

September 1982
Final Report

DOT HS-806-329



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

Norms and Attitudes Related to Alcohol Usage and Driving: A Review of the Relevant Literature. Volume I: A Review of the Literature

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Contract No. DTNH22-81-C-07358
Contract Amount \$178,512

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A D D E N D U M

Recognizing the magnitude and complexity of the alcohol-impaired driving problem, the National Highway Traffic Safety Administration reexamined its alcohol program and, in 1981, developed an Alcohol Highway Safety Program Plan calling for an integrated problem solving effort at all levels of government and society. The plan emphasizes six major points:

1. General Deterrence (short term): programs oriented toward deterring the majority of drunk drivers who are never arrested (rather than "treating" the few who are) for short term impact.
2. Community Focus: program emphasis and responsibility is placed at the local level.
3. Systems Approach: integration of the coordinating, enforcement, prosecution, adjudication, education/treatment, public information/education, and licensing functions at the local and State level, as appropriate.
4. Financial Self-Sufficiency: assessing fines, court costs, treatment tuition fees, etc., to convicted offenders to defray the costs of local and community programs.
5. Citizen Support: generating community and citizen support for comprehensive community programs (to provide a political base for increased countermeasure activity).
6. Prevention (long term): efforts toward changing societal attitudes toward drinking and driving through long-term prevention/education programs.

This report addresses the final point--development of programs for preventing alcohol-impaired driving. It is felt that achievement of long-term reductions in the magnitude of the drinking/driving problem necessitates the establishment of societal norms emphasizing individual responsibility and making alcohol-impaired driving unacceptable behavior. The intent of this report is to provide a foundation for developing prevention programs to achieve such long-term reductions in alcohol-impaired driving. The literatures on health prevention programs and on attitudes related to alcohol-usage and driving were reviewed as the first step in identifying promising approaches for preventing alcohol-impaired driving.

This report, in four volumes, summarizes (1) information available on attitudes related to alcohol-usage and driving, (2) factors associated with "successful" prevention programs, and (3) data on perceptions of the drinking/driving problem and its possible solutions collected through individual interviews and focus groups.

This report will be most useful to individuals interested in planning, designing, and developing programs to prevent alcohol-impaired driving, for it provides information about the issues which should be addressed when designing such programs. This report is not intended for use by program implementers, as it does not provide information on already-developed and tested drunk-driving prevention programs, nor does it provide detailed outlines on how to establish such programs.

State and local program designers/developers, health professionals and educators interested in drinking-driving programs may each find this report of interest. Those interested in changing attitudes about drinking and driving and in issues associated with attitude-change programs should find Volume I useful. Information about "success" factors associated with public health prevention programs (e.g., smoking, hypertension, substance abuse) can be found in Volume II. In designing drunk-driving prevention programs, this information can be used to avoid some of the pitfalls of previous health prevention efforts. Volumes III and IV contain information, collected through individual interviews and focus groups, on the drunk-driving problem and its possibilities for solution. While these data are based on small, selected samples and are not generalizable, they do provide insight into the magnitude and complexity of the drinking-driving problem. These two volumes may be of particular interest to persons working with youth programs, school-based programs and/or parent-child programs. Finally, a short, summary booklet outlining issues associated with, and providing suggestions for, developing drinking-driving prevention programs is included as part of this report. While this booklet is helpful in providing a short overview of suggestions for developing programs to prevent alcohol-impaired driving, users of this report are encouraged to refer to the appropriate volume containing the more complete background and empirical information when designing their drinking/driving prevention programs.

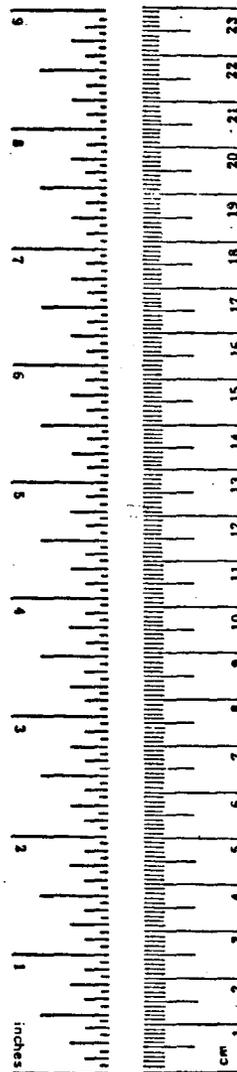
1. Report No. DOT HS 806 329	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Norms and Attitudes Related to Alcohol Usage and Driving: Review of the Relevant Literature. Volume I: A Review of the Literature.		5. Report Date September, 1982	6. Performing Organization Code
7. Author(s) Sue Korenbaum, Project Director		8. Performing Organization Report No.	
9. Performing Organization Name and Address Creative Associates, INC. 3201 New Mexico Ave., NW Suite 270 Washington, D.C. 20016		10. Work Unit No. (TRAIS)	11. Contract or Grant No. DTNH22-81-C-07358
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration 400 Seventh Street, S.W. Washington, D.C. 20590		13. Type of Report and Period Covered Final Report June 1981 to September 1982	
14. Sponsoring Agency Code		15. Supplementary Notes This is the first volume of four volumes produced under this contract.	
16. Abstract This project provides information on norms and attitudes related to alcohol use and driving. This volume contains a review and analysis of the literature pertaining to attitude formation and change, attitudes towards alcohol use/abuse, attitudes associated with drinking and driving and primary prevention approaches for reducing drinking and driving. Recommendations included the following: a national survey on attitudes towards drinking and driving should be conducted to identify and assess peoples' attitudes towards drinking and driving; alcohol education programs should be studied to determine whether they can provide an effective means for impacting on the drinking driving behavior of students; and a three-year pilot program should be conducted on community-based prevention of drinking and driving. Information on the other aspects of the project can be found in other volumes of this report as follows: Volume II - Meta-analysis of Primary Prevention Studies; Volume III - Report of Individual Interviews; Volume IV - Report of Focus Groups and a booklet entitled "Suggestions for Developing Prevention Programs to Reduce the Incidence of Alcohol-Impaired Driving."			
17. Key Words Attitudes, Drinking and Driving, Prevention, Alcohol Use, Attitudes Towards Alcohol Use		18. Distribution Statement Document is available to the U.S. public through the National Technical Information Service, Springfield, Virginia 22161	
19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

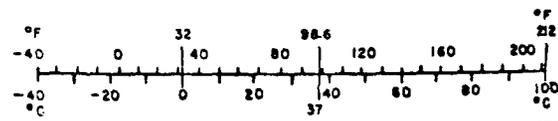
Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.46	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

* 1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



ACKNOWLEDGEMENTS

Creative Associates would like to acknowledge those people who contributed to the successful completion of this project. The contributions made by Dr. Maria Vegega, the Contract Technical Manager from NHTSA enhanced the quality of the final reports. In addition, Dr. Thomas Nagy provided invaluable information on the application of primary prevention to the problem of drunk driving. Special thanks to Brenda Bryant and David Kahler for their editorial assistance and to Pushpa Raj, Helen Phillips and Barbara Chowney for their superb clerical and production assistance.

PREFACE

The following research was conducted under NHTSA contract #DTNH 22-81-C-07385 Norms and Attitudes Related to Alcohol Usage and Driving: A Review of the Relevant Literature. The purpose of this project was to provide a foundation for the development of prevention activities and programs to deter people from drinking and driving. Components of the project include: conducting a review of the literature; performing a meta-analysis of primary prevention studies; conducting individual interviews and focus groups; and developing a booklet of suggestions for developing prevention programs to reduce the incidence of alcohol-impaired driving.

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INTRODUCTION

This volume of the Final Report for NHTSA Contract # DTNH22-81-C-07385, "Norms and Attitudes Related to Alcohol Usage and Driving" contains a review and analysis of the literature on attitude formation and change, attitudes towards alcohol use/abuse, attitudes associated with drinking and driving, and primary prevention approaches for reducing drinking and driving. The overall goal of this project was to obtain and synthesize information that would provide the basis for developing primary prevention programs to deter people from driving while intoxicated (DWI).

Project requirements included reviewing the literature, analyzing primary prevention programs, conducting individual interviews and focus groups, and developing a state users' guide on prevention approaches for deterring drinking and driving. This volume contains a traditional, or qualitative, literature review integrating the findings of major research efforts. Information on the findings of other aspects of this project may be found in the following volumes of this final report: Volume II, "Meta-analysis of Primary Prevention Studies;" Volume III, "Report of Individual Interviews;" Volume IV, "Report of Focus Groups;" and a booklet on preventing drunk driving entitled, "Suggestions for Developing Prevention Programs to Reduce the Incidence of Alcohol-Impaired Driving."

Due to a scarcity of literature specific to norms and attitudes related to alcohol use and driving, information collection criteria were expanded to include literature on norms and attitudes towards alcohol use, and substance use and abuse; attitude formation and change; other highway safety issues (e.g. enforcement, rehabilitation of chronic problem drinkers); and primary prevention programming.

The studies reviewed in these related areas were often not directly relevant to the drinking/driving problem. However, they provided valuable information and insights on areas peripheral to drinking and driving and are included in the annotated bibliography attached to this report.

In addition to this qualitative review of the literature, Creative Associates, Inc. conducted a meta-analysis, or quantitative review, of the literature, on primary prevention programs. This statistical analysis of controlled studies provided definitive data identifying specific components or variables associated with successful primary prevention programs. The results of the meta-analysis are contained in Volume II of this report; however, some of the most relevant studies will be included in the annotated bibliography of this report.

The findings of the qualitative and quantitative review of the literature serve several purposes: 1) to define the state-of-art concerning norms and attitudes related to alcohol usage and driving; 2) to identify clinical areas where additional research is required; 3) to provide guidelines for analyzing primary prevention programs; 4) to develop strategies to deter people from driving while intoxicated; and 5) to provide the foundation for a major program effort to decrease the incidence of drunk driving.

By expanding the scope of the literature review, Creative Associates was able to identify basic issues that have led to a more global approach to the DWI problem. This approach incorporates a broad-based view of DWI as a subset of a larger group of alcohol-related problems. Therefore, the following analysis, proposes that a comprehensive and integrated set of prevention approaches to deter people from driving while intoxicated can be structured by using the wider views described herein.

CHAPTER I

THE DRINKING/DRIVING PROBLEM

This chapter contains information which establishes the need for developing short- and long-term approaches for dealing with the drinking/driving problem. The first section discusses the extent of the problem and identifies obstacles to its solution. The second section provides theoretical models for evaluating the problem and the third section contains suggestions for alleviating the problem.

Background to the Drinking/Driving Problem

It has been estimated that approximately one-half of all auto crash fatalities in the U.S. involve drivers whose performance is significantly impaired by alcohol (Jones and Joscelyn, 1978; Birrell, 1971, 1979; OECD, 1978; Comptroller General, 1979; Teknekron, 1979). The staggering cost of such carnage was recently estimated at over \$5 billion (Comptroller General, 1979). Although the figures do not appear to be as well documented, available statistics suggest that approximately one-third of the pedestrians killed in traffic accidents have a blood alcohol content (BAC) above 0.10% (the legal threshold for intoxication in many states). In addition, about 10-20% of the non-fatal auto accidents in the U.S. are thought to be alcohol-related (Haddon, 1967; Jones and Joscelyn, 1978; OECD, 1978). Awareness of the magnitude of the problem, underscored by these figures, has led to a significant infusion of resources by both the public and private sectors in an attempt to combat the problem.

In general, the most massive efforts spawned by the infusion of resources have been in the areas of detection or enforcement and prevention of recidivism. However, much of this work has been of dubious efficacy in reducing the number of alcohol-related fatalities (OECD, 1978; Waller, 1978), and the approaches used suffer from piecemeal implementation. Other research has found that no single countermeasure is likely to have a significant impact on reducing accidents due to drinking and driving (Health and Welfare Canada, 1978; Lane, 1979). Because many countermeasures (both proposed and existant) encounter legal, social and economic resistance, it is important to understand the norms and attitudes towards alcohol use and driving in our society.

Bacon and Jones (1971) suggest that there are a large number of shared characteristics in the demographic profiles of drinkers and drivers.

"Ours is a society of both drivers and drinkers. According to the statistics, about 80 per cent of our adult members hold driver's licenses and 65 to 75 per cent of them drink at least occasionally. We also know that most of the people who drink are men between the ages of eighteen and forty-five, and that they come largely from the middle and upper groups as far as education and income are concerned. Since exactly these same characteristics apply to drivers, the chances of an overlap between the drinkers and the drivers are extraordinarily high." (p. 145)

Heilman (1976) also characterizes the U.S. as an alcoholic society. Highway officials from the 50 states, D.C. and Puerto Rico have cited the growing social acceptability and use of alcohol as an obstacle to combatting the drinking driver problem. In fact, this social acceptability has been cited with higher frequency than any other factor (Comptroller General, 1979) as the major obstacle.

Approximately two-thirds of U.S. adults are at least occasional consumers of alcoholic beverages and there is evidence that the numbers are increasing (Cahalan, Cisin, and Crossley, 1969; Bacon and Jones, 1971; Comptroller General, 1979; Ewing and Rouse, 1979). In American Drinking Practices (Cahalan et al., 1969), 2746 Americans were surveyed in an attempt to describe the use of alcohol in the United States. Findings suggest that most Americans can be characterized as holding inconsistent attitudes towards alcohol. This is based on the fact that three-fourths of all respondents, including the majority of males who are heavy drinkers, said they thought that drinking does more harm than good. Three-fourths of those interviewed also said they regarded alcoholism as either a very serious or fairly serious public health problem (Cahalan et al., 1969).

Much of the discussion which does take place regarding the problems associated with alcohol consumption often focuses on the morality of drinking (Cahalan, et al., 1969; Mangum, 1976; Klette, 1979) and countermeasures based on social considerations are likely to reflect the implicit (or explicit) values of those implementing them. As Klette (1979) has observed:

"Part of the function of law is to give recognition to ideals different from established conduct. Most of its complications arise from the necessity of pretending to do one thing while actually doing another. The legislator very often moves within a social reality very narrowly circumscribed by his political duties to party ideology and electorate, not to scientific truth." (p. 366.)

Klette contends that both legislators and other public officials are likely to be more guided by the orientation of their constituents than by scientific considerations. Nonetheless, it is the scientific considerations that are likely to provide the effective solutions to complex and pressing problems.

Over a dozen years ago, Donald Campbell (1969) warned against basing solutions to problems on hypothetical theories. Instead he proposed that if problems could be delineated into their component parts, solutions for each component could be tested to establish their effectiveness. With regard to drinking and driving, it is still fairly common to advocate countermeasures which either have not been demonstrated to be particularly effective or have been demonstrated to be ineffective.

In the final analysis, however, the critical test of effectiveness of solutions must be a demonstrable reduction in the number of accidents due to alcohol intoxication. Innovative approaches for addressing the problem of

drinking and driving (as well as more traditional approaches) will have to be evaluated on the basis of their impact on reducing alcohol-related deaths and injuries on the highways.

In short, the combination of drinking and driving is fatal far too much of the time. It has been suggested that in the United States where one-half of the adult population has combined drinking and driving at some time in their lives (Waller, 1978), the probability of being arrested for drunk driving is 1 in 2000 (Borkenstein, 1975). Some state and local officials have indicated that a lack of resources (personnel and financial) is a significant obstacle to combatting the drunk driving problem. However, others have suggested that resources are available, but insufficient attention to their allocation is the problem (Comptroller General, 1979).

Finally, there is a general ambivalence towards the problem of drunk driving. This ambivalence is compounded by judicial systems that are inconsistent in sentencing DWI offenders. Penalties for DWI offenses range from heavy fines and jail sentences to attendance at rehabilitation programs. Furthermore, as is evidenced by the consistent number of highway fatalities associated with alcohol use, annually, (Comptroller General, 1979) the usual countermeasures for detecting and apprehending drunk drivers have proven of questionable efficacy. In the final analysis, solutions, to date, have been based too often on political and economic viability rather than on a commitment to discovering and using strategies which work.

A Conceptual Framework for Combatting the Problem

Researchers and practitioners alike often seek the guidance of theories and/or models to direct their thinking in exploring various phenomena or in attempting to develop solutions to problems (Lachman, 1967). Although a number of models of alcohol abuse and alcoholism have been developed, not all are equally relevant for dealing with the problem of drinking and driving.*

The models which follow identify important factors that should be considered and integrated into the planning of primary prevention activities to deter people from driving while intoxicated. Although the first model is not specific to the drinking/driving problem, it provides a theoretical basis for understanding the difficulty that arises when attempting to develop programs for deterring people from driving while intoxicated.

Sociologists' long standing interest in understanding aspects of alcohol use and alcohol-related damage has led to two recognized viewpoints on the subject. The earlier of the two, which has been called the sociocultural model (Frankel and Whitehead, 1979), is based on drinking attitudes and practices viewed from a cross-national perspective. The model is based on the assertion that societies which are explicit and coherent with regard to values, customs, sanctions, and public attitudes toward alcohol consumption will have low rates of alcoholism (Ullman, 1958).

*Additional information and models are described in the works of Clare (1974), Cahalan and Cisin (1977), and Ewing and Rouse (1978).

The second major viewpoint, the distribution of consumption model, was first articulated in U.S. literature by de Lint and Schmidt (1968). It was based on some early work by the French mathematician, Sully Ledermann, who noted that the distribution of consumption of alcohol in many societies approximated lognormality (not unlike contagious diseases). It assumes that, as accessibility and availability of alcohol increase, so will the level of consumption.

Frankel and Whitehead (1979), in an attempt to effect a synthesis of the two approaches, note both the similarities and differences of the two models. The most marked difference is the criteria for defining alcoholism. Alcoholism for the socioculturalist is usually indexed by drunkenness. In the distribution of consumption model, however, physical pathology is the basic criterion. It is important to keep in mind that excessive use of alcohol has two distinct but related manifestations. The first is acute and behavioral, and the second is chronic and pathological. Obviously, the interest of those concerned with drunk driving lies in the acute and behavioral effects. Still, as will be discussed below, consideration of the chronic and pathological manifestations of alcohol abuse may have implications for the prevention of drinking and driving.

In their final synthesis, Frankel and Whitehead (1979) describe the development of a "path-analytic" model which can be summarized as follows:

- "In any group or society in which the overall level of consumption is high and (to a lesser extent) where proscriptions against excessive drinking are few or absent, the rate of alcohol-related damage will be high;
- Where drinking practices are integrated into the cultural structure and where prescriptions for moderate drinking are prevalent, the overall level of consumption will be high; and
- Societies characterized by prescriptions for moderate drinking tend to have integrated drinking practices and few proscriptions against excessive drinking." (p. 34)

Although this brief summary cannot do justice to the Frankel and Whitehead model, it does highlight the fact that the drinking-driving problem is a subset of a larger problem that can be identified in terms of alcohol-related damage. Moreover, it also suggests that some aspects of the problem must first be dealt with through countermeasures (to be discussed below) that are aimed at society as a whole.

A 1978 paper from Health and Welfare Canada shares the broadened perspective of the Frankel-Whitehead hypothesis in that it, too, focuses on alcohol-related problems defined in terms of "physical, mental, and social damage associated with the consumption of alcohol" (Health and Welfare Canada, 1978, p.5). The model seeks to develop primary prevention strategies which focus on both non-specific environmental and personal factors and on alcohol-specific

personal, environmental and substance factors. By focusing on non-specific environmental and personal factors, alcohol-related problems can be reduced through positive actions to improve physical, mental, and social health, such as reducing stress, providing alternatives to drinking, and making alcohol and other drug abuse unnecessary or inappropriate. Also, alcohol-specific personal, environmental and substance factors can encourage moderation or abstinence.

Within this model, the authors' definitions are purposefully broad so that the overall strategy will be applicable to a wide variety of alcohol-related problems. The strategy is not designed to preclude either the use of alcohol or its occasional excessive use. Instead it views minimization of harmful consequences as a desirable outcome.

The Health and Welfare Canada model does not seek to prohibit drinking or driving. Instead, it seeks to reduce "the impact of their interaction"(1978, p. 13). The approach differentiates the person-substance-environment interaction at three levels: 1) pre-drinking; 2) drinking; and 3) drinking-driving which will be discussed later in this chapter. The Canadian authors suggest that the efforts of health workers should focus on understanding ecological relationships at the drinking level in order to prevent impaired individuals from driving (offering alternatives to driving after drinking). Health workers should also concern themselves with the drinking-driving level in their attempts to reduce the probabilities of crashes if an operator does try to drive while drunk.

J.C. Lane (1979) has developed a model that specifically addresses the problem of drinking and driving. The objective of Lane's model is to reduce the exposure of the general populace to those at risk for alcohol-related accidents and/or to reduce the level of impairment of the "at risk" driver. He bases his model on certain assumptions that can be summarized as follows.

A very large number of highway accidents are due to alcohol impairment among male drivers whose blood alcohol concentration (BAC) is excessive and whose likelihood of collision increases as a function of the BAC. Lane (1979) argues that additional assumptions (less well-founded in terms of data) suggest that most drivers with BACs elevated above legal limits are excessive drinkers whose alcohol usage habits have been established by early adulthood, are "at risk" with regard to alcoholism, frequently drive while impaired, and constitute a significant minority (less than 8%) of the driving populace. These assumptions are based primarily on data from the author's home country, Australia. A somewhat comparable figure for the United States estimates that three-fourths of the alcohol-related crash fatalities are caused by 2% of the driving population who are problem drinkers (Worden, 1981).

Lane's (1979) paper outlines three main strategies for dealing with the problem of drinking and driving -- prevention, deterrence and remediation. Lane does not view these types of strategies as mutually exclusive. In his approach Lane attempts to quantify the effects of various countermeasures for each strategy and to account for factors that would enhance or degrade the process of decreasing DWI. His preventive strategy assumes that a reliable, non-overridable interlock device could be created to keep the impaired

individual from driving a car. Hence, impaired drivers would be prevented from gaining access to their vehicles. Despite the potential reliability of this type of countermeasure, the United States experience with seat belt interlocks demonstrates the lengths to which some individuals will go to override these types of safety devices.

Lane's (1979) general deterrence strategy relies on the deterring effects of perceived risk of apprehension and conviction. However, perceived risk is a function of actual risk, and actual risk is extremely low. Additionally, although lawmakers and judges are committed to a belief in the efficacy of enforcement as a countermeasure, the true efficacy of enforcement depends on both resources and policy. Moreover, Lane argues that enforcement may have to be doubled, tripled, even quintupled to be an effective deterrent and that this cannot occur without the expenditure of considerable additional resources.

Remedial countermeasures, aimed at reducing the population of excessive drinkers who are also drivers, are based on further assumptions. According to Lane (1979), these assumptions may be summarized by noting the following: Those convicted for DWI often exhibit strong symptoms of alcohol abuse and therefore could benefit from rehabilitation/remediation programs. No rehabilitative efforts, however, are likely to have a large impact on the population of problem drinking-drivers because no remedial effort is going to have 100% conversion efficiency. This is the case, because not all problem drinking drivers will be apprehended, and of those apprehended, not all will be referred for treatment.

As Campbell and Levine (cited in Waller, 1973) have pointed out, figures can be deceptive. As an example, consider the 2% figure cited by Worden (1981) as representing the number of truly dangerous drivers. Campbell and Levine, using North Carolina's 3 million drivers as an example, concluded that 60,000 drivers should account for half (944 deaths) of the auto crash deaths in 1973. Reason alone suggests the gross inefficiency of attempting to rehabilitate 60,000 people who account for 944 deaths. On the positive side, there is probably some percentage of drinking-drivers who convert unassisted.

In view of the massive resource expenditures on remedial efforts and the negligible potential for impact on the drinking-driving problem, some might suggest that such efforts be abandoned. When considering this, two points are pertinent. First, efforts can be streamlined somewhat to reach a higher proportion of the 2% reputed to be the "real" problem. Second, some of the expense can be justified on the basis that remediation efforts will also impact other problems related to alcohol damage. Whether these considerations are sufficient to warrant the current commitment of resources is, at least in part, a political question.

Three main points emerge when analyzing the information contained in the models. First, there is a need for a comprehensive framework which would guide efforts to attack the drinking-driving problem (Health and Welfare Canada, 1978; Jones and Joscelyn, 1978). Second, the past emphasis on enforcement (aimed at getting the driver, once drunk, off the road) and rehabilitation (aimed at treating both DWI offender and the problem-drinking driver) over primary prevention (aimed at preventing the alcohol-impaired driver from

driving) may well have contributed to the fact that current countermeasures have, by-and-large, failed to reduce alcohol-related collisions. Alcohol-related collision fatalities have continued to account for about half of all crash fatalities in the United States. Third (and related to the last point), thoughtful analyses such as Lane's (1979) suggest that sheer numbers of drinking drivers may mitigate attempts to deal with the problem at levels beyond primary prevention. Detection rates are sufficiently low to conclude that enforcement efforts have not made significant impact on the drinking-driver problem. If a tenfold increase in detection rates were to occur, there would still be about 100-200 times that number of drinking-drivers on the road. Since both enforcement and rehabilitation efforts are highly dependent on detection rates, it is clear that increased attention to effective primary prevention strategies can only have a salutary effect.

Suggestions for Alleviating the Problem

According to the Health and Welfare Canada (1978) model, primary prevention measures may be directed at modifying the person, the substance (alcohol), or the environment. Such measures, in concert, would aim to address the drunk-driving problem by decreasing BAC levels and the likelihood of alcohol-impaired driving. Each of these factors is discussed below.

Person factors would typically focus on increasing awareness and changing attitudes of the general population toward both drinking and driving (Klein, 1979). Strategies for increasing the public's awareness include the use of educational vehicles such as:

- o mass media campaigns;
- o driver and general highway safety courses; and
- o making information available through establishments where alcoholic beverages are sold and/or consumed.

There is some evidence (Teknekron Research, Inc. 1979) to suggest that such efforts may have some impact on certain behaviors (e.g., host intervention to prevent an inebriate from driving). Educational efforts should focus on the total adverse health impact of alcohol (Health and Welfare Canada, 1978).

Attitudinal measures are not so easily implemented in an effective manner, for several reasons. First, there is some evidence (Kinder, 1975) to suggest that the mass media lacks the credibility needed for changing attitudes. Second, although most of the population begins to drink as teenagers (Cahalan, Cisin, and Crossley, 1969) there is little indication of any systematic educational efforts at or prior to that age level. That is to say that in the absence of explicit discussion of norms, laws, and self-control with regard to drinking, attitudes accepting and condoning drinking/driving behavior are likely to develop. Modeling is also an important factor. If moderation is not modeled, it is unlikely to be adopted by novice drinkers (Weissbach and Vogler, 1977). Children seem especially sensitive to attitude behavior inconsistency; hence any strategy focusing exclusively (or primarily) on

changing attitudes is unlikely to produce visible differences in drinking patterns unless the strategy includes behavioral modeling.

Further, with regard to driving, some of the attitudes toward both automobiles and public transport (Klein, 1979) probably contribute to the drunk driving problem. These attitudes are based on the fact that driving a car is viewed as more than just a means for changing location. Driving helps fulfill peoples' (especially young people) affiliation and acceptance needs by enabling them to leave their immediate group and environment. In the car they can be their own group asserting a new identity not subject to parental or immediate group standards. Furthermore, driving gives people a feeling of freedom and power (Klette, 1979) and is perceived as an implicit right. One's right to own and operate a car appears as important as one's right to a free education. Changing such attitudes, too, are likely to require a comprehensive approach involving behavior-change components.

Substance factors offer a second means of attempting to control the drinking-driving problem. Alcohol consumption may be manipulable through both pricing policy (Poham, Schmidt, and de Lint, 1979) and decreasing beverage proof (Health and Welfare Canada, 1978). Data bearing on price does show that there is an inverse relationship between price and alcohol-related damage. Furthermore, there are also data which indicate that ad lib drinking of low alcohol beer results in notably lower BACs than ad lib drinking of beer with more typical alcohol content (Health and Welfare Canada, 1978). Therefore, beverage manufacturers could be requested to produce additional alcoholic products with lower alcohol percentage levels as the cigarette manufacturers did with low tar and nicotine cigarettes. If such compliance is not volunteered, compliance could be encouraged via taxation. Rate of taxation on alcoholic beverages could be specifically tied to proof levels. The high taxes on beverages with a high alcohol content would be likely to have significant impact on sales.

Environmental factors have been suggested by a number of authors as a means of reducing the drunk-driving problem. Because a range of such measures has been suggested, the measures are listed below according to their application to specific levels of the drinking-driving problem. These levels are: pre-drinking, drinking, drinking-driving, and post-drinking driving. Environmental modifications at the pre-drinking level are directed towards encouraging reduced alcohol consumption before a person engages in drinking behavior.

Pre-drinking level measures include:

- Lower insurance rates as an incentive for those who currently do not drink and drive (OECD, 1978);
- Heavier restrictions on the advertising and use of alcoholic beverages in the media; (Health and Welfare Canada, 1978) and
- Development of a self-scoring risk appraisal system to be used in the media, driving schools, etc. (Health and Welfare Canada, 1978).

With regard to the first measure cited above, the OECD (1978) report suggests that there are subtle difficulties involved with insurance-based incentives. Part of the problem appears to be that truly moderate drinking drivers seem to have better actuarial records (for collisions) than abstainers.

Influences at the drinking level are aimed primarily at the typical drinking settings. Unless otherwise noted, these measures were recommended in the Health and Welfare Canada (1978) report:

- Serving food with drinks;
- City or town planning encouraging the separation of drinking and driving (e.g., by reducing the number of parking places near bars, increasing the use of the neighborhood bar concept, etc.);
- Prohibiting or discouraging the practice of setting up rounds of drinks;
- Training and licensing drinking establishment personnel concerning alcohol with risk of consumption-related issues (i.e., health and legal license suspension or revocation for those who act to increase patron consumption, e.g., by pushing drinks);
- Separating the minimum legal driving age (e.g., 16) and drinking age (e.g., 21);
- Increasing the availability of a wide variety of either non-alcoholic or low-alcohol mixed drinks.

Drinking and driving level countermeasures can be divided into three categories -- measures that focus on keeping the alcohol-impaired driver from driving; measures preventing continued drinking/driving once the impaired driver is apprehended; and measures that deal directly with highway safety when impaired drivers continue to drive. Countermeasures aimed at keeping the impaired drinker from driving are suggested below:

- Making dial-a-cab or other systems of transporting impaired drivers available (Health and Welfare Canada, 1978);
- Having breath-testing equipment available in drinking establishments (Health and Welfare Canada, 1978);
- Developing and installing reliable and tamperproof ignition interlock systems to prevent impaired drivers from starting their automobiles (Huntley and Bray, 1974);
- Encouraging the availability of one of a variety of pills designed to induce sobriety in impaired drivers (OECD, 1978).

Several general countermeasures have also been suggested to prevent impaired drivers from continuing to drive after being stopped by enforcement officials. As recommended in Health and Welfare Canada (1978) these include:

- Routine or mandatory testing of BAC;
- Revoking license or placing restrictions on auto use following conviction on alcohol-related driving offenses;
- Impounding convicted drivers' automobiles or placing special license plates or markings on cars of DWI offenders to identify the driver as "high risk;"
- Increasing insurance rates for those convicted (OECD, 1978).

Highway safety related measures seeking to reduce crash and/or injury risk once the impaired individual begins to drive include:

- Installing continuous-monitoring devices that activate a warning system if the driver begins to show aberrant driving behavior (OECD, 1978);
- Discouraging non-drinking drivers from using the roadways during "high risk" periods (e.g., late night) (Health and Welfare Canada, 1978);
- Issuing probationary permits to novice drivers which would allow them to drive only in the daytime and perhaps early evening driving with special license plates on the vehicle to identify these drivers (Health and Welfare Canada, 1978);
- Improving medical response to accidents (Buttiglieri, Brunse, & Case, 1972; Klette, 1979);
- Improving highway design (Haddon, 1967). (There is some evidence to suggest that alcohol-related accidents occur more frequently, for example, on curved portions of roads);
- Improving the crashworthiness of automobiles (Haddon, 1967; Klein, 1979).

Primary prevention efforts are thought to be the keystone of an effective attack on the drinking and driving problem (Health and Welfare Canada, 1978). Thus, the implementation of a substantial subset of the above-mentioned measures would support current enforcement and rehabilitation endeavors and, in turn, complement these strategies.

In closing, it is important to note that there has been a univocal call for evaluation of prevention techniques at all levels (e.g., Jones and Joscelyn, 1978; OECD, 1978). As OECD recognizes, effective evaluation will

depend, at least in part, on standardizing the implementation of certain critical techniques. In any event, the major thrust of this review is to suggest the overriding importance of avoiding piecemeal attacks on the drunk driving problem in favor of an integrated multi-level approach that stresses a comprehensive set of primary prevention techniques.

CHAPTER II

ATTITUDE THEORY; FORMATION AND CHANGE

The following chapter contains a review of the theoretical literature on attitude formation and change and the relationship between attitudes and behavior. The purpose of this section is to identify the different approaches to attitude theory and to delineate their components in order to provide a conceptual framework for examining attitudes relating to alcohol use and driving. The first section discusses the similarities and differences among various definitions of attitudes. The second section describes the influences affecting attitude formation and change and the third section highlights the literature on the relationship between attitudes and behavior.

Attitude Theory

There are as many definitions of attitudes as there are attitude theorists. As early as 1918 social psychology was defined as the scientific study of attitudes (Thomas and Znaniecki, 1918). Much of the dispute over defining the concept of attitudes comes from theorists' attempts to explain while defining rather than just pointing to the phenomena (Kiesler, Collins Miller, 1969). This is evidenced in the following definitions:

"an attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (Allport, 1935).

"... an enduring organization of motivational, emotional, perceptual, and cognitive processes with respect to some aspect of the individual's world" (Krech and Crutchfield, 1948).

"... the intensity of positive or negative affect for or against a psychological object. A psychological object is any symbol, person, phrase, slogan or idea toward which people can differ as regards positive or negative affect" (Thurstone, 1946).

Triandis (1971) suggests the following definition as one that encompasses many of the central themes used by attitude theorists.

"an attitude is an idea charged with emotion which pre-disposes a class of actions to a particular class of social situations" (p. 2).

He further states that his definition suggests three components of attitudes, 1) cognitive, 2) affective and 3) behavioral (Triandis 1971). Although this concept of separating thoughts, feelings and actions as interrelated parts of

an attitude has a philosophical basis, many theorists question its empirical validity and usefulness (Oskamp 1977). McGuire (1969) maintains that most of the available research suggests that one or more of these components are unimportant, having no relationship to events in the real world. He states "that theorists who insist on distinguishing them should bear the burden of proving that the distinction is worthwhile" (p. 157).

Fishbein and Ajzen (1972) suggest that the term attitude should only be used to describe the affective dimension, indicating evaluation or favorability towards an object. They label the cognitive dimension as "benefits" indicating a person's subjective probability that an object has a particular characteristic and state that a person usually has various beliefs about the same object that are not necessarily related (Oskamp 1977). Fishbein and Ajzen do not feel there is necessarily any congruence between beliefs, attitudes and behavioral intentions and treat them as entirely separate entities. Although some attitude theorists would disagree with this approach, Oskamp indicates that this stance has theoretical and empirical advantages for guiding research.

In his evaluation of attitude theories, Oskamp maintains that regardless of one's position, underlying all definitions of attitudes are two themes: 1) an attitude is a predisposition to respond; and 2) an attitude is represented by consistencies in the responses of individuals to social situations.

Attitude Formation

Attitude formation refers to the initial change from having no attitude toward a given object to having some attitude toward it. For adults, having no attitude toward an object may mean that they have had no experience, either direct or vicarious with the object, or they have never thought to evaluate their attitudes toward the object. Once individuals' attitudes are formed they are controlled by 1) their personality, 2) the information they receive, 3) the statements and attitudes of authorities to which they are exposed, and 4) the small informal groups, or primary groups to which they belong. As people mature, their attitudes are subject to change. However, this change does not come easily (Oskamp 1977).

The influences that affect attitude formation provide the basis for understanding the responses we observe. Three major sets of influences affect attitude formation - culture, family and peer groups. These three sets of influences can be further analyzed by examining the effects of direct parental influence, personal experiences, group determinants, mass media and learning processes which are described below.

Parental Influence

McGuire (1969) has referred to childhood as a "total institution" because of the extent and intensity that parental influence has on the development of a child's behavior and attitudes. Although a child's attitudes are shaped by his/her worldly experiences, they are acquired through explicit teaching by parents, as well as, implicit modeling of parental attitudes.

Group Determinants

Group determinants or reference groups often influence people's attitudes, even without overtly attempting to do so (Oskamp 1977). A reference group is a group to which an individual belongs or aspires to belong psychologically (Sherif, 1976). Individuals form personal attitudes relative to the norms of their reference groups; therefore, the identities of an individual's reference groups are important for understanding attitude formation and change. High involvement with a reference group increases the strength of the relationships between the individual's behavior and the normative expectations of others (Sherif, 1976). Although the changing of one's reference groups has been shown to coincide with a change in attitude (Lieberman, 1956; Newcomb, Koenig, Flacks, & Warwick, 1967), actual membership in a new reference group is not necessary for attitude change. Merely aspiring to a new reference group may coincide with a change in attitude (Siegel & Siegel, 1957). Oftentimes individuals measure themselves against groups whose standards and beliefs they accept regardless of whether they actually belong to the group.

Mass Media

Mass media - newspapers, magazines, movies, radio, and television - mold individual's perceptions of reality by selecting, emphasizing and interpreting particular events and by publicizing peoples' reactions to those events. Thus, the media does not just transmit information, it impels the public to form attitudes on these new issues (Lang & Lang, 1959). Oskamp (1977) uses the following five general principles to illustrate the way in which mass communications influences attitude formation and change:

1. The influence of mass communication is mediated by factors such as personal predispositions, personal selective processes, group memberships, etc.
2. Because of these factors, mass communication usually serves to reinforce existing attitudes and opinions, though occasionally it may serve as an agent of change.
3. When mass communication does produce attitude change, minor change in the extremity or intensity of the attitude is much more common than is "conversion" from one side of an issue to the other side.
4. Mass communication can be quite effective in changing attitudes in areas where people's existing opinions are weak, as in much of commercial advertising.
5. Mass communication can be quite effective in creating opinions on new issues where there are no existing predispositions to reinforce.

Source: Adapted by Oskamp (1977) from Klapper (1960, p. 15; 1963, pp. 70, 76).

The relationship between the content of a communication and an existing attitude affects a person's decision to ignore the communication, see it as reinforcing her/his position, to change the attitude, or to pursue other modes of behavior regarded as alternative reactions (Sherif, Sherif, & Nebergall, 1965). The effect of communications on different issues has been shown to vary based on peoples' personal involvement. More change has been found for low-involvement topics than for high-involvement topics (Rhine & Severance, 1970; Tittler, 1967). Furthermore, Hovland, Harvey, and Sherif (1957) found that the farther a communication is from a person's viewpoint, the more unfair it is judged. When a person is not highly involved with an issue, increasingly discrepant communications can be assimilated and may produce increasing change. However, even with low-involvement individuals, there is a point at which discrepancy is too great and no change in attitude takes place (Bochner & Insko, 1966). However, when a person is highly involved with an issue, discrepant communications tend to be contrasted (i.e. shifted farther away from the person's original position) rather than assimilated (Sherif, 1976).

Learning Processes

Of the many different learning processes by which attitude formation and change occurs, seven will be discussed. Early learning theories were concerned with the process whereby a given response becomes associated with a given stimulus. The first of the four processes listed below - classical conditioning, stimulus generalization, instrumental conditioning and selective learning - rely on the effects of reinforcement (reward or punishment) and focus on the stimulus/response relationship.

- Classical conditioning, which was studied by Pavlov, is based on an individual's conditioned response to a particular stimulus. Classical conditioning is most relevant to the feeling or evaluative aspects of attitudes and has been studied by theorists such as Weiss (1968); and Zanna, Kiesler and Pilkonis (1970).
- Stimulus generalization occurs once a stimulus response connection has been established and suggests that the conditioned response can be elicited by other similar stimuli. Furthermore, people can display semantic generalization to other stimuli having similar meaning so that a negative attitude might be elicited by a word that is related to one associated with the negative attitude. This has been studied by Terrace, (1966) and Myers & Trapold (1966).
- Instrumental conditioning and selective learning focus on the relationship between a response and the external stimuli causing the response. Stimuli can include the behavior of other individuals, physical environment or situational factors. These learning processes relate to the behavioral aspects of attitude formation and have been studied by Weiss (1968). In both processes, when the individual's response is the desired one, the individual receives external reinforcement (Oskamp, 1977).

- o Imitation or modeling of another person's actions or attitudes usually occurs without reinforcement. It is a very common type of learning and much research has shown that "models" are very effective in shaping attitudes and behavior especially in the areas of aggression (Bandura 1965) and helping behavior (London, 1970).
- o Persuasive communication is probably the most common way of trying to change a person's attitude. Persuasive communication mainly attempts to influence the cognitive aspects of attitudes suggesting conclusions or recommendations for action, combined with supporting facts or arguments (Oskamp, 1977). The communicator is an important determinant of attitude change; expert and prestigious communicators have been shown to be more effective in changing attitudes than less knowledgeable and less prestigious communicators (Aronson, Turner, & Carlsmith, 1963; Bochner & Insko, 1966; Hovland & Weiss, 1951). The effect of the communicator's prestige is especially important on issues which are not highly involving (Serenio, 1969).
- o Information integration stresses that a person's attitude toward an object is based on the beliefs that he or she has about the object - some favorable, some unfavorable. The person then must integrate the beliefs about the object which are salient to him/her into an overall impression or attitude (Oskamp, 1977).

Problems associated with learning theories of attitude formation, especially those based on early, or classical theories of learning, include an inability to explain why individuals may not react in the same way all the time to the stimulus object. If the presence of a stimulus is to evoke a learned response, why is that response not evident in all cases? Other factors must influence the occurrence, or nonoccurrence, of a particular response. Some of these factors include the particular situation or environment in which a person finds himself/herself at a given time; the particular people, including significant others, present in that environment; and the way in which a person evaluates the relationships among the stimulus, environment, and significant others. Thus, although the seven learning processes discussed above have unique characteristics it is important to note that they are not mutually exclusive, nor totally explanative. Several or all of these processes may take place as individuals acquire attitudes. This will be dependent on the stimulus situations to which the individual is exposed and will be further influenced by the environment in which the individual interacts.

A person's immediate environment as well as the environment represented by the society in which a person lives all influence the attitudes held by the

individual. Although these attitudes are personal and subjective, they are not self-generated; rather they are formed during interaction with objects, persons, values, ideas and intergroup controversies (Sherif 1976). The influence of the individual's immediate environment is important because it interacts with the individual's attitudes to determine what behavior (including verbal behavior) will be expressed. A stable social environment will have a significant effect on the stability of the individual's attitudes (Sherif 1976). Conversely a changing social environment contributes to changes in attitudes (Thistlethwaite, 1974).

Attitude Change

Attitude change can take place in a variety of ways. It can occur when a person receives new information, it can occur when a person has a new experience (pleasant or unpleasant); it can occur when a legal imposition changes social norms; it can occur when a person is forced to behave in a way that is inconsistent with his existing attitudes; or it can occur by what is known as a "fait accompli," which is when a person's attitudes change so as to be consistent with the implications of an event. Attitudes can also be changed through psychotherapy. This is accomplished by increasing the individual's insights into the reasons he/she holds certain attitudes and then providing appropriate stimulus for change (Triandis, 1971).

Viewing the attitude change field from a persuasive communication perspective, attitude change is seen as a system of relationships among the source of the attitude change, the message that is produced by the source, the channel through which the message is communicated, and the audience which is receiving the message. In looking at this system, consideration must be given to the effect of who says what, how, to whom, and with what effect (Triandis, 1971).

Theorists have described a number of steps or dependent variables that characterize the actual attitude change process: attention, comprehension yielding, retention and action. If the effect of a communication is to be observable, the receiver of the communication must go through each of these steps (McGuire, 1968; Hovland, Janis, and Kelley 1953). Triandis (1971) explains these steps as follows. When a message is communicated (for example, a television message) there is no certainty that the audience will pay attention to it. Only a small fraction of those who pay attention will actually yield to the message, thinking that the message is a good idea or worthwhile. Of those who yield another fraction will remember it long enough to do something about it. Finally, of those who remember it, even fewer will act.

Triandis further points out that different variables will determine whether an individual proceeds through the different steps. Attention may be reduced because of distraction; understanding may be reduced because of low intelligence; retention may be affected due to competing messages; and action may not take place because of personal circumstances of the individual.

The relationship between the source, channel, message, and audience and the heretofore mentioned dependent variables listed above must be viewed as an

interactive one. Situations in which information is received vary; and a change in one variable will not only interact with the other variables, but it will also have a different effect from situation to situation.

Before concluding, a word of caution about equating persuasive communications with attitude change. As indicated earlier, attitudes are learned through interaction with one's environment, including people and objects in that environment. Communications research in the 1940's identified some weaknesses of mass media approaches to attitude change: audience members selectively attend to communications (Hyman & Sheatsley, 1947), and individuals cite significant others, more often than the mass media in being instrumental in voting preferences (Lazarfeld, Berelson & Gaudet, 1948). Later, Katz (1965) spoke of a "two-staged" communication process by which information is first assimilated and interpreted by "opinion leaders" (i.e., respected members of the community); the message is then disseminated to community members by these opinion leaders. Possibly, attitude change may be effected by identifying the "opinion leaders" in the community, or the "significant others" with whom individuals interact, rather than relying totally on mass communication.

The preceding sections have described the factors that effect attitude formation and change. The following section discusses the relationship between attitudes and behavior. The information that is presented focuses on the causal relationship between attitude and behavior and points out the difficulty involved in its measurement.

Attitudes and Behavior

It is usually considered logical or consistent that a person holding a favorable attitude towards an object would be likely to perform favorable behaviors towards the object of the particular attitude. However, Ajzen and Fishbein, 1977 believe there is almost no theoretical basis for assuming that a behavior has favorable or unfavorable implications for the object of the particular attitude. Therefore, assuming that a given behavior is consistent or inconsistent with a person's attitude is an assumption based on intuitive reasoning.

There is much controversy among social psychologists about the causal relationship between attitudes and behaviors. Four different positions regarding these relationships have been espoused by highly respected investigators: attitudes cause behaviors (McGuire 1976); behaviors cause attitudes (Bem 1972); attitudes and behaviors have mutual causal impact (Kelman 1974); and attitudes and behaviors are slightly, if at all related (Wicker, 1969). Although theorists disagree on the basic relationship between attitudes and behavior, progress in identifying factors that influence the attitude - behavior relationship is being made (Bentler and Speckart, 1981). However, this attitude-behavior relationship is believed to be contingent on the context in which it occurs (Bagozzi, 1981).

Some of the findings regarding the relationship between attitude and behavior suggest that the relation depends on the stability of attitudes (Schwartz, 1979); the extent of prior experience with the focal behavior

(Fazio and Zanna, 1978a; Regan and Fazio, 1977); the degree of confidence in one's attitude (Fazio and Zanna, 1978b); the consistency between affective and cognitive responses (Norman, 1975); and the interaction between felt norms and attitudes (Acock and DeFleur, 1972; Andrews and Kandel, 1979). However, most of these findings are based on the notion that, given valid measures and the correct design, the causal effect of attitudes on behavior will be shown. "Unfortunately, an appropriate nonexperimental methodology has as yet not been utilized to examine the issues" p. 226 (Bentler and Speckart, 1981).

Hanson (1980) reviewed 46 studies that sought to correlate attitude and behaviors. He found that of the 26 studies reporting positive relationships between attitudes and behavior, 18 were laboratory studies; of the 20 studies not reporting a positive relationship between attitudes and behavior, sixteen were conducted in the field. Hanson's findings are similar to an earlier finding by Carl Hovland (1957) who contrasted attitude change research in laboratory and field settings. Not surprisingly, Hovland found quite a large amount of attitude change occurring in laboratory settings, and relatively little attitude change occurring in field settings. Evidently the amount of personal involvement in the issue studied and the interaction with the setting (i.e., lab vs. field) influenced the amount of change evidenced.

Many studies have explored the relationship between attitudes and overt behavior. They follow a basic design in which an attitude measure, based on a verbal response regarding a particular object is compared to a behavioral measure, based on the observation of the individuals' overt response to an object. This line of research assumes that if an attitude does represent a predisposition to act toward the attitude object in a particular way, it should be possible to predict responses on the behavioral measure from responses to the attitude questionnaire (Kelman, 1974).

Wicker (1979) in his review of studies of the attitude-action relationship concluded that in most of these types of studies it is more likely that attitudes will be unrelated or only slightly related to overt behaviors. Furthermore, in his review he stated that there is, "little evidence to support the postulated existence of stable, underlying attitudes within the individual which influence both his verbal expressions and his actions (p. 75)." Sherif (1976) however argued that much of the confusion and inconsistency in the attitude-behavior research literature arises from the tendency to equate "attitude" with measurement techniques securing verbal responses to research questions in brief research encounters. Sherif pointed out that the theoretical literature is remarkably consistent in noting the kinds of behaviors indicative of an attitude, and that these behaviors are consistent, characteristic, and selective for or against relevant objects, persons, groups, situations, etc. (See Sherif, 1976, Chapter 9). Thus, according to Sherif attitude-behavior inconsistency results from problems in measurement technology, not from problems with attitude theory.

Another view of the causal relationship between attitudes and behavior assumes that they are "...linked through nomothetic mechanisms but that previous failures to find such a link have been largely due to improper specification and measurement of both variables" (Bagozzi, 1981, p. 607). Bagozzi identifies the work performed by Fishbein and Ajzen (1975) supporting

this line of thinking. They maintain that only when there is a high correspondence between at least the target and action elements of the attitudinal and behavioral entities, can one find a strong attitude-behavior relationship. Furthermore, Fishbein and Ajzen (1975) maintained that the most pertinent attitude serving as a precursor of behavior is the attitude towards the act, and not towards the object. Finally, Fishbein and Ajzen (1974) and Weigal and Newman (1976) found that the degree of aggregation of the behavioral criterion is a factor in the attitude-behavior relationship.

Bagozzi (1981) also supports Bentler and Speckart (1981) in their belief that many past failures to significantly relate attitude to single-act criteria occurred because of a methodology that did not take errors of measurement into account was used. Yet, psychological responses, which can attenuate estimated relationships among attitudes, intentions and behavior, are especially prone to measurement error. Therefore, based on Bentler and Speckart's work, Bagozzi used a causal modeling methodology to test hypotheses concerning the attitude-behavior relation among blood donors in a longitudinal field study of 157 students, faculty and staff.

In his experiment, Bagozzi (1981) asked participants to express their attitudes towards and intentions of giving blood. These questions were asked one week prior to the first of two annual blood drives on campus. He then examined their actual behaviors by reviewing Red Cross records. Bagozzi used measures of actual blood donation behavior at two points in time to determine the attitude-behavior relationship and found that attitudes influenced behavior, but only in an indirect manner through their impact on intentions. Furthermore, he found that the attitude-intentions relationship was stronger when expectancy-value attitude measures were used as predictors than when semantic differential measures were employed (Bagozzi, 1981).

Supportive of Bagozzi's (1981) findings are Cialdini, Petty and Cacioppo (1981) who, in their review of studies and papers published between January 1977 and January 1980, found that attitude-behavior research is no longer focusing on whether attitudes predict behavior, but rather on when attitudes predict behavior. They maintain that although general attitudes, in some instances, may relate to specific behaviors, the attitude-behavior correlations can be improved by measuring attitudes and behaviors at corresponding levels of specificity as discussed below.

"Attitude and behavior measures are said to correspond on action, target, context, and time dimensions" (Cialdini, et al., p. 366). This suggests that the more an attitude measure corresponds to a behavioral criterion, the better its predictive value (Cialdini, et al., 1981). This is particularly important if the attitude-behavior relationship is being studied for the degree to which attitudes can predict behavior. Cialdini and colleagues also point out that there are other measurement factors which can increase the attitude-behavior correlation. These include: taking attitude and behavior measures closer in time, and measuring attitudes and/or behaviors under conditions of self-awareness (in front of a mirror).

Applying the measurement of attitudes and behaviors at corresponding levels of specificity to drinking and driving, one cannot measure an

individual's attitudes towards drinking and driving and expect to be able to predict whether the individual will drink and drive a month later. However, if an individual was drinking at a bar and his/her attitudes towards drinking and driving were measured as positive (drinking and driving is okay), one could predict with a high degree of success whether the individual would drive upon leaving the bar.

As presented in the preceding sections, theory and research on attitude formation and change provides insights and applications for prevention programming to deter drinking and driving. Additional research, specific to the relationship between attitudes towards drinking and drinking and driving behavior would enhance the success of prevention programs by providing practitioners with data highlighting the strengths and weaknesses of prevention approaches.

Chapter III

ATTITUDES RELATED TO ALCOHOL USE

As was stated in the introduction to this report, the purpose of this literature review of norms and attitudes related to alcohol usage and driving was to identify primary prevention strategies to deter people from driving while intoxicated. Unfortunately, there is a dearth of material specific to this topic. The sections contained in this chapter provide general information on how attitudes towards alcohol use are formed. A brief overview of attitude research as it relates to demographic and other variables is presented along with specific attitude data on drinking and driving collected by individual states.

The information presented is drawn from research efforts that were not necessarily intended to assess attitudes related to drinking and driving. The research was conducted in a variety of settings with a range of foci. As a result the data are not always comparable, the findings not always consistent, and overall conclusions cannot be drawn. However, the studies highlighted in this chapter suggest ways in which attitude research can be applied to the examination of drinking and driving.

Formation of Attitudes Towards Alcohol Use

In general, current research supports the conclusion that behavior related to alcohol use is learned behavior. This learning is rooted in attitudes that are shaped from the early years by parents, churches, peers, and the community. Socialization experiences determine how individuals will choose to act in adapting socially; certain critical kinds of events can lead to the responsible or the irresponsible use of alcohol.

The family appears to be a crucial agent in the transmission of orientations toward alcohol. According to Cutter (1980), a family with an absence of social controls over deviant drinking, a family with a model of abnormal drinking, and overt or covert conflict between parents lead to social and emotional reasons for drinking. Cutter found that college students were at risk of becoming problem drinkers when their family socialization experience included maternal deviant drinking, weak or unclear paternal norms about drinking, or extreme closeness or distance between parents. Both parental attitudes and child rearing practices were responsible for shaping attitudes--attitudes that led to a choice to drink for social reasons or for reasons related to poor self-esteem.

Burk (1972) supports Cutter's (1980) findings in his study of child development and children of alcoholic parents. Based on Bandura's theory of imitative learning (1965), Burk concludes that children learn drinking behavior from parents and the media. Role models are responsible for the adaptive skills that young people imitate and acquire. Through observation of the problem solving and coping behaviors of an alcoholic parent, the child grows vulnerable to alcoholism in adulthood. This conclusion is reinforced by Weschler (1973), who determined that teenagers who drink fairly heavily tend

to be alienated from their parents and from traditional values and standards of behavior. Among adolescents who encounter difficulties with dependence, the risk of problem drinking is greatest. They identify closely with the youth culture and associate with peers who drink.

Since human response patterns are shaped by one's history of social interaction, Maddox (1964) noted that an individual's needs for status, social acceptability, pleasure, and anxiety reduction, can all determine his/her choice of drinking behavior. The relationship between social alienation and the irresponsible use of alcohol was explored further by Blane (1966), who found that high school students who were powerless and normless were more likely to accept the misuse of alcoholic beverages.

In the last 10 years an increasing amount of information has discussed a dramatic and alarming increase in the use of alcohol by adolescents. Experts and researchers disagree about much of this information, particularly about the nature of the increase and its causes. However, most recent studies do verify that adolescent alcohol consumption and the associated behaviors and consequences are, in fact, serious societal problems (Center for the Study of Social Behavior, 1975). In the area of highway safety alone "Warren (1976) found that an 18-19 year old was 70 times as likely to be fatally injured while impaired (driving while intoxicated) compared to the chances of the average driver being killed while driving sober" (Hodgdon, Bragg and Finn, 1981).

In 1970, the most universal statement that could be made with certainty about adolescent drinking was that alcohol consumption had been consistently found to be related to sex and age: girls drink less than boys in terms of quantity and frequency, and drinking becomes more frequent with increasing age (Stacey and Davies, 1970). As the problem of adolescent drinking became more obvious, the lack of real information about the problem also became evident. By 1975, a number of studies had verified what many had assumed, that adolescence is a critical period in terms of initial experiences with alcohol and in terms of the formation of attitudes about alcohol usage (Adler and Lotecka, 1973). It is a time when "children" begin to disregard the way their parents want them to behave and start behaving the way they want to behave (Blane, Hill and Brown, 1968; Fillmore, 1970).

In a series of studies designed to identify personal qualities that are characteristic of both abstaining and drinking adolescents, (Jessor, Collins and Jessor, 1972; Jessor and Jessor, 1975; Jessor, Chase, and Donovan, 1980) found that the following factors could be predictive of drinking behavior:

- higher degree of value placed on independence than on successful school performance;
- higher degree of involvement in deviant behavior.
- higher degree of tolerance for deviant behavior;
- higher degree of perceived support for drinking from others, especially peers;

- o lower degree of involvement with parents and with friends whose outlook is similar to that of parents;
- o lower degree of religiosity and involvement with church; and
- o lower degree of expectation for academic achievement;

Beyond these factors, relatively little is definitively known about adolescent drinking patterns, how these patterns and related attitudes are formed and what can be done to influence and control both the attitude formation and patterns of use. Nonetheless, assumptions abound regarding the roles of a permissive society, parental behavior, peer group influence, legal controls, advertising, religious influences, etc. Unfortunately, recent attempts to deal with the problem are being based upon these assumptions rather than upon hard information that has been researched and verified. A good example of this trend is in the growing movement to raise legal drinking ages after a decade of lowering them.

Recent research has indicated that raising the age limit may actually encourage rather than discourage adolescent drinking by fostering a "forbidden fruit" syndrome, thus providing adolescents with a restricted behavior in which they can indulge as a means for rebelling against adult authority (Rooney, 1977). These findings have been verified by other studies. For example, Biddle, Bank, and Marlin (1979) suggest that societal or parental beliefs about alcohol use that are not internalized by an adolescent may result in rebellion against those beliefs. These researchers found that adolescent drinking seems to be controlled more by personal preferences and norms than by "instrumentality" (raising the legal age for drinking, increasing punishment for alcohol misuse and holding parents "responsible" for their children's drinking behavior).

The research, thus far, suggests that legal and community standards have little positive influence on the problem of adolescent drinking behaviors; and that an adolescent's personal preferences and norms are more important in determining drinking behavior than those of parents or peers. However, Biddle and colleagues did find that in those cases when adolescents reported outside influences, parents appeared to exert influence through normative standards and peers through modeling behavior.

The complex ways in which these issues relate to each other lead to a conclusion that has been promoted by Jessor et al. (1975): to become a drinker in our society is an integral aspect of the larger process of adolescent development, a part of moving from childhood to adulthood. Drinking is seen as a transition marking behavior, an event that signifies the beginning of adulthood. Given this context the problem of adolescent drinking patterns and attitudes cannot be looked at or addressed outside of its socio-cultural context, or be addressed simply as deviance. As long as drinking is linked to adulthood, adolescents will want and need to drink.

Attitudes Towards Alcohol

In his two part study of attitudes towards alcohol and drug use and abuse, Kinder (1975) reviewed attitude research relating to demographics, correlational data, experimental data and mass media research. In studies specific to alcohol use, Kinder found that attitudes toward the consumption of alcohol use showed a replicable trend toward increased tolerance with increasing educational attainment (age). Following a review of four studies on the relationship of sex to alcohol-related attitudes, however, Kinder concluded that this relationship is still in doubt; three studies found no attitude differences between male and female participants and one study found that males held more favorable attitudes.

Kinder (1975) does state that differences in religious upbringing and affiliations are related to attitudes towards alcohol use. Based on a review of seven studies which identified relationships between attitudes towards alcohol use and religious affiliation, Kinder found a substantial trend for members of the more ascetic, strict religious groups to hold less permissive attitudes towards alcohol usage than members of Catholic and Jewish groups.

Although researchers have found some consistent personality differences between drug users and non-users, Kinder points out that the studies did not generally look at attitudinal differences between these two groups. In the few studies that have looked at the relationship of attitudes and personality variables, findings suggest that high authoritarianism scores do appear correlated with negative attitudes toward treatment of alcoholic patients, while liberalism appears correlated with more positive attitudes.

In the summary of the first part of his study Kinder concluded that demographic variables are not generally consistently related to attitudes; nor are most personality variables. In the second part of his review, Kinder addressed the relationship between attitudes and knowledge as they pertain to drug and alcohol education. He pointed out that an implicit assumption in drug and alcohol education programs is that increasing factual knowledge will lead to changes in attitudes and behavior. Kinder found that his review of the literature suggested little distinct and clear relationship between attitudes and knowledge.

Kinder (1975) reviewed fifteen drug and alcohol education programs evaluated between 1967 and 1973. Three of the fifteen studies showed significant attitudinal changes, while two showed few significant changes; the remaining ten showed no significant changes in attitudes. He concludes that "... published studies to date indicate that drug and/or alcohol education programs in several different settings and among individuals of varying age and educational experience have been, at best, only minimally successful in changing attitudes" (p. 1042).

Kinder (1975) noted that many studies have investigated drug- and alcohol-related attitudes. However, he maintains that because statistical and methodological problems abound in the research, only a small percentage of studies can be considered methodologically sound. These problems stem from the use of restricted samples which don't allow for generalizability to the

total population, lack of or great disparity in defining characteristics of the sample populations, insufficient descriptions of the "treatments" or educational programs used, lack of validity and reliability data on the instruments used and poor choice of the experimental design.

Attitudes Towards Alcohol and Highway Safety

Jones and Joscelyn (1978), in their review of the literature on alcohol and highway safety, performed a comprehensive review of the research on characteristics of drinking drivers. They identified four categories of variables that have been studied:

1. variables that are primarily biographical, including such demographic characteristics as sex, age, race, etc;
2. variables that relate particularly to driving, such as the number of previous crashes, driving experience, number of driving interactions with law enforcement agencies, etc.
3. variables that describe an individual's drinking practices, such as the quantity and frequency of his drinking and the type of beverage he consumed; and
4. variables which have been analyzed in various psychometric studies and which are classified as personality and stress variables.

In their conclusions Jones and Joscelyn (1978) identified the following variables as being strongly related to alcohol-crash involvement: sex, age, time of day of crashes, day of week of crashes, number of prior arrests for DWI frequency and quantity of drinking, type of beverage preferred and history of alcoholism or problem drinking. However, they caution that, based on present research, it is not possible to identify definitively individuals who will be involved in alcohol-related accidents. Rather they suggest that the existing data can help determine gross alcohol risk of entire groups of drivers.

As is pointed out in Jones and Joscelyn's review, very little research specific to attitudes related to drinking and driving has been conducted in relation to alcohol and highway safety. However, in conducting this literature review Creative Associates discovered modest sections of larger studies containing questionnaire data on attitudes related to drinking and driving.

In their study of Public Acceptability of Highway Safety Countermeasures, Vayda and Crespi (1981) compared respondents attitudes towards drinking and driving to their acceptance of four alcohol countermeasures:

- a Model Traffic Violations Law (MTVL),
- a Drunk Driving Warning System (DDWS),

- o a Continuous Monitoring Device (CMD), and
- o Restricted Driving Hours.

Vayda and Crespi found that drivers who felt that driving after two or three drinks posed a serious safety hazard were more inclined to support a model traffic violations law. Such a law proposed that drivers stopped for moving violations would receive more severe penalties if they had been drinking. Furthermore, support for use of the DDWS or CMD was unrelated to the seriousness attributed to driving after two or three drinks. Regarding restricted hours for persons convicted of drunk driving, respondents having a more open-ended definition of the safety hazards posed by driving after two or three drinks were more in favor of this countermeasure.

Attitudes of Drinking Drivers Towards Alcoholics

In his introduction to his study of ninety-four drinking drivers, Hart (1977) suggested that most research on attitudes towards alcohol(ism) focused on the attitudes of those who treat alcoholics (directly or indirectly) and societies' mores, values, and sanctions pertaining to the alcoholic and alcoholism in general. Consequently little research has been conducted on the attitudes of the problem drinker.

Therefore, Hart assessed the attitudes of 94 male drinking drivers who were clients of the Boston Alcohol Safety Action Project on nine factors related to alcoholism and the alcoholic. Based on the analysis of a 40-statement questionnaire,* Hart found responses on two factors differed from those of the general population norm group. Drinking drivers were positive in their belief that periodic excessive drinkers can be alcoholics and negative in their attitude regarding alcoholism as an illness. Hart noted that aside from these factors, the ninety-four drinking drivers were as ambivalent in their attitudes towards alcoholism and the alcoholic as the norm group to which they were compared.

Attitudes of Naval Personnel Towards Alcohol

As stated in the first chapter of this report, Cahalan et al. (1969) noted, "although most drinkers do not appear to consider their own drinking a problem, a pronounced general ambivalence toward alcohol is seen in the finding that three-fourths of all respondents (and a majority of even men heavy drinkers) said they thought drinking does more harm than good" (p. 192).

In their survey of attitudes and behavior of Naval personnel concerning alcohol and problem drinking, Cahalan and Cisin (1975) surveyed a total of 9,508 person on active duty in the Navy. As part of their survey, they assessed attitudes towards drinking and intoxication, and attitudes and experiences concerning prevention and treatment of alcohol problems.

*"The Alcoholism Questionnaire" was developed by A. Marcus of the Alcohol and Drug Addiction Research Foundation in Toronto, Canada.

Findings were reported separately for officers and enlisted personnel and for males and females. Cahalan and Cisin reported that, "Substantial proportions of all four groups agreed that:

'It's all right to get drunk whenever you feel like it.'

'I enjoy getting drunk once in a while.'

'Getting drunk occasionally is a good way to blow off steam.'

'Most of my friends don't mind people getting drunk if they don't do things that disturb other people.'" (P. 46)

Furthermore, substantial proportions of respondents also believed that "alcoholism is basically a sign of moral weakness" and that "alcoholism is a disease."

Regarding their attitudes toward prevention and treatment it was concluded that half to two-thirds of all groups felt that "Naval personnel with drinking problems usually do not try to get help through service sources because they are afraid of damaging their careers" (p. 5). However, the general attitude toward recovered alcoholics is supportive in that eight out of ten interviewees felt that recovered alcoholics should be assigned and promoted without discrimination (Calahan and Cisin 1975).

General Attitudes Towards Drinking and Driving

The "Compendium of Highway Safety Questionnaire Items" (NHTSA, 1980) contains the results of state surveys in which peoples' attitudes towards drinking and driving were assessed. The data were collected by various means - personal interview, mail survey, telephone survey - from 1977 to 1979. Included are questions on perceptions of the drunk-driving problem and drunk drivers, ways to deal with drunk drivers (treatment, education, penalties), and the social acceptability of drunk driving. The actual questions and responses are contained in Appendix B; however, some of the more significant findings are summarized below.

Perception of the Problem

Three states reported data on peoples' perception of the drunk driving problem. In Missouri, where 10,000 persons were interviewed, 67.2 percent believed that drunk drivers were a problem on the highway; 54 percent believing that 50 percent of all highway fatalities were related to alcohol and other drugs. In North Carolina, where 988 persons were surveyed through the mail, 45 percent believed that 3-5 of every ten deaths in North Carolina were caused by drunk drivers.

Alcohol and Driving and Social Acceptability

In Arkansas, where 403 people responded to questions in a telephone interview, 76 percent believed that when a person has had a "few" drinks he/she drives worse than usual. Concerning the social acceptability of drinking and driving, 59 percent of 788 Iowans, interviewed in a telephone survey, felt it was not socially acceptable among their friends to drive after having had four or more drinks.

Treatment

Finally, 52.4 percent of 1,669 persons interviewed in Nevada, felt that stiffer penalties would be the most effective way to deal with persons convicted of drunk driving. However, in a telephone survey of 1,700 persons in Nevada, 55.9 percent felt that attending an alcohol treatment program would be more beneficial for someone convicted of drunk driving than being subjected to traditional penalties.

As stated in the introduction to this chapter, the study of attitudes has been applied in a variety of ways in order to understand peoples' use of and behavior towards alcohol. Responses listed in the aforementioned compendium of questions on drinking and driving, reflect to a large degree societal norms on the issues. If data of this type were collected and integrated with the theoretical and practical literature on attitude formation, maintenance and change, an excellent basis for the development of prevention programs to deter people from driving while intoxicated could be developed.

The next chapter discusses primary prevention and how it can be used to deter people from driving while intoxicated.

CHAPTER IV

PRIMARY PREVENTION

This chapter focuses on the application of primary prevention techniques as a means of promoting and protecting the public's well-being by preventing people from driving while intoxicated. The concept of primary prevention is described and an historical perspective on its use is given. This is followed by a discussion of the application of primary prevention through the use of media, technology and governmental regulation. Finally, information is presented on primary prevention programming in the fields of alcohol and substance abuse.

Primary Prevention: The Concept

When examining the role that primary prevention can play in deterring people from driving while intoxicated, it is important to understand the public health concept of prevention. In public health terminology, prevention is an all-embracing concept having three distinct levels: primary prevention, referring to actions taken before the onset of disease to intercept its causation or to modify its course before people are involved; secondary prevention, meaning early diagnosis and treatment; and tertiary prevention, indicating rehabilitative efforts to reduce the residual effects of illness (Leavell and Clark, 1965).

Based on this definition, primary prevention efforts fall into two major categories: 1) Health Promotion - referring to measures taken to improve the quality of life and raise the general level of health in a population and 2) Specific Protection - referring to specific procedures for disease prevention, e.g., immunizations (Goldston, 1977).

In the case of drunk driving, a primary prevention approach would be aimed at preventing a person who has been drinking from driving his/her car. A secondary prevention approach would involve stopping a person suspected of drunk driving and tertiary prevention would provide rehabilitation to a DWI offender who is a problem drinker. This section of the review focuses on primary prevention as a means of deterring people from driving while intoxicated.

Primary Prevention: An Historical Perspective

To have a clearer picture of how primary prevention techniques can presently be used it is important to understand the evolution of primary prevention. The application of primary prevention to today's public health problems is based on the successes of the health model for controlling the spread of infectious diseases. According to the 1850 census of mortality, approximately three-fifths of all deaths in the United States were caused by infectious diseases, e.g., tuberculosis, cholera, malaria, typhoid fever, and others. The greatest proportion of these deaths were due to unfavorable environmental factors, to polluted water supplies, indescribable systems of feces disposal, overcrowding with resultant disreputable housing conditions, bad milk, bad food, flies in millions, poor nutrition, long hours of overwork,

and gross ignorance and carelessness. The virtual elimination of these diseases has occurred as a result of economic and social changes, environmental control measures, immunization, health education and other public health activities (Terris, 1980).

These public health measures are now being applied to the control of non-infectious diseases like, heart disease, lung cancer, and other public health problems such as accidents, substance abuse, and mental health. The use of these measures for promoting the concept of positive health, as more than just the absence of disease, represents a shift towards a broadly-based preventive approach for coping with a wide range of sociomedical problems (Grant, 1974). Two of these sociomedical problems are death and/or injury from motor vehicle accidents.

As indicated by past experiences, public health problems can be successfully eliminated by rallying support for social, economic and environmental changes. However, these changes require commitment and support from the public and from elected officials. This same commitment and support will be necessary if efforts to decrease death and/or injury resulting from alcohol-impaired driving are to be implemented.

Primary Prevention: Its Application

"During the period from 1972 to 1975 the average number of persons killed in highway crashes each year was more than 50,000" (Jones and Joscelyn, 1979).

"In the United States alone more than 100,000 accidental deaths occur each year" (Haddon, 1967).

Applying public health strategies for combatting drunk driving has met resistance because of a wide-spread belief that accidents are largely - even exclusively - a problem of human behavior. This belief has been endorsed by behavioral scientists, manufacturers of motor vehicles and other potentially dangerous products, safety educators and many officials and investigators who regard law enforcement as the key to the prevention of, at the very least, motor vehicle accidents. Preoccupation with the contribution of human behavior to accidents has delayed the recognition of other preventive possibilities for decades (Haddon, 1967). These other preventive possibilities include: technology, pharmacology, education, information/media, legal, psychotherapy, as well as combinations of approaches.

Technological Interventions in Primary Prevention Programs

Throughout the years, practical devices and techniques, have been developed which have the potential to help prevent illness and injury. In many instances the Federal government has passed legislation mandating the use of these devices and techniques in the interest of protecting the public. Some examples of the use of these technological "fixes" include child-proof containers, fluoridation of water supplies, and tempered glass for patio and shower doors.

As a result of the use of the child-resistant containers, the incidence of poisoning from prescription drugs was diminished by 75%-90% during the trials of the "Palm-N-Turn" top; one year after safety packaging became mandatory in the U.S., aspirin deaths dropped by 50% (Fielding, 1978).

Fluoridation of water supplies, another primary prevention strategy based on technology, has decreased the incidence of dental caries throughout the United States. Federal legislation requiring that all sliding patio doors and shower doors be made of tempered glass, is yet another example of how technology has worked to prevent serious injury and in some instances death. These examples of technological approaches to primary prevention do not try to change behavior they merely intervene, through technology, to protect the public's well being.

Jonathan Fielding (1978), in his article, "Successes of Prevention" discusses technological and legal prevention approaches to auto safety. He states, "For many years the public has been barraged by auto safety educational campaigns designed to instruct people to slow down because 'speed kills'" (p. 277). Although auto safety should have been uppermost in the mind of the public, people continued to drive in excess of the posted speed. However, other factors combined to accomplish what education and exhortation had not. Between 1966 and 1976 there was a decline of over 42% in the national fatality rate from motor vehicle crashes. These factors included the requirement, effective January 1968, that every car be equipped with lap belts and shoulder harnesses for all passenger positions and the establishment in 1973 of the 55 mph national maximum speed limit.

When the 55 mph speed limit was first established as an energy saving measure, the Federal government put pressure on the states to ensure its enforcement; not only was energy saved but there was a notable decrease in the number of highway fatalities. As the energy crisis lifted and enforcement lessened, highway speeds began to increase once again. This increase has taken place in spite of the fact that people know that by driving above the 55 mph speed limit, they are increasing their chances of being involved in a fatal accident. A similar problem exists with seat belt use. Fielding (1978) indicated that Americans who wear seat belts reduce their chances of death or serious injury by 35% to 50%. Recent NHTSA estimates indicate that only 11% of the American driving public wear safety belts (Opinion Research, 1982).

The above two examples of primary prevention measures are far from reaching their preventive potential. Yet, they illustrate the difficulty that exists in getting people to change their behavior and suggest that program success may be influenced by the degree to which individuals must change their behavior. Therefore, the extent of behavior change required of the individual must be considered when developing primary prevention programs.

Regulation as a Primary Prevention Strategy

The use of technology in primary prevention requires consideration of two major issues: (1) the roles and responsibilities of government in protecting and promoting the general health and well-being of the population, and (2) the roles and responsibilities of individuals in protecting and promoting their

own well-being. Tied into these issues are economic and political factors that influence the implementation of any prevention activity (Worden, 1980).

Focusing on alcohol use and driving, one is faced with a "...thriving alcohol beverage industry whose major objective is to maximize profits through sales using the very best techniques to make their products attractive and desirable" (Worden, 1980, p. 76). At the same time we are faced with an automobile industry that is suffering serious losses from foreign competition and is, at best, reluctant to incorporate new vehicle design which will increase the cost of producing new cars.

Worden emphatically makes this point by quoting M. Jacobsen, who commented:

Preventing a health problem in this day and age ... often means stepping on the toes of some very powerful industries, industries which do not like to be stepped on, industries which have great influence over legislators and presidents, industries which could probably force cutbacks in the budgets of federal agencies, including even the politically popular National Institutes of Health." (p. 76)

Regulating public well-being is often difficult, but not impossible as has been evidenced by other successful primary prevention interventions. Opponents of regulation are often quick to blame the victim, denying the role that society plays in the decisions that individuals make regarding their well-being. As Terris (1980) states,

"It is difficult to accept the concept that smoking is an individual matter when it is a well-known fact that cigarette advertising, costing more than \$300 million a year, transformed smoking from a minor to a major addiction; that the women's market was developed by carefully designed advertising campaigns; and that the youth market was next opened up by systematic advertising directed at college newspapers and youth magazines." (p. 333)

At the same time one cannot ignore the collective responsibility of individuals to assert their rights to well-being. Putting pressure on judges to convict persons charged with driving while intoxicated and lobbying for legislation that will require revocation of licenses of people who have caused serious injury or property damage, resulting from DWI, are but two ways in which individuals can take responsibility for their well-being.

Media Use in Primary Prevention Efforts

In their review article, "Effective Methods of Informing the Public Regarding Health Problems Relating to Alcohol Abuse," (Lindenmann, Nasatir and Karamon, 1980), the authors provide an historical overview of research in mass communications effects. They conclude that, although early findings in communications research suggested that media messages impact on all people exposed to them, present findings suggest that many intervening factors condition the ultimate effects that communications have on their audiences.

Lindenmann and associates (1980) studied health and safety communications dealing with smoking, drug abuse, fire prevention, health hazards at the work place, and toxic substances and found that "...research efforts to measure the effectiveness of these campaigns have often been haphazard, at best" (Lindenmann, et al., 1980, p. 12). In their review of information campaigns specific to alcohol-related health and safety problems the authors reiterate this conclusion stating, "there appears to have been a virtual absence of empirical research on communications effects with respect to alcohol abuse" (p.17).

Of particular interest is Lindenmann et al.'s (1980) finding that although a number of studies reveal that public awareness of alcohol-related issues has increased and opinions have changed, there is little evidence of value and behavior change. The conclusions of the report suggest that 1) there has been inadequate communications research that clearly demonstrates the effectiveness of a large number of health and safety programs; 2) information campaigns are more effective when they are specific in nature, when the messages provide detailed information and when target groups are clearly defined; 3) when undertaking information programs, consideration to competing messages must be given and 4) communicators and policymakers must be aware of the range of communication effects (awareness change - behavior change) to be expected and the levels of difficulty involved in achieving them.

Two specific studies on the effects of information campaigns support several of Lindenmann's (1980) findings: "A Controlled Study of the Effect of Television Messages on Safety Belt Use," by Robertson, Kelley, O'Neill, Wixom, Eiswirth, and Haddon, (1974) and "A Study of the Effectiveness of a Radio/TV Campaign on Safety Belt Use," by Fleischer (1973). In both studies, broadcast media messages were used to encourage the use of seatbelts. Observations of seat belt use were made both before and after the messages were aired. The two studies concluded that public service announcements had little significant effect on safety belt use and were, thus, inefficient means for reducing highway losses.

Once again it is difficult to assess definitively the impact of a particular preventive strategy when there is little objective measure of impact. However, we do know that "Madison Avenue" is constantly selling ideas through the mass media, therefore we cannot disregard its potential for primary prevention. Instead we must, through evaluation, search for ways to reap the benefits of mass media.

Prevention Programs: Strategies, Emphases and Effectiveness

Staulcup, Kenward, and Frigo, (1979), reviewed 21 primary alcoholism prevention demonstration projects funded between 1974-1978 by the U.S. National Institute on Alcohol Abuse and Alcoholism (NIAAA). Of the 21 projects, 2 were curriculum development projects, 2 provided consultation, 2 conducted exploratory research. Of the remaining 15 projects, the majority used educational, recreational or training based approaches focusing on learning about alcohol and its effects. Most of the "preventive" approaches relied on education as a means for reducing alcohol misuse, thus taking a sociocultural approach to alcohol abuse.

None of the 21 projects used an experimental design for evaluating success. Rather, quasi-experimental and non-experimental designs were used for evaluation. (Dependent, or criterion, measures were mainly self-report, although a few projects used structured interviews, institutional or public records, and behavioral observation.) Only seven programs could be evaluated;* five of which used a quasi-experimental design and two, a non-experimental design. The majority of the evaluated projects measured attitudes towards alcohol, knowledge about alcohol, drinking behavior, and affective or cognitive development. Of the seven programs, five reported positive outcomes and two reported negative outcomes (Staulcup et al., 1979). Those programs reporting positive outcome were: Boys Clubs of America, CASPAR, Cottage Programs, King County Project, and the University of Massachusetts. The positive outcomes reported were mainly increased knowledge and more positive attitudes. In the two programs reporting negative outcomes, both reported no meaningful change for the variables tested. In one of the programs, researchers reported a decrease in performance on two of the variables under observation--knowledge and attitudes.

The methodological weaknesses of the five programs limited any confidence that could be placed in reported successes. Furthermore, none of the projects that used alcohol education could demonstrate a link between knowledge or attitude change and subsequent drinking behavior. In spite of this, the authors felt that these projects demonstrated that people are receptive to prevention activities, that attitudes and knowledge about alcohol are subject to change, and that prevention efforts often complement treatment services.

In a paper published in February 1980, Schaps, DiBartolo, Moskowitz, Palley, and Churgin, reviewed 127 drug abuse program evaluations for the National Institute on Drug Abuse. Most of the identified studies focused on youth populations and used one or a combination of several prevention strategies for program implementation.

The authors identified ten types of prevention strategies as follows:

1. Information strategies. Attempts to teach facts about the legal, physiological, and/or psychological consequences of drug use or abuse.
2. Persuasion strategies. Attempts to influence attitudes or behaviors regarding drugs through persuasive messages that contain minimal factual information.
3. Affective skill building strategies. Systematic efforts to improve affective skills presumed to be related to drug use, e.g., communication skills, decision-making skills, valuing skills, self-assertion skills.

*Evaluated programs were: Boys Clubs of America, CASPAR, Cottage Programs, King County Program, Orangeburg Area Project, University of Florida and University of Massachusetts.

4. Affective experiential strategies. Attempts to provide "positive" or "growth inducing" affective experiences, but not designed to develop or improve affective skills.
5. Counseling strategies. Peer counseling programs, rap rooms, counseling by professionals.
6. Tutoring/teaching strategies. Peer or cross-age tutoring or teaching programs.
7. Peer group strategies. Attempts to strengthen or exploit natural peer group dynamics which inhibit drug use.
8. Family strategies. Efforts aimed at strengthening parenting skills and family relationships.
9. Program development strategies. Attempts to improve the climate or functioning of organizations other than schools.
10. Alternatives strategies. Recreational activities; miscellaneous experiential activities. (From Schaps, et al., 1980, p. 14)

Because most programs consisted of a combination of strategies, Schaps and colleagues (1980, p. 16) categorized these combinations as follows:

<u>Program Type</u>	<u>Constituent Strategies</u>
A) Information	● Information and/or Persuasion;
B) Affective	● Affective-skill building and/or Affective-experiential;
C) Information + Affective	● Any combination of strategies from A and B;
D) Counseling	● Counseling, alone or with any other strategy(ies);
E) Other Combinations	● All single strategies or combinations of strategies which fall outside the above categories.

Overall analysis of the 127 programs showed only minor effects on drug use, behavior and attitudes. However, ten programs in which effectiveness was substantial were identified. These programs were based on two criteria 1) service program intensity scores of eight or more and 2) research design ratings of four or five. Program intensity scores reflected the rating reviewed in three program areas: duration - length of service delivery; scope - range of relevant variables; and persistence - extent to which program services are likely to continue beyond the intervention itself. The overall ratings ranged from (3) "weak" to a maximum of (11) "strong". Research design

ratings were based on the overall quality of each evaluation effort as follows: (5) strong, (4) acceptable, (3) borderline, (2) unacceptable, and (1) substandard.

Eight of the ten studies produced positive drug-specific outcome ratings (measures of drug use, measures of intention to use drugs, and measures of attitudes towards drug use); one showed no effect; and one showed a negative effect on attitudes towards drug use. For the majority of the studies reporting positive outcomes, these outcomes only showed positive impact on attitudes towards drugs. The authors note that this attitude change does not necessarily result in behavior change.

Although there appeared to be some positive findings, the authors felt that the quality of evaluation data was insufficient to serve as a guide for policy formulation and program development. Their recommendations included: 1) rigorous outcome evaluations of well established prevention programs should be funded; 2) in new program development, consideration should be given to the scope, intensity and duration of program services, 3) also in new program development, intensive, long-term formative evaluation (including consistent feedback and on-going evaluation) should take place; 4) an active, well publicized repository for program evaluations should be established and 5) widespread and systematic evaluations of programs serving minority populations and sub-populations should be undertaken.

In a report prepared for the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA), a meta-evaluation (evaluative comparison of outcome measures from a series of studies on a common topic/theme) of primary prevention projects funded by ADAMHA over the past ten years was conducted (Mackintosh, Tosh, and Mock, 1981). As stated by the authors, the purpose of the meta-evaluation was to:

- Identify and describe evaluation approaches and assess their quality;
- Identify and describe effective prevention strategies i.e., effective projects whose results could be trusted because of rigorous evaluations;
- Identify and describe implementation and evaluation problems faced by prevention projects; and
- Identify and suggest improvements to ADAMHA's prevention policies and evaluation guidelines.

Of 150 projects, 42 were identified as meeting project selection criteria for evaluation (see Mackintosh, et al., 1981 for specifics). The majority of the projects were aimed at reducing the chances of an individual becoming involved in anti-social or potentially destructive behavior. Most of the projects were aimed at youth; thirty percent attempted to change attitudes.

Prevention strategies fell into three general categories: 1) one-on-one counseling, 2) multi-service, primarily affective education and 3) mass media.

Mackintosh and colleagues (1981) found that of the 42 projects, 63% had inadequate conceptualizations (unclear specification of the evaluation's objectives and methods for measuring them); 68% had inadequate design; 71% had inadequate execution; and 60% were inadequate overall. Only seven projects were identified as having highly adequate evaluations. On the basis of all available information, five prevention projects appeared to demonstrate effectiveness based on reported positive outcomes, evaluation quality and principal investigator interpretations; of these only two clearly documented high quality evaluation and intervention effectiveness.

Based on this meta-evaluation the authors made the following recommendations to ADAMHA:

- ADAMHA should address the need for conducting longitudinal research to identify long-term mental health risk factors in a broad cross section of the population.
- ADAMHA should develop a means for sharing and disseminating information about prevention programs.
- ADAMHA should include a strong evaluation component in all prevention programs it funds.

Although overall program effectiveness was unclear, Mackintosh and associates (1981) did compile a "generic" prevention strategy consisting of the following elements:

- Core educational curriculum that increases a young individual's ability to make responsible decisions; continuous exposure to the curriculum through the school system;
- Contracting system (contingency rewards) for school performance;
- Supplemental counseling; and
- Intensive training of teachers and parents.

The goal of this strategy would be emotional security, social adjustment and maturity, and reduced susceptibility to self-destructive agents and irresponsible activities (Mackintosh, et al., 1981).

The primary prevention programs just reviewed were aimed at changing peoples' behavior. The majority of programs attempted to provide information that would aid individuals in choosing/exhibiting responsible behavior when confronted with the options of using alcohol and/or other substances. Due to

insufficient evaluation it is difficult to ascertain any long-term positive effects in attitude/behavior change; however, these reviews leave no question as to the importance of including strong evaluation components in all new projects. Furthermore, scrutiny of those on-going projects that have indications of positive impacts would be in order.

This chapter has provided an overview of primary prevention in an attempt to promote its potential for contending with the drunk driving problem. The application of primary prevention in the future can have greater impact if attention is paid to both limitations and successes of previous efforts.

The following chapter contains conclusions and recommendation based on this review of the literature.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The conclusions presented in this section reflect the diversity of the information collected during this literature review. As noted earlier, the contractor felt it necessary to review research in areas peripheral to the issue of norms and attitudes related to alcohol use and driving. The contributions made to the goal of the project by broadening the data base may well provide a more global perspective for designing primary prevention strategies. The conclusions are grouped under the following headings: Drinking and Driving; Attitude Theory; Attitudes Towards Alcohol Use; Attitudes Towards Drinking and Driving; and Primary Prevention.

Drinking and Driving

1. Alcohol use is an accepted practice in American society.
2. The hazards caused by alcohol-impaired driving pose a serious public health problem.
3. Americans hold inconsistent attitudes towards drinking and driving.
4. Enforcement/detection alone will not eliminate the drunk driving problem.
5. Attempts to curb drinking and driving have been piecemeal and based on insufficient research.

Attitude Theory

1. Three major sets of influences affect attitude formation - culture, family and peer groups.
2. Once individuals' attitudes are formed they are controlled by (1) their personality, (2) the information they receive, (3) the statements and attitudes of authorities to which they are exposed, and (4) the small informal groups, or primary groups to which they belong. As people mature, their attitudes are subject to change. However, this change does not come easily (Oskamp 1977).
3. Attitude change is difficult to bring about and even more difficult to measure.
4. Research on the attitude-behavior relationship should focus on the specific conditions under which attitudes effect behaviors .

Attitudes Towards Alcohol Use

1. Attitudes towards alcohol use are formed at the early stages of the individuals development and are influenced by parents, churches, peers, and the community.
2. The family is a crucial agent in the transmission of orientations towards alcohol.
3. Factors that can help predict drinking behaviors of adolescents do exist. (See page 26)
4. The drinking of alcoholic beverages by minors is related to their desire to achieve adult status.
5. Self standards are important determinents of adolescent behavior.
6. Peer modeling behavior and parental normative standards appear to be the most important reinforcers of adolescent self-standards.
7. Tolerance towards alcohol consumption increases with age.
8. Alcohol education programs have not generally been successful in changing attitudes or behavior. (See page 28)

Attitudes Towards Drinking and Driving

1. Minimal research has been conducted on attitudes toward drinking and driving.
2. Survey research on attitudes towards drinking and driving suggests that people do perceive drinking and driving as a serious problem.
3. Surveys addressing drinking and driving indicate that people are unsure about the effects alcohol has on driving ability.

Primary Prevention

1. Primary prevention approaches require support from all levels of the community -- individuals, groups, local, state and federal government.
2. Primary prevention approaches have been effective in decreasing death and injury caused by auto accidents. (See page 35)

3. Primary prevention approaches that attempt to change human behavior are less successful than technological approaches.

The recommendations below focus on research and program activities that NHTSA should consider funding. They address specific areas where research is required and general approaches to how primary prevention activities should be implemented.

1. A national survey on attitudes towards drinking and driving should be conducted to identify and assess peoples' attitudes towards drinking and driving. This information can help to identify needs, determine the appropriateness of different approaches and strategies, and verify issues. The design of the survey should include questions aimed at different age groups of respondents. The collection of this data will help federal, state and local highway safety officials--as well as, enforcement, judicial and education personnel--develop policies and plan programs for preventing and decreasing the incidence of alcohol-impaired driving.
2. Research should be conducted on the relationship between attitudes towards drinking and drinking/driving behavior to determine whether programs aimed at changing peoples' attitudes toward drinking and driving have potential effectiveness in terms of changing behavior.
3. Alcohol education programs should be studied to determine whether they can provide an effective means for impacting on the drinking/driving behavior of students.
4. A three-year pilot program should be conducted on community-based prevention of drinking and driving. A guide on "Suggestions for Developing Prevention Programs to Reduce the Incidence of Alcohol-Impaired Driving" was developed under this project. The information contained can serve as the basis for developing a pilot program for preventing drinking and driving.
5. Collaboration should take place with the National Institute on Alcohol Abuse and Alcoholism on how best to handle drinking drivers in medical, legal and social contexts. This should include sharing information on the effectiveness of alcohol rehabilitation programs for drinking drivers, corroborating research on treating the problem drinker/drinking driver, and identifying social interventions for decreasing the incidence of alcohol-impaired driving.
6. Prevention approaches should be conceptualized and designed as part of a comprehensive effort to deter drunk driving. Reliance on single approaches (e.g., only school-based

programs, only increased enforcement of drunk driving laws) should be avoided and evaluation objectives should be built into all prevention efforts.

Appendix A: Reference List

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**Appendix B: Survey Questions
Pertaining to Attitudes
Towards Drinking and Driving**

Perception of the Problem

Source	Type of Survey	Year	Sample	Question	%		
MO	Personal	1978	10,000	Do you believe drunk drivers are a problem on the highways?	A serious problem.....	67.2	
					A moderate problem.....	24.8	
					A slight problem.....	6.5	
					No problem.....	1.5	
					What percentage of highway fatalities last year were related to alcohol and other drugs?	10%.....	11.5
						25%.....	25.0
						50%.....	54.0
						Other.....	9.5
						Other.....	9.5
					NC	Mail	1978
3 - 5.....	45.0						
6 - 8.....	32.0						
9 - 10.....	6.0						
Other.....	6.0						
SD	Mail	1979	525	Most people who are involved in alcohol related auto accidents have a history of problem drinking.	Strongly agree.....	8.8	
					Agree.....	30.9	
					Don't know.....	23.9	
					Disagree.....	30.2	
					Strongly disagree.....	6.2	

Alcohol and Driving

Source	Type of Survey	Year	Sample	Question	%
AR	Telephone	1979	403	In your opinion, what determines how much a person can drink? (Answers not read)	
				Size	24.8
				Experience (how much they normally drink)	32.8
				Sex.....	1.7
				Age.....	3.2
				Amount of food in stomach.....	9.4
				Amount of alcohol in drink.....	4.7
				Other.....	16.1
				Don't know.....	30.8
AR				When a person has had a "few" drinks, do you think they drive about the same, better, or worse than usual?	
				Better.....	5.7
				Worse.....	76.4
				Same.....	10.2
				Don't know.....	7.7
AR				In your opinion, how reliable are the alcohol blood tests?	
				Extremely reliable.....	22.3
				Fairly reliable.....	58.1
				Seldom reliable.....	6.9
				Never reliable.....	1.0
				Don't know.....	11.7
SD	Mail	1979	524	As a general rule, how effective do you feel the following action would be if implemented, in encouraging you not to drive after you've consumed alcoholic beverages?	
				If it could be proven to you that alcohol seriously reduces driving ability.	
				Very effective.....	23.6
				Effective.....	38.6
				Don't know.....	15.2
				Ineffective.....	21.5
				Very ineffective.....	1.1

Social Acceptability

Source	Type of Survey	Year	Sample	Question	%
IA	Telephone	1978	768	This question deals with the social acceptability of drinking and driving. Among your own friends, is it considered socially acceptable to drive after several drinks, such as 4 or more, or not socially acceptable?	
				Yes, considered socially acceptable....	35.0
				No, not socially acceptable.....	59.0
				Don't know.....	6.0
PA	Telephone	1977	284	When friends are involved, a person should be willing to take even physical action to prevent them from driving drunk.	
				Agree strongly.....	55.0
				Agree somewhat.....	36.0
				Disagree somewhat.....	5.0
				Disagree strongly.....	1.0
				Don't know.....	2.0
NC	Mail	1978	988	What should be done to cut down on drunk driving?	
				More arrests.....	10.0
				Jail.....	5.0
				Stiffer penalties in general.....	49.0
				Take license.....	27.0
				Alcohol education programs for those arrested.....	27.0
				Other (please describe.)	5.0
				Would you favor or oppose strict enforcement of drunk driving laws?	
				Favor.....	93.2
				Oppose.....	6.8

Source	Type of Survey	Year	Sample	Question	%
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SD	Mail	1979	524	As a general rule, how effective do you feel the following actions are, or would be if implemented, in encouraging you not to drive after you've consumed alcoholic beverages?	
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If enforcement efforts were increased in order to arrest more drivers who drink and drive.

Very effective.....	33.8
Effective.....	39.5
Don' t know.....	16.5
Ineffective.....	8.9
Very ineffective.....	1.4

If you were certain to get a severe penalty if you were convicted for drinking and driving.

Very effective.....	37.1
Effective.....	43.3
Don' t know.....	11.2
Ineffective.....	6.3
Very ineffective.....	2.2

Treatment

Source	Type of Survey	Year	Sample	Question	%
NV	Personal	1977	1,669	Which method do you feel would be most effective in dealing with persons convicted of driving under the influence of alcohol?	
				Stiffer penalties.....	52.4VA
				Increased enforcement..	7.3
				Alcohol education schools.....	32.4
				None of the above.....	7.9
	Telephone	1977	1,700	Which do you think would benefit a convicted drunken driver more - attending an alcohol treatment program or undergoing the traditional penalties of fine, jail or loss of license?	
				Traditional penalties..	31.9
				Alcohol treatment programs.....	55.9
				Undecided.....	12.9
NV			1,804	Would you favor or oppose alcohol education schools for persons convicted of driving under the influence of alcohol?	
				Favor.....	88.4
				Oppose.....	11.6
AR				In your opinion, should alcohol education be taught in the school?	
				Yes.....	90.6
				No.....	6.5
				Don't know.....	3.0

Appendix C: Annotated Bibliography

Annotations

1. Alcohol, Drug Abuse and Mental Health Administration, National Institute for Alcoholism and Alcohol Abuse. "Alcohol-related Accidents, Crime and Violence." in Third Special Report to the U.S. Congress on Alcohol and Health from the Secretary of Health and Human Services. Washington, DC: Department of Health and Human Services, 1978.

This chapter summarizes what is known about the role of alcohol in accidents (motor vehicle, home, industry and recreation), crime, and suicide. The literature review concerning alcohol-related car crashes documents the findings of other researchers that alcohol is significantly involved in motor vehicle accidents.

DWI, accidents, demographic factors, BAC.

2. Arafat, I. "Drinking Behavior in High School, College and Adult Groups." Free Inquiry in Creative Sociology. Vol. 7, No. 1, May 1979.

This study of 1,885 white high school and college students and white male adults investigated differences in the effects of drinking habits. Results indicate that the primary elements which favor drinking involvement--drinking in the family, keeping alcohol at home, and incorporating drinking into social activities (and to a lesser degree drug use)--are the powerful mechanisms of social life during the formative years of high school and college. The authors also suggest this involvement with alcohol use is unaffected by age and is established before entry into high school.

Attitudes, religion, parents, peers, drinking behaviors.

3. Argeriou, M. and Manohar, V. "Treating the Problem Drinking Driver: Some Notes on the Time Required to Achieve Impact." British Journal of Addiction. Vol. 72, No. 4, December 1977.

This article reports on the findings of a three-year study of 277 men who entered a Boston Services for Traffic Safety Treatment project in 1972. All were charged with driving under the influence of liquor (DUIL). By examining the relationship between type of drinker, the length of time in treatment, and the severity of the drinking problem, the authors conclude that six months of treatment is generally enough time to effectively treat emerging problem drinkers. It is also enough time to measure the probability of success (motivation) with problem drinkers.

DUIL offenders, treatment, problem drinking.

4. Argeriou, M. "Researching Problem-Drinking Blacks: The Unheralded Potential of Drinking Driver Programs." The International Journal of the Addiction. Vol. 13, No. 3, 1978.

This article summarizes a three-year study of 271 black and white males who were treated for driving under the influence of liquor (DUIL) in Boston in the early 1970's. The treatment was conducted in two phases, an alcohol reeducation program for everyone and an intensive counseling, referral, and maintenance program for those diagnosed as problem drinkers. Comparing results between blacks and whites, the study found that the treatment impact was equally distributed and largely positive. Significantly, the findings provide little support for the position that alcoholism among blacks is a distinctive problem which cannot be effectively treated without recognition and proper attention to distinctiveness. It suggests that treatment can be effective if cast in an appropriate structure and if focused on the primary problem of alcohol abuse.

DUIL offenders, treatment, demographic factors.

5. Bacon, M. and Jones, M.B. "Driving, Delinquency and Sex." in Teen-Age Drinking. New York: Thomas Y. Crowell Co., 1971.

This book chapter explores the relationship between drinking and driving by reviewing numerous studies involving various age groups. An indepth look at a 1962-63 Grand Rapids study of drivers involved in accidents reveals that teenage drinking and driving was an insignificant problem. The authors conclude that because drinking-driving accidents are more frequent among the 25-64 age group, DWI is largely an adult problem.

Drinking drivers, delinquency, adolescents, demographic factors.

6. Beckman, L.J. "Women Alcoholics--A Review of Social and Psychological Studies." Journal of Studies on Alcohol. Vol. 36, 1975.

Beckman reviews numerous experimental and quasi-experimental studies that discuss causal factors (e.g., background, self-concept, personality, sexuality, and roles) that are related to problem drinking and alcoholism in women. Several common hypotheses concerning the pathology of women alcoholics are questioned. For instance, although past research indicates that women alcoholics tend to be more influenced by environmental stresses such as divorce, ill health, and familial alcoholism than men, subgroups of alcoholic women behaved differently on the basis of race, social class, and family background.

Alcohol, social factors, psychological factors, demographic factors.

7. Biddle, B.J. Bank, B.J. and Marlin, M.M. "Social Determinants of Adolescent Drinking." Journal of Studies on Alcohol. Vol. 41, 1980.

This research study relied on indepth interviews with 149 adolescents to identify correlates between adolescent drinking and the drinking behaviors of peers and parents. Researchers concluded that personal preferences are the key predictor of adolescent drinking behavior. However, the research also reveals that these preferences are, to a certain extent, shaped by parents and peers, but in different ways--parents through normative standards set and peers through modeling behaviors.

Adolescents, parents, peers, drinking behaviors, role models.

8. Birrell, J. "Drinking Habits and Vehicle Use." A Presentation for the Seventh International Conference on Alcohol, Drugs and Traffic Safety. Canberra: Australian Government Publishing Service, 1979.

In what Birrell calls the "appalling ignorance of the public of alcohol's contributions to the road toll," he points out that the factors that contribute to a lack of action on the DWI problem are industry lobbying, legal technicalities, media, folklore that encourages drinking, and a lack of awareness of DWI problems. He suggests solutions that are aimed at these sources.

DWI, social factors.

9. Birrell, J. "Drinking and Driving." in Toward Prevention. Washington, DC: Narcotics Education, Inc., 1971.

The author cites extensive evidence of the relationship between drinking and road accidents. Based on his experience in Australia he advocates a campaign that uses: 1) the public example of leaders, 2) mass communication, and 3) enforcement. He recommends that preventive action for motorists be based on blood alcohol levels of .05-.1 percent.

Drinking drivers, BAL, accidents, public information and education campaign, prevention.

10. Blane, H.T., Hill, M.J. and Brown, E. "Alienation, Self-Esteem and Attitudes Toward Drinking in High School Students." Quarterly Journal of Studies on Alcohol. Vol. 29, No. 1, 1968.

This study attempts to relate personality variables to attitudes toward alcohol use. High school boys and girls in grades 9 through 12 were surveyed. Survey results indicated that powerlessness and normlessness were positively associated with irresponsible use of alcohol and negatively associated with self-esteem. However, social isolation was not associated with irresponsible drinking. The authors suggest that this relationship may be more true for boys than girls, because research indicates that most girls drink during social occasions such as dates and parties.

Attitudes, adolescents, psychological factors.

11. Booth, R.E. and Grosswiler, R. "Correlates and Predictors of Recidivism and Drinking Drivers." International Journal of the Addictions. Vol. 13, No. 1, 1978.

In a follow-up study of 47 former DUI clients of an alcohol treatment program, the authors found that drinking and driving behavior was positively affected (that is, reduced) when the offender was involved in an accident at the time of arrest. Age and occupation, length of treatment, and follow-up treatment appear to be the best predictors of subsequent DUI behavior.

DUI offenders, treatment, demographic factors.

12. Brownlie, A. "Drink, Drugs and Driving--A Survey." Med-Legal Journal. Vol. 43, No. 4, 1975.

In a speech before the Medico-legal Society, Brownlie traced the history of DWI legal deterrence in England from the Criminal Justice Act of 1925 (the first law to formally penalize the drunk driver) to the Road Traffic Act of 1962. He concluded that current laws and practices are effective in deterring DWI. However, he believes the laws can be more effective through rigorous enforcement and reducing the legal BAC level from 80 mg to 50 mg.

DWI, BAC, legal countermeasures.

13. Biener, Kurt J. "The Influence of Health Education on the Use of Alcohol and Tobacco in Adolescence." Preventive Medicine. Vol. 4, 1975.

In this four year longitudinal study, the authors attempted to determine the effectiveness and measurability of comprehensive health education among high school students and young men after they left school. In a second study the authors designed a health education care course, based on the one that was administered to the high school students, and administered it to a group of 60 apprentices in "a machine" factory. A control group of 60 apprentices did not receive the health education program. Several tests were administered to all groups at the beginning of the study and again four years later. The authors found a significant difference in the number of nonsmokers who became smokers in that fewer nonsmokers became smokers in the test group than the control. However, there was no significant difference in smokers who quit in either group or between groups. By the end of the study, occasional drinking had increased more for the control group (from 29 who drank occasionally to 55) than the test group (from 26 who drank occasionally to 33 who did so at the end). Further, more nondrinkers remained abstinent in the test group (of 34 initial nondrinkers, 27 remained abstinent) than the control group (of 31 nondrinkers only 5 remained abstinent). The principal reason given for abstinence was participation in sports. The author concluded that health education courses during adolescence can produce positive results.

Anti-smoking, alcohol education, adolescents, longitudinal study.

14. Burk, E. D. "Some Contemporary Issues in Child Development and the Children of Alcoholic Parents." Annals of the New York Academy of Sciences. Vol. 197, May 25, 1972.

Based primarily on Bandura's Theory of no-trial learning, Burk concluded that children learn drinking behavior from parents and the media. Further, children of alcoholics appeared particularly vulnerable to developing drinking habits that could lead to problem drinking. Burk suggested that using esteem models will help to deter the development of inappropriate attitudes and behaviors related to drinking.

Drinking behaviors, family, role models.

15. Cahalan, D. and Cisin, E.H. "Drinking Behavior and Drinking Problems in the U.S." in Social Aspects of Alcoholism. Benjamin Kassin and Henri Begleiter (Editors). Brooklyn, NY: Plenum Press, Vol. 4, 1977.

This article addressed attitude formation and change with regard to alcoholism by examining the various perspectives of epidemiologists and behavioral scientists. The article focused on the social control of drinking through a discussion of the three dominant models for defining "alcoholism" or "problem drinking"--the vice model (subsuming both the "crime" and "bad habits" models), the disease model (including classical concepts and a medical consequences component), and the social problems model (which draws on labeling theory, anomie theory, and differential association process). The authors concluded that each model is, by itself, inadequate and that greater collaboration and cooperation is needed between the epidemiologists and social scientists to develop more effective prevention programs aimed at reducing alcohol-connected problems.

Attitudes, alcohol, theoretical models, epidemiology.

16. Cahalan, D. and Room, R. Problem Drinking Among American Men. New Haven, CT: College and University Press, 1974.

The subjects of this monograph were men, aged 21 to 59, drawn from two national surveys and from a community study in San Francisco. The amount and frequency of drinking, perceptions of own drinking, familial drinking, and socioeconomic demographics of these men were analyzed and discussed in detail. The authors' drew some of the following conclusions from their analyses: men still drink more than women although more women are drinking; for most people, whether they drink at all is primarily a function of sociological and anthropological factors rather than psychological; and problem-related drinking appears to be associated with combined heavy and escape drinking, and mass drinking (e.g., drinking five or six drinks on an occasion).

Attitudes, problem drinking, demographic factors, questionnaire.

17. Center for the Study of Social Behavior, Research Triangle Institute.
"Summary of Final Report: A National Study of Adolescent Drinking Behavior, Attitudes and Correlates." Rockville, MD: National Clearinghouse for Alcohol Information, April 1975.

This summary discussed the findings of a national survey studying the extent and nature of adolescent alcohol use in America. The study of students in grades 7-12 examined the relationship between demographics, social and personal factors, consumption habits, and attitudes toward drinking. The findings indicated that adolescent alcohol consumption is a serious societal problem and is probably becoming increasingly so. Further, the results of the survey seem to support studies that indicate that the period of adolescence is critical for attitude formation towards and initial experiences with alcohol use.

Drinking behaviors, adolescents, demographic factors, social factors, attitudes.

18. Champion, R.A. and Bell, D.S. "Attitudes Toward Drug Use: Trends and Correlations With Actual Use." The International Journal of the Addictions. Vol. 15, No. 4, 1980.

The findings reported in this study demonstrate a relationship between permissive attitudes concerning drug use and increased drug use. The survey data used in this study were collected over a three year period in New South Wales from secondary school students, college students, nursing students, and "at risk" groups of probationed prisoners and delinquents. With respect to alcohol use, the authors suggested that there is extreme conflict between attitudes of permissiveness and prohibition. It seems that although light and non-users considered alcohol to be dangerous in excess, few felt that alcohol should be prohibited. The article also discussed the role of drug education as a preventive measure by increasing awareness of dangers.

Attitudes, alcohol, drugs, delinquency, countermeasures.

19. Clark, W.B. and Cahalan, D. "Changes in Problem Drinking Over a Four Year Span." Addictive Behaviors. Vol. 1, 1976.

The concept of alcoholism as a progressive disease was questioned in this longitudinal study of a representative sample of 786 white males aged 51-59. The respondents were interviewed twice (interviews were four years apart) concerning problems associated with their drinking (e.g., financial--spending too much money on drinks) and loss of control over drinking (e.g., difficulty in cutting down on drinking). The findings indicated that reported loss of control highly correlated with reported problem drinking; however, problem drinking was not a predictor of loss of control. Further, the authors found that drinking problems were not unilinear with progression from less severe to more severe and from a single problem to many problems. These findings contradict the disease model of alcoholism which implies that the potential alcoholic continues to keep "early symptoms" and early problems and add on others over time. The authors suggested adopting a "problems" approach to

alcohol research and treatment, which would focus more on dysfunctions in the interactions between the individual and his environment and less on the individual as the locus of the disease.

Alcohol, longitudinal study, environmental factors, treatment, theoretical models.

20. Cockerham, W.C. "Drinking Attitudes and Practices Among Wind River Reservation Indian Youth." Journal of Studies on Alcohol. Vol. 36, No. 3, 1975.

This study examined alcohol use/abuse attitudes and behavior of 7th and 8th grade American Indian students (by sex) living on a reservation in Wyoming. The study confirmed that these adolescents and their peers both approve of drinking and drink, despite the knowledge that it is illegal in many cases.

Attitudes, American Indians, drinking behaviors, adolescents.

21. Comptroller General. "The Drinking-Driver Problem--What Can Be Done About It? Comptroller General's Report to the Congress." Washington, DC: Superintendent of Documents, February 1979.

This overall digest on the state-of-the-art examined all aspects of DWI. It focused on recent efforts to reduce the DWI problem in terms of federal, state and local, foreign and private efforts. Based on a questionnaire, this digest provided information on public attitudes toward DWI as perceived by NHTSA state officials and field workers. It also explored which campaign efforts are perceived by these officials as obstacles to a successful anti-drinker driver program.

DWI, Countermeasures, attitudes, questionnaire.

22. Cotton, N. S. "The Familial Incidence of Alcoholism: A Review." Journal of Studies on Alcohol. Vol. 40, No. 1, 1979.

This review of 39 studies reveals that rates of alcoholism are substantially higher for relatives of alcoholics than for relatives of non-alcoholics, even when the non-alcoholics are psychiatric patients. Alcoholism was more prevalent in male than in female relatives of alcoholics, in families of women alcoholics than of men alcoholics, and in close relatives than distant relatives. The study also indicates that alcoholism occurs more frequently than does mental illness in the families of alcoholics.

Alcohol, family, psychological factors.

23. Cureton, L.W. "Parents' Police Records for Drunkenness and Behavior Problems of Their Children." Proceedings of the First Annual Alcoholism Conference of the National Institute on Alcohol Abuse and Alcoholism, Research on Alcoholism: Clinical Problems and Special Populations. Morris B. Chafetz, M.D. (Editor). Washington, D.C.: USDHEW, 1971.

This study examined the effect of parental drunkenness on adolescent behavior and attitudes with regard to juvenile delinquency, school dropouts, student achievement, race, sex, and socio-economic factors. The author found some relationship between parental problem drinking (defined as one or more arrests for drunkenness) and school dropout rates and delinquency among their children. However, the author cautioned that there may be little or no causal relationship between parental drinking problems and their children's behavior problems; instead "both may be symptoms of other underlying factors in the home or family."

Attitudes, drinking behaviors, parents, delinquency, demographic factors, social factors.

24. Cutter, H.S.J. and Fisher, J.C. "Family Experience and the Motives for Drinking." The International Journal of the Addictions. Vol. 15, No. 3, 1980.

This study explored how mother's drunkenness, father's attitudes toward drinking, and parental closeness affect motives for drinking. Parental attitudes and childrearing practices define whether the child will drink for social reasons or for causes related to poor self-esteem. The degree of "involvement with self" vs. "social drinking" seems to be a determinant for the onset of alcoholism. Using the Definitions of Alcohol Scale (DAS) as its measure, the study applies these findings to suggest types of treatment to be used in alcoholism prevention.

Alcohol, treatment, prevention, family, attitudes.

25. Denberg, D. and Smart, R. "Recidivism and Collision Involvement of Impaired Drivers: Some Implications for Countermeasures." Proceedings of the Fourth Annual Alcoholism Conference of the National Institute on Alcohol Abuse and Alcoholism Research, Treatment and Prevention. Washington, D.C.: USDHEW, 1974.

A sample of 5,330 Canadian drivers with at least one alcohol-impaired driving conviction was identified to determine recidivism rates. The results indicated that recidivism is more likely within the first year. However, for the majority of the sample, the conviction was their first known alcohol offense. The study indicated that males and 16-19 year olds were the most critical group at risk of being involved in alcohol-related accidents. The authors recommended that both primary and secondary preventive measures for reducing the impaired-driver problem be taken.

DWI offenders, adolescents, prevention.

26. Eagly, A.H. and Himmelfarb, S. "Attitudes and Opinions." Annual Review of Psychology. Vol. 29, 1978.

This article reviews the major research studies and theoretical papers on two broad approaches to attitude change theory--persuasion induced attitude change and the relationship between attitudes and behavior. In addition, several minitheories are discussed. The authors concluded, with guarded optimism, that attitude change observed in the laboratory reflects genuine attitude change and that these results are "generalizable beyond the laboratory."

Attitude research.

27. Ebel, H.C., Katz, D., and Roses, A. "Effect of a Marijuana Drug-Education Program: Comparison of Faculty-Elicited and Student-Elicited Data." Journal of Drug Education. Vol. 5, No. 1, 1975.

This study examined the effects of a drug-education course upon the relationship between drug attitudes and usage, and assessed the validity of attitude-usage relationship by comparing data elicited by peers and teachers. Students were given pre- and post-tests to assess their attitudes toward drug usage and their drug use behaviors. The results indicated significant shifts in attitude-usage patterns. Post-tests administered by students showed more positive attitudes toward drug use among non-users than did the teacher-administered post-tests. Whereas the teacher-administered tests showed a larger decrease in drug use among drug-users than did the student-administered tests. Control course students displayed no consistent precourse, postcourse patterns. The authors concluded that the "cognitive dissonance" strategy had an effect only in situations in which precourse reports contain discrepant expression of attitudes.

Attitudes, drugs, adolescents, peers, questionnaire.

28. Ewing, J.A. and Rouse, B.A. (Editors). Drinking Alcohol in American Society: Issues and Current Research. Chicago: Nelson Hall, Inc., 1978.

This book provides an introductory look at alcohol use in American society and alcohol-related problems. It covers the entire gamut including alcohol and highway safety, teenage drinking, college drinking, and social policy and drinking. In addition, there are specific articles and studies for the educated researcher.

Attitudes, college students, adolescents, drinking behaviors, government regulation, legal countermeasures.

29. Fell, J. C. "A Profile of Fatal Accidents Involving Alcohol." in Proceedings of the 21st Conference of the American Association for Automotive Medicine. Donald F. Huelke (Editor). Morton Grove, IL: American Association for Automotive Medicine, 1977.

This study summarized the results of accident research studies in Boston, Baltimore, Oklahoma, and Albuquerque where Alcohol Safety Action Projects were in effect. Based on the results of these four studies, the author developed a list of characteristics of accidents that involve alcohol and a profile of the driver who is at increased risk of being involved in a fatal, alcohol-related accident. Some of the accident characteristics which were overrepresented in the studies were: the striking vehicle was usually the alcohol involved vehicle, the vehicle was usually 5 to 8 years old and poorly maintained, and the accidents usually occurred between 8 P.M. and 4 A.M. on Friday or Saturday night. The profile of the DWI offender who is at risk of being involved in a fatal accident is a male between the ages of 20 and 35, who has had a previous alcohol-related, DWI, or speeding arrest, and is single, separated, or divorced. The author makes specific recommendations as to how these results can be used by state highway safety officials.

ASAP, DWI, accidents.

30. Fleischer, G.A. "A Study of the Effectiveness of a Radio/TV Campaign on Safety Belt Use." Journal of Safety Research. Vol. 5, No. 1, March 1973.

This article reports on a 1971 study in California which tried to change attitudes related to the use of seatbelts by broadcasting radio/TV public service announcements (PSA's). Two test communities and one control community were used. Actual seatbelt use was observed and telephone surveys measured attitude changes. The study concludes that the PSA's had little significant effect on seatbelt use or on related attitudes.

Attitudes, technological countermeasure, public information and education campaign.

31. Frankel, B.G. and Whitehead, P.C. "Sociological Perspectives on Drinking and Damage." in Alcohol Reform and Society: The Liquor Issue in Social Context. Jack S. Blocker Jr. (Editor). Westport, CT: Greenwood Press, 1979.

This article summarizes two major sociological perspectives that have dominated thinking in the U.S. on the social aspects of alcohol use and alcohol-related damage. The structure of each model--the sociological model and the distribution of consumption model--is discussed in depth. The article reviews the research on both models, discusses their strengths and weaknesses, and proposes a new model based on the strengths of each of the two models.

Alcohol, prevention, theoretical models, research methodology.

32. Globetti, J. and Harrison, D.E. "Attitudes of High School Students Toward Alcohol Education." Journal of School Health. Vol. 40, No. 1, 1970.

A survey of 440 students, grades 7-12, revealed high interest in learning about alcohol and especially in gaining information that is objective rather than normative. Most students indicated that they receive little information on the subject and rely substantially on peers. The authors feel that the schools should meet their obligation to provide alcohol education.

Adolescents, attitudes, alcohol education, peers.

33. Greenberg, J. S. and Deputat, Z. "Smoking Intervention: Comparing Three Methods in a High School Setting." The Journal of School Health. October 1978.

In this experimental study, a hundred students, in grades 9, 10 and 12 who smoked at least five cigarettes a day, were used to assess which of three approaches aimed at curbing smoking among teenagers would be most effective: the "scare" approach, the "fact" approach, or the "attitude" approach. The students were divided into four groups (three experimental and one control) with each of the experimental groups receiving one of the treatment approaches. Pre- and post-test, self-report instruments were used to measure smoking habits and attitudes. The findings indicated that the "scare" approach had the most immediate effect, while the "attitude" approach had the most long-term effect.

Adolescents, prevention, anti-smoking, attitudes.

34. Hanson, D.J. "Relationship Between Methods and Findings in Attitude-Behavior Research." Psychology. Vol. 17, 1980.

A review of the literature was conducted to determine if an association exists between research methods and findings in attitude-behavior research. The findings indicated that laboratory studies tended to demonstrate a positive correlation between attitudes and behavior while field studies demonstrated no such relationship. The results of analysis further revealed that there is a significant relationship between research methodology and research findings.

Attitude research, research methodology.

35. Hanson, D.J. "Drinking Attitudes and Behavior Among College Students." Journal of Alcohol and Drug Education. Vol. 19, No. 3, Spring 1974.

The purpose of this study was to examine the drinking habits and attitudes toward alcohol of 3,696 college students. Based on a review of the literature, general findings of other studies concerning the incidence of drinking were confirmed by this study. For example, the incidence of drinking is: higher among males than females, positively associated with socioeconomic status, positively associated with parental drinking, and associated with

drinking among friends. In addition to supporting these findings, the author found that drinkers generally reported guilt feelings concerning their drinking and a majority of the nondrinkers reported that they believed drinking was wrong. The results of each questionnaire item were discussed and then compared with the findings of previous studies. No overall conclusions were offered.

College students, parents, drinking behaviors, religious, questionnaire.

36. Hart, L. "Attitudes Regarding Alcoholism among a Group of Drinking Drivers." The International Journal of the Addictions. Vol. 12, No. 2-3, 1977.

This study reported the findings of a survey administered to a group of 94 male drinking drivers to assess their attitudes on nine factors related to alcoholism and the alcoholic. The survey was adapted from a questionnaire developed by A. Marcus. Marcus tested his questionnaire on a general population group which, for the purposes of this study, served as the comparison group. Nine factors were assessed for each group based on Marcus's criterion. The groups differed in their attitudes on two factors. The drinking driver group believed that periodic excessive drinkers can be alcoholics while the norm group was ambivalent. The norm group was positive, while the drinking driver group was ambivalent, in the belief that emotional difficulties and psychological problems contributed to the etiology of alcoholism. Based on these results, the author suggests that administrators of alcohol education programs should consider assessing their students' opinions about alcoholism. He feels that this information may aid in the reeducation process.

Alcohol, attitudes, drinking drivers.

37. Hartford, T. C. "Drinking Contexts: A Developmental Approach." Rockville, MD: National Institute on Alcohol Abuse and Alcoholism, Department of Health, Education and Welfare, 1976.

This article examines the frequency and quantity of drinking of adolescents and adults in terms of drinking contexts (interactions of persons and settings) by relating age and sex factors. The article is based on data obtained from two 1975 surveys of junior and senior high school students and adults aged 18 and older in the Boston metropolitan area. The author concluded that drinking is age-related in that more drinking takes place among late adolescents and young adults (where consumption appears to peak) than among older adults. Further, contextual drinking such as at "mealtimes" increases with age, whereas "party" drinking decreases with age.

Alcohol, adolescents, demographic factors, environmental factors, drinking behaviors.

38. Health and Welfare Canada, Research Bureau, Non Medical Use of Drugs Directorate. A Strategy for the Prevention of Alcohol-Related Problems. (Draft) Canada: Research Bureau, Health and Welfare Canada, n.d.

This paper outlines a strategy for preventing alcohol problems in Canada. The authors admitted that no single program will prevent the complex problems related to alcohol abuse. Instead, the authors concentrated on proposing issues that they felt must be dealt with in relation to alcohol. In addition, the paper provides working definitions of the three levels of prevention (primary, secondary and tertiary) and examines alcohol problems from various perspectives as a physical health problem, mental health problem, and social health problem.

Prevention, alcohol, psychological factors, biological factors, social factors.

39. Hindmarch, I., Hughes, I., and Einstein, R. "Attitudes to Drug Users and to the Use of Alcohol, Tobacco, and Cannabis on the Campus of a Provincial University." Bulletin on Naratives. Vol. 27, No. 1, 1975.

This study investigated attitudes toward cannabis, alcohol, and tobacco. It examined cannabis, particularly, to test the "cognitive consistency" model which hypothesizes that the attitudes the individual drug user holds will be congruent and compatible with the behavioral milieu surrounding him/her. A questionnaire was administered to 1,000 university students. It revealed that, unlike alcohol and tobacco, cannabis was not regarded as a social drug among the students. There were no attitudinal differences between users and non-users of alcohol and tobacco, while there were significant differences between users and non-users of cannabis. Non-users of cannabis tended to have negative attitudes towards cannabis use, regarding it as dangerous and believing more what they read about the dangers of drug use, whereas the cannabis users tended to be more neutral in their attitudes.

Attitudes, college students, drugs, alcohol, questionnaires, cannabis.

40. Hodgdon, J.D., Bragg, B.W.E., and Finn, P. Young Driver Risk-Taking Research. The State-of-the-Art. Washington, D.C.: Department of Transportation, 1981.

The authors of this research project correlated age, attitude, and behavior (risk-taking) with unsafe driving. This interim report concludes that prior attempts to measure risk perception, utility, and choice have been invalid. It suggests video-computer technology as a means to simulate hazardous driving which would apply to young driver risk-taking research.

Risk-taking, attitudes, demographics, technological countermeasures.

41. Hogue, R.C. "Drinking Behavior and Attitudes on Alcoholism Needs Assessment for the North Catchment Area of Hills Borough County." Tampa, Florida: Northside Community Mental Health Center, Inc., 1977.

This study investigated problem drinking in the Northwestern segment of Hills Borough County, Florida. The study examined demographic characteristics of heavy drinkers, beliefs, perceptions, situational variables, and opinions about drinking. The results suggest that problem drinkers of both sexes generally began drinking before the age of 18 and drinking behavior was approved by at least one parent. Other familial and socioeconomic data are offered to explain the existence and distribution of heavy drinkers in the Hills Borough survey area.

Attitudes, drinking behavior, alcohol, demographic factors, parents, situational factors.

42. Hubbard, T. "Focus on Youth." Alcohol Health and Research World. Washington, DC: U.S. Department of Health, Education and Welfare. National Institute on Alcohol Abuse and Alcoholism, Winter 1978/79.

This overview of the Prevention Model Replication Program examines NIAAA's commitment to providing useful alcohol prevention/education programs in various states and state schools. The discussion focuses on the replication of three model prevention programs for youth--CASPAR, King Co. and U. Mass programs--in other communities experiencing alcohol abuse problems among youth.

Alcohol education, prevention, adolescents.

43. Huntley, S. M. and Bray, K. J. "The DWI and Driving: A Technological Approach." in Proceedings of the Fourth Annual Alcoholism Conference of the National Institute on Alcohol Abuse and Alcoholism. Morris E. Chafetz (Editor). Rockville, MD: National Institute on Alcohol Abuse and Alcoholism, 1974.

This article reports and discusses the results of a series of performance tests conducted by NHTSA on technological devices designed for installation in cars to detect and deter impaired driving. The devices were tested for compensatory tracking, discrete response accuracy, critical testing, and tracking and detection. The study concluded that of the automobile interlock systems, devices with built in breathalyzers were more accurate in estimating the extent of impairment than devices that measured psychomotor performance. The short-term and long-term preventative effects of each system are also discussed.

DWI, prevention, technological countermeasure, BAC.

- 43a. Jefferys, M. and Westaway, W.R. "Catch Them Before They Start: A Report on an Attempt to Influence Children's Smoking Habits." Health Education Journal. Vol. 19, 1961.

This study evaluated the effectiveness of an educational program conducted intermittently throughout one school year among third form students in a British secondary school. A comparable secondary school serving the same housing district was selected as the control. Pre- and post-tests were administered to both schools. The authors found no differences in the smoking habits of students from both schools. In fact, smoking increased for both schools. In their summary discussion, the authors also evaluated the effectiveness of the program's treatment approaches which included two films and a lecture given by representatives of the Central Council for Health Education. The authors found that the films and speakers that were the most effective (i.e., the students remembered more of the information presented), emphasized human dramas (e.g., a story of someone's experience) more than statistics. In addition, the authors discovered that films and audiovisual materials that contained hospital treatment scenes had some undesirable side-effects. It seems that these types of visual materials can arouse anxieties and fears in sensitive and vulnerable children. The authors recommended that a responsible individual should always be present when films or visual aids are used to allay morbid anxieties.

Anti-smoking, prevention.

44. Jessor, R., Chase, J.A., and Donovan, J.E. "Psychosocial Correlates of Marijuana Use and Problem Drinking in a National Sample of Adolescents." American Journal of Public Health. Vol. 70, No. 6, January 1980.

Personality, environmental, and behavioral variables representing psychosocial risk factors for adolescent problem behaviors were assessed in a 1974 national study of over 10,000 high school students. Significant correlations were found with marijuana use and 13 of 17 personality, environmental, and behavioral variables (e.g., independence-achievement value, tolerance for deviance, performance in school, and drunkenness in past year). Based on problem-behavior theory, adolescents whose scores reflected a tendency toward problem behavior tended to be more involved in marijuana use than adolescents whose personality, social, and behavioral scores showed a lower problem-behavior proneness. This relationship held across age, sex, and ethnic group lines. The authors concluded that there may be a "syndrome" of problem behavior in adolescence; the occurrence of one risk factor being associated with the occurrence of others.

Adolescents, attitudes, psychological factors, environmental factors, drugs, alcohol.

45. Jessor, R. and Jessor, S.L. "Adolescent Development and the Onset of Drinking." Journal of Studies on Alcohol. Vol. 36, No. 1, January 1975.

This article discusses further the findings of Jessors' four-year longitudinal study of junior and senior high school students. The authors found that the likelihood of drinking was directly related to problem proneness. Further, they suggested that there is a developmental relationship between the onset of drinking and other socio-psychological attributes (e.g., subjects who have a greater tolerance for deviant behavior and who have models who approve of drinking, such as parents or peers, tend to become drinkers). The authors conclude that becoming a drinker is an integral aspect of the process of adolescent development.

Adolescents, drinking behaviors, psychological factors, longitudinal study.

46. Jessor, R., Collins, M.I., and Jessor, S.L. "On Becoming a Drinker: Social Psychological Aspects of an Adolescent Transition." Annals of the N.Y. Academy of Science. Vol. 197, 1972.

This longitudinal study of the onset of drinking behavior followed high school students for a four-year period to collect comprehensive personality, social, and behavioral data. The purpose of the study was to identify factors that seem, for adolescents, to signal a forthcoming shift from abstaining to drinking status. Students who were abstainers in study years I and II and in year I only were compared with students who were identified as drinkers during both study years. The results indicated that abstainers differed from those who abstained and drank later in that abstainers valued academic recognition more and independence less than did the drinkers. On the other hand, drinkers tended to perceive a greater degree of support for drinking from peers and tolerated transgression more.

Adolescents, drinking behaviors, social factors, psychological factors, longitudinal study.

47. Jones, R.K. "Alcohol and Highway Crashes: A Projection for the 1980s." The HSRI Research Review. Ann Arbor, MI: University of Michigan Highway Safety Research Institute, Vol. 7, No. 5, March-April 1977.

This paper analyzes factors suggested by research to be related to the alcohol-crash problem and develops a short-range projection of the problem for the 1980 decade. The author projects DWI-related highway crash losses for the 1980s by comparing baseline variables such as total highway fatalities, non-pedestrian highway fatalities and blood alcohol levels (BAL's) of drivers involved in non-pedestrian highway fatalities with per capita alcohol consumption, ages of licensed drivers, trends in marital status, and other demographics. Jones concluded that the absolute magnitude of highway crash losses involving drunk drivers is likely to increase substantially over the

next ten years, but that such losses will remain about the same with respect to crash losses as a whole.

Alcohol, BAL, accidents, drinking driver, demographic factors.

48. Jones, R.K. and Joscelyn, K.B. Alcohol and Highway Safety 1978: A Review of the State of Knowledge Summary Volume. Prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration. Springfield, VA: National Technical Information Service, January 1978.

This report summarizes the results of a comprehensive study to review, evaluate, and summarize the existing knowledge on alcohol and highway safety in the United States. Both the nature of the alcohol-crash problem and societal responses to the problem are discussed. Literature examined in this review includes epidemiologic studies, experimental studies and countermeasure programs. The short term future of the alcohol-crash problem is projected and conclusions and recommendations regarding future research and programs are offered.

DWI, drinking behaviors, demographic factors, social factors, epidemiology, countermeasures, ASAP.

49. Jones, R.K. and Joscelyn, K.B. "Identification of General Risk-Management Countermeasures for Unsafe Driving Actions." Vol. 1, Washington, D.C.: Department of Transportation, February 1981.

This study examined unsafe driving actions (UDAs) to develop operational definitions and to identify the traffic crash risk they present. UDAs discussed were speeding, following too closely, and driving left of center. It was found that only the speeding UDA should be given high priority by risk management agencies. The study discusses seven countermeasures to reduce the incidence of speeding. Although the study doesn't discuss alcohol-related driving, many of the speeding countermeasures offered would serve to prevent DWI (e.g., increasing enforcement and use of automatic detection devices). Such measures may increase perceived risk of and actual detection of alcohol-impaired driving.

DWI, risk taking, prevention, countermeasures.

50. Kinder, B. N. "Attitudes Toward Alcohol and Drug Use and Abuse. I. Demographic Data." International Journal of the Addictions. Vol. 10, No. 5, 1975.

The author reviewed the literature concerning the relationship of demographic and personality variables to drug and alcohol-related attitudes. The author found that demographic variables were not generally consistently related to attitudes nor were most personality variables such as authoritarianism, liberalism, introversion-extroversion, and sensation seeking.

Attitudes, alcohol, drugs, demographic factors, psychological factors, religion.

51. Klein, D. "Social Barriers to Traffic Safety." in Seventh International Conference on Alcohol, Drugs and Traffic Safety: Ian R. Johnston (Editor). Canberra: Australian Government Publishing Service, 1979.

This article discusses the need to "broaden our perspective" on traffic safety. It suggests that the level of economic development, value systems and social structure of any given society or culture must be considered when planning traffic safety programs. Further, it suggests that we must develop specific and focused solutions to traffic safety problems that consider the cultural context in which the driving behavior occurs.

Attitudes, social factors, drinking drivers.

52. Klette, H. "Drunken Driving--The Swedish Experience." in Proceedings of the Seventh International Conference on Alcohol, Drugs and Traffic Safety. Ian R. Johnston (Editor). Canberra: Australian Government Publishing Service, 1979.

The author discusses attempts by social scientists and economists to assess the effectiveness of Swedish DWI legislation. His own study has led him to conclude that although the Swedish approach appears to have been relatively effective in relation to drivers in general, it appears to have failed with young drivers and with problem drinkers. He also discusses other social and psychological needs that driving satisfies (e.g., group affiliation and acceptance, self-esteem, and sense of power) and how the perceived risk of detection relates to these psychological elements.

Attitudes, drinking drivers, social factors, psychological factors, problem drinking.

53. Knox, W. "Objective Psychological Measurement and Alcoholism: Survey of the Literature, 1973." Psychological Reports. Vol. 42, 1978.

Literature on alcoholics in the U.S. was examined for objective psychological test data and behavioral measurements. Information was grouped according to problem area and included tests used, significant findings, critical comments, and inferences for therapy and research. The author found that the most consistent flaws in the research reviewed were the failure to report whether alcoholics were detoxified at the time of testing and the failure to report follow-up data for all subjects. Further, the author suggested that more random sampling of participants should be used to improve evaluation effectiveness.

Alcohol, research methodology.

54. Kotarba, J.A. "The Serious Nature of Tavern Sociability." Presented at the Annual Meeting of the Society for the Study of Social Problems. San Diego: University of California, September 1977.

This article discusses the public drinking place as an important milieu for a sociological study of drinking behavior. The author posed as a bartender or regular patron at four neighborhood bars and recorded conversations and drinking behaviors he observed. The purpose was to examine the characteristics of the tavern subculture that encourage drinking and driving. The author found that the regular patrons often shared DWI "coping strategies" (e.g., how to appear sober if pulled over by police) to reduce the risk of apprehension for alcohol-impaired driving. Further, the author found that "regulars" would consider a patron "weak" if he could not drink a lot, "hold his liquor," and drive home safely afterwards.

DWI, drinking behaviors.

55. Lane, J.C. "Alcohol and Transport Safety." in Proceedings Seventh International Conference on Alcohol, Drugs and Traffic Safety. Canberra: Australian Government Publishing Service, 1979.

Lane describes prevention, deterrence, and remediation as three types of DWI countermeasures. He urges avoidance of oversimplification of the problem in selecting countermeasures and argues that both assumptions and quantitative measures ought to be attached to any plan to reduce DWI.

Prevention, drinking behaviors, DWI, countermeasures.

56. Mackay, J.R., Phillips, D.L., and Bryce, F.O. "Drinking Behavior Among Teenagers: A Comparison of Institutionalized and Non-institutionalized Youth." Journal of Health and Social Behavior. Vol. 8, March 1967.

This paper reports the findings of two studies on use, non-use, or misuse of alcohol among New Hampshire youth. The study compares institutionalized delinquents with a sample of junior and senior high school students. The findings revealed that fewer students than delinquents were likely to have continued drinking after their first experience with alcohol; more "serious" drinking occurred among the delinquents; and delinquents drank for tension relief more frequently than did the students.

Alcohol, adolescents, drinking behaviors, delinquents.

57. Maddox, G.L. and McCall, B. "Why People Drink: A Teenage Version." in Chapter 5 of Drinking Among Teenagers. New Haven, CT: College and University Press, 1964.

This book is based on data gathered in 1964; current research tends to suggest that the findings on motives for teenage drinking continue to be relevant today. The main reasons given for drinking included sociability,

self-expression, and anxiety reduction. The authors also discuss other less obvious reasons for drinking among teenagers, including status transformation, group identification, anticipatory socialization, and legitimizing unconventional behavior.

Adolescents, attitudes, psychological factors, demographic factors.

58. Malfetti, J.L. and Winter, D.J. Development of a Traffic Safety and Alcohol Program for Senior Adults. Falls Church, VA: AAA Foundation for Traffic Safety, 1978.

This book describes a program designed to assist older people in recognizing how alcohol consumption habits, driving and pedestrian skills, and aging can combine to cause traffic fatalities.

Alcohol, drinking drivers, countermeasures.

59. McAlister, A., Perry, C., Kellen, J., Slinkard, L. A., and Maccoby, N. "Pilot Study of Smoking, Alcohol and Drug Abuse Prevention." American Journal of Public Health. Vol. 70, No. 7, July 1980.

In this longitudinal study of drug prevention, trained student role models in the experimental school were used to lead six classroom sessions. The sessions emphasized methods to help students diffuse peer pressures to smoke. A second school with an intensive health education course served as the control. Self-reports and breath samples were collected from students of both schools three times yearly for two years. Reported smoking and other drug use decreased among the experimental school students. The authors feel the study provides encouraging evidence that the onset of behaviors like smoking and alcohol can be deterred by training young adolescents to resist the temptation and pressure to smoke.

Adolescents, alcohol education, anti-smoking, prevention, role models, longitudinal study.

60. McLean, N.J. and Campbell, I.M. "The Drinking Driver: A Personality Profile." in Proceedings Seventh International Conference on Alcohol, Drugs and Traffic Safety. Ian R. Johnson (Editor). Canberra: Australian Government Publishing Service, 1979.

This study compared the personality profiles of three groups: 70 convicted drinking drivers, 39 hospitalized problem drinkers, and 39 students rated as "heavy drinkers." The subjects were administered the California Psychological Inventory (CPI) which measures personality adjustment by examining 18 inter-personal and intra-personal characteristics (e.g., responsibility, self-control, and socialization). The scores indicated that the personality make-up of the drinking driver was similar to that of the problem drinker (e.g., both groups scored low on the tolerance, self-control, and responsibility scales). However, the drinking driver consistently scored higher on

the CPI scales than the problem drinker and in most cases, the differences were significant. Thus, the authors conclude that drinking drivers were better adjusted than problem drinkers.

Drinking drivers, BAC, psychological factors.

51. Meck, D.S. and Baither, R. "The Relation of Age to Personality Adjustment Among DWI Offenders." Journal of Clinical Psychology. Vol. 36, No. 1, January 1980.

This study concluded that the treatment needs of DWI offenders 25 years of age and younger are different from the needs of older DWI offenders and female offenders. Offenders under 25 had significantly higher levels of maladjustment and emotional conflicts than did older offenders. Increased consumption among women appears to be related to introversive behavior which may be indicative of underlying personal conflict.

DWI offenders, attitudes, treatment, psychological factors, demographic factors.

62. Moore, M. H. and Gerstein, D. R. Editors. Alcohol and Public Policy: Beyond the Shadow of Prohibition. Committee on Substance Abuse and Habitual Behavior, National Research Council. Washington, DC: National Academy Press, 1981.

This book examines various approaches to preventing alcohol-related problems and evaluates alcohol-related prevention policy. The topics discussed include current prevention models; institutional and normative factors that influence policy making; government regulation; social controls; environmental controls; public information and education programs. In addition, two commissioned papers on drinking and driving are included. One recommendation that seems to underlie both papers is that countermeasures should be as rigorously tested as they are administered.

Drinking behaviors, public information and education campaign, government regulation, prevention, social factors, environmental factors.

63. Moskowitz, Herbert. "Panel: Evaluation of Countermeasures for the Drinking Driver: Introductions and Questions Regarding Drinking Driver Counter-measures." in Proceedings of the Fourth Annual Alcoholism Conference of the National Institute on Alcohol Abuse and Alcoholism Research, Treatment and Prevention. Washington, DC: National Institute on Alcohol Abuse and Alcoholism, 1974.

This opinion piece discusses the need to go beyond the ASAP program which assumes that by modifying the behavior of the problem drinker there will be a reduction in highway fatalities. Moskowitz asks if it might not be more cost effective to attempt to change the behavior of non-problem drinkers who drive and are involved in the majority of alcohol-related accidents.

Accidents, ASAP, drinking drivers.

64. Moss, F. Drinking Attitudes and Practices in Twenty Indian Communities. University of Utah: Western Region Alcoholism Training Center, July 1979.

This study is a comprehensive survey of drinking attitudes and practices in 20 Indian communities. To understand the nature of alcoholism and alcohol abuse among American Indians, the author examined demographic characteristics of drinkers and non-drinkers, attitudes and alcohol consumption behaviors of community leaders, and community-wide attitudes and practices related to alcohol use. Based on the results, the author outlines and summarizes the data that have the strongest implications for alcoholism education programming for Indian populations (e.g., attitudes of leaders toward alcohol education programs).

Alcohol, attitudes, drinking behaviors, American Indians, demographic factors, religion.

65. Mudler, S. and Ferneau, E. "Attitudes Towards Alcoholism Among a Group of College Students." The International Journal of the Addictions. Vol. 6, No. 3, September 1971.

This article presents the findings of a study which compared the attitudes toward alcoholics of 35 undergraduate psychology students with those of the general population. The comparison, while interesting, showed no striking differences between the students and the norm group except in one area: the students were less likely to believe that an alcoholic is unable to control his or her drinking behavior.

Alcohol, attitudes, college students.

66. National Institute on Alcoholism and Alcohol Abuse. Fourth Special Report to the U.S. Congress on Alcohol and Health from the Secretary of Health and Human Services. Washington, DC: U.S. Department of Health and Human Services, January 1981.

This report to Congress provides a detailed account of the current information on alcohol and health in the U.S. that has been developed since the Third Special Report in 1978. Chapter topics include: patterns of alcohol consumption; drinking problems; variations and prevalence; biomedical consequences of alcohol problems; strategies and activities; intervention; treatment and rehabilitation; fiscal and human resources. In the section on intervention, specific attention is given to outlining methods currently being considered for reducing the incidence of drinking driving. The interventions discussed are general deterrence (e.g., high risk of arrest, severity of punishment, and public information and education campaigns), third-party intervention (e.g., pressuring peers not to drink and drive, driving an intoxicated person home, or getting the person a taxi), screening the driving population for potential drinking drivers, and installing detection devices on cars to prevent the alcohol-impaired driver from driving. No recommendations are made.

Alcohol, treatment, problem drinking, biological factors.

67. National Institute for Alcoholism and Alcohol Abuse. Research Monograph No. 1 Alcoholism and Alcohol Abuse Among Women: Research Issues. Washington, DC: United States Department for Health and Human Services, 1980.

This monograph summarizes the proceedings of a workshop on women and alcohol abuse. The major areas covered were: epidemiology of male/female drinking over the last half century; biological and psychosocial consequences of alcohol for women; and risk and education research. Each section summarizes the current state of knowledge, suggests future research issues, and provides summary recommendations.

Alcohol, prevention, epidemiology, biological factors, psychosocial factors.

68. National Institute for Alcohol Abuse and Alcoholism. Research Monograph No. 3: Normative Approaches to the Prevention of Alcohol Abuse and Alcoholism. Washington, DC: United States Department of Health, Education and Welfare, 1980.

This monograph summarizes the proceedings of a symposium on alcohol abuse which focused on major theoretical explanations of alcohol consumption patterns and their implications for prevention. Presentations on the "Sociocultural Model" and the "Distribution of Consumption Model" are included along with discussions on "Availability and Prevention of Alcohol-Related Problems" and efforts to synthesize the major concepts from all models and approaches.

Alcohol, theoretical models, prevention, drinking behaviors.

69. National Institute on Alcohol Abuse and Alcoholism. National Drug and Alcoholism Treatment Utilization Survey. Washington, D.C.: Department of Health and Human Services, June 1981.

This report summarizes the results of a national survey on drug and alcoholism treatment program in four areas: national profile (description of alcoholism treatment programs and clients in treatment); funding sources; treatment capacity and utilization; and staffing. In addition, the 1979 survey results are compared with data obtained from the 1980 survey.

Alcohol, drugs, treatment, questionnaires.

70. National Highway Traffic Safety Administration. Compendium of Highway Safety Questionnaire Items. Washington, D.C.: Department of Transportation, 1980.

This compendium contains questionnaire items and results (when furnished) used in state and national surveys during 1976 to 1980. The compendium is organized by safety issues into item groups that reflect drivers' attitudes, behaviors, and knowledge; of relevance to this project is the section on "Drinking and Driving."

Drinking drivers, attitudes, drinking behaviors, questionnaire.

71. Nichols, J.L., Weinstein, E.B., Ellingstead, V.S., Struckman-Johnson, D.L., and Reis, R.E. "The Effectiveness of Education and Treatment Programs for Drinking Drivers: A Decade of Evaluation." Washington, DC: National Highway Traffic Safety Administration, 1980.

In favoring general deterrents (e.g., high police visibility for persons not yet arrested for DWI) over specific deterrents (e.g., alcohol education or treatment programs for persons arrested for DWI), the authors argue for laws and sanctions that would increase the risk of apprehension and arrest rates for DWI. Education programs were found to have no effect and failed to reach the DWI offender until after an accident occurred.

DWI offender, risk-taking, countermeasures.

72. O'Rourke, T.W. and Barr, S.L. "Assessment of the Effectiveness of the New York State Drug Curriculum Guide with Respect to Drug Attitudes." Journal of Drug Education. Vol. 4, No. 3, 1974.

The purpose of this controlled investigation was to assess the effectiveness of a revised drug education curriculum. The curriculum was introduced in a Nassau County high school and administered for six months. A post-test attitude survey was administered to students who received the revised curriculum and to students who received a regular health education course in a comparable high school. Overall, students in the experimental school reported more favorable attitudes toward non-usage of drugs. However, differences between schools disappeared when the scores were compared by sex. Girls in both schools reported more favorable attitudes toward non-usage of drugs than boys. The authors concluded that the fact that females are usually less likely than males to use drugs may account for the differences between sexes.

Drugs, attitudes, adolescents, demographic factors.

73. Pankau, J.W., Romer, K.G., Mortimer, R.G., and Stone, D.B. "An Educational Approach for Court Referred DWI Offenders." Presented at the 50th Annual Research Convention of the American School Theater Association in New Orleans. Champaign, Illinois: Department of Health and Safety Education, University of Illinois, 1976.

This study examined how problem drinkers and nonproblem drinkers compare on DWI knowledge and attitude tests before and after participation in a DWI course. As part of Champaign County's DWI outreach program, the 191 DWI offenders used in the study were also diagnosed as social, presumed problem, or problem drinkers by means of the Mortimer-Filkin's test. The authors reported that their findings support previously reported studies in that the majority of the DWI students were problem drinkers, in particular, the 16-19 year olds, females, people who were separated or divorced, and heavy smokers.

Further, post-test scores showed a significant increase in alcohol and driving knowledge across all groups. The authors recommended that DWI educational programs should also provide alcoholism treatment referral.

DWI offenders, alcohol education, demographic factors.

74. Pederson, L.L., Baskerville, J.C., and Lefcoe, N.M. "Change in Smoking Status Among School-Aged Youth: Impact of a Smoking-Awareness Curriculum, Attitudes, Knowledge and Environmental Factors." American Journal of Public Health. Vol. 71, No. 12, 1981

This study, conducted in Canada, involved children in grades 4 to 8 from 20 schools. The purpose of this study was to examine the relationship between a number of predictor variables and change in smoking status over three years. The schools were divided equally into experimental and control groups with the experimental group being exposed to a smoking-awareness curriculum in health class. Exposure to the curriculum was not found to be significant. In addition, the results indicated that change in peer smoking was associated with change in smoking status.

Adolescents, anti-smoking, attitudes, peers.

75. Pelz, D.C., McDole, T.L., and Schuman, S.H. "Drinking-Driving Behavior of Young Men in Relation to Accidents." Journal of Studies on Alcohol. Vol. 36, No. 7, 1975.

Data collected from a survey of 1670 young men indicated that by age 20 over half the sampled men drank at least once weekly and drove after drinking at least once a month. Alcohol was involved in 3.8% of all crashes of 20 year olds. The highest accident rate without alcohol involvement occurred at ages 18-20, whereas most alcohol-related accidents occurred at ages 22-24.

DWI, drinking behaviors.

76. Pelz, D.C. and Schuman, S.H. "Drinking, Hostility and Alienation in Driving of Young Men." in Proceeding of the Third Annual Alcoholism Conference of the National Institute on Alcohol Abuse and Alcoholism. Alcoholism: A Multilevel Problem Treatment, Organization and Management, Morris E. Chafetz, M.D., (Editor). Washington, DC: USDHEW, NIAAA, 1974.

This study is based on interviews with 1,700 young men. The findings indicated that the highest rates of crashes and citations occurred not when starting to drive at around age 16, but two or three years later at age 18 or 19. Infractions rose for young men who were both hostile and alienated from the school systems and especially if they were both hostile and alienated (having rejected or been rejected by the school system apparently led to the rejection of traffic laws as well). Analyses indicate two distinct age peaks for young men: one at 18 for crashes not involving alcohol and a second at 22 or 23 for

crashes involving alcohol. These findings suggested to the authors that it takes two years to learn how to drive and another two years after the legal drinking age to learn how to drink and drive.

Alcohol, drinking drivers, adolescents, demographic factors, psychological factors.

77. Perry, C., Killen, J., Telch, M., Slinkard, L.A., and Danaher, B.G. "Modifying Smoking Behavior of Teenagers: A School-Based Intervention." American Journal of Public Health. Vol. 70, No. 7, 1980.

This study investigated the effectiveness of a smoking prevention program conducted during one semester of tenth grade health classes. Three schools participated in the experimental program. Two control schools received only information on the long-term harmful effects of smoking during three days of health class. Physiological tests and questionnaires were used to measure smoking behavior of all students. The results indicated a significant decrease in smoking among the students in the experimental schools on each dependent measure including self-reported behavior and carbon monoxide levels. Although the authors were encouraged by the results, they recommended that additional research be conducted to assess the long-term effectiveness of the program.

Prevention, anti-smoking, adolescents, questionnaire.

78. Pomerleau, O., Pertschuk, M., Adkins, D., and Brady, J.P. "A Comparison of Behavioral and Traditional Treatment for Middle Income Problem Drinkers." Journal of Behavioral Medicine. Vol. 1, 1978.

This study examined similarities and differences between behavioral treatment and "traditional" denial-confrontation therapy. Thirty-two out-patient problem drinkers were randomly assigned to one of the two treatment groups. Although participants reduced their alcohol consumption significantly in both treatments, based on other indicators (i.e., dropout rates, alcohol consumption levels prior to treatment), the authors concluded that the behavioral treatment was more successful.

Alcohol, treatment, problem drinking.

79. Robertson, L.J. "Crash Involvement of Teenaged Drivers When Driver Education is Eliminated from High School." American Journal of Public Health. Vol. 70, No. 6, 1980.

This study examined the effect of eliminating driver education curricula from the high school and compared crash involvement rates for 16 and 17 year olds from communities where driver education was still being offered. In

Connecticut school systems where driver education courses were eliminated, the number of 16-17 year olds who became licensed was substantially reduced, as were the number of crashes for that same group.

Prevention, driver's education, accidents, adolescents.

80. Rohsenow, D.J. and O'Leary, M.R. "Locus of Control Research on Alcoholic Populations: A Review: I. Development, Scales, and Treatment." International Journal of the Addictions. Vol. 13, No. 1, 1978.

Locus of control research on alcoholism investigates the extent to which an alcoholic perceives the outcomes of events as contingent upon his/her behavior (internality) or beyond his control (externality). The aim of most alcoholism treatment programs is to teach alcoholics to become more responsible for their behavior. The article reviews methods for assessing a patient's locus of control orientation prior to treatment and the degree to which the patient changes as a result of treatment. When treatment programs were examined, the authors found that some alcoholics became more internal over the course of treatment while others showed no significant change.

Locus of control, alcohol, treatment.

81. Rooney, J.F. "The Influences of Informal Control Sources Upon Adolescent Alcohol Use and Abuse." Unpublished paper. Washington, D.C.: Catholic University of America, 1981.

This study examined high school students' responses to a questionnaire that measured student alcohol use and the use patterns of close friends, parents, and teenage peers. The author found that an adolescent's personal standards and the standards of close friends exerted more influence on the adolescent's alcohol use than peer or parental standards.

Alcohol, attitudes, adolescents, peers, parents, social factors, questionnaires.

82. Rooney, J. and Schwartz, S. "The Effect of Minimum Drinking Age Law Upon Adolescent Alcohol Use and Problems." Contemporary Drug Problems. Vol. 6, No. 4, 1977.

This study surveyed 4,065 high school students to examine several variables that past research has identified as influencing alcohol consumption. The study focused on the relationship between informal controls such as self-standards, peer standards, parental norms and parental drinking practices, and formal controls such as minimum drinking age laws. The results indicate that interpersonal processes effect adolescent drinking patterns more than laws that prescribe the minimum age for drinking. Further, the study documents the problem of enforcing laws that are opposed by the group or that contradict the norms of an important reference group.

Alcohol, drinking behaviors, adolescents, social factors, legal countermeasures.

83. Rosenberg, N., Laessig, R.H., and Rawlings, R. "Alcohol, Age, and Fatal Traffic Accidents." Quarterly Journal of Studies on Alcohol. Vol. 35, 1974.

This study is based on data collected on 753 white male drivers killed in passenger cars in Wisconsin during a 39-month period. It examined the role of alcohol in single-car crashes as compared with two-car crashes. Higher BAC levels were found in drivers killed in one-car than in two-car accidents, in drivers involved in nighttime and weekend accidents than weekday accidents, and among drivers under age 30.

BAC, accidents, demographic factors.

84. Ryan, G.A. and Salter, W.E. "Drinking Habits, Social Change, and Blood Alcohol Concentrations of Road Crash Casualties." in Proceedings of the Seventh International Conference on Alcohol. Ian R. Johnson (Editor). Canberra: Australian Government Publishing Services, 1979.

This study attempted to determine the social characteristics and drinking patterns of persons hospitalized after car crashes and to relate these to their Blood Alcohol Concentration levels (BAC). The results indicated that one-fourth of the drivers had BAC's exactly the legal limit. However, twenty percent of the male drivers had BAC's of .150 percent, a level considered to reflect problem drinking. Biographical variables did not differentiate between those above and below the legal limit (except by sex).

BAC's, accidents, social factors, demographic factors.

85. Sadler, M. "A Pilot Program in Health Education Related to the Hazards of Cigarette Smoking." Rhode Island Medical Journal. Vol. 52, 1969.

The smoking habits and attitudes of sixth grade students who received a health education program were compared with students of the same grade and school who did not participate in the class. A pre-test, post-test questionnaire was administered to students who received the health education program and a post-test only to students who did not participate in the program. When smoking habits of students who participated in the health education programs were compared with the nonparticipating students, the results showed no significance at all. Students' smoking habits and attitudes differed overall between year one and two with fewer students smoking in both groups. The authors concluded that peer influence and pressures to conform play a powerful role in teen smoking habits.

Anti-smoking, attitudes, peers, adolescents.

86. Sanchez-Dirks R. "Drinking Practices Among Hispanic Youth." Alcohol Health and Research World. Washington, DC: U.S. Department on Health and Human Services, Winter 1978.

A questionnaire was administered to a group of "Anglo" and Hispanic teenaged males. The author found commonalities between the two groups related to the amount of drinking. Students who drank more had lower grades, valued peer opinion more, and had more spending money. Some differences that were found between the two groups with regard to attitudes toward and reasons for drinking were that Anglo students drank more for a good time than Hispanics. Hispanic students tended to report more drinking related to relieving social and academic pressures. The author suggests that alcohol education should be introduced in the early grades.

Alcohol, adolescents, attitudes, demographic factors, drinking behaviors.

87. Sandler, I., Palmer, S., Holmen, M., and Wynkoop, R. "Drinking Characteristics of DWI Individuals Screened as Problem Drinkers." Presented at 6th International Conference on Alcohol, Drugs, and Traffic Safety in Toronto, Canada. Phoenix, AR: St. Luke's Hospital Medical Center, 1974.

Using a sample of 281 DWI subjects screened as "high risk" problem drinkers, it was determined that a large percentage of drunk drivers are potential clients for alcoholism rehabilitation. The authors concluded that the reduction of DWI must rely on intervention in the broader population of problem drinkers--a group which frequently drives while intoxicated. Further, the authors feel that in order to adequately deal with the problem, greater cooperation is needed between the judicial corrections system and the alcoholism rehabilitation system.

DWI offenders, problem drinking, demographic factors, treatment.

88. Sargent, M.J. "A Cross-Cultural Study of Attitudes and Behavior Towards Alcohol and Drugs." British Journal of Sociology. Vol. 10, 1971.

The purpose of this study was to examine the relationship between cultural attitudes toward alcohol use (e.g., abstinence, conviviality, and utilitarian) and problem drinking in four cultures--Australian, Jewish, Chinese, and Japanese. The article is based on the results of a questionnaire that was given to 1,823 Australian, Jewish, and Chinese undergraduates in four Sydney universities. The Japanese sample (278 students) was drawn from four universities in northern Japan. The author predicted that reported heavy and problem drinking would be higher among Australian men than any other group and that infrequent light drinking and abstinence would be reported more by Japanese women, Jews, and Chinese than by Australians. Most of the predictions were not confirmed because of reported Jewish drinking patterns. The author found that with the exception of heavy drinking, the amount and frequency of drinking were similar among the Jewish and Australian students.

The author attributed these similarities to acculturation of Jews to Australian society. Further, he concluded that despite the similarities between Jewish and Australian drinking patterns, in Chinese and Japanese cultures the investigation demonstrated a relationship between cultural attitudes and low rates of alcoholism.

Alcohol, drugs, attitudes, social factors, drinking behaviors.

89. Scoles, P. and Fine, E. "Short-Term Effects of an Educational Program for Drinking Drivers." Journal of Studies on Alcohol. Vol. 38, 1977.

In a study of 122 DWI first-offenders, the authors found that participation in an educational program did not have an impact on the offenders' alcohol drinking patterns or alcohol-impaired behavior. Questioning the utility of educational countermeasures, they encourage further study of alternative educational designs, more reliance on alcoholism treatment for DWI offenders, and comprehensive programming that allows for individualized treatment.

DWI offenders, alcohol education, treatment, drinking behaviors.

90. Selzer, M. and Barton, E. "The Drunken Driver: A Psychosocial Study." Drug and Alcohol Dependence. Vol. 2, 1979.

In this comparison study of alcoholics, drunk drivers, and licensed drivers, the authors found that the scores of the drunk drivers fell between the other two groups on most measures of psychosocial characteristics. Sixty-eight percent of drunk drivers were identified as alcoholics; they were more aggressive, more depressed, and had lower self-esteem, less sense of responsibility, and less self-control than the control group of licensed drivers. Their impulsive tendencies were seen as a complicating factor in deterrence.

DWI offenders, alcohol, drinking behaviors, psychological factors.

91. Simpson, H. "The Impaired Driver Problem vs. the Impaired Problem-Driver." Transportation Associated Life Insurance Medical Directors of America. Vol. 61, 1978.

According to Simpson, DWI countermeasures have failed because they do not discriminate between subgroups of impaired drivers (e.g., the inexperienced drinker, problem drinker, and occasional drinker) and do not deter those most "at risk" and least apprehendable--the problem drinker. The person who is likely to be detected and apprehended is the social or occasional drinker who has the lowest risk of collision. The complexity of developing adequate countermeasures is also discussed.

DWI offenders, accidents, countermeasures, risk-taking.

92. Stacey, B. and Davies, J. "Drinking Behavior in Childhood and Adolescence: An Evaluative Review." British Journal of Addiction. Vol. 65, 1970.

Although the quality of available data on the development of drinking behavior among children and adolescents is questionable, the authors concluded that legal or control strategies do not deter the onset of problem drinking. Furthermore, informal social controls (e.g., restrictive or disapproving attitudes in family or by institutions toward alcohol use) may instead increase the number of problem drinkers. Alcohol education programs directed at parents, teachers, youth, and others are encouraged.

Alcohol, family, adolescents, social factors, drinking behaviors.

93. Sterling-Smith, R. and Fell, J.C. "Special Accident Investigation Studies. The Role of Alcohol/Drug Involvement." in Proceeding of 16th Conference of the American Association for Automotive Medicine. Chapel Hill: University of North Carolina, 1972.

Problem drinkers and chronic risk-takers were found among the 50 operators involved in fatal accidents in Boston during an 8-month period; 42 percent of the drivers were driving under the influence (DUI) at the time of the collision and 48 percent of all the drivers had previously been arrested for reckless driving. Depression, tension, and fatigue were among the human factors related to DUI. Findings are preliminary but human factors appear to be important in approaching solutions for drinking and risk-taking drivers.

DWI offenders, accidents, drinking behaviors, risk-taking.

94. Teknekron Research, Inc. "Drinking and Driving." 1979 Survey of Public "Perceptions" on Highway Safety. Washington, DC: Department of Transportation, National Highway Traffic Safety Administration, July 1979.

A national sample of 1,500 licensed drivers were interviewed concerning their attitudes, knowledge, and behavior with respect to driving after drinking. The survey assessed driver's awareness of public information and education campaigns and their perceptions of accident risk.

Attitudes, public information and education campaign, risk-taking, drinking drivers.

95. Terris, W. "Attitudinal Correlates of Theft, Violence, and Drug Use." Presented at the Seventeenth Inter-American Congress of Psychology, Lima, Peru. Chicago: DePaul University, 1979.

This study measured the relationship between attitudes and behavior in the areas of theft, violence, and drug abuse. Using college students from DePaul University, the author administered tests and questionnaires that measured

attitudes and behaviors related to the three areas. The results indicated that students who scored high on scales that measured dishonest and violent tendencies also scored high on drug-abuse scales. There was also a corresponding tendency for these students to admit to having been involved in criminal acts. Although the study does not distinguish alcohol within the drug use category, the findings did indicate that, in general, subjects saw drug use as prevalent and tended to have tolerant attitudes toward drugs even when they did not use them personally.

Drugs, attitudes, psychological factors, questionnaire.

96. Tolor, A. "The Attitude Toward Alcoholism Scale: A Measure of Attitudes Toward Alcoholics and the Nature and Causes of Alcoholism." Presented at the Annual Meeting of the Eastern Psychological Association, Philadelphia, Pennsylvania, Fairchild, Connecticut: Institute for Human Development, Fairfield University, 1974.

Using an attitudinal scale devised by the author, this study examined the development of attitudes toward alcoholism. The scale included items for the following categories: psychological ecology, social rejector, physical-genetic ecology, moral weakness, humanism, and medical illness. The findings suggest that neither age nor education appeared to influence attitudinal responses, but that personal drinking patterns and acquaintance with alcoholics contribute to the development of attitudes toward heavy alcohol consumption.

Alcohol, attitudes, psychological factors, drinking behaviors, social factors.

97. Veevers, J.E. "Drinking Attitudes and Drinking Behavior: An Exploratory Study." Journal of Social Psychology: Vol. 85, 1971.

The reliability of five attitude measures was tested (three attitude scales--SI, EAI, and Likert scales--a self-rating scale and a single item poll) and compared with reported drinking behavior. The author determined that in terms of validity, all of the attitude indices showed positive degrees of association with reported drinking behaviors. However, the author could not recommend using scaling methods over single item polling based on the positive outcomes of both methods.

Alcohol, attitudes, drinking behaviors.

98. Voas, R.B. "A Systems Approach to the Development and Evaluation of Countermeasure Programs for the Drinking Driver." Proceedings of the Fourth Annual Alcoholism Conference of the National Institute on Alcohol Abuse and Alcoholism Research, Treatment and Prevention. Morris, E. Chafetz (Editor) Washington, D.C.: U.S. Department of Health, Education and Welfare, 1974.

Electing to focus on the drinking driver most at risk of being involved in a crash, the author discusses deterrence of DWI among heavy drinkers. He distinguishes between the problem drinker and the alcoholic and believes that general DWI deterrence measures work only to prevent the drinker in control of his drinking from driving while under the influence. Heavy drinkers require more specific deterrents (e.g., treatment programs, fines, and penalties) once they are exposed to the court system. However, a major problem is "flexing" in the judicial system (the informal system which allows more flexibility in sentencing for the individual case such as off-the-record decisions) which interferes with the problem drinker receiving the service he/she needs. The author feels that good evaluations of countermeasure programs cannot occur until specific deterrents are consistently enforced.

DWI offenders, alcohol, drinking behaviors, countermeasures.

99. Waller, J.A. "Suggestions for Educational Programs about Alcohol and Highway Safety." Traffic Safety Research Review. Vol. 2, No. 3, 1968.

This article outlines some basic guidelines for alcohol education programs for both drivers and pedestrians. The author identifies the populations that should receive such programming, including the elderly, children, judges, police and legislators. Further, examples of the types of information each group needs in order to modify drinking-driving or drinking-walking behavior are offered.

Alcohol education, drinking drivers, demographic factors.

100. Warheit, G.J., Bell, R.A., Ubieta, R., and Melevin, P.T. "A Socio-Psychiatric Assessment of the Driving While Intoxicated Offender: An Empirical Investigation." Eustis, Florida: Lake-Sumter Community Mental Health Center, n.d.

The object of this study was to construct a comprehensive, multi-dimensional profile of the DWI offender. Three hundred and forty-five adults attending court ordered classes were examined. The profile is based on descriptions of socio-demographic functioning, physical and mental health characteristics, and drinking behavior. The authors developed profiles of two types of DWI offenders. The Type I DWI offender is a white male between the ages of 20 and 50, who is married, has a full-time skilled or semi-skilled job and less than a high school education. This type of DWI offender is a heavy drinker who drinks for social reasons but seldom gets in trouble with his spouse or employer as a result of his drinking, and does not believe he is a problem

drinker. The Type II DWI offender more closely resembles the alcoholic. He is a white male between the ages of 40 and 60, who is widowed, separated, or divorced, and is often unemployed. Unlike the Type I DWI, he is aware of his problem and aware that his friends and/or spouse regard his drinking as excessive. The authors suggest that society can deal with the Type I DWI by sensitizing them to their potential problems. However, more stringent regulations, enforcement, and penalties may be needed to deter the Type II DWI since education programs have not been very effective in changing their drinking (or driving) behaviors.

DWI offenders, attitudes, social factors, demographic factors.

101. Weissbach, T.A. and Vogler, R.E. "Implications of a Social Learning Approach to the Prevention and Treatment of Alcohol Abuse." Contemporary Drug Problems. Vol. 6, No. 4, 1977.

This overview of alcohol abuse stresses the need for a social learning model that accentuates the importance of imitation and modeling in the development of alcohol consumption habits. It makes the point that the majority of alcohol abusers come from backgrounds where either drinking or total abstinence is common, hence, a "role model" in moderation is missing. Although little can be done in terms of monitoring parental behavior, the authors suggest providing more media examples of controlled drinking.

Alcohol, theoretical models, biological factors, prevention.

102. Weschler, H. and Thum, D. "Teenage Drinking, Drug Use, and Social Correlates." Quarterly Journal of Studies on Alcohol. Vol. 34, 1973.

This study of high school students was based on a questionnaire that focused on four areas: (1) use of alcoholic beverages and illicit drugs, (2) participation in delinquent activities, (3) personal and social characteristics, and (4) perceptions of the extent of drinking among friends and peers. The findings indicated that illicit drug use is reported more by heavy alcohol users than light drinkers. It was also suggested that the drinking habits of senior-level high school boys and girls are more similar than previous studies have found.

Adolescents, alcohol, drugs, social factors, drinking behaviors, questionnaire.

103. Whitehead, P.C., Craig, J., Longford, N., MacArthur, C., Stanton, B., and Ferrence, R. "Collision Behavior of Young Drivers, Impact of the Change in the Age of Majority." Journal of Studies on Alcohol. Vol. 36, No. 9, 1975.

The number of collisions experienced by young male drivers in London, Ontario, was compared before and after the reduction in the legal age (from 21 to 18) for drinking and purchasing alcoholic beverages. The findings indicated that

the change in the law led to an increase in the collision involvement of young drivers.

DWI offenders, legal countermeasures, accidents.

104. Widseth, J.C. and Mayer, J. "Drinking Behavior and Attitudes Toward Alcohol in Delinquent Girls." The International Journal of the Addictions. Vol. 6, No. 3, 1971.

This paper describes alcohol usage and attitudes toward drinking among a group of delinquent girls in Massachusetts. It also investigated the relationship between the subjects' drinking patterns and their personal drinking histories, activities, attitudes toward alcohol use, and parents' drinking behavior. The most striking finding was that delinquent girls drink much more frequently and pathologically than either non-delinquent girls or delinquent boys.

Alcohol, drinking behaviors, adolescents, attitudes, delinquency.

105. Wilde, G.J.S. "A Psychological Study of Drivers' Concern for Road Safety and Their Opinions of Various Public Policy Measures Against Drinking and Driving." Proceedings of the Seventh International Conference on Alcohol, Drugs, and Traffic Safety. Ian R. Johnson (Editor). Canberra: Australian Government Publishing Service, 1977.

This study was based on a questionnaire concerning attitudes for road and driving safety. Reported are respondents' attitudes toward (1) doubling the price of alcohol, (2) raising the drinking age to 21, (3) reducing the legal BAC level, and (4) doubling the penalties for DWI.

Attitudes, BAC, government regulation, questionnaire.

106. Williams, A. and Wells, J. K. "The Tennessee Child Restraint Law in its Third Year." American Journal of Public Health. Vol. 71, No. 2, 1981.

This study investigated the effectiveness of a Tennessee seat belt law enacted in 1978. The law requires parents or legal guardians to use child restraint systems when transporting children four years of age and younger. In the law's third year, child restraint usage in Knoxville and Nashville, Tennessee, was compared with child restraint usage in Lexington and Louisville, Kentucky, where no child restraint laws exist. The authors observed a marked increase in child restraint use in Knoxville and Nashville as compared with the Kentucky cities. However, the authors caution against optimism about the results because of the remaining large percentage of children who travel in cars without benefit of child restraints.

Legal countermeasures, technological countermeasures.