-Esteem				
	26.6	10.2	29.8	5.6

Table F-10

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning Internal
Influences

Scale	Mentioned		Not mentioned	
	N = 9		N = 76	
	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	13.1	4.0	13.2	2.1
Friend	6.1	4.1	7.1	3.5
Alcohol-Drinking Locus of Control				
Internal	13.6	2.7	13.0	2.4
Friend	6.0	4.5	7.0	3.6
Self-Esteem				
	31.0	7.3	29.4	5.9

Table F-11

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning the Risk Cluster

	Mentioned		Not mentioned	
	N = 71		N = 14	
Scale	M	SD	M	SD

Tobacco-Smoking Locus of Control

Internal	13.1	2.3	13.4	2.3
Friend	7.1	3.7	6.2	3.1

Alcohol-Drinking Locus of Control

Internal	13.0	2.3	13.4	3.2
Friend	7.0	3.6	6.6	4.4
Self-esteem	29.8	5.7	28.5	7.7

Table F-12

Mean Locus of Control and Self-esteem Scores for
Students Mentioning and Not Mentioning the Social
Influences Cluster

	Mentioned		Not mentioned	
	N = 16		N = 69	
Scale	M	SD	M	SD
Tobacco-Smoking Locus of Control				
Internal	13.1	2.2	13.2	2.3
Friend	7.1	3.1	6.9	3.7
Alcohol-Drinking Locus of Control				
Internal	13.2	2.6	13.1	2.5
Friend	7.9	3.6	6.7	3.7
Self-Esteem				
	29.0	7.2	29.7	5.8

Appendix GFrequency of Decision-Making Factors by Academic
Placement and Gender

Table G-1

Frequency of Students Mentioning Each Decision-Making
Factor by Academic Placement

Factor	Low placement		High placement	
	N = 28		N = 57	
	n	%	n	%
Accident risk	18	64.3	45	78.9
Mistrust of driver	5	17.9	21	36.8
Coercion	1	3.6	8	14.0
Party risks	3	10.7	6	10.5
Party considerations	5	17.9	11	19.3
Party attractions*	9	32.1	3	5.3
Friend influences	1	3.6	3	5.3
Peer influences	3	10.7	3	5.3
Authority influences	3	10.7	8	14.0
Internal influences	4	14.3	5	8.8

* $p < .05$

Table G-2

Frequency of Students Mentioning Each Decision-Making
Factor by Gender

Factor	Males		Females	
	N = 37		N = 48	
	n	%	n	%
Accident risk*	22	59.5	41	85.4
Mistrust	10	27.0	16	33.3
Coercion	1	2.7	8	16.7
Party risks	6	16.2	3	6.3
Party considerations	8	21.6	8	16.7
Party attractions	7	18.9	5	10.4
Friend influences	3	8.1	1	2.1
Peer influences	1	2.7	5	10.4
Authority influences	2	5.4	9	18.8
Internal influences	3	8.1	6	12.5

* $p < .05$

REFERENCES

- Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. Journal of Abnormal Psychology, 87, 49-74.
- Alexander, C. S., & Klassen, A. C. (1988). Drug use and illnesses among eighth grade students in rural schools. Public Health Reports, 103(4), 394-399.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.
- Botvin, G. J. (1986). Substance abuse prevention research: Recent developments and future directions. Journal of School Health, 56(9), 369-374.
- Botvin, G. J., & Eng, A. (1980). A comprehensive school-based smoking prevention program. Journal of School Health, 50, 209-213.
- Byrne, B. (1983). Investigating measures of self-concept. Measurement and Evaluation in Guidance, 16, 115-126.
- Clarke, J. H., MacPherson, B. V., & Holmes, D. R. (1982). Cigarette smoking and external locus of control among young adolescents. Journal of Health and Social Behavior, 23, 253-259.

Coopersmith, S. (1967). The antecedents of self-esteem.
San Francisco: Freeman.

Dielman, T. E., Campanelli, P. C., Shope, J. T., &
Butchart, A. T. (1987). Susceptibility to peer
pressure, self-esteem, and locus of control as
correlates of adolescent substance abuse. Health
Education Quarterly, 14(2), 207-221.

Dielman, T. E., Leech, S. L., Lorenger, A. T., &
Horvath, W. J. (1984). Health locus of control and
self-esteem as related to adolescent health
behavior and intentions. Adolescence, 76, 935-950.

Dielman, T. E., Shope, J. T., Leech, S. L., & Butchart,
A. T. (1989). Differential effectiveness of an
elementary school-based alcohol misuse prevention
program. Journal of School Health, 59(6), 255-263.

Duryea, E. (1983). Utilizing tenets of inoculation
theory to develop and evaluate a preventive
alcohol education intervention. Journal of School
Health, 53, 250-256.

Duryea, E. J., & Okwumabua, J. (1985). An exploratory
study of the health decision-making variables of
New York and Montana ninth-graders. Adolescence,
20, 899-908.

Green, L., Kreuter, M., Deeds, S., & Patridge, K.
(1980). Health education planning: A diagnostic
approach. Palo Alto, CA: Mayfield.

- Hammes, M. J., & Duryea, E. J. (1986). Cognitive development and the dynamics of decision-making among adolescents. Journal of School Health, 56(6), 224-226.
- Hansen, W. B., Johnson, C. A., Flay, B. R., Graham, J. W., & Sobel, J. (1988). Affective and social influences approaches to the prevention of multiple substance abuse among seventh grade students: Results from project SMART. Preventive Medicine, 17, 135-154.
- Hearne, J., & Klockars, A. J. (1988). Applicability of the Parcel-Meyer Children's Health Locus of Control Scale. Journal of School Health, 58(1), 16-19.
- Hintze, J. T. (1987). Number crunching statistical system. Kaysville, UT: Author.
- Janis, I. L., & Mann, L. (1977). Decision making. New York: The Free Press.
- Johns Hopkins University, School of Hygiene and Public Health, Division of Maternal and Child Health. (1987) Adolescent Health Project. Baltimore: Author.
- Juhasz, A. M. (1985). Measuring self-esteem in early adolescents. Adolescence, 20, 877-887.
- Kandel, D. B. (1980). Drugs and drinking behavior among youth. Annual Review of Sociology, 6, 235-285.

Kaplan, H. B., Martin, S. S., & Robbins, C. (1984).

Pathways to adolescent drug use: Self-derogation, peer influence, weakening of social controls, and early substance use. Journal of Health and Social Behavior, 25, 270-289.

Kolbe, L. J., Iverson, D. C., Kreuter, M. W., Hochbaum, G., & Christensen, G. (1981). Propositions for an alternate and complementary health education paradigm. Health Education, 12, 24-30.

Krohn, M. D., Massey, J. L., Skinner, W. F., & Lauer, R. M. (1983). Social bonding theory and adolescent cigarette smoking: A longitudinal analysis. Journal of Health and Social Behavior, 24, 337-349.

Krohn, M. D., Naughton, M. J., Skinner, W. F., Becker, S. L., & Lauer, R. M. (1986). Social disaffection, friendship patterns and adolescent cigarette use: The Muscatine Study. Journal of School Health, 56(4), 146-150.

Lamarine, R. J. (1987). Self-esteem, health locus of control, and health attitudes among Native American children. Journal of School Health, 57(9), 371-373.

- Levinson, H. (1974). Activism and powerful others: Distinctions within the concept of internal-external control. Journal of Personality Assessment, 38, 377-383.
- Marsh, H. W. (1986). Global self-esteem: Its relation to specific facets of self-concept and their importance. Journal of Personality and Social Psychology, 51(6), 1224-1236.
- Marsh, H. W., & Smith, I. D. (1982). Multitrait-multimethod analyses of two self-concept instruments. Journal of Educational Psychology, 74,(3), 430-440.
- Marston, A. R., Jacobs, D. F., Singer, R. D., Widaman, K. F., & Little, T. D. (1988). Adolescents who apparently are invulnerable to drug, alcohol, and nicotine use. Adolescence, 23(91), 593-598.
- Maryland Department of Health and Mental Hygiene, Drug Abuse Administration (1987). 1986-87 survey of drug use among Maryland adolescents: General report. Baltimore: Author.

- McAlister, A. L. (1979). Tobacco smoking, alcohol, and drug abuse: Onset and prevention. In Healthy people: The Surgeon General's report on health promotion and disease prevention background papers (DHEW Publication No. PHS 79-55071A) (pp. 197-206). Washington, DC: U.S. Government Printing Office.
- McGuire, W. J., & McGuire, C. V. (1981). The spontaneous self-concept as affected by personal distinctiveness. In M. D. Lynch, A. A. Norem-Hebelsen, & K. J. Gergen, (Eds.), Self-concept: Advances in theory and research (pp. 147-172). Cambridge, MA: Ballinger.
- Murphy, N. T., & Price, C. J. (1988). The influence of self-esteem, parental smoking, and living in a tobacco production region on adolescent smoking behaviors. Journal of School Health, 58(10), 401-405.
- National Professional School Health Organizations. (1984). Comprehensive school health education: A definition. Journal of School Health, 54, 312-315.
- Newcomb, M. D., & Harlow, L. L. (1986). Life events and substance use among adolescents: Mediating effects of perceived loss of control and meaninglessness in life. Journal of Personality and Social Psychology, 51(3), 564-577.

- Parcel, G. S. (1988). CHLC scale developer comments on applicability. Journal of School Health, 58(1), 19-20.
- Parcel, G. S., & Baranowski, T. (1981). Social learning theory and health education. Health Education, 12, 14-18.
- Parcel, G. S., & Meyer, M. P. (1978). Development of an instrument to measure children's health locus of control. Health Education Monographs, 6(2), 149-159.
- Phillips, S. D., Pazlenza, N. J., & Ferrin, H. H. (1984). Decision-making styles and problem-solving appraisal. Journal of Counseling Psychology, 31, 497-502.
- Rockett, G. (1981). Drug education. In R. D. Russell (Ed.), Education in the 80's: Health education (pp. 91-99). Washington, DC: National Education Association.
- Rosenberg, M. (1965). Society and the adolescent self-image. Princeton: Princeton University.
- Rosenberg, M. (1979). Conceiving the self. New York: Basic Books.
- Rotter, J. B. (1982). The development and application of social learning theory. New York: Praeger.

- Saltzer, E. B. (1978). Locus of control and the intention to lose weight. Health Education Monographs, 6(2), 118-128.
- Schinke, S. P., & Gilchrist, L. D. (1983). Primary prevention of tobacco smoking. Journal of School Health, 53, 416-419.
- Schvanevelt, J. D., & Adams, G. R. (1983). Adolescents and the decision-making process. Theory into Practice, 22, 98-104.
- Silver, M. (1976). Values education. Washington, DC: National Education Association.
- Surgeon General. (1979). Healthy people: The Surgeon General's report on health promotion and disease prevention background papers (DHEW Publication No. PHS 79-55071A). Washington, DC: U.S. Government Printing Office.
- Wallack, L., & Corbett, K. (1987). Alcohol, tobacco and marijuana use among youth: An overview of epidemiological, program and policy trends. Health Education Quarterly, 14(2), 223-249.
- Wallston, B. S., & Wallston, K. A. (1978). Locus of control and health: A review of the literature. Health Education Monographs, 6(2), 107-117.
- Wallston, K. A., & Wallston, B. S. (1978). Preface: Health locus of control. Health Education Monographs, 6(2), 101-106.

- Wallston, K. A., Wallston, B. S., & DeVellis, R. (1978). Development of the Multidimensional Health Locus of Control (MHLC) scales. Health Education Monographs, 6(2), 160-170.
- Wylie, R. C. (1979). The self-concept (rev. ed., vol 2). Lincoln: University of Nebraska.
- Young, M., Werch, C. E., & Bakema, D. (1989). Area specific self-esteem scales and substance use among elementary and middle school children. Journal of School Health, 59(6), 251-254.