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The Health Belief Model and Drinking and Driving

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THE HEALTH BELIEF MODEL AND DRINKING AND DRIVING

By

Teresa Ellen Tucker

A THESIS

Submitted to
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ABSTRACT

THE HEALTH BELIEF MODEL AND DRINKING AND DRIVING

By

Teresa E. Tucker

The purpose of this study was to identify differences in health beliefs of individuals convicted of driving under the influence of alcohol (DUI) with a history of an alcohol-related MVC and individuals convicted of DUI with no such MVC history. The Health Belief Model variables include seriousness, susceptibility, benefits, barriers and health motivation. It was hypothesized that health beliefs of individuals convicted of DUI and with a history of an alcohol-related MVC would be different from individuals convicted of DUI but with no such MVC history. A demographic assessment tool and Health Belief questionnaire designed for this study were used collect data. Eighty-four subjects convicted of DUI (26 with a history of an alcohol-related MVC, 58 without). The only statistically significant difference in health beliefs was health motivation. Individuals with a previous history of an alcohol-related crash scored higher than those individuals without.

Dedication

Dedicated to my fiancée, Mark L. Holbrook for his unfailing encouragement and support. This is also dedicated to my parents who stressed upon me at an early age the importance of education.

Acknowledgements

I sincerely appreciated Andrea Bostrom, Ph.D., R.N., the chairperson of my thesis committee. Her knowledge, insight, expertise and support have made this all possible. I am thankful for her support, time and flexibility throughout this long process.

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CHAPTER 1

INTRODUCTION

Why do people engage in activities that they know are detrimental to their health? This question continues to come up time and time again. People choose to smoke, have sex without condoms and many people drink and drive. These activities can be harmful, yet the knowledge that it is potentially dangerous does not change behavior.

In the area of drinking and driving, not only is it dangerous, but it is also against the law. For some, legal intervention is not enough to enforce compliance. For people who drink and drive one wonders what their health beliefs are. This study will explore this issue.

Trauma and Alcohol Usage

In the 1960s trauma was recognized as a neglected disease, but in the last five years greater attention has been given to trauma and its etiologies. According to C. Everett Koop (1989), former Surgeon General of the United States Public Health Services, injuries and death from alcohol-related driving are two of the most serious problems facing Americans. Alcohol is a leading factor in motor vehicle crashes (MVC), being involved in over half of the traffic fatalities in 1987. Each year, approximately

560,000 people suffer injuries in alcohol-related MVCs. This is an average of one person injured every minute (Fell & Nash, 1989). Despite these data, mechanisms do not exist in the majority of trauma systems to identify and/or treat alcoholism. The major focus has been on the treatment of the injuries rather than the alcoholism itself.

Trauma is the leading cause of death for alcoholics, not cirrhosis, hepatitis or pancreatitis. The cost of treatment for alcoholism ranges from \$8,000 to \$15,000, however, the cost of prolonged hospitalization and long-term disability secondary to trauma is considerably higher (Gentilello et al., 1988).

Studies indicate that over half of all people sustaining a head injury have been drinking (Sparadeo & Gill, 1989). Some studies reveal that patients with alcohol in their system tend to have a lower level of consciousness when admitted and longer duration of coma, resulting in longer hospital stays (Sparadeo & Gill, 1989). Those sustaining head injuries go through various stages of recovery, and the agitation phase of recovery is one of these stages. Sparadeo and Gill (1989) documented that alcohol consumption and head injury are closely linked, and they noted that the duration of the agitation phase of recovery was significantly longer in intoxicated patients than in non-intoxicated patients. In addition, patients who were intoxicated prior to injury had a lower cognitive

status at the time of hospital discharge than did those who were not intoxicated. They also found that individuals sustaining head injuries secondary to alcoholism, even those with lasting deficits, are likely to return to drinking.

A major obstacle in the treatment of alcoholism is denial by the patient and the patient's family. Blood alcohol levels provide blunt, objective evidence that are used to break through the wall of denial (Clark, 1985). "The National Council of Alcoholism has agreed that the act of driving a car while intoxicated may by itself allow a diagnosis of alcoholism, and certainly should be suggestive. A blood alcohol content of 300mg/dL or withdrawal symptoms provide indisputable evidence of alcohol dependence" (Clark, 1985). All of this evidence gives health care providers strong indicators of alcoholism and therefore the opportunity to intervene. Gentilello et al. (1988) found that intervention performed immediately upon discharge from the trauma service was successful in initiating alcohol treatment.

This certainly presents a challenge to physicians, nurses, law enforcement agencies, alcohol treatment centers and major trauma centers. Unfortunately, alcoholism is usually not addressed by medical professionals except as the source of crude jokes. If a former patient returns to the hospital maimed from a second alcohol-related injury, the failure to previously diagnose and treat the individual's

alcoholism is not considered malpractice or even poor medical care in today's society (Gentilello et al., 1988). This attitude toward failure to diagnose and treat alcohol abuse is unique compared to other chronic disorders (Waller, 1990). Early recognition provides an important opportunity for early intervention and prevention of repeated alcohol-related injury.

Problem and Research Question

The purpose of this study is to identify differences in the health beliefs of those individuals who have been convicted of driving under the influence (DUI) of alcohol and have a history of an alcohol-related motor vehicle crash compared to those individuals that have been convicted of DUI but with no history of an alcohol-related motor vehicle crash. The dependent variable is one's health beliefs. The independent variables are the modifying factors of a history of MVC and/or DUI.

The health beliefs of individuals help determine their health behavior but other variables affect health behavior as well. A few others are locus of control and knowledge level about a subject. Health beliefs include an individual's perceived susceptibility to a condition, the seriousness of the condition, perceived benefit of an action, perceived barrier of an action, stimulus or cue to action, health motivation (or the tendency to take part in healthy behavior), and modifying factors such as

demographic, sociopsychologic and structural factors (Champion, 1984).

The Health Belief Model (HBM) offers a theoretical basis to do this. The model was originated in the early 1950s by Hochbaum, Kegeles, Lerenthal and Rosenstock (Mikhail, 1981). It was originally devised to explain the failure of persons to accept preventive health measures or to seek screening for the early detection of asymptomatic disease (Rosenstock, 1974). The model stated that in order for an individual to take appropriate action to avoid a disease he/she would need to believe one of the following: (1) that he/she was personally susceptible to it, (2) that the occurrence of the disease would result in severe consequences on some component of his/her life, (3) that taking a particular action would be beneficial resulting in a reduction in his/her susceptibility to the condition or severity of the condition, (4) that overcoming important psychological barriers such as cost, inconvenience, pain, and embarrassment would be worth it to him/her (Rosenstock, 1974). The HBM states that one's behavior is the direct result of one's health beliefs. The cause of one's behavior must first be understood before one can determine methods to influence it. Several variables affecting health behavior have been identified. In this study the focus is on the difference between the health beliefs of drivers who have been convicted of DUI and have a history of involvement in

an alcohol-related MVC, and those drivers convicted of DUI
land with no history of an alcohol-related MVC.

CHAPTER 2

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Drinking and Driving

The consequences of alcoholism and alcohol abuse are significant in terms of adverse health effects, health care costs, lost earnings and decreased productivity. The nation has recognized that alcoholism and alcohol abuse are a problem, and in 1990 nineteen health objectives were developed which address the misuse of alcohol and other drugs (Johnson, 1990). The focus of these objectives is to make adolescents aware of the risks associated with using alcohol or other drugs. A few of the objectives aim at decreasing fatalities from alcohol-related motor vehicle accidents and decreasing the mortality rate from cirrhosis.

Early intervention in the trauma patient with alcohol-related injuries is often absent. Waller (1990) stated that a patient does have to feel enough psychic pain from the effects of the disease to be motivated for change. The best time for such motivation is when the patient is still scared and hurting from trauma, but yet the blood alcohol concentration has diminished enough so that the patient can understand and discuss options.

Macdonald and Pederson (1988) investigated the driving

behaviors of male alcoholics in order to better understand the role of alcoholism in driving behaviors. Two hundred fifty-eight male alcoholics receiving treatment for alcoholism completed a self-administered questionnaire about their driving behavior. Their official driver records were also accessed. On the average, the surveyed men were driving 8.6 days per month after consuming alcohol at the legal level of impairment in Canada. About 88.3% of the sample reported driving while impaired. Those with multiple DUI arrests drove while impaired more frequently than people with zero DUI arrests. Multiple offenders had significantly more total collisions than those non-offenders (Macdonald & Pederson, 1988). One of the reasons for the high prevalence of impaired driving in this population is that the chances of being apprehended are low (Macdonald & Pederson, 1988). The HBM would refer to this as a decrease in the perceived susceptibility of being apprehended. A limitation of this study is that only male subjects were administered the questionnaire.

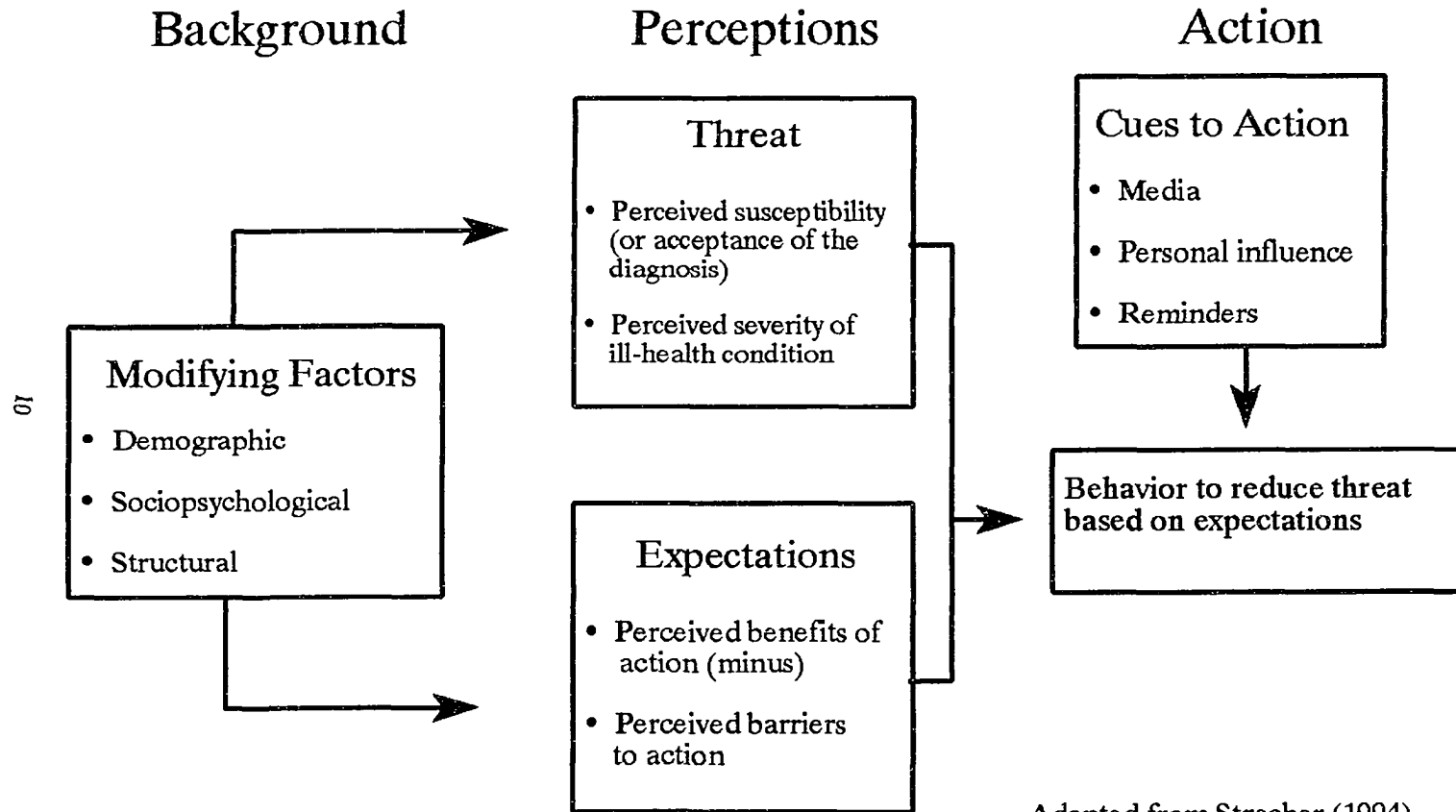
Conceptual Framework

Several variables that affect health behavior have been identified by the Health Belief Model. Figure 1 contains a diagram describing the Health Belief Model (HBM). Although originally devised to explain the failure of persons to accept preventive health measures or to seek screening for the early detection of asymptomatic disease, the Health

Belief Model has been valuable in predicting patient compliance with certain medical regimens (Rees, 1985). The definitions listed below are adapted from Rosenstock (1974).

Two variables in the model describe the threat to the individual. These are perceived susceptibility and perceived seriousness. Perceived susceptibility is the individual's own subjective risks of contracting a condition. This may occur when an individual denies any possibility of contracting a given condition, or when a person admits to the "statistical" possibility of a disease occurrence but that it would not be likely to happen to him or her, or when a person expresses a feeling of real danger of contracting the condition. Perceived seriousness is the subjective conviction concerning the seriousness of a given

Figure 1: The Health Belief Model



health problem. The degree of seriousness may be judged by the degree of emotional arousal created by the thought of a disease or by the kinds of difficulties the individual believes a given health condition will create (Becker, 1974). Perceived susceptibility and perceived severity have strong cognitive components and are partly dependent on knowledge (Rosenstock, 1974). Do people who drink and drive perceive their behavior as making them particularly susceptible to getting in a motor vehicle crash or getting arrested for DUI? And to what degree? How serious do they perceive these potential outcomes are?

Another set of variables describe the patient's expectations. These include the perceptions of barriers and benefits to action. Perceived benefit is the individual's subjective belief about the relative effectiveness and availability of known alternatives in reducing the disease threat. An individual may believe that a given action will be effective in reducing the threat of disease, but at the same time may believe that an action is inconvenient, expensive, unpleasant, painful or upsetting. These negative aspects serve as barriers to change and stimulate avoidance behaviors (Rosenstock, 1974). Perceived barriers are those negative aspects of a health action that keep people from performing something to make them healthy or keep them safe. The perceived benefit is weighed against the perceived barriers which may include psychological, physical and

financial costs (Mikhail, 1981). The person's beliefs about the availability and effectiveness of various courses of action, and not the objective facts, determine his/her behavior (Becker, 1974). Is the perceived action of driving and not drinking a greater risk or a greater benefit? Which will cost the individual more: physically going through withdrawal or psychologically not drinking and driving?

Cue to action, or stimulus affects health behavior. This stimulus may be an internal (e.g., personal beliefs) or external (e.g., media or legal) influence. An event may occur to an individual or to someone close to the individual and be considered a stimulus. A strong stimulus is necessary to prompt a person to take action especially if the individual does not perceive himself or herself as susceptible to an event, does not perceive the occurrence of a condition as being severe, does not feel the benefits of an action outweigh the potential costs or does not view the barriers as surmountable (Mikhail, 1981). If the perceived susceptibility, seriousness and benefits are strong and perceived barriers are weak, a lesser stimulus would prompt a person to action.

Another variable that determines health behavior is health motivation. This concept is not a subjective belief and is defined as the general tendency of an individual to partake in healthy behaviors (Mikhail, 1981). This concept is directly concerned with health behaviors.

The last group of variables which affect health behavior are modifying factors that include demographic, sociopsychologic and structural. These are factors that affect a person's predisposition to taking preventive action. Demographic modifiers include age, sex, income, education and ethnicity. Sociopsychologic factors include personality, social class, peer pressure and reference group pressure. Structural factors are prior experiences such as history of DUI or history of an alcohol-related MVC or knowledge about the disease or condition (Davidhizar, 1983).

Each of the variables discussed earlier affect health behaviors directly, but the relative weight of each variable remains undetermined. It is unclear whether it is the perception of an increased benefit or the perception of a decreased barrier that promotes compliance. A point can be reached at which the psychological state and/or stimulus is so great that it produces an indirect relationship to compliance. For example it is too emotionally painful for one to comply or not comply.

Literature Review

Studies using the Health Belief Model

Janz and Becker (1984) reviewed a total of 46 HBM studies. Twenty-four studies examined preventive health behaviors, 19 reviewed sick role behavior, and three explored clinic utilization. The studies that were included were only HBM related investigations published between 1974

and 1984, and had to contain at least one behavioral outcome measure and only findings related to the fundamental HBM variables. These investigations provide substantial empirical evidence supporting HBM dimensions and are important contributors to the prediction and explanation of an individual's health-related behaviors. Barriers proved to be the most powerful of the HBM dimensions.

Susceptibility was a strong component to understanding preventive health behaviors yet benefits was a strong contributor to understanding sick role behaviors. Severity produced the lowest overall significance values, yet severity was strongly related to sick role behavior (Janz & Becker, 1984).

A few studies focused on women and their health beliefs. Leatherman, Blackburn, and Davidhizar (1990) described how post-partum women explain their lack of obtaining adequate prenatal care. The purpose of their study was to identify and analyze the reasons women gave for not obtaining adequate prenatal care. The sample was a convenience sample of a wealthy county in the Midwest with many transient people. The county has a population of 137,000 with 95% white, 4% black and 1% hispanic. Forty-four subjects participated. Chi-square was used to determine the relationship between the reasons given and three variables: age, time between knowledge of pregnancy and making an appointment for care, and source of payment.

The study revealed that insufficient money to pay for care was the primary reason given for not obtaining adequate prenatal care (81%). Other reasons included motivational issues (45%), and access to or lack of transportation (19%). There was a significant relationship ($p = .05$) with four reasons attributed to the variable of age and three reasons attributed to both the variable of time and source of payment. There were three limitations. The data were self-reported and, therefore, limited by knowledge level and self-awareness. The subjects were limited to those who delivered in the hospital or who came in for birth certificates within the 6 months of the study. It did not include those who chose home births and did not come in for birth certificates. The subjects were taken from one county so generalization to other settings is not possible.

A descriptive study observing the health beliefs toward smoking in three groups of women was completed by Manfredi, Lacey, Warnecke and Buis (1992). The hypotheses being tested were: that black women who were subsidized public housing residents will be heavier smokers and have weaker motivation to quit smoking, fewer beliefs consistent with smoking cessation, weaker social pressure and less social support to quit than other blacks. Another hypotheses were: other blacks not in subsidized public housing are expected to have weaker motivation to quit smoking, fewer beliefs consistent with smoking cessation, weaker social pressure

and less social support to quit than whites.

The sample included black women who lived in subsidized public housing, other black women and white women. A baseline telephone interview was conducted with a general population of smokers. This was a random sample of women, that were 18 years of age or older, lived in the Chicago metropolitan area and watched the evening news at least three times a week. The sample yielded 117 black females and 496 white females. Baseline face to face interviews were conducted with the subsidized public housing group obtained through a random sample of 1849 apartments in their public housing developments. The telephone surveys and interviews were conducted six months before the intervention. Questionnaires examined 45 dependent variables and with some questions examining variables of HBM. Questions were asked about perceived severity, perceived susceptibility, barriers, benefits, and motivations for wanting to quit smoking.

The results revealed black subsidized public housing women were not favorable to smoking cessation. In comparing whites with other blacks it was found blacks started smoking at an older age, smoked fewer cigarettes per day, had a stronger desire to quit and were concerned about the effects of smoking on their health. They also were more likely to consider restrictions at work, the expense of cigarettes and showing that they are not hooked on cigarettes as very

important reasons to quit. In summary, it was found that lower education not race, was related to smoking. That as education increases, racial differences diminish. Plans to quit, beliefs that smoking is related to lung cancer and that lung cancer would have serious consequences, the knowledge of where to go for help in quitting are all positively related to education. Education is negatively related to age of onset of smoking, amount smoked, and perceived difficulties with quitting. The limitations of this study are that two different methods of obtaining data were used. The same questionnaire was used, but was collected by both telephone interviews and face-to-face interviews. One strength identified was this is one of the few studies that looks at women and at a race different than Caucasian relative to the HBM.

Health Belief Model and Nursing

Nursing research has successfully used the HBM. The impact that nursing can have on health beliefs and health behavior have been identified by Champion (1984, 1985, 1987) and Kim, Horan, Gendler and Patel (1991). Champion (1985) identified that the variables of barriers and health motivation significantly impacted the frequency of breast self-examination. Champion (1987) repeated the study and found that all the variables of the HBM plus the control concept affected health behavior. Champion (1987) found that barriers, knowledge and susceptibility were significant

predictors of the frequency of self-breast exam. Champion (1987) identified that the variables in the HBM differ in importance depending on the health behavior being measured.

Kim et al. (1991) conducted a study to develop and evaluate the Osteoporosis Health Belief Scale based on the HBM. The sample consisted of women 60 years or older recruited from four senior centers and one large senior residential apartment complex. The sample included 150 women who ranged in age from 60-93 years. Three questionnaires were given to the study participants after the study was explained and informed consent obtained. The tool used was a 35-item questionnaire adapted from Champion's tool (1984), but altered to include both categories of behaviors (calcium intake and exercise). The self-report Athletic Pursuits Questionnaire was adapted with the assistance of exercise physiologists to measure exercise behavior. A third questionnaire assessed calcium intake. Data collection occurred over a 3 week period in a metropolitan area. Internal consistency for the calcium intake and exercise ranged from .61-.80. The results demonstrate the importance of health motivation in influencing health-related behaviors. Barriers and health motivation were important in explaining exercise behaviors and calcium intake. Limitations of this study are the sample size in relationship to factor analysis. The levels of reliability and validity of the criterion measures of

exercise behaviors and calcium intake may explain the limitations in the findings related to discriminant function analysis (Kim et al., 1991). This study and its findings contribute to the knowledge base of the HBM research with the elderly. Both Champion (1985, 1987) and Kim et al., (1991) identified the importance of health motivation influencing health behaviors.

Health Belief Model and Alcoholism

The habitual drinker or alcoholic lives in constant fear that the physiologic and psychologic pain of treatment will be worse than the pain of the disease itself (Waller, 1990). In other words, the perceived risk of going through treatment is greater than the perceived benefit of being disease free.

Few studies have looked at the Health Belief Model and alcoholism treatment compliance. Rees (1985) performed a prospective study that supports the Health Belief Model as a framework for explaining health behavior in patients who attend an alcoholism treatment clinic. The study examined the health beliefs of these patients and investigated the relationship between these beliefs and patient compliance as defined by the duration of treatment (Rees, 1985). There were 117 subjects, 74% were men and 26% women. Construct validity of the HBM instrument was assessed by performing a cluster analysis of the health belief model items. Test-retest reliability was assessed on each questionnaire item

and all items presented in the study had an excess of .75 by Spearman or greater than .7 by Kappa. The study determined that certain health beliefs measured early in treatment predicted compliance behavior over a 6 month period, and offered a better means of understanding and modifying patient adherence to treatment. The compliant patients were more motivated to accept help. Compliance was not affected by perceived susceptibility nor barriers to treatment, however patients from the lower socioeconomic groups tended to be less compliant.

Rees (1986) conducted a second study which examined whether changing the health beliefs of alcoholic patients upon entering treatment would improve their compliance with treatment. A control group received the conventional treatment available at an alcoholism clinic. An experimental group received, in addition, an opportunity to attend group meetings where attempts were made to modify their health beliefs. The sample was 100 consecutive patients at an alcoholism clinic. Of the total patients, 79% were men, 41% married, 42% employed and 55% were of the lower socioeconomic group. Although this intervention resulted in changes in patients' health beliefs, the subsequent difference between the average length of stay in treatment between the two groups was not statistically significant. A deficiency noted in this study was that compliance was measured by the length of stay in the

program, not by long-term avoidance of alcohol consumption. The study found only modest support for the hypothesis that health beliefs are determinants of compliance.

Bardsley and Beckman (1988) utilized the Health Belief Model to study alcoholism treatment utilization. Variables hypothesized to affect health related behavior were compared between subjects receiving alcohol treatment, and two groups of problem drinkers not receiving treatment. Only two of the five HBM variables showed consistently strong relationships with the decision to enter treatment: perceived severity and cues to action. A few identified cues to action were: the realization of having hit bottom (30%), new or increasing conflicts with family and friends (21%), and unusual or heightened physical symptoms of drinking (16%) (Bardsley & Beckman, 1988). Subjects in treatment had a higher perceived severity than those not in treatment. One weakness of this study, identified by the authors, is that the study was retrospective and the subjects' perceptions may have been modified upon entering treatment.

The importance of timely intervention is emphasized by studies of recovering alcoholics which reveal that crises are the most common events forcing alcoholics to see past their denial and take steps to receive treatment (Gentilello et al., 1988). Gentilello et al. (1988) conducted a prospective study using standard outpatient intervention

techniques on inpatient alcoholic trauma patients to induce them into accepting alcoholism treatment. There was successful intervention in 17 trauma patients out of 19. All patients who received intervention accepted treatment and were then placed in a 28 day inpatient alcohol treatment facility. No attempt was made to determine the long-term sobriety of these patients. Small sample size and a lack of control group are weaknesses in this study. Further research with a larger sample size is needed to determine the true effectiveness of intervention on inpatient alcoholic trauma patients.

Summary of Limitations

There is a limited amount of research on women who drink and drive. In studies reviewed, several did not use women at all (Macdonald & Pederson, 1988). Four studies did include women (Rees, 1985, 1986, Leatherman et al., 1990; & Manfredi et al., 1992). Leatherman et al. and Manfredi et al. used all women in their studies. Twenty-one percent of the sample were women in Rees's studies. This is consistent with a study by Halpern and Visker (1993) in which 12 to 20 percent of those arrested for driving intoxicated were female. It is important that women be included in future studies on driving while intoxicated.

The literature is full of attempts to alter health behavior, but altering behavior of someone who drinks and drives is a much greater challenge. A few studies looked at

alcoholism treatment compliance and the HBM (Rees, 1985 & 1986; Bardsley & Beckman, 1988). There were not any significant findings related to specific variables of the HBM affecting drinking specifically. Authors measured only compliance with treatment rather than abstinence. This area is one that needs further exploration.

Literature on alcoholism states that it is difficult to alter an alcoholic's behavior. There have been no studies done looking at health beliefs and drinking and driving. Gentilello et al. (1988) indicated that determining the time for intervention is the key element in altering alcoholics' behavior.

Summary of Strengths

The strengths of the research studies are threefold. Many studies have been completed on the Health Belief Model and support the model's predictive ability with preventive health behaviors. Nursing has contributed to this research (Champion, 1984, 1985, & 1987; Kim, Horan, Gendler, & Patel, 1991). Recognition of the relationships between trauma and alcohol use or abuse has been identified by many authors (Waller, 1990; Macdonald & Pederson, 1988). Some characteristics of those who drink and drive have been identified (Halpern & Visker, 1993).

Conclusion

Since nurses spend more time with patients than any other health care professional, they have a greater

opportunity to influence a patient's health beliefs and subsequent behavior. Understanding health beliefs is essential if nurses are to recruit the cooperation and participation of patients in the management of their own care. After understanding the patients' health beliefs the nurse can plan an intervention strategy that is pertinent to these beliefs.

The question remains: is there a difference between the health beliefs of those individuals who are convicted of DUI and have a history of an alcohol-related MVC compared to those who are convicted of driving under the influence of alcohol but have no history of an alcohol-related MVC? Are the legal ramifications of being arrested for DUI strong enough to alter health beliefs?

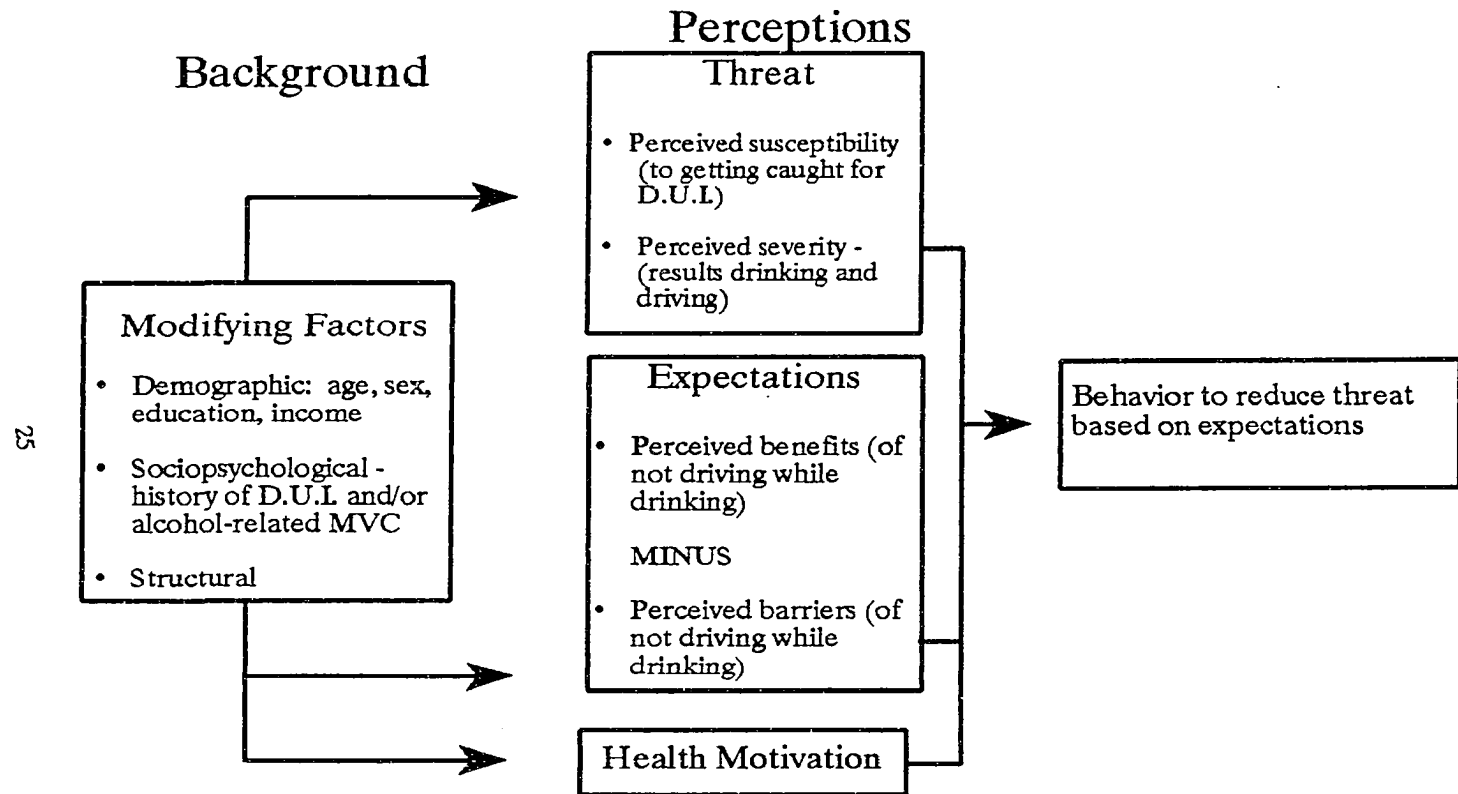
Hypothesis

The research hypothesis tested in this study is: There is a difference in health beliefs of those individuals who have been convicted of DUI and have a history of an alcohol-related MVC as compared to those individuals who are convicted of DUI but have no history of an alcohol-related MVC.

Definition of Terms

The following terms and definitions used for this study were adapted from those of Champion (1984). Figure 2 describes how the HBM variables are specific to this study.

Figure 2: The Health Belief Model and Drinking and Driving



Adapted from Strecher (1994).

Health beliefs include perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, stimuli, modifying factors and health motivation.

Perceptions are important for several variables.

Perceived susceptibility focuses on an individual's own subjective risk of contracting a condition. This may occur with the individual who denies any possibility of getting caught drinking and driving or being involved in a MVC after drinking and driving. This could be the person who admits to the "statistical" possibility of getting caught drinking and driving or being involved in a MVC after drinking and driving, but that it would not be likely to happen.

Perceived seriousness is an individual's subjective conviction concerning the seriousness of a given health problem. The degree of seriousness may be judged by the degree of emotional arousal created by the thought of a getting convicted of drinking and driving or by the kinds of difficulties the individual believes getting caught drinking and driving or involved in a MVC after drinking and driving will create. Perceived benefits are an individual's subjective belief about the relative effectiveness and availability of known alternatives in reducing being convicted of DUI or being involved in a MVC after drinking and driving. Perceived barriers are those negative aspects that keep a person from performing something to make them not drink and drive. Negative responses to the action may

be viewed as inconvenient, expensive, unpleasant, painful or upsetting. Health motivation relates to a general tendency for an individual to partake in healthy behaviors. This concept is directly concerned with behaviors, not the subjective beliefs. In this study it will be measured by asking about behaviors related to wellness.

Other variables are more situational. Cues to action or stimulus refers to a factor that serves as a trigger to appropriate action. In this study it is not being measured. Modifying factors are those factors affecting predisposition to take preventive action. In this study age, sex, race, income, occupation, employment status and education level are modifying factors. This includes a history of an alcohol-related MVC. A history of an alcohol-related MVC is a self-reported event. All of the above mentioned items were measured in this study.

CHAPTER 3

METHODOLOGY

Design

A non-experimental ex post facto design was used in this retrospective investigation. Some limitations to this type of study exist. There was no pre-testing of the individual prior to being convicted of DUI. This study looked at health beliefs not health behavior. There was no control group and the investigator was not aware of any previous education about drinking and driving.

Sample and Setting

Criteria for selection of subjects

The sample was a non-probability sample. It was a sample of convenience. The sample consisted of individuals convicted of driving under the influence (DUI) of alcohol in a midwestern county of 200,000 people. DUI indicated the individual had a blood alcohol level of .10 or greater. It included both those with a history of an alcohol-related motor vehicle crash (MVC) and those with no history of an alcohol-related MVC. This group of drivers convicted of DUI were obtained from the Victims' Impact Panel (VIP). As part of a DUI's sentence they must attend the Victims' Impact Panel. This is a combined and dedicated effort of the

County's Chapter of Mother's Against Drunk Driving (MADD) and the County's District Courts and law enforcement agencies. The panel presentation was designed after the original VIP from Redmond, Washington. The first panel session for the County was implemented in March, 1990. It continues to be presented on a monthly basis for offenders convicted of drinking and driving offenses. Being sentenced to attend VIP discussion does not replace any of the traditional sentence. It is an option available to the sentencing Judge, in addition to whatever else may be ordered. The attendance is approximately 85-115 participants per month. The format includes an introduction, a movie, and then a panel discussion ensues with victims of drunk driving crashes sharing their experiences. There is time left for closing remarks, questions and a written evaluation. The focus is on responsibility, not judgement.

The completion of the questionnaire was considered informed consent from this group of subjects. Contact was made with this group at the Victim's Impact Panel meeting which is held the last Monday of the month. The researcher attended the meeting and handed out the questionnaires prior to the meeting.

Sample Characteristics

The researcher attended the VIP in the months of July and September, 1994. In July, 57 surveys were distributed;

47 returned and 46 completed. Eighty surveys were distributed in the September meeting and forty were returned with 38 fully completed. A total of 84 subjects were obtained which was a 66% return rate. All were convicted of DUI in this midwestern county. Twenty-six (32.5%) had a history of an alcohol-related MVC and 58 (67.5%) had no history of an alcohol-related MVC. Four people chose not to answer the question. Forty-four percent ($n = 34$) subjects had a prior history of being convicted or arrested for an alcohol-related offense and 56.4% ($n = 44$) subjects had no history of being convicted or arrested for an alcohol-related offense. Six subjects chose not to answer the question.

The demographic data included age, sex, occupation, employment, and income range. The mean age for the sample was 27 with a range from 17-49 (see Table 1). There was no difference in age with those having a history of an alcohol-related MVC and those having no history. The total sample revealed that 80% ($n = 65$) of the respondents were male and 20% ($n = 16$) female. The group with a history of an alcohol-related MVC had 96% ($n = 25$) males and 4% (or one) female. The group with no history of an alcohol-related MVC had 72% ($n = 39$) males and 28% ($n = 15$) females. The majority were Caucasian (85%) (see Table 2). There was no difference in race between the two groups.

Halpern and Visker (1993) conducted a study that looked

at the demographics of the drinking driver who was ticketed and/or arrested in the study County and found that 88% percent were white and the ages were 31-50 years. Of these drinking drivers, 85% were males and 14% were females. The present study's sample is similar to the findings of Halpern and Visker (1993).

Table 1

Age of Respondents

Age Range	MVC Before n(%)	No MVC Before n(%)	Total group n(%)
17-21	4 (17)	12 (23)	10 (21)
22-26	10 (42)	21 (40)	31 (41)
27-31	2 (8)	6 (12)	8 (11)
32-42	5 (21)	12 (23)	17 (22)
42-49	3 (12)	1 (2)	4 (5)

Table 2

Race of Respondents

Race	MVC Before n(%)	No MVC Before n(%)	Total Group n(%)
Caucasian	23(89)	46(85)	69(85)
Afro-American	3(11)	3 (5)	7 (8)
Asian	0 (0)	0 (0)	0 (0)
American-Indian	0 (0)	1 (2)	1 (1)
Hispanic	0 (0)	2 (4)	2 (3)
Other	0 (0)	2 (4)	2 (3)

Table 3

Marital Status of the Respondents

Marital Status	MVC Before n(%)	No MVC Before n(%)	Total group n(%)
Single	20(77)	37(68)	58(72)
Divorced	4(15)	7(13)	11(14)
Married	2 (8)	8(15)	10(12)
Separated	0 (0)	2 (4)	2 (3)
Widowed	0 (0)	0 (0)	0 (0)

Table 3 illustrates the majority were single. The majority in both groups were single or divorced. Table 4 shows that 61% were employed full-time (n = 46). Eighty-four percent of those with a history of an alcohol-related MVC were employed full-time compared to 50% employed full-time among those who had no history of an alcohol-related

MVC. There was a wide range of occupations described by the respondents. Twenty-two percent (n = 16) were students and 2.6% (n = 2) were self-employed. Table 5 shows the highest education completed. The majority have completed high school and have some college. Over half of the respondents had an income of \$20,000 or less (see Table 6). Demographic data of the subsamples with a history of an alcohol-related MVC and those with no history of an alcohol-related MVC were compared. There were 26 with a history of an alcohol-related MVC and 58 had no history. There were no statistically significant differences in age, race, marital status, highest education completed, and income range. There was however, a statistically significant association between employment status and alcohol-related MVC ($X^2 = 9.64$, d.f. = 2, $p = .008$). (Table 7).

Table 4

Current Employment of Respondents

Employment Status	MVC Before n(%)	No MVC Before n(%)	Total Group n(%)
Full-time	21(84)	25(50)	46(60)
Part-time	4(16)	14(28)	18(24)
Laid-off/ Unemployed	0 (0)	11(22)	12(16)

Table 5

Highest Educational Level Completed

Education Level	MVC Before n(%)	No MVC Before n(%)	Total Group n(%)
Grade School	2 (4)	2 (4)	3 (4)
High School	7(29)	14(26)	22(28)
Some College	8(34)	28(53)	36(46)
College Graduate	7(29)	8(15)	15(19)
Graduate School	1 (4)	1 (2)	2 (3)

Table 6

Income Range of Respondents

Income Range	MVC Before n(%)	No MVC Before n(%)	Total Group n(%)
< \$10,000	7(29)	22(44)	30(40)
\$10,001-\$20,000	8(33)	13(26)	21(28)
\$20,001-\$30,000	7(29)	8(16)	15(20)
\$30,001-\$40,000	2 (9)	6(12)	8(11)
\$40,001-\$50,000	0 (0)	1 (2)	1 (1)
\$50,001-\$60,000	0 (0)	0 (0)	0 (0)
> \$61,000	0(0)	0(0)	0(0)

In addition, there was a different proportion of men and women with a history of an alcohol-related MVC. There was 64 men and 16 women in the sample. Twenty-five men (39%) had a history of an alcohol-related MVC while only 1 (6.3%) woman had such a history. This was statistically significant ($X^2 = 6.28$, d.f. = 1, $p = .012$). Employment, sex, and history of an alcohol-related MVC were explored.

Table 7 displays these data. All but one with a history of MVC were male and employed full or parttime. The sample was too small to do inferential statistics.

Table 7

Employment of Sample in Relationship to Sex

Type of Employment	Sex	MVC before n	No MVC before n
Full-time	Male	21	20
	Female	0	5
Part-time	Male	4	10
	Female	0	4
Unemployed/ Laid-off	Male	0	7
	Female	0	4

Note: The woman with a history of a MVC was self-employed.

Instruments

Two instruments were used to collect the data. One questionnaire examined health beliefs (Appendix A) and the other was a demographic assessment tool (Appendix B).

HBM Questionnaire

The first questionnaire measures the main five variables in the HBM. Five questions relate to seriousness, seven questions review susceptibility, four relate to benefits, five to barriers and five to motivation. The last question addresses when the questionnaire was completed; before or after the panel presentation. A 5-point Likert scale was used to rate items from strong disagreement (1) to strong agreement (5). This is the most common form of

attitude measurement (Polit & Hungler, 1987). A Likert scale consists of several statements that declare a viewpoint on a topic. Respondents were asked to indicate the extent to which they agree or disagree with the opinion expressed in the statement. The responses were then combined to form a composite score, the aim of which was to signify the subject's position, relative to that of others, on the health belief continuum. A total score was derived by the summation of scores assigned to all items, which in turn were scored according to the direction of favorability expressed.

This tool was modified from one developed by Champion (1984) and Kim, Horan, Gendler, and Patel (1991) which demonstrated an internal consistency from .61 to .80. The tool was tested for content validity prior to implementation and internal consistency after all data were collected.

Content validity. The tool was distributed to individuals who were familiar with the Health Belief Model. Definitions of the major variables of the HBM were also included. These individuals determined which variable each question was testing. Each question needed a 60% consensus for content validity and inclusion on the final instrument. There was not a 60% consensus on five questions with the first survey. On review, the definitions of susceptibility, seriousness and barriers were identified as not clear and then changed. Appendix C contains the definitions from the

first survey and the changes for the second survey. After the first survey some questions were changed to more clearly relate to the variable being questioned. The first survey was also evaluated for reading level and items were changed accordingly.

The first survey was sent out to eleven individuals and eleven were returned. The second survey was sent out to ten of the original eleven and eight were returned. Appendix D contains the first survey and Appendix E contains the second survey. Tables 8-12 illustrate the percent consensus on each question. The letter "a" indicates the question as it was asked on the first survey and the letter "b" the second survey.

Table 8

Original, revised items and percent consensus at time 1,
time 2, and combined for the seriousness subscale.

<u>Item</u>	<u>1st</u> <u>n=11</u>	<u>2nd</u> <u>n=8</u>	<u>Combined</u> <u>n=19</u>
1a. The thought of being in a car accident after drinking scares me.	36%		-
		62.5%	
1b. The thought of being in a car accident after drinking frightens me.			
6a. My feelings about myself would change if I got in a car accident after drinking.	18%		-
		50%	
6b. I would hate myself if I got in a car accident after drinking.			
8a. Being in a car accident after drinking would hurt my family.	27%		-
		62.5%	
8b. Being in a car accident after drinking would hurt my family a lot.			
10a. Problems I would experience from being in a car accident after drinking would last a long time.	72%		-
		100%	
10b. The problems I would have after being in a car accident while drinking would last a long time.			
16. If I was in a car accident after drinking my whole life would change.	82%		88.8%
		87.5%	

a = original item

b = revised item

Note: There is not a combined score for questions that were changed and this is indicated by a dash.

Table 9

Original, revised items and percent consensus at time 1,
time 2, and combined for the susceptibility subscale.

<u>Item</u>	<u>1st</u> <u>n=11</u>	<u>2nd</u> <u>n=8</u>	<u>Combined</u> <u>n=11</u>
3. I feel that my chances of being in a car accident after drinking in the future are high.	91%	100%	95%
5. I worry a lot about being in a car accident after drinking.	72%	25%	53%
7. My chances of being in a car accident after drinking are great.	82%	100%	90%
9. There is a great chance within the next year I will be in a car accident after drinking.	91%	87.5%	90%
11. My habits of drinking and driving make it more likely that I will be in a car accident after drinking.	73%	87.5%	79%
12. There is a good possibility that I will be in a car accident after drinking.	91%	87.5%	90%
21. I think the chances of me being in a car crash are the same whether I have been drinking or not.	64%	75%	98%

Table 10

Original, revised items and percent consensus at time 1,
time 2, and combined for the benefits subscale.

<u>Item</u>	<u>1st</u> <u>n=11</u>	<u>2nd</u> <u>n=8</u>	<u>Combined</u> <u>n=19</u>
4. Not driving after drinking avoids future problems for me.	72%	75%	74%
13. I have a lot to gain by not drinking and driving.	55%	50%	53%
15. If I do not drive after drinking, I will not be hurt badly if I am in a car accident.	82%	37.5%	63%
17. If I do not drive when I drink, it would help me to avoid a car crash.	82%	62.5%	74%

Table 11

Original, revised items and percent consensus at time 1,
time 2, and combined for barriers subscale.

<u>Item</u>	<u>1st</u> <u>n=11</u>	<u>2nd</u> <u>n=8</u>	<u>Combined</u> <u>n=19</u>
2. Avoiding drinking before I drive is difficult.	63.6%	62.5%	68%
14a. It is embarrassing for me to drink and not drive.	91%		-
14b. It is embarrassing for me to avoid driving after I have been drinking.		100%	
18a. In order to not drive after drinking I have to give up quite a bit.	91%		-
18b. I have to give up quite a bit in order to not drive after drinking.		100%	
22. To avoid driving after I have been drinking would require starting a new habit, which is difficult.	91%	100%	95%
24. I am afraid I would not be able to drive after drinking.	46%	38%	42%

a = original item

b = revised item

Note: There is not a combined score for questions that were changed and this is indicated by a dash.

Table 12

Original, revised items and percent consensus at time 1, time 2, and combined for the motivation subscale.

<u>Item</u>	<u>1st</u> <u>n=11</u>	<u>2nd</u> <u>n=9</u>	<u>Combined</u> <u>n=19</u>
19. I exercise regularly - at least three times a week.	100%	87.5%	95%
20. I eat a well-balanced diet.	100%	87.5%	95%
23. I frequently do things to improve my health.	100%	87.5%	95%
25. I search for new information related to my health.	91%	100%	95%
26. Maintaining good health is extremely important to me.	73%	62.5%	68%

Four of the five questions related to seriousness were changed. The definition was changed but it was felt the questions needed to imply more grave consequences to one's actions. In item number 1 "scares" was changed to "frightens" because it implies a more intense seriousness. On the first survey 36% felt this question related to the concept seriousness and 45% felt this question related to the concept of susceptibility. As changed, 62.5% identified this question as relating to seriousness. In question 6, the word "hate" replaced the statement "your feelings about yourself would change" because hate is more intense. On the

first survey 36% felt this question related to barriers, 18% seriousness and 18% susceptibility. On the second survey 50% felt the changed question related to seriousness, 25% barriers and 25% motivation. In question number 8 the words "a lot" were added to the end of the question for more emphasis. The first survey indicated that 63.6% felt the question related to barriers and 27% to seriousness. In the second survey, the altered question was rated on the variable of seriousness by 62.5% respondents. Question 10 was reworded to be consistent with a sixth grade reading level.

Two questions related to the concept of barriers were changed. Question 14 was changed to make it more understandable and the question 18 was changed to be consistent with a sixth grade reading level.

The second survey revealed some items for which a 60% consensus was not reached. Question number 5, intended to measure susceptibility, was related to susceptibility on the first survey by 72% of the respondents and by 25% on the second survey. The remaining respondents on the second survey categorized it as seriousness (63%) and barriers (12%). This yielded a 53% combined consensus. Question number 13, intended to measure benefits, was related to benefits (55%) and motivation (45%) on the first survey; and 50% benefits, 50% motivation on the second survey. The combined consensus from both surveys was 53%. Question

number 24, intended to measure barriers, was rated by 46% to barriers, 18% to benefits, 18% to seriousness and 18% to susceptibility on the first survey. In the second survey this rating was 38% barriers, 13% benefits, 26% susceptibility, 12% seriousness, susceptibility and motivation. The combined score was 42%.

Consultation with experts and evaluation of the above data were done to determine which questions should be included in the final questionnaire. Based on this discussion, the final instrument included all the items. Question number 24 was reworded. The question "I am afraid I would not be able to drink after driving" was changed to "I do not think I would be able to drive after drinking" for the final version of the questionnaire.

Internal consistency. Internal consistency was established based on collected data using Cronbach's alpha. The seriousness scale had a reliability coefficient of .62. The reliability coefficient of the susceptibility scale was .55, when question 21 was eliminated the reliability changed to .66. The reliability coefficient for benefits was .25. The reliability coefficient for barriers was .59, but when question 24 was eliminated the reliability changed to .78. Question 24 received 42% consensus on content validity test. The variable of health motivation had a reliability coefficient of .79. The total reliability of the tool was .72 and if question 21 was deleted it changed to .75. All items

were used in the analysis.

Demographic assessment questionnaire

The demographic assessment tool evaluated what the HBM refers to as modifying factors. These are factors that affect a person's predisposition to taking preventive action. They include demographic, sociopsychologic and structural factors. Age, sex, income, employment status, marital status, race, occupation and highest education completed were included in this study (Appendix B).

Procedure

The researcher attended the VIP meeting and explained to the whole group the purpose of the study and that participation was voluntary. After the panel presentation the researcher was available to personally collect the questionnaires and answer any questions. The completion of the questionnaire was considered informed consent from this group of subjects (see cover letter, Appendix F). This project was approved by the Human Use Committee at Grand Valley State University and the hospital where the VIPs occur. The subject's confidentiality was maintained at all times. The records were kept confidential. Any information published from this study is aggregate data only.

CHAPTER 4

RESULTS/DATA ANALYSIS

In this chapter the results of the study will be presented. The first section will describe the responses to the questionnaire in general. The next section will discuss the hypothesis.

Responses to HBM Questionnaire

The HBM questionnaire included questions that related to each of the variables of the HBM (see Tables 13-17). Over 50% of the sample strongly agreed or agreed that if there were an alcohol-related MVC the results would be serious (Table 13). This was consistent among the five questions asked regarding seriousness. Interestingly, less than 40% percent of the sample felt they were susceptible to being involved in an alcohol-related MVC (Table 14). Twenty-eight to 83% percent answered strongly disagree, or disagree to the seven questions related to susceptibility. For instance question number 9 states "there is a great chance within the next year I will be in a car accident after drinking" and 83% strongly disagreed or disagreed with this question.

Seventy-seven to 89% answered strongly agree or agree to 3 of the 4 items on the benefits subscale indicating that

the benefits of not drinking and driving were great (Table 15). In the five questions about barriers 34% to 76% strongly disagreed or disagreed that the barriers were too great (Table 16). Seventy-six percent strongly disagreed or disagreed about item number 14 which states "It is embarrassing for me to avoid driving after I have been drinking." This indicates that the sample does not perceive the barriers to driving and not drinking as high. Forty-three to 73% felt that promoting and maintaining their health was important (Table 17).

Table 13

Responses to Questions Related to Seriousness

Seriousness Items	1 n(%)	2 n(%)	3 n(%)	4 n(%)	5 n(%)
1. The thought of being in a car accident after drinking frightens me.	1(1)	9(11)	10(12)	29(34)	35(42)
6. I would hate myself if I got in a car accident after drinking.	7(8)	5 (6)	16(19)	27(32)	29(35)
8. Being in a car accident after drinking would hurt my family a lot.	2(2)	6 (7)	5 (6)	32(38)	39(47)
10. The problems I would have after being in a car accident while drinking would last a long time.	3(4)	1 (1)	10(12)	31(38)	37(45)
16. If I was in a car accident after drinking my whole life would change.	2(2)	4 (5)	19(23)	33(39)	26(31)

Note. 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

Table 14

Responses to Questions Related to Susceptibility

Susceptibility Items	1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)
3. I feel that my chances of being in a car accident after drinking in the future are high.	15(18)	24(29)	22(26)	20(24)	3 (3)
5. I worry a lot about being in a car accident after drinking.	5 (6)	25(30)	23(27)	17(20)	14(17)
9. There is a great chance within the next year I will be in a car accident after drinking.	42(51)	27(32)	13(16)	1 (1)	0 (0)
11. My habits of drinking and driving make it more likely that I will be in a car accident after drinking.	30(35)	22(26)	14(17)	14(17)	4 (5)
12. There is a good possibility that I will be in a car accident after drinking.	19(23)	29(34)	15(18)	17(20)	4 (5)
21. I think the chance of me being in a car crash are the same whether I have been drinking or not.	13(16)	34(41)	16(20)	15(18)	4 (5)
7. My chances of being in a car accident after drinking are great.	13(16)	10(12)	27(32)	23(27)	11(13)

Table 15

Responses to Questions Related to Benefits

Benefits Items	1 n(%)	2 n(%)	3 n (%)	4 n (%)	5 n (%)
4. Not driving after drinking avoids future problems for me.	4 (5)	4 (5)	11(13)	18(21)	47(56)
13. I have a lot to gain by not drinking and driving.	1 (1)	2 (3)	6(7)	28(33)	47(56)
15. If I do not drive after drinking, I will not be hurt badly if I am in a car accident.	26(31)	21(25)	18(22)	12(15)	6 (7)
17. If I do not drive when I drink, it would help me to avoid a car crash.	1 (1)	2 (2)	14(17)	36(43)	31(37)

Table 16

Responses to Questions Related to Barriers

Barriers Items	1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)
2. Avoiding drinking before I drive is difficult.	23(28)	34(41)	17(20)	6 (7)	3(4)
14. It is embarrassing for me to avoid driving after I have been drinking.	37(45)	26(31)	14(17)	4 (5)	2(2)
18. I have to give up quite a bit in order to not drive after drinking.	27(33)	33(40)	12(14)	10(12)	1(1)
20. To avoid driving after I have been drinking would require starting a new habit, which is difficult.	22(27)	34(42)	11(13)	14(17)	1(1)
24. I am afraid I would not be able to drive after drinking.	5 (6)	23(28)	28(34)	21(26)	5(6)

Table 17

Responses to Questions Related to Health Motivation

Motivation Items	1 n(%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)
19. I exercise regularly - at least three times a week.	6(7)	15(18)	20(24)	25(30)	17(21)
20. I eat a well-balanced diet.	2(2)	13(16)	19(23)	35(42)	14(17)
23. I frequently do things to improve my health.	2(2)	9(11)	26(32)	39(48)	6 (7)
25. I search for new information related to my health.	4(5)	11(13)	32(39)	30(37)	5 (6)
26. Maintaining good health is extremely important to me.	0(0)	4(5)	18(22)	42(51)	18(22)

Hypothesis

The research question was, is there a difference in health beliefs between those individuals who are convicted of DUI and have a history of an alcohol-related MVC versus those convicted of DUI but have no history of an alcohol-related MVC before. The tested hypothesis was that there would be a difference in health beliefs between the two groups.

A t-test was done to compare the two groups health

beliefs. When the two groups were compared the following results were found (see table 18). Only health motivation was found to be statistically significant at .042. The difference in the seriousness scale approached significance, however, the mean scores were not in the direction one might expect.

Table 18

Comparison of Health Beliefs Between Those with a History of an Alcohol-Related MVC and Those with no History.

HBM Variable	MVC Mean	No MVC Mean	t value	p value
Seriousness	19.12	20.60	-1.84	.069
Susceptibility	15.7	15.2	.54	.594
Barrier	11.52	11.34	.22	.826
Benefit	14.96	15.24	-.50	.615
Motivation	18.88	17.13	2.07	.042

The time span between these individuals' previous and most recent alcohol-related MVC ranged from one to 180 months (15 years). The mean amount of time between a previous alcohol-related MVC was 27.3 months or about 2 years.

There was no difference in health beliefs between those convicted of prior and those who had just encountered their first DUI (see Table 19).

Table 19

Difference in Health Beliefs between those involved in more than one DUI and those that obtained their first DUI

Health Beliefs	Prior DUI Mean	First DUI Mean	t Value	p Value
Seriousness	20.23	20.14	.12	.904
Susceptibility	15.91	15.04	.92	.360
Barrier	11.67	11.26	.56	.579
Benefit	15.02	15.27	-.47	.636
Motivation	17.11	17.97	-1.05	.297

Incidental and/or other Findings

Table 20 shows that there was no statistical significance among the health beliefs based on the timing of when the questionnaire was taken in relationship to the panel presentation. The responses to susceptibility did approach significance.

Table 20

Comparison of Health Beliefs of Those Who Completed the Questionnaire Before and After the Panel Presentation.

HBM Variable	Before Panel Mean	After Panel Mean	t Value	P Value
Seriousness	20.00	20.50	-.44	.662
Susceptibility	14.88	17.6	-1.87	.065
Barrier	11.15	12.33	-1.03	.306
Benefit	15.04	15.50	-.59	.555
Motivation	17.43	17.90	-.38	.706

Summary

In summary, demographic characteristics of the sample were similar between those with a history of an alcohol-related MVC and those with no history of an alcohol-related MVC except on sex and employment status. The overall sample viewed the results of drinking and driving to be serious yet did not perceive themselves as being susceptible. The stated hypothesis was partially supported. A statistically significant difference does exist between the two groups in relation to health motivation. The Victim's Impact Panel may make a difference in the health beliefs.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

Discussion of Findings

The hypothesis investigated in this study was only partially supported by the data. There was a statistically significant difference between the two groups in health motivation. Those who have had a prior alcohol-related MVC were more motivated to maintain their health. There was, however, another finding that warrants discussion. The entire group felt the results of drinking and driving were serious, yet did not perceive themselves as susceptible.

It is interesting that the sample felt if they were involved in an alcohol-related crash the results would be serious, yet they did not perceive themselves as susceptible to being involved in an alcohol-related MVC. As identified by Clark (1985) denial is one of the major obstacles to treatment. Denial may play a role in their perception of susceptibility. This may have occurred thus explaining some of the findings. Another explanation is the young age of the sample with 50% between the ages of 17-26. Individuals at this age see themselves as immortal or untouchable to the things around them. The concept of seriousness seems less personal than the concept of susceptibility. It is easier

to say: that "the results of drinking and driving are serious, yet they may never happen to me" than stating "I will be in a alcohol-related MVC but the result will not be serious." This seems to be one way to depersonalize the whole issue. This is a theme that is evident in trauma prevention.

Those that were involved in previous alcohol-related MVC had more full-time and part-time employment then those without a history of an alcohol-related MVC. One would think that an individual who is unemployed or laid-off would experience greater stress that would encourage one to drink. It may be that being employed causes much stress and drinking is one way to relieve stress. Individuals who are employed full or part-time have more opportunities for drinking and may have greater access to automobiles. They also are required to spend more time in a motor vehicle commuting to and from work.

There was a difference in the perceived seriousness between those with a history of an alcohol-related MVC and those with no history. This difference approached significance at .069, but the individuals with no history of an alcohol-related MVC scored higher than those with a previous alcohol-related MVC which was different from what one might expect. One reason for this may be those who were involved in an alcohol-related MVC may have had a loss of memory or the alcohol may have clouded reality. This may

have caused them to have an inaccurate picture of what really happened. This would also explain why there is not a statistically significant difference in seriousness and susceptibility beliefs between the two groups. The time lag between a MVC and completion of the survey may have resulted in a weakening of their perceived seriousness and susceptibility.

There was a statistically significant difference in health motivation (.042) between the group of individuals with a history of an alcohol-related MVC and those with no history of MVC. The sample who had an alcohol-related MVC were more motivated in their general health behaviors than those who had not been in a MVC. This supported the findings of Rees (1985) in which patients who remained in an alcohol treatment center were more motivated to accept help. Kim et al. (1991) also found that the importance of health motivation in influencing health related behaviors in relationship to calcium intake and exercise.

Strengths

The HBM questionnaire appears to be a satisfactory instrument to evaluate beliefs about this behavior. There are five questions related to seriousness and only one failed to achieve 60% consensus. Seven questions were asked about susceptibility and only one failed to achieve at least 53% consensus. Four questions were asked about benefits and only one failed to achieve 60% consensus goal (53%). Five

questions were asked related to barriers and only one failed to reach 60% consensus (42%). Five questions were asked related to health motivation, all of which achieved 60% consensus. The ideal questionnaire would have five questions in each area and each have a 60% consensus. The entire tool yielded a reliability of .72, but with eliminating one question the reliability could increase to .75. This is adequate for a newly developed tool.

Limitations

Sample

The size of the study group (n=84) was small. There were 25 in the group who had a history of an alcohol-related MVC and 53 in the group with no history of an alcohol-related MVC. This small sample size did not allow an adequate comparison between the two groups. A smaller sample size has less statistical power therefore, real differences were not detected. Study participants were obtained from a single county, thus limiting the ability to make generalizations about the data. Participation in the study was voluntary. Individuals who volunteered for the study may feel that their health beliefs are more "normal" as defined by the community at large. Participants who volunteer for a study might not be typical of the actual population of those who drink and drive. Those who chose not volunteer for this study may be illiterate or feel that their health beliefs are wrong or different in relationship

to the community at large. One individual was excluded from the study because she was drunk, and asked to leave before the questionnaire was distributed. Another limitation is that there was no assessment of cognitive impairment. If one had cognitive impairment this would alter their ability to respond.

Methodology

This study was a descriptive survey using a questionnaire. This did not allow the researcher to interview the sample which would have allowed more qualitative data. The participants were not given self-addressed envelopes to return the questionnaire, and were, in fact, asked to return their questionnaires before leaving the VIP session. This limited the available time to consider and answer each question fully. This again could have eliminated individuals who take longer to fill out questionnaires. Extraneous variables were not assessed. One of these extraneous variables that was not assessed is if those that have been involved in a previous alcohol-related MVC have a history of poor driving habits, thus predisposing them to crashes in general.

Instruments

The questions found in the HBM tool used the word "accident" rather than crash. This was brought to the attention of the researcher by one of the members of the VIP. It was stated that the word accident implies an

inadvertent, unforeseen mishap and when one drinks and drives that it is no accident. In future revisions "accident" will be changed to "crash".

Application to Practice/Administration/Education

Major crises are the most common events forcing alcoholics to see through their denial and take steps to receive appropriate treatment (Gentilello et al., 1988). The key is to identify the triggering crisis which is different for each person. Some individuals may find that a DUI conviction or attending the VIP panel is a big enough crisis to trigger change. Since nurses spend more time with patients than any other health care professional, they have a greater opportunity to influence a patients' health beliefs and their subsequent behavior. Understanding health beliefs is essential if nurses are to recruit the cooperation and participation of patients in the management of their own care. After understanding the patient's health beliefs the nurse can then plan an intervention strategy that is pertinent to these beliefs. This study has added support to the HBM. Building on the belief of health motivation in these participants may be a place to start.

Suggestions for Further Research/Modifications

The practical importance of health beliefs is that they can often be influenced by health education efforts (Petosa & Jackson, 1991). Several different studies based on this research would be interesting. Based on the results of this

study it is recommended that educational programs be focused on health-related motivations that also identify not drinking as a healthy behavior. Several studies are suggested: design a study comparing the health beliefs of those who are convicted of DUI with those who are not, one evaluating the health beliefs of those in a recent alcohol-related MVC and those convicted of DUI, but not involved in a recent alcohol-related MVC; and one comparing those in an alcohol-related MVC with and without injury. In the later study, the severity of injury could then be correlated with health beliefs. A study that correlated health beliefs to actual health behavior would further strengthen the relationship between health beliefs and health behaviors related to drinking and driving.

Mother's Against Drunk Drivers (MADD) would benefit from further research to explore if the VIP panel alters not only health beliefs, but also behavior. An analysis of the impact of the education and method of presentation at the VIP would be an interesting study. A comparison of the HBM questionnaire before and then one week after the VIP panel would also be of interest.

Finally, a study with open ended questions evaluating why one chooses to drink and drive in the first place would be useful. This could explore, in depth, the benefits and barriers to changes in health beliefs.

Summary

Why people engage in activities that they know are detrimental to their health is a complex question. The purpose of this study was to describe the health beliefs of those who are convicted of DUI. The study examined the health beliefs of those who are convicted of DUI and have a history of an alcohol-related MVC with those convicted of DUI and have no history of an alcohol-related MVC. There was no difference in health beliefs except the health beliefs about health motivation.

APPENDICES

APPENDIX A

HBM QUESTIONNAIRE

Appendix A

HBM Questionnaire

I am going to ask you some questions about your beliefs concerning drinking and driving. There are no right or wrong answers. Everyone has different experiences which will influence how they feel.

It is important that you answer according to your actual beliefs and not according to how you feel you should believe or how you think we want you to believe. We need the answers that explain how you feel. Be sure you answer all the questions.

After you read each statement, choose if you STRONGLY DISAGREE, DISAGREE, are NEUTRAL, AGREE, or STRONGLY AGREE with the statement.

- | | | | | | | |
|----|---|---|---|----|---|------|
| SD | D | N | A | SA | 1. The thought of being in a car accident after drinking frightens me. | (21) |
| SD | D | N | A | SA | 2. Avoiding drinking before I drive is difficult. | (22) |
| SD | D | N | A | SA | 3. I feel that my chances of being in a car accident after drinking in the future are high. | (23) |
| SD | D | N | A | SA | 4. Not driving after drinking avoids future problems for me. | (24) |

- | | | | | | | | |
|----|---|---|---|----|-----|--|------|
| SD | D | N | A | SA | 5. | I worry a lot about being in a car accident after drinking. | (25) |
| SD | D | N | A | SA | 6. | I would hate myself if I got in a car accident after drinking. | (26) |
| D | D | N | A | SA | 7. | My chances of being in a car accident after drinking are great. | (27) |
| SD | D | N | A | SA | 8. | Being in a car accident after drinking would hurt my family a lot. | (28) |
| SD | D | N | A | SA | 9. | There is a great chance within the next year I will be in a car accident after drinking. | (29) |
| SD | D | N | A | SA | 10. | The problems I would have after being in a car accident while drinking would last a long time. | (30) |
| SD | D | N | A | SA | 11. | My habits of drinking and driving make it more likely that I will be in a car accident after drinking. | (31) |
| SD | D | N | A | SA | 12. | There is a good possibility that I will be in a car accident after drinking. | (32) |
| SD | D | N | A | SA | 13. | I have a lot to gain by not drinking and driving. | (33) |
| SD | D | N | A | SA | 14. | It is embarrassing for me to drink and not drive. | (34) |
| SD | D | N | A | SA | 15. | If I do not drive after drinking, I will not be hurt badly if I am in a car accident. | (35) |
| SD | D | N | A | SA | 16. | If I was in a car accident after drinking my whole life would change. | (36) |
| SD | D | N | A | SA | 17. | If I do not drive when I drink, it would help me to avoid a car crash. | (37) |

- | | | | | | | | |
|----|---|---|---|----|-----|---|------|
| SD | D | N | A | SA | 18. | I have to give up quite a bit in order to not drive after drinking. | |
| | | | | | | | (38) |
| SD | D | N | A | SA | 19. | I exercise regularly - at least three times a week. | |
| | | | | | | | (39) |
| SD | D | N | A | SA | 20. | I eat a well-balanced diet. | |
| | | | | | | | (40) |
| SD | D | N | A | SA | 21. | I think the chances of me being in a car crash are the same whether I have been drinking or not. | |
| | | | | | | | (41) |
| SD | D | N | A | SA | 22. | To avoid driving after I have been drinking would require starting a new habit, which is difficult. | |
| | | | | | | | (42) |
| SD | D | N | A | SA | 23. | I frequently do things to improve my health. | |
| | | | | | | | (43) |
| SD | D | N | A | SA | 24. | I am afraid I would not be able to drive after drinking. | |
| | | | | | | | (44) |
| SD | D | N | A | SA | 25. | I search for new information related to my health. | |
| | | | | | | | (45) |
| SD | D | N | A | SA | 26. | Maintaining good health is extremely important to me. | |
| | | | | | | | (46) |
| 27 | | | | | | Did you complete this questionnaire | (48) |
| | | | | | | _____ before the panel presentation?(1) | |
| | | | | | | _____ after the panel presentation? (2) | |

Items adapted from Kim et al. (1991) tool

_____ Yes, I am interested in receiving a summary of the
study results.

NAME _____
ADDRESS _____

APPENDIX B

Demographic Data

Appendix B

Demographic Data

 (1-3)

Please complete the following information. This data is helpful, but not necessary.

Age: _____ (4-5) Sex: male _____ (1) (6)
female _____ (2)

Marital Status: (7)
Single____(1) Married____(4)
Widowed____(2) Separated____(5)
Divorced____(3)

Race: _____ (8)

Caucasian _____ (1)	American Indian _____ (4)
Afro-american _____ (2)	Hispanic _____ (5)
Asian-american _____ (3)	Other _____ (6)

Occupation: _____ (9-10)

Present employment status: (11)

Employed full-time _____ (1) Employed part-time _____ (3)
Unemployed _____ (2) Laid-off _____ (4)

Highest education completed: (12)

Grade school____(1)	College graduate____(4)
High school____(2)	Graduate school____(5)
Some college____(3)	

Income Range: (13)

Less than \$10,000 _____(1) \$10,001 - 20,000____(4)
 \$20,001 - 30,000 _____(2) \$30,001 - 40,000____(5)
 \$40,001 - 50,000 _____(3) \$50,001 - 60,000____(6)
 \$61,000 or >____(7)

1. Have you ever been in a motor vehicle crash that involved drinking?

Yes ____ (1) No ____ (2) (14) How long ago? ____
(15-16)

2. Have you ever been convicted or arrested for an alcohol-related offense before?
Yes ____ (1) No ____ (2) How long ago? ____ (18-19)
(17)

Appendix C

HBM Variable Definitions at First and Second Survey

Appendix C

HBM Variable Definitions at First and Second Survey

First Survey

Susceptibility - An individual's own estimated subjective probability that he or she will encounter specific health problems. It refers to the subjective risks of contracting a condition.

Second Survey

Susceptibility - An individual's own subjective risks of contracting a condition. This may occur with the individual who denies any possibility of contracting a given condition or a person who admits to the "statistical" possibility of a disease occurrence, but it would not be likely to happen or a person who expresses a feeling of real danger of contracting the condition. An example is someone who smokes, but denies the possibility of getting lung cancer related to their smoking.

First Survey

Seriousness - An individual's own subjective conviction concerning the seriousness of a given health problem.

Second Survey

Seriousness - An individual's own subjective conviction concerning the seriousness of a given health problem. The degree of seriousness may be judged by the degree of emotional arousal created by the thought of a disease or by the kinds of difficulties the individual believes a given health condition will create. An example would be the belief that wearing a seat belt is important because if involved in a car accident a head injury may occur and change one's life.

First Survey

Barriers - Those negative aspects of health action that serve to stop action and arouse conflicting motives of avoidance.

Benefits - An individual's subjective belief about the relative effectiveness of known available alternatives in reducing the disease threat.

Health motivation - Relates to the general tendency for an individual to partake in healthy

Second Survey

Barriers - Those negative aspects of a health action that keep a person from performing something to make them healthy or keep them safe. Negative responses to the action may be viewed as inconvenient, expensive, unpleasant, painful or upsetting. For example: I don't wear my seat belt because it wrinkles my clothes.

No change

No change

behaviors, not subjective beliefs.

APPENDIX D
FIRST SURVEY FOR CONTENT VALIDITY

APPENDIX D

FIRST SURVEY FOR CONTENT VALIDITY

Appendix D

First Survey for Content Validity

November 8, 1993

Dear Colleague:

I am presently working on my MSN through Grand Valley State University and have to complete my thesis. My purpose in writing to you is to ask for your assistance in defining the content validity of my tool. Enclosed you will find definitions of the various components of the Health Belief Model and a questionnaire. Below is listed what is needed:

1. Read the definitions,
2. Read each question and decide what concept the question is testing,
3. Circle the appropriate letter that represents the concept being tested,
4. Return the questionnaire in the self-addressed stamped envelope.

I appreciate you taking the time out of your schedule to assist me. Please return the questionnaire by November 23, 1993.

Sincerely,

Teresa Tucker, RN, MSNc, CCRN
Care Coordinator for Critical Care

Definition of Terms

Terms	Definition
Perceived susceptibility	An individual's own subjective conviction concerning the seriousness of a given health problem.
Perceived seriousness	An individual's own estimated subjective probability that he or she will encounter specific health problems. It refers to the subjective risks of contracting a condition.
Perceived benefits	An individual's subjective belief about the relative effectiveness of known available alternatives in reducing the disease threat.
Perceived barriers	Those negative aspects of a health action that serve to stop action and arouse conflicting motives of avoidance.

Health motivation

Relates to a general tendency
for an individual to partake
in healthy behaviors, not
subjective beliefs.

After you read each statement, choose if the variable being studied is seriousness (ser), susceptibility (suc), benefits (ben), barriers (bar), or health motivation (mov) and circle the appropriate abbreviation.

- | | | | | | |
|-----|-----|-----|-----|-----|---|
| ser | suc | ben | bar | mov | 1. The thought of being in a car accident after drinking scares me. |
| ser | suc | ben | bar | mov | 2. Avoiding drinking before I drive is difficult. |
| ser | suc | ben | bar | mov | 3. I feel that my chances of being in a car accident after drinking in the future are high. |
| ser | suc | ben | bar | mov | 4. Not driving after drinking avoids future problems for me. |
| ser | suc | ben | bar | mov | 5. I worry a lot about being in a car accident after drinking. |
| ser | suc | ben | bar | mov | 6. I would hate myself if I got in a car accident after drinking. |
| ser | suc | ben | bar | mov | 7. My chances of being in a car accident after drinking are great. |
| ser | suc | ben | bar | mov | 8. Being in a car accident after drinking would hurt my family. |

- ser suc ben bar mov 9. There is a great chance within
the next year I will be in a
car accident after drinking.
- ser suc ben bar mov 10. Problems I would experience
from being in a car accident
after drinking would last a
long time.
- ser suc ben bar mov 11. My habits of drinking and
driving make it more likely
that I will be in a car
accident after drinking.
- ser suc ben bar mov 12. There is a good possibility
that I will be in a car
accident after drinking.
- ser suc ben bar mov 13. I have a lot to gain by not
drinking and driving.
- ser suc ben bar mov 14. It is embarrassing for me to
drink and not drive.
- ser suc ben bar mov 15. If I do not drive after
drinking, I will not be hurt
badly if I am in a car
accident.
- ser suc ben bar mov 16. If I was in a car accident
after drinking my whole life
would change.

ser suc ben bar mov 17. If I do not drive when I
drink, it would help me to
avoid a car crash.

ser suc ben bar mov 18. In order to not drive after
drinking I have to give up
quite a bit.

ser suc ben bar mov 19. I exercise regularly - at
least three times a week.

ser suc ben bar mov 20. I eat a well-balanced diet.

ser suc ben bar mov 21. I think the chances of me
being in a car crash are the
same whether I have been
drinking or not.

ser suc ben bar mov 22. To avoid driving after I have
been drinking would require
starting a new habit, which is
difficult.

ser suc ben bar mov 23. I frequently do things to
improve my health.

ser suc ben bar mov 24. I am afraid I would not be
able to drive after drinking.

ser suc ben bar mov 25. I search for new information
related to my health.

ser suc ben bar mov 26. Maintaining good health is
extremely important to me.

APPENDIX E
2ND SURVEY FOR CONTENT VALIDITY

Appendix E

2nd Survey for Content Validity

Definition of Terms

Terms	Definition
Perceived susceptibility	An individual's own subjective risks of contracting a condition. This may occur with the individual who denies any possibility of contracting a given condition or a person who admits to the "statistical" possibility of a disease occurrence, but it would not be likely to happen or a person who expresses a feeling of real danger of contracting the condition. An example is someone who smokes, but denies the possibility of getting lung cancer related to his/her smoking.

Perceived seriousness

An individual's own subjective conviction concerning the seriousness of a given health problem. The degree of seriousness may be judged by the degree of emotional arousal created by the thought of a disease or by the kinds of difficulties the individual believes a given health condition will create. An example would be the belief that wearing a seat belt is important because if involved in a car accident a head injury may occur and change one's life.

Perceived benefits

An individual's subjective belief about the relative effectiveness and availability of known alternatives in reducing the disease threat.

Perceived barriers

Those negative aspects of a health action that keep a person from performing something to make them healthy

or keep them safe. Negative responses to the action may be viewed as inconvenient, expensive, unpleasant, painful or upsetting. For example: I don't wear my seat belt because it wrinkles my clothes.

Health motivation

Relates to a general tendency for an individual to partake in healthy behaviors, not subjective beliefs. For example: I drink one glass of milk a day to help prevent osteoporosis.

After you read each statement, choose if the variable being studied is seriousness (ser), susceptibility (suc), benefits (ben), barriers (bar), or health motivation (mov) and circle the appropriate abbreviation.

- | | | | | | | |
|-----|-----|-----|-----|-----|----|--|
| ser | suc | ben | bar | mov | 1. | The thought of being in a car accident after drinking frightens me. |
| ser | suc | ben | bar | mov | 2. | Avoiding drinking before I drive is difficult. |
| ser | suc | ben | bar | mov | 3. | I feel that my chances of being in a car accident after drinking in the future are high. |
| ser | suc | ben | bar | mov | 4. | Not driving after drinking avoids future problems for me. |
| ser | suc | ben | bar | mov | 5. | I worry a lot about being in a car accident after drinking. |
| ser | suc | ben | bar | mov | 6. | I would hate myself if I got in a car accident after drinking. |
| ser | suc | ben | bar | mov | 7. | My chances of being in a car accident after drinking are great. |

- ser suc ben bar mov 8. Being in a car accident after drinking would hurt my family a lot.
- ser suc ben bar mov 9. There is a great chance within the next year I will be in a car accident after drinking.
- ser suc ben bar mov 10. The problems I would have after being in a car accident while drinking would last a long time.
- ser suc ben bar mov 11. My habits of drinking and driving make it more likely that I will be in a car accident after drinking.
- ser suc ben bar mov 12. There is a good possibility that I will be in a car accident after drinking.
- ser suc ben bar mov 13. I have a lot to gain by not drinking and driving.
- ser suc ben bar mov 14. It is embarrassing for me to avoid driving after I have been drinking.
- ser suc ben bar mov 15. If I do not drive after drinking, I will not be hurt badly if I am in a car accident.

ser suc ben bar mov 16. If I was in a car accident
after drinking my whole life
would change.

ser suc ben bar mov 17. If I do not drive when I
drink, it would help me to
avoid a car crash.

ser suc ben bar mov 18. I have to give up quite a bit
in order to not drive after
drinking.

ser suc ben bar mov 19. I exercise regularly - at
least three times a week.

ser suc ben bar mov 20. I eat a well-balanced diet.

ser suc ben bar mov 21. I think the chances of me
being in a car crash are the
same whether I have been
drinking or not.

ser suc ben bar mov 22. To avoid driving after I have
been drinking would require
starting a new habit, which is
difficult.

ser suc ben bar mov 23. I frequently do things to
improve my health.

ser suc ben bar mov 24. I am afraid I would not be
able to drive after drinking.

ser suc ben bar mov 25. I search for new information
related to my health.

ser suc ben bar mov 26. Maintaining good health is
extremely important to me.

APPENDIX F
COVER LETTER

Appendix F

Cover letter

June, 1994

My name is Teresa Tucker and I am a registered nurse at Bronson Hospital. I am presently conducting a research study that will assess the relationship of what you believe about your health and how that affects your behavior. To do this I need your help. You will need to fill out two questionnaires assessing your health beliefs.

The information provided will be kept strictly confidential and the data will be coded so that identification of individual participants will not be possible. No one will be identified by name. The information will be utilized for research only. There are not any identified risks to participating in this study at this time. Participation is voluntary and you may withdraw at any time without affecting your future medical care. When you fill out and return the two questionnaires this means you consent to participate in this study.

If you have any questions or concerns regarding this study, please contact me at 341-8338. If you are interested in receiving a summary of the study please fill out the attached form. Thank you for your consideration in participating in this study.

Sincerely yours,

Teresa Tucker, RN, MSN Candidate

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