

A TEST OF THE THEORY OF REASONED ACTION

A DISSERTATION
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN THE GRADUATE SCHOOL OF THE
TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NURSING

BY

LOUISE AMANDA AUTIO, BSN, MS

DENTON, TEXAS

MAY 1994

TEXAS WOMAN'S UNIVERSITY
DENTON, TEXAS

March 28, 1994
Date

To the Associate Vice President for Research and Dean of the
Graduate School:

I am submitting herewith a dissertation written by Louise
Amanda Autio entitled "A Test of the Theory of Reasoned
Action." I have examined this dissertation for form and
content and recommend that it be accepted in partial.
fulfillment of the requirements for the degree of Doctor of
Philosophy, with a major in Nursing.

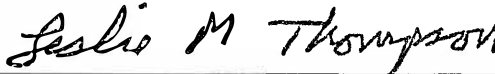


Dr. Patti Hamilton,
Major Professor

We have read this dissertation
and recommend its acceptance:



Accepted



Associate Vice President for Research
and Dean of the Graduate School

Copyright c Louise Amanda Autio, 1994

All rights reserved

ABSTRACT

A TEST OF THE THEORY OF REASONED ACTION

May, 1994

The study problem was, "Do relationships among the variables on the Health Care Intention Index correspond to those predicted by the theory of reasoned action (Ajzen & Fishbein, 1980)?" The study had a descriptive, correlational, comparative design with a survey using a semantic differential. The sample contained 60 volunteers, women, aged 66 to 90, who lived in government subsidized, public apartments. The investigator performed (a) Pearson correlation to test for positive relationships among variables intrinsic to the theory of reasoned action, (b) hierarchical multiple regression to examine the contributions made by attitude toward the behavior, subjective norm, and past habit of seeking health care to the prediction of health care intention, (c) cross-validation to test the generalizability of the regression solution developed from one half of the sample to the other, and (d) one-way analysis of variance to contrast the extrinsic with intrinsic variables. The current study treated the variable, "past habit of seeking health care"

as an intrinsic variable. Past habit of seeking health care made a negligible contribution toward the prediction of intention. Subjective norm was the consistent predictor of health care intention. The total sample of 60 volunteers was divided into two subgroups for comparison. Multiple R ranged between .6270 and .8334 ($p < .01$) for each subgroup. The regression coefficients were stable over the two subgroups. There were significant relationships between general health and health care intention using a more stringent criterion than .05 (.043). Cronbach's alpha was .7122 for the attitude toward the behavior subscale, .9225 for the evaluations of likely outcomes subscale and .6769 for the normative beliefs subscale.

The Health Care Intention Index needs further testing before expert nurses use it to encourage secondary prevention. This testing should include item analysis to construct a homogeneous set of subscales and subsequent factor analysis.

TABLE OF CONTENTS

COPYRIGHT.....	iii
ABSTRACT.....	iv
LIST OF TABLES.....	viii
LIST OF FIGURES.....	x
CHAPTER	
I. INTRODUCTION.....	1
Problem of Study.....	3
Purposes of the Study.....	3
Rationale for the Study.....	3
Theoretical Framework.....	15
Assumptions.....	24
Hypotheses.....	26
Definition of Terms.....	28
Limitations.....	33
Delimitations.....	36
Summary.....	36
II. REVIEW OF THE LITERATURE.....	38
Studies Using the Theory of Reasoned Action.....	38
Andersen's Theory of Health Care Utilization....	42
Triandis's Theory of Interpersonal Behavior.....	50
Research on Past Behavior.....	57
Summary.....	60
III. PROCEDURE FOR COLLECTION AND TREATMENT OF DATA..	63
Setting.....	63
Population and Sample.....	64
Protection of Human Subjects.....	64
Instrument.....	65
Data Collection.....	71
Treatment of Data.....	73
IV. ANALYSIS OF DATA.....	77
Description of Participants.....	77
Findings.....	86
Summary of Findings.....	103

CHAPTER

V. SUMMARY OF THE STUDY.....	106
Summary.....	107
Discussion of Findings.....	108
Conclusions and Implications.....	112
Recommendations for Further Study.....	116
REFERENCES.....	118
APPENDIX	
A. CONSENT.....	130
B. AUTHORIZATION LETTER FROM THE HUMAN SUBJECTS REVIEW COMMITTEE.....	133

LIST OF TABLES

Table

1	Relationships Between Attitude Toward the Behavior (<u>Aact</u>) and Subjective Norm (<u>SN</u>) With Intention (<u>BI</u>) in Studies Using the Theory of Reasoned Action.....	39
2	Variables in the Theory of Health Care Utilization.....	43
3	Studies Using Andersen's Model to Predict Visits to a Physician by the Elderly.....	45
4	Age Comparisons of the Participants by Grouping..	78
5	Distribution of Participants by Age.....	79
6	Distribution of Health Ratings.....	80
7	Months Since Last Visit to a Doctor.....	81
8	History of Opportunities Taken for Screenings for Secondary Prevention.....	82
9	Participants Currently Concerned About Health....	83
10	Years of Formal Education Completed by the Participants.....	84
11	Terminal Educational Level of the Participants...	85
12	Reported Satisfaction with Current Income.....	86
13	Cronbach's Alpha for Subscales on the Health Care Intention Index.....	87
14	Correlations Between the Sum of Evaluations of Likely Outcomes (<u>ΣOE</u>) with Attitude Toward the Behavior (<u>Aact</u>) and Health Care Intention (<u>BI</u>) (<u>N</u> = 60)...	89
15	Correlation Between the Sum of Motivation to Comply with Normative Beliefs (<u>ΣMcNB</u>) With Subjective Norm (<u>SN</u>) and Health Care Intention (<u>BI</u>).....	90

Table

16	Hierarchical Regression of Subjective Norm (<u>SN</u>), Attitude Toward the Behavior (<u>Aact</u>), and Past Habit of Seeking Health Care (<u>H</u>) on Health Care Intention (<u>BI</u>) for Subgroup 1 (<u>n</u> = 30).....	93
17	Hierarchical Regression of Subjective Norm (<u>SN</u>), Attitude Toward the Behavior (<u>Aact</u>), and Past Habit of Seeking Health Care (<u>H</u>) on Health Care Intention (<u>BI</u>) for Subgroup 2 (<u>n</u> = 30).....	94
18	Analysis of Variance of the Regression Coefficients Over the Subgroups.....	95
19	One-Way Analysis of Variance of Intention by the Extrinsic Variables in the Total Sample (<u>N</u> = 60).....	97
20	One-Way Analysis of Variance of Attitude Toward the Behavior by the Extrinsic Variables in the Total Sample (<u>N</u> = 60).....	98
21	One-Way Analysis of Variance of Subjective Norm by the Extrinsic Variables in the Total Sample (<u>N</u> = 60).....	99
22	One-Way Analysis of the Sum of Evaluations of Likely Outcomes by the Extrinsic Variables in the Total Sample (<u>N</u> = 60).....	100
23	One-Way Analysis of Variance of the Sum of Motivation to Comply with Normative Beliefs by the Extrinsic Variables in the Total Sample (<u>N</u> = 60).....	101
24	One-Way Analysis of Variance of Past Habit of Seeking Health Care by the Extrinsic Variables for the Total Sample (<u>N</u> = 60).....	102

LIST OF FIGURES

Figure

1	Model Demonstrating Hypothesized Variable Relationships.....	22
---	--	----

CHAPTER 1

INTRODUCTION

The true stories of three women demonstrate the reason for nursing's interest in health care decisions by the elderly. In the first story, a jaundiced, frail, stooped, elderly woman advanced haltingly into the room by lurching from island to island of support. She clung to the door frame, wall, cabinet, and table to the back of a folding chair. She slumped into the chair, eyes downcast, relieved at not falling, her exhaustion evident from the effort spent moving from her apartment to the community room. She told a nursing student that she had been extremely ill for the previous two weeks and, except for periods of vomiting and diarrhea, remained confined to bed. That afternoon the housing manager made arrangements to take the woman to her doctor. Emergency surgery the next morning revealed a tumor blocking her bile duct.

In the second story, an elderly woman told her visiting nurse that she kept a growing breast tumor hidden from her husband for a year by changing clothes in the closet. Her daughter discovered the hardened mass when helping her mother to her feet after a fainting spell. The

morning after the discovery the daughter took her mother to the "best oncologist in town." After surgery and radiation the wound gaped and required continuing, frequent dressing changes at home. The elderly woman said she still regretted her family's discovery of the mass but not the fact that she had waited too long and cure was no longer possible.

In the third story, an elderly woman reported experiencing crushing chest pains and refusing to see a doctor because she had had open heart surgery once and did not want to undergo the procedure again. She avoided formal health care for the next month despite continuing episodes of chest pain and the pleadings of her adult daughter. Finally, she could bear the pains no longer and agreed to go to a local hospital by ambulance for a second open heart operation.

These stories reveal the reason for the investigator's interest in health care decision making. A questionnaire, The Health Care Intention Index, may reveal the actual content of such decisions. This manuscript presents a description of two tests of that instrument with women, aged 65 and over, who lived in subsidized housing.

Problem of Study

The study problem was, "Do relationships among variables on the Health Care Intention Index correspond to those predicted by the theory of reasoned action?"

Purposes of the Study

The purposes of the study were (a) determining the reliability of the subscales of the Health Care Intention Index, (b) determining which variables correlated with health care intention, (c) determining the stability of the tested relationships, and (d) examining the relationship of extrinsic variables to those intrinsic to the theory of reasoned action.

Rationale for the Study

The Health Care Intention Index was designed to explore decision making in regard to secondary prevention. This section addresses the study in terms of reasons for focusing on secondary prevention with the target group and the costs of missed secondary prevention. Secondary prevention is the early diagnosis and prompt treatment of disease to limit disability (Leavell & Clark, 1965). Several policy-setting groups have promoted increasing secondary prevention efforts among the elderly. These

groups include the United States Department of Health and Human Services (1990), the Texas Department of Health (1991), the Texas Cancer Council (1992), and the Texas Statewide Health Coordinating Council (1993). National year 2000 goals for secondary prevention focus on women receiving clinical breast examinations, mammograms, and Pap tests, all part of screening for cancer. The Texas Cancer Council has established a goal of detecting, diagnosing, and treating cancer early to effect a cure. Making up-to-date cancer screening procedures available to a larger number of adults and identifying and reducing barriers to cancer prevention and control are ways planned to accomplish this goal (Texas Department of Health). The Texas Statewide Health Coordinating Council has presented an executive summary of recommendations that includes preventing avoidable diseases, injuries, and deaths in the elderly. One recommendation is increasing pneumococcal pneumonia and influenza immunizations to reduce such deaths and a second involves ensuring that the elderly receive the screening, immunization, and counseling services recommended by the national Preventive Services Task Force. The Texas Statewide Health Coordinating Council also urged involving nurses in the delivery of clinical preventive services since that strategy increases health care

utilization. The Texas Cancer Council assigned responsibility for reminding persons about the need for cancer screenings to nurses as members of the health professions. Expert nurses could screen the elderly for (a) the depressive symptoms, (b) suicide risk factors, (c) abnormal bereavement, (d) changes in cognitive function, (e) medications associated with an increased risk of falls, (f) signs of physical-abuse or neglect, (g) malignant skin lesions, and (h) peripheral arterial disease, all cited as special concerns by The Texas Statewide Health Coordinating Council.

According to recommendations of these policy-setting bodies, times to implement specific secondary prevention measures occur every one, two, and three years in the absence of symptoms. By delaying more than 36 months between visits for formal health care one would miss all these opportunities. A review of past research on utilization of formal health care identified groups who did not participate in secondary prevention. McCall and Wai (1983) studied a random sample of continuously enrolled Medicare program beneficiaries, representing 3% of the eligible Medicare population in Colorado. Over the four year duration of the study, 57% of the nonusers of formal health care remained nonusers. For all utilization

variables, nonusers had a high likelihood of remaining nonusers or becoming low users in the following year. For medical office visits, 70% of the nonusers remained in the same utilization category the following year.

The National Health Interview Survey in 1972 and 1982 revealed that low-income people, people with low levels of education, and Hispanics were the least likely to receive routine preventive services (Texas Department of Health, 1991). In 1989, approximately 25.3% of the 2.4 million Texans, aged 60 years of age and over, fell below the federally designated poverty level (Texas Department of Health) and so would be less likely to receive recommended preventive services.

Other research described persons who delayed seeking diagnosis and treatment despite being symptomatic. Louis Harris and Associates (1981) used a stratified national sample of the civilian population based on the 1980 Census figures in multistage random cluster sampling. One in seven (N = 1,836) people, aged 65 and over, reported avoiding seeing a doctor in the past year even though they felt something about their health warranted a visit. Waxman, Carner, and Klein (1984) asked 88 people attending senior lunch programs whom they would tell about specific symptoms. More than 21% would keep symptoms of depression

to themselves and over 4% would keep cardiovascular symptoms to themselves. Only 37% of the people would report signs of depression to a health professional and over 70% would report cardiovascular symptoms.

The elderly could interpret some symptoms of illness as signs of aging (Haug, 1981; Leventhal, 1984; Leventhal & Prohaska, 1986; Levkoff, Cleary, Wetle, & Besdine, 1988) or as unimportant conditions (Mac Arthur & Smith, 1984). These unimportant conditions could be hemorrhoids as a reason for rectal pain and normal body fluctuations for weight loss (Mac Arthur & Smith). Though fatigue could be a normal part of aging, it could also signify the presence of many diseases (Leventhal). When respondents attribute symptoms to aging, they are more likely to cope by: (a) waiting and watching, (b) accepting the symptoms, (c) denying or minimizing the threat, or (d) postponing or avoiding medical attention (Leventhal & Prohaska). Attributing symptoms to aging or as signifying an unimportant condition leads some elderly to delay seeking formal health care.

Individuals with established chronic illness could assume new symptoms are part of an existing condition and not take action. The significance of new symptoms could be difficult to determine because the chronically ill never

expect to be free of symptoms (Levkoff et al., 1988).

Several studies have associated other variables with nonparticipation in secondary prevention efforts by the elderly. These variables could be summarized as social (Coe, Wolinsky, Miller & Prendergast, 1985; Keith, 1987), economic (Keith; Louis Harris and Associates, 1981; McIntosh, 1983; Petchers & Milligan, 1988; Safer, Tharps, Jackson, & Leventhal, 1979; Stoller, 1982), perceptual (Louis Harris and Associates; McIntosh; Safer et al.; Stoller), emotional (Louis Harris and Associates; McIntosh), and transportation concerns (Louis Harris and Associates).

Research on leading causes of death has revealed costs of missed secondary prevention. The 1989 leading causes of death for female Texans, aged 65 and over, were malignant neoplasms, heart disease, cerebrovascular disease, chronic obstructive pulmonary disease and associated conditions, pneumonia and influenza, and diabetes mellitus (Larimer & Rutenberg, 1991).

The Texas Cancer Council (1992) targeted persons over 60 years of age as being at highest risk for almost all types of cancer, with that risk increasing as they age. Medicare reported spending nearly \$4.1 billion on hospitalizations for malignant neoplasms in 1987 (CDC,

1990). Four types of cancer, breast, cervical, colorectal, and lung, have been responsible for nearly half of all cancer deaths in Texas (Texas Department of Health, 1991). Of these types, only lung cancer does not have an effective screening method (Texas Cancer Council).

The cost of treating a breast cancer patient cured after early detection is approximately \$14,000 compared to \$34,000 for those fatal cases not detected early (Texas Statewide Health Coordinating Council). According to the 1990 risk factor survey only 38% of women in Texas, aged 50 and over, had had a screening mammogram within the past year (Texas Statewide Health Coordinating Council). If all women received mammograms according to recommended guidelines, approximately 673 of the 2,246 deaths due to breast cancer in 1990 would not have occurred (Texas Statewide Health Coordinating Council). Therefore the cost of these 673 unnecessary deaths due to the missed opportunity of secondary prevention resulted in an added \$13.46 million in health care costs in Texas for 1990. This cost analysis does not include the loss to family members or personal suffering. The Texas Cancer Council (1992) estimates that performing mammography on all women, over age 40, without a history of such screening would reveal 8,000 new cases of cancer.

Although one-quarter of cervical cancer incidence occurs in women, aged 65 and over, almost 41% of all cervical cancer deaths occur in the same population (Celentano, Shapiro, & Weisman, 1982). The survival rate for detecting cervical cancer in the precancerous stage or in situ is virtually 100% (Texas Department of Health, 1991; United States Department of Health and Human Services, 1992). Approximately 37% of cervical cancer deaths are a result of never having had a pap test (Texas Department of Health). A case-control study that paired 153 women with cervical cancer with matched controls (Celentano, Klassen, Weisman, & Rosenshein, 1988) lent support to this estimate. The researchers found the majority of the women with cancer had never had a Pap test. Celentano et al. (1982) found a strong, negative, linear relationship between age and the number of women reporting a recent Pap test (N = 675). Mandelblatt and Fahs (1988) estimated saving \$5,907 and 3.9 years of life per 100 Pap tests by screening 816 women, aged 65 and over, at a hospital clinic. The CDC (1989a) estimated that screening women with a Pap test every three years could reduce cervical cancer mortality by 70 to 95%.

The CDC (1989b) reported that in 1986, 41% of deaths from colorectal cancer occurred in persons aged 60 to 74

years and 44% in persons aged 75 years or more. The five year survival rate between the years 1974 and 1985 was approximately 83% if diagnosed at a localized stage but only 6% if advanced. Colorectal cancer has a natural history of approximately 10 to 15 years, providing an opportunity for intervention (Winawer, 1993). Mandel et al. (1993) found annual fecal occult-blood testing decreased the 13 year cumulative mortality from colorectal cancer by approximately 33% (N = 46,551, aged 50 to 80). Funch (1985) found patients generally waited 3 to 6 months before seeking help for symptoms of colorectal cancer. Marshall, Gregorio, and Walsh (1982) found single, divorced, or separated women, aged 65 and over, tended to seek help for colon cancer at a significantly more advanced stage than did men (N = 1,894, $p < .05$).

The 1987 national Medicare hospitalization costs for heart disease in the elderly were over \$8.7 billion. This was more than one fifth of total Medicare expenditures on hospital care for the elderly for that year (CDC, 1990).

Strokes are a leading cause of disabling conditions. In 1988, 87% of all cerebrovascular disease deaths and 74% of associated hospitalizations occurred among people aged 65 years or more (CDC, 1992a). Medicare costs for hospitalizations related to cerebrovascular disease topped

\$2.3 billion in 1987 (CDC, 1990) but hospitalization represents only slightly more than one third of the total cost for that condition (CDC, 1989c). Other costs include medical treatment and rehabilitation, institutional care and loss of productivity and quality of life (Texas Department of Health, 1991).

The 1987 Medicare cost for hospitalization of elderly persons with chronic obstructive pulmonary disease (COPD) was \$668.8 million (CDC, 1990). Since COPD develops slowly, lung function testing of smokers could identify early impairment (Coultas & Samet, 1992).

The Texas Statewide Health Coordinating Council (1993) estimates that pneumococcal disease is three times more prevalent among the elderly than the population as a whole. The 1987 Medicare costs for hospitalizations related to pneumonia or influenza were \$1.8 billion (CDC, 1990). A 1989 National Health Interview Survey revealed that only 14% of persons, aged 65 and over, reported ever having received pneumococcal vaccine (Texas Statewide Health Coordinating Council).

Diabetes

There are probably 830,000 persons with diabetes in Texas but only half know their diagnosis (Texas Statewide Health Coordinating Council, 1993). Due to the aging of

the population and increasing numbers of high-risk Texans (Hispanics and African Americans), the prevalence of diabetes probably will increase significantly over the next ten years (Texas Statewide Health Coordinating Council).

Blindness and amputation. There are approximately 290 new cases of blindness and 2,400 amputations annually (half of all nontraumatic amputations) as a result of diabetes (Texas Statewide Health Coordinating Council, 1993). The CDC (1993) estimates that persons with diabetes are 25 times more likely than the general population to become blind. After 15 years of using insulin, the prevalence of diabetic retinopathy increases to approximately 90% (CDC). Proper care and early intervention could prevent approximately 60% of new cases of blindness from diabetes (Texas Department of Health, 1991). Regular eye examinations could save \$62 million to \$102 million and 71,000 to 85,000 sight-years annually in the United States (CDC). A diabetic is approximately 40 times more likely to have a lower extremity amputation than a nondiabetic but improved foot care programs could prevent 44 to 85% of such amputations (CDC, 1989d).

Renal disease. There are 620 new cases of end-stage renal disease annually with at least one quarter of the persons receiving associated dialysis in Texas as a result

of diabetes (Texas Department of Health, 1991). From 1980 to 1989 the incidence of new cases of end-stage renal disease due to diabetes increased six-fold overall with a twelve-fold increase in persons aged 75 years or more (CDC, 1992b). In 1985 the Texas Kidney Health Care Program provided interim financial support to more than 1,300 diabetics requiring dialysis at a cost of almost \$20,000 per patient (Texas Department of Health) for a total expenditure of \$26 million for that year alone.

Nersesian, Zaremba, and Wilhoite (1982) audited charts of diabetic patients (N = 898) at 34 hospitals to see if better education could have prevented their hospitalizations. More than 16% of the hospitalizations were due to a lack of knowledge of self-management skills and 10.3% had their hospital stays prolonged for diabetes education alone. The same investigators presented an educational program on self-management skills to a group of 533 diabetics. There were 96 (33%) fewer hospitalizations in the year following the program than the group had experienced in the previous year. Using average length of stay data the researchers estimated the cost savings at \$203,791 for 941 fewer hospital days. The costs of education were \$69,150 so the net saving was \$134,641 or \$292 per participant.

In summary, this section reviewed recommendations for secondary prevention furthered by several policy-setting groups. Several studies showed there have been elderly persons who would miss or delay obtaining such prevention. Research on the leading causes of death revealed both tremendous physical and financial costs of missing secondary prevention efforts. Expert nurses could encourage the elderly to participate in screenings and early treatment. After extensive testing, nurses may be able to use the Health Care Intention Index to predict whether persons urged to seek formal health care intended to do so.

Theoretical Framework

Fishbein (1967, 1973) derived the theory of reasoned action from Dulany's (1961) theory of propositional control by changing the names, meanings, and measurement of the concepts. Dulany (1968) credited a variety of scholars ranging from James, an 1890 psychologist, to Piaget for ideas to develop his theory that focused on verbal operant conditioning (encouraging particular verbal responses through subtle reinforcements of behavior). Verbal operant conditioning differs from pure behaviorism by the addition of awareness and mentalism. Dulany (1961) measured the

relationship between a participant's intention and behavior in making particular verbal responses.

Relationships of the Concepts

Three mathematical equations demonstrate the most recent version of the theory of reasoned action (Fishbein & Ajzen, 1975). Equation 1 shows the first formulation.

$$B \approx BI = (A_{act})w_1 + (SN)w_2 \quad (1)$$

Equation 1 shows the best predictor of volitional behavior (B) is behavioral intention (BI). Knowledge of one's attitude toward performing the behavior (A_{act}) added to the subjective norm or what one believes generalized important others expect (SN) each multiplied by regression weights (w_1 and w_2) are the best predictors of behavioral intention (BI).

The remaining formulations deal with prediction of attitude toward the behavior (Equation 2) and subjective norm (Equation 3) from underlying beliefs.

$$A_{act} = \sum_{i=1}^n O_i E_i \quad (2)$$

Equation 2 shows summing the evaluations of likely outcomes (OE) best predicts one's attitude toward performing that behavior (Aact).

$$SN = \sum_{i=1}^n (NB_i)(M_{ci}) \quad (3)$$

Equation 3 shows the sum of the motivation to comply with normative beliefs (MCNB) best predicts one's subjective norm (SN). Motivation to comply acts as a weight signifying the opinions rendered by a significant other.

Evaluation of the Theory

Fishbein's theory is parsimonious because it accounts for behavior of various kinds by using a relatively small number of concepts embedded within a single theoretical framework. One of its strengths is the conceptual order it provides by classifying variables into one of three categories (a) independent, (b) dependent, and (c) extrinsic (Liska, 1984). Another strength is the detailed instructions on operationalizing the variables resulting in measurement consistency, facilitating comparisons across studies (Ried & Christensen, 1988).

Sheppard, Hartwick, and Warshaw (1988) describe the

theory of reasoned action as robust because it functions well even in situations requiring a choice between alternatives. Stockman (1986) believes relationships among variables are robust even in situations expected to weaken it, such as varying the lapse of time between measures of the predictors and the behavior, predicting behavior instead of intention, examining intentions in novel behaviors or with habits, and predicting behavior for populations differing in age and education.

There are four criticisms of the theory. The first is in regard to its high specificity (Mullen, Hersey, & Iversen, 1987) because each behavior and sample require new belief items. Group interviews with women, aged 65 and over, provided belief items to develop the Health Care Intention Index.

The second criticism is a question about whether a true independence exists between attitude toward the act and subjective norm in Equation 1. This is been referred to as multicollinearity (Miniard & Cohen, 1981), redundancy (Miniard & Cohen, 1983), or crossover effect (Oliver & Bearden, 1985; Ryan, 1978, 1982; Shimp & Kavas, 1984). Liska (1984) disputes this criticism by maintaining that even if attitudes and subjective norms arise from similar and interrelated belief systems, their influences can

remain distinct.

Attitude toward the behavior exerts a stronger influence on behavioral intention than subjective norm does (Farley, Lehman, & Ryan, 1981). This effect has been universal, regardless of sample type, design, research discipline, or nature of measurement (Stockman, 1986). By examining the origin of the theory of reasoned action one can see how subjective norm lost importance in the translation. In Dulany's (1961) laboratory experiments the significant other was in the same room reinforcing particular verbal responses. This resulted in an influence and presence difficult to match when studying intention in independent adults.

The third criticism of the theory of reasoned action is that it ignores the role of past behavior in understanding intention (Sutton, 1987). The current study included a question on past habit of seeking formal health care.

The fourth and final criticism of the theory of reasoned action concerns Equation 2 and the meaning of multiplying an unlikely outcome (-1, -2, or -3) by a negative evaluation (-1, -2, or -3) resulting in a positive product (+1, +2, +3, +4, +6, or +9). Valiquette, Valois, Desharnais, and Godin (1988) address this issue while

reporting an item analysis of belief statements for intention to exercise regularly. Out of 2700 products (Equation 2) obtained in their study (Valiquette et al.) only 103 or 3.8% were the result of negative outcomes times negative evaluations. In the current study 375 out of 3900 products (Equation 2) or 9.6% were the result of multiplying a negative outcome times a negative evaluation. Ajzen and Fishbein (1980) describe the sum of evaluations of likely outcomes as a weighting process demonstrating the personal significance of each belief. Pearson correlation determines the relationship between the sum of evaluations of likely outcomes and attitude toward the behavior, intention, or behavior. Pearson correlation has three important principles that explain the effect of the product of two negative scores. Roscoe (1975) identifies these principles as the following:

1. The magnitude of the correlation coefficient is a function of the variability of the measures;
2. The correlation coefficient is unaffected by adding a constant to one or both of the measures; and
3. The skewing of one variable reduces the size of the correlation coefficient. This means the correlation coefficient would either be lessened (by decreased variability or skewing) or unaffected (constant effect)

depending on the number people selecting the two negative multiplicands and the uniformity in the size of the two negative multiplicands. After repeated testing, any products (whether from two negative multiplicands or not) that do not contribute to the prediction of attitude toward the behavior, intention, or behavior should be deleted. Therefore the criticism of meaningless positive scores is without merit.

Model for the Study

Figure 1 shows the study model. It demonstrates that the extrinsic variables will not exhibit meaningful relationships with any intrinsic variable and that attitude toward the behavior, past habit of seeking health care, and subjective norm are the direct predictors of health care intention. The sum of evaluations of likely outcomes and the sum of motivation to comply with normative beliefs are the indirect predictors of health care intention. No temporal order is implied.

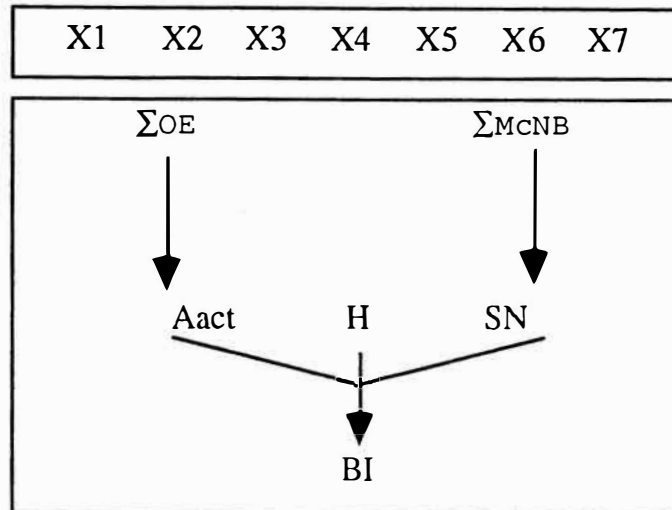


Figure 1. Model demonstrating hypothesized variable relationships.

Extrinsic Variables		Intrinsic Variables	
X1	Race	ΣOE	Sum of Evaluations of Likely Outcomes
X2	General Health		
X3	Current Concern	Aact	Attitude toward the Behavior
X4	Income	$\Sigma McNB$	Sum of Motivation to Comply with Normative Beliefs
X5	Age		
X6	Education	SN	Subjective Norm
X7	Months since Last Visit to a Doctor	H	Past Habit of Seeking Health Care
		BI	Health Care Intention
		➔	Direct Relationship

Equation 4 is a variation of Equation 1 showing variable relationships in the current study. Knowledge of attitude toward the behavior (Aact) added to the subjective norm (SN) added to past habit of seeking health care (H) each multiplied by regression weights (w_1 , w_2 , and w_3) are the best predictors of behavioral intention (BI). Equations 2 and 3 express the other relationships that are part of the current study and are redisplayed.

$$A_{act} = \sum_{i=1}^n O_i E_i \quad (2)$$

$$SN = \sum_{i=1}^n (N B_i) (M c_i) \quad (3)$$

$$BI = (A_{act})w_1 + (SN)w_2 + (H)w_3 \quad (4)$$

Assumptions

Theoretical Assumptions

1. Beliefs are formed through personal experience and information from respected others (Ajzen & Fishbein, 1980).

2. The goal of nursing is guiding the family in choosing among possibilities in the changing health process (Parse, 1981).

3. Seeking formal health care is volitional behavior predictable from intentions (Ajzen & Fishbein, 1980).

4. Adults consider the implications of their actions as they form intentions to seek health care (Ajzen & Fishbein, 1980).

5. It is possible to gain an understanding of the factors determining an individual's intention to seek formal health care (Ajzen & Fishbein, 1980).

6. It is possible to change health care seeking behavior by changing a number of the beliefs an individual holds (Ajzen & Fishbein, 1980).

Research Assumptions

1. There are assumptions associated with multiple hierarchical regression (Tabachnick & Fidell, 1989):

a. Multicollinearity or singularity does not exist among subjective norm, attitude toward the behavior, or past habit of seeking health care;

b. There is normality, linearity, and homoscedasticity between the predicted health care intention scores and the errors of prediction;

c. The errors of prediction of health care intention are independent of one another;

d. Subjective norm, attitude toward the behavior, and past habit of seeking health care do not act as suppressor variables; and

e. There are no outliers.

2. There are assumptions associated with correlation (Waltz & Bausell, 1981):

a. The variables (sum of evaluations of likely outcomes, sum of motivation to comply with normative beliefs, subjective norm, attitude toward the behavior, past habit of seeking health care, and health care intention) distribute normally and independently in the population;

b. The variables (sum of evaluations of likely outcomes, sum of motivation to comply with normative beliefs, subjective norm, attitude toward the behavior, past habit of seeking health care, and health care intention) have homoscedasticity; and

c. Sum of evaluations of likely outcomes, sum of motivation to comply with normative beliefs, subjective

norm, attitude toward the behavior, past habit of seeking health care, and health care intention are interval level variables.

3. There are assumptions associated with one-way analysis of variance (Waltz & Bausell, 1981):

- a. The extrinsic variables are discrete;
- b. The sum of evaluations of likely outcomes, sum of motivation to comply with normative beliefs, subjective norm, attitude toward the behavior, past habit of seeking health care, and health care intention are interval level variables; and
- c. The variances of the sum of evaluations of likely outcomes, sum of motivation to comply with normative beliefs, subjective norm, attitude toward the behavior, past habit of seeking health care, and health care intention don't differ significantly from one group to the other.

Hypotheses

- 1. Among women, aged 65 and over, there is a relationship between
 - (a) The sum of evaluations of likely outcomes and attitude toward the behavior (Equation 2),
 - (b) the sum of evaluations of likely outcomes ($\sum OE$) and

health care intention (BI),

(c) the sum of motivation to comply with normative beliefs and subjective norm (Equation 3), and

(d) the sum of motivation to comply with normative beliefs ($\Sigma McNB$) and health care intention (BI).

2. Among women, aged 65 and over, there is a relationship between the sum of the subjective norm, attitude toward the behavior, and past habit of seeking health care and health care intention (Equation 4).

3. There will be no differences between subgroups on prediction of health care intention (Equation 4) among women, aged 65 and over.

4. There will be no relationship between the extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and health care intention (BI) among women, aged 65 and over.

5. There will be no relationship between extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and attitude toward the behavior (Aact) among women, aged 65 and over.

6. There will be no relationship between extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and subjective norm (SN) among women, aged 65 and over.

7. There will be no relationship between extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and the sum of evaluations of likely outcomes (ΣOE) among women, aged 65

and over.

8. There will be no relationship between extrinsic variables ($X_1, X_2, X_3, X_4, X_5, X_6$, and X_7) and the sum of motivation to comply with normative beliefs ($\sum McNB$) among women, aged 65 and over.

9. There will be no relationship between extrinsic variables ($X_1, X_2, X_3, X_4, X_5, X_6$, and X_7) and past habit of seeking health care (H) among women, aged 65 and over.

Definition of Terms

Theoretical

The sum of evaluations of likely outcomes ($\sum OE$) is the sum of the products of the expected results of seeking health care in the next two weeks multiplied by evaluations of those results (Ajzen & Fishbein, 1980).

The sum of motivation to comply with normative beliefs ($\sum McNB$) is the sum of the products of the willingness to act as significant others expect multiplied by perceptions of the expectations held by those significant others in regard to one's seeking formal health care in the next two weeks (Ajzen & Fishbein, 1980).

Health care intention (BI) is the degree of likelihood of seeking formal health care in the next two weeks (Ajzen & Fishbein, 1980).

Attitude toward the behavior (Aact) is the amount of favorability an individual has toward seeking formal health care in the next two weeks (Ajzen & Fishbein, 1980).

Subjective norm (SN) is the individual's perception of the expectation held by significant others as a whole (Ajzen & Fishbein, 1980).

Past habit of seeking health care (H) is a perception of one's characteristic response to health problems (Timko, 1987).

Extrinsic variables include racial identification (X1), general health (X2), current health concerns (X3), satisfaction with level of income (X4), age (X5), level of education (X6), and time lapse since last visit to a doctor (X7).

Operational definitions

Outcomes (O). These include the following:

- (a) My going to the doctor in the next two weeks will result in the doctor saying, "Nothing is wrong with you. Go home (unlikely/likely),"
- (b) My going to the doctor in the next two weeks will get me answers to questions I have (unlikely/likely),
- (c) My going to the doctor in the next two weeks will make me feel the best (unlikely/likely),
- (d) My going to the doctor in the next two weeks will allow

the doctor to look at my body (unlikely/likely),

(e) My going to the doctor in the next two weeks will get me an explanation from my doctor (unlikely/likely),

(f) My going to the doctor in the next two weeks will get me an explanation from the nurse (unlikely/likely),

(g) My going to the doctor in the next two weeks will get me a treatment I had in the past (unlikely/likely),

(h) My going to the doctor in the next two weeks will get me the truth about what will happen (unlikely/likely),

(i) My going to the doctor in the next two weeks will keep me at my current level of health (unlikely/likely),

(j) My going to the doctor in the next two weeks will get me new medicines (unlikely/likely),

(k) My going to the doctor in the next two weeks will get me attention from the doctor (unlikely/likely),

(l) My going to the doctor in the next two weeks will get me expensive medications (unlikely/likely), and

(m) My going to the doctor in the next two weeks will let me talk with the office staff (unlikely/likely).

Evaluations (E). These include

(a) hard/easy,

(b) unimportant/important,

(c) annoying/calming,

(d) confusing/clearing, and

(e) disappointing/cheering.

Motivation to comply (Mc). These include the following:

- (a) generally speaking, I do what my family recommends (unlikely/likely),
- (b) generally speaking, I do what my friends recommend (unlikely/likely),
- (c) generally speaking, I do what my neighbors recommend (unlikely/likely), and
- (d) generally speaking, I do what my doctor recommends (unlikely/likely)

Normative beliefs (NB). These include the following:

- (a) my family thinks I should not/should go to the doctor in the next two weeks,
- (b) my friends think I should not/should go to the doctor in the next two weeks,
- (c) my neighbors think I should not/should go to the doctor in the next two weeks, and
- (d) my doctor thinks I should not/should go to the doctor in the next two weeks.

Health care intention (BI). I will go to the doctor in the next two weeks (unlikely/likely).

Attitude toward the behavior (Aact). Going to the doctor in two weeks would be

- (a) hard/easy,
- (b) unimportant/important,
- (c) annoying/calming,
- (d) confusing/clearing, and
- (e) disappointing/cheering.

Subjective Norm (SN). Most people who are important to me think I should not/should go to the doctor in the next two weeks.

Past habit of seeking health care (H). In general, when you notice a physical symptom, do you usually wait/go to the doctor right away (Timko, 1987)?

Extrinsic variables. These include

- (a) your race - white, African American, Hispanic, other (X1);
- (b) general health - excellent, good, fair, or poor (X2);
- (c) are you currently concerned about your health? - yes/no (X3);
- (d) income - much more than enough, more than enough, enough, sometimes not enough, or mostly not enough (X4);
- (e) your age (X5);
- (f) Level of education (X6); and
- (g) length of time since you've last seen a doctor (X7).

Limitations

Using a nonexperimental survey with volunteers results in some limitations. Kerlinger (1986) describes three weaknesses of nonexperimental research. The first weakness is the inability to manipulate independent variables. The current study analyzes naturally occurring relationships. There was no attempt to infer causation. The appropriate methods of analysis limited possible revelations. Using correlation and measurement at only one time does not assess stability, change, or temporal or logical order of variable relationships (Brinberg & McGrath, 1985). Correlation detects a linear relationship best (Brinberg & McGrath). Kerlinger also describes one drawback of survey research as the possibility of creating an artificial mind set in the participant who then gives invalid answers to match this mind set.

The second weakness of nonexperimental research (Kerlinger, 1986) is the risk of improperly interpreting the results. The current study contained hypotheses to define expected relationships and reduce this risk. Cook and Campbell (1979) also attribute the risk of improper interpretation to inadequate preoperational explication of constructs. The relationships clearly outlined by the theory of reasoned action and used as a model for

operationalization of variables in the current study reduced this risk.

The third weakness of nonexperimental research (Kerlinger, 1986) is the lack of power to randomize. Randomization would result in a greater probability that the two subgroups would be equal and any effects that extraneous variables have on the dependent variable would be nullified. When randomization is not possible, Kerlinger describes two other ways to handle the influence of extraneous variables. One of the ways is minimizing the effect of a variable by choosing subjects so they are as homogeneous as possible on that variable. The current study used only women, aged 65 and over, who lived in government subsidized housing. The second way to control an extraneous variable is by building it into the design as an independent variable and examining its influence. In this way, the current study analyzed the effects of current concerns about health, adequacy of income, amount of formal education, membership in one of five age groups, race, and months since last visit to a physician on past habit of using formal health care and the variables in the theory of reasoned action.

Cook and Campbell (1979) describe three threats to external validity. One is that there could be an

interaction between the study setting and answers on the questionnaire. They suggest varying the settings and analyzing for this form of influence. The current study used six sites with members of subgroup two all being residents of one site and subgroup one containing two to seven residents from every site. There was no attempt to identify differences associated with place of residence.

The second threat to external validity (Cook & Campbell, 1979) is the interaction of history and answers on the questionnaire. Several participants complained about local physicians who refused to accept new Medicare patients. Other participants complained about the expense of formal health care. Two questions dealt with economic issues, adequacy of income and expense of medications.

The third threat to external validity (Cook & Campbell, 1979) is the interaction of selection and answers on the questionnaire. The current study used a nonprobability sample of volunteers.

External validity is a matter of replication. Cook and Campbell (1979) say many heterogeneous, small experiments provide more support for external validity than do one or two large studies.

Cook and Campbell (1979) also give a list of threats to the construct validity of putative causes and effects.

One of these threats results from mono-operation bias. A remedy for this is triangulation of results. The items on the Health Care Intention Index represent a triangulation of the likely outcomes elicited during group interviews. Another threat to the construct validity of putative causes and effects is mono-method bias (Cook & Campbell). This could occur because all outcomes used the same five evaluative scales. One way to remedy this is by varying the positive and negative wording of the questions. Negative wording is used for 2 of the 13 outcomes in the current study. The final threat to the construct validity of putative causes and effects (Cook & Campbell) is that the act of completing the questionnaire could alter one's intention. This would be of concern in future studies when responses on the questionnaire are compared to a criterion of actual subsequent behavior.

Delimitations

This study focused on women, aged 65 and over, who spoke and read English, and lived independently in government subsidized, public apartments in urban settings.

Summary

This chapter described an interest in health care

decision making by elderly women as central to the role of the nurse in promoting participation in secondary prevention. Since adults consider the implications of their actions before performing the volitional behavior of seeking formal health care (Ajzen & Fishbein, 1980), the Health Care Intention Index seeks to measure those considerations. The study problem was determining the relationships between study variables. Certain policy-establishing groups promote a focus on secondary prevention efforts for elderly women. Research demonstrates some elderly people do not participate in secondary prevention. Other research demonstrates the societal and personal costs of missed early diagnosis and treatment for the leading causes of death for female Texans, aged 65 and over. This chapter presented the theory of reasoned action and assumptions underlying adult decision-making with nursing's role. Hypotheses posited expected relationships between different parts of the research instrument and stability of the relationships among key determinants and intention. This chapter also presented definitions of terms describing item categories. Study limitations are those associated with nonexperimental, correlational survey research. The target group is women, aged 65 and over, living in government subsidized, public apartments.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter presents the literature review in three parts. The first is a discussion of studies using the theory of reasoned action to analyze intentions to seek formal health care. The second is a discussion of competing theoretical formulations, Andersen and Newman's (1973) health care utilization model and Triandis's (1977) theory of interpersonal behavior. The third part presents literature on past behavior as a predictor of current health care utilization.

Studies Using the Theory of Reasoned Action

Five articles described results of questionnaires based on Ajzen and Fishbein's (1980) theory of reasoned action concerning intentions to seek health care. Table 1 shows the results. Uomoto and Gorsuch (1984) asked second- and third-generation Japanese Americans to read vignettes describing people with psychological disorders and refer the characters to various mental health resources. Hill,

Table 1

Relationships Between Attitude Toward the Behavior (Aact),
and Subjective Norm (SN) With Intention (BI) in Studies
Using the Theory of Reasoned Action

Study	BI	Aact with BI	SN with BI
	Multiple R	<u>r</u>	<u>r</u>
Uomoto & Gorsuch, 1984 (N = 106)	.16 to .85*	- a	- a
Hill, Gardner & Rassaby, 1985 (N = 123)	.54****	.47****	.29**
Montano, 1986 (N = 359)	.79*	.57*	- a
Timko, 1987 (N = 134)	.75****	.63***	.49***
Montano & Taplin, 1991 (N = 683)	.52*	.54***	- a

^a Analysis not conducted.

* $p < .01$. ** $p < .02$. *** $p < .005$. **** $p < .001$.

Gardner, and Rassaby (1985) examined intention to obtain Pap smears. Montano (1986) asked chronically ill, veteran outpatients for intentions to obtain a flu shot. Timko (1987) asked women to read vignettes describing characters with symptoms of breast cancer and recommend actions. Montano and Taplin (1991) questioned women about intention to obtain a mammogram after notification of an increased risk of breast cancer. None of these studies examined the general intention to seek formal health care within the next two weeks.

There are several weaknesses in these studies. The first weakness is that none of the studies using multiple correlation determined appropriateness of the sample by considering number of variables, power, significance criterion, and effect size. Setting power at .80, criterion at .01, and multiple R^2 at .30 (Cohen & Cohen, 1983), three of the studies collected samples appropriate for more than 100 independent variables, yet the most used was 17. Hill et al. collected a sample appropriate for more than 90 independent variables yet used 2. Uomoto and Gorsuch (1984) collected a sample appropriate for more than 60 independent variables, but reported using only 42. When one uses such large numbers of subjects, tests of the significance of multiple R become "trivial" (Tabachnick &

Fidell, 1989, p. 154). Using the criterion of .05, power of .80, multiple R^2 of .30, and three independent variables established the recommended sample size at 30 participants. A second sample of 30 allows cross-validation of the results.

The second weakness was the wide age range of the subjects. Timko (1987) used a 30 year span, Montano and Taplin (1991), more than a 36 year span, Hill et al. (1985), a 52 year span and Montano (1986), a 65 year span. Including several developmental stages can limit one's ability to predict intention for a specific individual. As Cook and Campbell (1979) explain, obtaining an effect with a mixed sample does not mean that tests on each separate part will obtain the same effect. The current study used subjects aged 65 and over.

A third problem concerned deviation from the theory of reasoned action in variable operationalization. Uomoto and Gorsuch (1984) did not measure evaluation of likely outcomes or normative beliefs and instead used motivation to comply with subjective norm. Montano (1986) did not use subjective norm. Montano and Taplin (1991) used a questionable operationalization of attitude toward the behavior.

An additional valuable piece of information from the review is the promise shown by the extrinsic variable, past behavior as a predictor of current intention (Hill et al., 1985; Timko, 1987). The current study included a question designed to reveal usual patterns of obtaining formal health care and study its relationship with current intention.

Andersen's Theory of Health Care Utilization

Wan (1989) describes Andersen's model as the most frequently used analytical model in the study of health services use by the elderly. The model first described health services utilization (Andersen & Newman, 1973) and then broadened to describe access to health care (Aday & Andersen, 1974). Despite the revision the relationship between individual determinants and health care utilization, the relationship most commonly tested, remains unchanged. According to the theory, an individual's predisposing characteristics (the tendency to use health services), enabling characteristics (the ability to secure services), and need (illness level) determine utilization of health care. See Table 2 for variables belonging to each determinant.

Table 2

Variables in the Theory of Health Care Utilization

Determinants of Utilization		
Predisposing	Enabling	Need
Age, Sex, Marital status, Past illness, Education, Race, Occupation, Family size, Ethnicity, Religion, Residential mobility, Values concerning health and illness, Attitudes toward health services, and Knowledge about disease.	Income, Health insurance, Type of regular source of care, Amount of access to regular source, Local ratio of health personnel and facilities to the population, Urban vs. rural region of the country, and Price of health services.	Subjective: Number of Disability days, Symptoms, and General health. Objective: Symptoms Judged by physician panel, Diagnoses and Need for care judged by physician.

Note. Summarized from Andersen and Newman (1973).

A review of 16 studies revealed past success using Andersen's model to predict visits to a physician by the elderly. In the studies using multiple regression there was no mention of effect size, power, number of independent variables, and criterion in determining the smallest sample needed in reporting tests of significance. See Table 3 for a comparison of actual sample size to that recommended using Cohen and Cohen's (1983) formulas. Four of the studies are exempt from this criticism. Wolinsky (1978) used a standardized regression coefficient $\geq \pm .10$ as the test of significance. Petchers and Milligan (1988) and Keith (1987) used percentages to describe response categories. Eve and Friedsam (1980) used tree analysis instead of multiple regression.

Table 3

Studies Using Andersen's Model to Predict Visits to a Physician by the Elderly

Study	Variables	Sample size		Multiple R^2	Best predictor
		Actual	Best		
Branch, Jette, Evashwick, Rowe, & Diehr, 1981	20	1,090	70 ^a	27.0	Need
Wan, 1982	9	1,987	47 ^a	15.3	Need
Stoller, 1982	30	580	107 ^a	13.0	Predisposing
Coulton & Frost, 1982	16	1,834	62 ^a	12.0	Need
Wan & Arling, 1983	18	77	66 ^a	13.6	Need
Wolinsky et al., 1983	19	401	68 ^a	19.0	Need
Arling, 1985	15	2,051	60 ^a	17.9	Need
Markides, Levin, & Ray, 1985	10	375	49 ^a	14.3	Need
Eve, 1988	22	1,894	74 ^b	13.0	Need
Evashwick, Rowe, Diehr, & Branch, 1984	23	1,317	76 ^a	24.0	Need
Eve, 1984	11	21,249	52 ^a	10.0	Need
Wolinsky & Coe, 1984	23	15,899	76 ^a	3.9	Need

^a Based on power .80, multiple R^2 0.30, and criterion .05.

^b Based on power .80, multiple R^2 0.30, and criterion .01.

A second problem concerned validity and reliability of the methods used to collect data. In five studies validity of some of the responses collected could be questioned since some informants were household residents answering for the subject (Arling, 1985; Eve, 1984; Wan, 1982; Wolinsky, 1978; Wolinsky & Coe, 1984). Though Petchers and Milligan (1988) reported adapting a questionnaire specifically to test the model, there was no reported estimate of reliability. Stoller (1982) did not report measures of the reliability associated with semi-structured interviews. Markides, Levin, and Ray (1985) did report a Cronbach's alpha of .78 for the scale of twenty physical symptoms in their primary research. Wolinsky et al. (1983) reported alphas ranging from .60 to .85 for (a) Locus of Control, (b) nutritional knowledge, (c) mental status, (d) activities of daily living, (e) instrumental activities of daily living, (f) sensory function, (g) nutritional risk, and (h) mental health. For the remaining twelve studies using secondary data analysis, only Coulton and Frost (1982) reported the results of a test-retest on data gathering (.92).

Tests of the model demonstrated that a major fault with Andersen's model was the low variances obtained, revealing an inability to predict individual actions

(Evashwick, Rowe, Diehr, & Branch, 1984). Eleven studies reported the explained variance in visits to a physician of less than 20% (Arling, 1985; Coulton & Frost, 1982; Eve, 1984, 1988; Eve & Friedsam, 1980; Markides et al., 1985; Stoller, 1982; Wan, 1982; Wan & Arling, 1983; Wolinsky & Coe, 1984; Wolinsky et al., 1983). The larger explained variances in visits to a physician were 27% (Branch, Jette, Evashwick, Rowe, & Diehr, 1981) and 24% (Evashwick et al., 1984). Wolinsky (1978) reported no meaningful relationship when examining National Health Interview Survey results for the years 1971, 1972 and 1973 ($N = 134,502; 132,891; 120,493$, respectively). There are two explanations for the low obtained variances. One concerns variable measurement and the other, homogeneity of the samples (Evashwick et al., 1984).

There were several problems with measurement of the variables. Out of the studies reviewed, only four used originally collected data to test the model (Markides et al., 1985; Petchers & Milligan, 1988; Stoller, 1982; Wolinsky et al., 1983). The remaining 12 analyzed survey data collected for some other purpose (Arling, 1985; Branch et al., 1981; Coulton & Frost, 1982; Evashwick et al., 1984; Eve, 1984, 1988; Eve & Friedsam, 1980; Keith, 1987; Wan, 1982; Wan & Arling, 1983; Wolinsky, 1978; Wolinsky &

Coe, 1984). This meant that at times available data did not fit model definitions. Some studies reassigned or omitted predictor variables without offering any accompanying reason. None of the 16 studies examined the predisposing determinants of religion, residential mobility or knowledge about disease. Some researchers reassigned two enabling variables, urban-rural locale (Eve, 1988; Eve & Friedsam; Wan & Arling) and region of the country (Eve, 1988) and one need variable, psychological distress (Coulton & Frost) as predisposing variables. None of the studies used the enabling variable of price of health services. Some researchers reassigned occupation (Branch et al.; Evashwick et al.) to a predisposing variable. Wan and Arling reassigned barriers to a part of need.

Evashwick et al. (1984) argued that the Andersen model might have performed better in explaining service use for a total population than for a specific segment. Selecting only the elderly with broad financial coverage and other similarities could have reduced the variability of the studies. However, Wolinsky (1978) studied people aged 18 to 99 in three years of National Health Interview Surveys and still found no meaningful relationship between the model components and explained visits to a physician.

Wolinsky (1981) predicted that the effect of the enabling characteristics on health services utilization should have decreased in an inverse relationship to the increasingly subsidized nature of medical care and, later (Wolinsky et al., 1983) concluded that both predisposing and enabling characteristics would no longer be factors important in utilization of formal health care by the elderly. Thirteen studies lent support to these conclusions by finding need-for-care factors accounting for the majority of the variance. In addition to the studies displayed in Table 3, Eve and Friedsam (1980) and Petchers and Milligan (1988) found need the most important determinant. Of the remaining studies, Stoller (1982) found predisposing determinants best predicted initial contact with a physician but need was important for volume of physician visits and Keith (1987) found predisposing and enabling variables were more important than need.

Wan (1989) criticizes Andersen's model for its overemphasis on structural determinants and its failure to specify the social-psychological process that perceives, evaluates and acts upon physical health. Bass and Noelker (1987) criticized Andersen's model for its neglect of familial factors. Both criticisms have merit. These deficiencies are not present in the theory of reasoned

action. The strength of the theory of reasoned action is its revelation of the decision-making process and belief that extrinsic variables such as structural determinants affect intention only by acting through subjective norm or attitude toward the behavior.

Triandis's Theory of Interpersonal Behavior

Articles describing different decision models (Adler, 1979; Sachs, 1986) categorize two as expectancy-times-value theories, Fishbein's theory of reasoned action and Triandis's theory of interpersonal behavior. These theories share the idea that an individual's choices are at least partly determined by one's beliefs about the resulting consequences.

Triandis's theory of interpersonal behavior (1977, 1980, 1982) consists of three formulas. One formula defines factors predicting behavior (Equation 5), the second, factors predicting intention (Equation 6), and the third, factors predicting the value of perceived consequences (Equation 7).

$$P_a = (H_{w1} + I_{w2})P^*F \quad (5)$$

Equation 5 shows that the habit of performing an act (H) added to the behavioral intention to perform it (I), each multiplied by regression weights (w₁ and w₂) and then summed before multiplying by one's physiological readiness (P) and facilitating geographical conditions (E) determine the probability an act will occur (Pa) (Triandis, 1980).

$$I = S_{w3} + A_{w4} + C_{w5} \quad (6)$$

Equation 6 shows that behavioral intentions (I) are a function of social factors (S), the affect toward the behavior (A), and the value of the perceived consequences (C), each multiplied by regression weights (w₃, w₄, and w₅) and then summed (Triandis, 1977, 1980). Social factors contain roles, norms (behavior considered morally correct and expected), self-monitoring, and self-concept (containing self-image, self-esteem, and past behavior). Triandis (1977) is unable to specify exactly how the multiple constructs combine to create social factors.

$$C = \sum (P_{Ci} * V_{Ci}) \quad (7)$$

Equation 7 shows that the sum of the perceived probability that the act will have such consequences (P_{Ci}) multiplied

by the perceived value of each consequence (V_{Ci}) determines the value of the perceived consequences of the behavior (C) (Triandis, 1977, 1980). Triandis (1977) admits taking this idea as well as affect (attitude toward the behavior) being responsible for determining intention from Fishbein (p. 231).

Triandis (1977) recommends using path and factor analysis to modify his model. Triandis (1980) also recommends using multimethod measurement of each construct when comparing his model to others. He discourages direct tests of the formulation saying his model only illustrates important constructs to consider in the study of human behavior. Triandis (1977, 1982) maintains that even though his model resembles Fishbein's, every construct is different and tests comparing the two should not use the same variable operationalizations.

Research Using Triandis's Model

There were two studies that used Triandis's model as a framework to study intentions to seek formal health care. Both compared results to those obtained using the theory of reasoned action.

Seibold and Roper (1979) examined women's intentions to obtain Pap tests ($N = 93$ women, 55 from the community, aged 18 to 90 years, and 38 from a university campus, aged

18 to 26 years). To simplify the comparison, they dropped attitude toward the behavior and subjective norm, the direct predictors of intention recommended by Ajzen and Fishbein (1980) and substituted the sum of the products of evaluations multiplied by the expected outcomes added to the average of normative belief items. This enabled the researchers to use the former for Triandis's C-component and the latter for part of the S-component. The operationalization of attitude toward the behavior became Triandis's A-component.

The outcomes chosen "arose" during some "pretest elicitation procedure." The meaning of this statement is unclear. Estimations of Cronbach's alpha for the evaluations of likely outcomes and the C-component were .52 and .58, respectively. The other scales ranged from .91 to .93. The researchers used good-bad terminal adjectives in a likert scale. Including more evaluative scales could have improved reliability (Nunnally, 1978). All results were significant ($p < .05$), but the researchers concluded Triandis's model was superior with multiple R ranging from 0.58 to 0.92 compared to 0.50 to 0.92 for Fishbein's model (Seibold & Roper, 1979). Publication of Ajzen and Fishbein's (1980) book outlining specific instructions on

operationalizing each construct occurred after the conclusion of this study.

The second piece of research testing Triandis's model was Montano's (1986) study of veteran's influenza vaccination intentions ($N = 359$) discussed earlier. Montano operationalized Triandis's work as intention is the sum of outcome evaluations added to the sum of motivation to comply with normative beliefs added to affect (attitude toward the behavior). With the exception of subjective norm, that operationalization assigned the components of Fishbein's theory of reasoned action to Triandis's model. Habit became a predictor of intention, contrary to Triandis's formulation. Montano did not examine other components in social factors. Cronbach's alpha of the affect scale (attitude toward the behavior) was .91 and sum of likely outcome evaluations scale was .79. Again, the conclusion was that Triandis's model was superior with multiple R at 0.80 compared to 0.79 for the Fishbein model.

Comparison to the Theory of Reasoned Action

Ajzen and Fishbein (1980) and Triandis (1977, 1982) address differences between their formulations. These differences lie in purpose, specification of the antecedents of behavior, and meaning of the constructs. The difference in purpose lies in the economy of

expression. Triandis hopes to account for the most variance but Fishbein hopes to account for the most variance with the fewest variables (Triandis; Ajzen & Fishbein).

Triandis (1977, 1980) feels it is desirable to be more specific about how intentions relate to behavior and one of his equations takes into account habits, physiological readiness and facilitating conditions, while Fishbein simply writes that behavior is approximately a function of behavioral intentions. Triandis (1977) feels habit could be as important as intention in some situations.

Ajzen and Fishbein (1980) hold that attitude toward the behavior and evaluations of likely outcomes are measures of the same feelings about performing a behavior. Attitude toward the behavior should have the largest predictive power for intention. Success in achieving a strong correlation between the sum of evaluations of likely outcomes and intentions rests on whether one uses relevant outcomes. Triandis (1977) feels affect contains different feelings about performing the behavior from those in the valuation of perceived outcomes so he advises summing both to predict intention. He admits that the A-component overlaps with the C-component, holding that affect contains emotions about the behavior that occur at the moment of

action but the values of perceived outcomes are emotions linking the act to future consequences. Ajzen and Fishbein (1980) feel it is impossible to make this distinction empirically. Triandis considers affect a noncognitive, conditioned, emotional response. Ajzen and Fishbein feel that such a thing does not exist (p. 80).

Triandis's (1977) model also contains roles, self-image, and interpersonal agreements, which have no counterparts in Fishbein's theory. Fishbein (1980) feels the effect of such variables will be felt through attitude toward the behavior or subjective norm. Part of social factors is a self-instruction on what "I should do." This was present in the earliest variation of Fishbein's formulation (1967), but dropped since respondents had trouble distinguishing it from "What I will do," the measure of intent. Sheth (1982) also feels a serious problem of multicollinearity exists between Triandis's intention (I) scale and the S-component.

Triandis's (1977) theory of interpersonal behavior is a grand theory according to criteria advanced by Gibbs (1972), Hardy (1978), and Walker and Avant (1983). It provides a global perspective but is untestable. Triandis states his formulation is "intentionally vague to encourage further research and avoid premature freezing on a

particular form (p. 233).” The areas that make this a grand theory are its vague terminology, particularly in regard to the term, social factors and the unspecified linkages among the constructs comprising social factors. Gibbs says if only some of the component statements are testable, one must first derive testable assertions in order to bring systematic evidence on the theory as a whole. The amorphous character of Triandis’s work is another characteristic common to grand theories. Sheth (1982) feels the operationalization of the S-component is not as rigorous as that of the C- and A-components and physiological arousal (P) and facilitating conditions (F) are also not standardized well enough. Sheth also reveals that tests of most of Triandis’s hypotheses linking personality traits with consumer choice behavior have already shown dismal results (p. 166).

The theory of reasoned action is a middle-range theory or circumscribed theory since it contains a limited number of variables and has a limited scope. It is testable.

Research on Past Behavior

In tests of various models, past behavior has contributed to the prediction of future behavior. Calnan and Rutter (1986) found prior behavior explained an

additional 48% of the variance above beliefs when using the health belief model. Some studies using Andersen's model also tested the influence of past behavior. Wolinsky et al. (1983) found no statistically significant effects of any enabling characteristics aside from having a regular source of care ($N = 401$). Coulton and Frost (1982) found an additional 18% ($N = 1934$, over age 65) in predicted variance when relating current use of medical care to past usage. Keith (1987) found a majority of women, over age 65, who postponed seeking health care in 1969 continued to do so in 1979. In research using the theory of reasoned action to study (a) donations from taxpayers (Manfredo & Shelby, 1988), (b) seat-belt use (Budd, North, & Spencer, 1983), (c) breast feeding (Manstead, Proffitt, & Smart, 1983), (d) college class attendance (Fredericks & Dossett, 1983), (e) drug consumption by young adults (Bentler & Speckart, 1979), (f) use of antabuse (Brubaker, Prue, & Rychtarik, 1987), and (g) drug addiction (Sutton, 1987), past behavior contributed to the prediction of future behavior.

There were also studies of utilization that did not use a common model but investigated the influence of past behavior. For the aged ($n = 152$) prior use was a significant predictor of subsequent physician use ($p = .05$,

Levkoff, Cleary, & Wetle, 1987). Four studies (Berkanovic, Telesky, & Reeder, 1981; Kelman & Thomas, 1988; McCall & Wai, 1983; Samet, Hunt, Lerchen, & Goodwin, 1988) found past behavior also predicted current utilization. Kelman and Thomas randomly selected a sample of 1855 community residents, at least 65 years of age, from lists of Medicare recipients and nonrecipients and found persons having any regular source of care invariably had higher mean rates of health care utilization than those having no regular care source. Berkanovic et al. found that persons who reported a tendency to delay seeking care were less likely than others to have seen a physician ($p < .01$). Samet et al. studied 800 persons, ≥ 65 years of age with newly diagnosed cancer and found the percentage of subjects reporting a yearly checkup declined as delay lengthened. McCall and Wai found that for all utilization variables, nonusers have a high likelihood of remaining nonusers or becoming low users in the following year. Over the period of 4 years, 70% of the nonusers remained in the same utilization category the following year. Delaying at least 1 year or more before seeking help was significantly related to history of regular check-ups.

Several researchers have forwarded alternative explanations for the relationship of past to current

behavior. Subjects could have distorted their recall of past behaviors to be congruent with present beliefs (Budd & Spencer, 1985; Miller & Grush, 1988) or the relationship could have been an artifact of the measure (Fredericks & Dossett, 1983). The current study tested whether past habit of seeking formal health care contributed to the prediction of current intention.

Summary

This chapter presented a summary of literature of health care utilization related to three models, Fishbein's (1967; 1973; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) theory of reasoned action, Andersen and Newman's (1973) theory of health care utilization, and Triandis's (1977) theory of interpersonal behavior. Previous studies using the theory of reasoned action examined specific purposes for seeking formal health care (Hill et al., 1985; Montano, 1986; Montano & Taplin, 1991; Timko, 1987; Uomoto & Gorsuch, 1984). None of these studies examined the general intent to obtain formal health care by women, aged 65 and over as did the current study.

The majority of studies using Andersen's model revealed low explained variances (less than 20%) when predicting visits to a physician. Researchers feel

Andersen and Newman's model is no longer effective in explaining health care utilization by the elderly because the increasingly subsidized nature of health care for this age group has reduced variability. Wolinsky also couldn't find a meaningful relationship despite using three large samples of persons ranging in age from 18 to 99. Andersen and Newman's focus on structural determinants and lack of emphasis on social-psychological processes make it an unsuitable guide in the study of health care decision-making by individuals.

Two studies compared results using Triandis's model to those obtained using Fishbein's theory (Montano, 1986; Seibold & Roper, 1979). In both instances the researchers claimed Triandis's model produced larger explained variances. The problem with the comparisons was the same items represented variables from both theories, an approach Triandis (1977) labels invalid. Triandis feels each one of his variables, though some appear similar to and arise from Fishbein's work (1967, 1973), are different. Triandis intentionally created a grand theory so developing an index based on his model would be difficult.

Finally, the chapter presented a review of the literature on the effect of past custom of using health care. In numerous instances past habit predicted current

utilization. The current study included a question on past utilization to analyze its relationship with current intention.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

The current study used a descriptive, correlational, comparative design (Burns & Grove, 1987). It was descriptive because the purpose was to provide a picture of naturally occurring situations. There was no attempt to manipulate the variables or situation. It was correlational because there was an interest in looking for variable relationships and not in predicting a relationship with an event (Nunnally, 1978) nor was the study a practical application (Waltz & Bausell, 1981). There was no attempt to prove causation. It was comparative because the results were cross-validated across the two subgroups. The study was a survey using a questionnaire and a nonprobability sample of volunteers. The theory of reasoned action provided guidance to prepare formal hypotheses.

Setting

Participants were residents in government subsidized apartments at one of six separate housing sites. The researcher moved to a new site when the flow of volunteers

ceased or upon reaching some limit established by the housing manager. Recruitment efforts took place on weekdays, between mid-May and the beginning of August.

Population and Sample

The target group was 60 women, aged 65 and over, who could read and understand English and lived independently in government subsidized, public apartments for the elderly. The investigator solicited participants in one of four ways, (a) through the housing managers, (b) through the participant's peers, (c) by the investigator's sitting in some common room and asking passers-by to participate, or (d) by the investigator's doing door to door solicitation.

Protection of Human Subjects

The Human Research Review Committee at Texas Woman's University reviewed and approved the questionnaire, informed consent and a description of procedures. See Appendix A and B for copies of the informed consent and authorization letter from the Human Research Review Committee at Texas Woman's University, respectively. If a volunteer showed an interest in participating, the investigator read the consent aloud and answered questions.

Once the participant signed the consent, the investigator administered the questionnaire. A copy of the consent was given to each participant. Participants who completed the questionnaire could add their name and address to a separate list to receive a report of findings.

Instrument

The Health Care Intention Index is a semantic differential with scales of seven numbers ranging from -3 to +3. For the semantic differential, Nunnally (1978) advises that one may develop a new group of scales rather than use only those identified during previous factor analyses of adjectives. The research variables included one question for the dependent variable, intention to seek formal health care within the next two weeks. The sum of five evaluative scales formed attitude toward the behavior. One question on how important others felt about the participant's need to seek formal health care represented the subjective norm. Participants rated each of 13 outcomes on the degree of likeliness of its happening should they seek formal health care within the next two weeks. The evaluative scales used to rate each of the outcomes are the same five scales which form attitude toward the behavior. Four items name specific types of

significant others for normative beliefs. Participants indicated whether they believed each significant other expected them to seek formal health care within the next two weeks. Then the participant indicated how often they acted according to the wishes of that significant other for motivation to comply. Finally, a question on general habit of seeking health care for new symptoms followed. Examples given by Ajzen and Fishbein (1980) guided operation-alization of the study variables. The scoring of items from -3 to +3, the use of a semantic differential, the use of one item to measure intention to seek formal health care and one item to measure subjective norm, the recoding of items measuring motivation to comply, and particular statistical tests all are based on Ajzen and Fishbein's (1980) recommendations.

The seven remaining questions represented extrinsic variables and included (a) age, (b) race, (c) length of time since last visit to the doctor, (d) adequacy of income, (e) current concern about health, (f) general health, and (g) level of education. All answers require the circling of numbers except those for age, level of education, and time since last visit for formal health care, which require numbers written in blank spaces.

The development of the Health Care Intention Index is patterned on Nunnally's (1978) recommended course of action. The first step is basing the instrument on a theory. The second step is administering the instrument to a small group of subjects and looking for an alpha of at least .60 for any subscale. This study represents the second step. If this search is successful, the third step is constructing more items, gathering responses from a much larger group of subjects, and performing a complete item analysis. Once the most homogeneous test is constructed from this item analysis, the fourth step is applying a factor analysis to the whole test.

Validity

Brinberg and McGrath (1985) would describe the current study with its use of hypotheses as an example of stage two in the theoretical path. Validity in this stage concerns the success in meshing relations from the conceptual domain with processes from the substantive domain. In the current study these relationships are testable, meeting the criterion for success in meshing. The first chapter addressed the following limitations in the current study:

1. The threats to validity from the nonexperimental, correlational design include the inability to manipulate the independent variables, the inability to assess

stability, change, or temporal or logical order of variable relationships, the possibility of creating an artificial mind set in the participant, the risk of improperly interpreting the results, and the lack of power to randomize;

2. The threats to external validity include interaction between answers on the questionnaire and the setting, history, and selection; and

3. The threats to the construct validity of putative causes and effects include mono-operation and mono-method biases. Researchers also need to evaluate an instrument's content, construct, and criterion-related validity (Kerlinger, 1986; Nunnally, 1978). There are two parts to judging content validity (a) determining how adequately the measuring instrument represents the substantive domain (Kerlinger; Nunnally) and (b) the sensibility of the instrument construction (Nunnally). A moderate level of internal consistency among test items is necessary for the former. Cronbach's alpha assessed internal consistency of the instrument's subscales. Nunnally urges use of coefficient alpha with all new measurement methods and says even though there are important sources of measurement error not considered by coefficient alpha, those sources make little difference. Using Ajzen and Fishbein's (1980)

text to operationalize the variables with data elicited during group interviews fulfilled the second part of content validity in sensible instrument construction (Nunnally). The women, aged 65 and over, who participated in these interviews acted as experts in defining salient beliefs (Ajzen & Fishbein).

Construct validity is the circumstantial evidence for the usefulness of a new measuring instrument (Nunnally, 1978) by demonstrating that relationships in the theoretical framework explain test variance (Kerlinger, 1986). Conducting many studies using different samples could provide support for the construct validity of the Health Care Intention Index.

The third type of validity that was not evaluated in the current study but should be in subsequent tests is criterion-related validity (Kerlinger, 1986). An evaluation of criterion-related validity is of importance because the instrument ultimately predicts an individual's actions. For criterion-related validity, the investigator compares responses on the questionnaire to some measure of subsequent actual behavior.

Reliability

Cronbach's alpha assessed reliability of the questionnaire for this sample. Unreliability inflates

standard errors of estimates (Cook & Campbell, 1979) and creates a doubt that the study results could be replicated (Nunnally, 1978). Nunnally describes the size of the alpha coefficient as dependent on both the average correlation among the items comprising a subscale (the internal consistency) and the number of items in that subscale. The items in the Health Care Intention Index comprise three subscales and two solitary items. One of the solitary items measures intention and the other, subjective norm. The attitude toward the behavior subscale contains five evaluative items. The evaluation of likely outcomes subscale contains 78 items. Thirteen of the items present different possible outcomes and the 65 remaining items are 13 replications of the same 5 evaluative items used in attitude toward the behavior. These evaluative items assess each outcome. The motivation to comply with normative beliefs subscale consists of 8 items, 4 items representing beliefs about opinions held by different types of significant others, and 4 items representing different motivations to comply with those beliefs.

The large number of items comprising the evaluations of likely outcomes subscale should result in a large alpha. There is less confidence about the size of the alpha for the other two shorter subscales. However, Nunnally (1978)

says using summative scales like the Health Care Intention Index usually produces highly reliable results.

Data Collection

The investigator discussed the values of the seven-numbered scale with each participant using an unrelated question concerning the weather in Dallas. The participant selected an answer orally and then circled the number representing her opinion. The investigator began reading the questionnaire aloud but stopped if the participant raced ahead. The researcher examined the completed questionnaire for any unanswered items. The participant then completed the missing items. The investigator urged participants who did not know what to mark, to circle 0.

Pilot Study

The plan was to test the instrument to gain experience with the subjects, methodology, and research instrument, to refine the data collection instrument, and to estimate the time needed to complete it (Burns & Grove, 1987) with ten women at the same subsidized housing sites used for the main study. The first participant saw the five semantic differential scales under one lead-in statement and marked only one scale. She suggested numbering each scale and

including directions to mark each scale before the first set. Her suggestions led to instrument modifications.

The third, fourth, fifth, and sixth participants found the page of detailed instructions with marked examples extremely confusing. One participant became agitated because she felt the example was clearly making a false statement. She threw down her pencil and exclaimed, "That is wrong. It is going to be hot in Dallas in July. What do I do now?" The investigator reduced the instructions to the same brief, introductory paragraph with one scale as an example without a lead-in statement. The next participant shrugged her shoulders and marked the scale without having anything to evaluate. This led to a revision because it seemed unwise to encourage responses unrelated to a stimulus. The final instructions kept the same brief, general, written introduction with one sample question about the weather. The investigator continued discussing the meaning of scale numbers with each participant.

The third, fourth, fifth, and sixth participants also could not understand the word adequate in describing personal income. The investigator substituted the word enough which seemed to clarify the meaning for the women. The final questionnaire used the word enough instead of the

word adequate. Then no other participants expressed difficulty understanding the question on income.

Members of the pilot group generally took 20 to 30 minutes to read the consent and complete the questionnaire. This time lengthened whenever a participant discussed the rationale for each question.

Treatment of Data

This section discusses methods used to analyze the data to satisfy the study purposes and test the relationships described in the hypotheses. Pearson correlation was used to search for the predicted positive relationships described in the first hypothesis between (a) the sum of evaluations of likely outcomes and attitude toward the behavior (Equation 2), (b) the sum of motivation to comply with normative beliefs and subjective norm (Equation 3), (c) the sum of evaluations of likely outcomes ($\sum OE$) and health care intention (BI), and (d) the sum of motivation to comply with normative beliefs ($\sum McNB$) and health care intention (BI).

Multiple hierarchical regression analyzed the predicted relationship described in the second hypothesis: There is a relationship between health care intention and the sum of the subjective norm, attitude toward the

behavior, and past habit of seeking health care (Equation 4). Tabachnick and Fidell (1989) describe hierarchical multiple regression as useful for testing hypotheses by examining relationships between one dependent variable and two or more independent variables. The relationship between the dependent variable and an independent variable is assessed following each entry. The current study entered subjective norm first, followed by attitude toward the behavior, and then past habit of seeking health care. The goal is to arrive at the set of β values, called regression coefficients, which bring the values of the dependent variable predicted from the equation as close as possible to the values obtained during actual measurement. These ideal regression coefficients optimize the correlation but minimize the deviations between the predicted and obtained values of the dependent variable for the data set. Regression analysis is appropriate to use with either continuous or dichotomous independent variables.

Cross-validation tested the third hypothesis: There will be no group differences on prediction of health care intention (Equation 4). Tabachnick and Fidell (1989) say cross-validation tests the generalizability of a regression solution developed from one subgroup to another. If the

solution is generalizable the same regression formula could explain both slopes and intercepts.

One-way analysis of variance (ANOVA) tested the relationships defined in the remaining hypotheses:

4. There will be no relationship between extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and health care intention (BI);

5. There will be no relationship between extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and attitude toward the behavior (Aact);

6. There will be no relationship between extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and subjective norm (SN);

7. There will be no relationship between extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and the sum of evaluations of likeliness of outcomes (ΣOE);

8. There will be no relationship between extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and the sum of motivation to comply with normative beliefs ($\Sigma MCNB$); and

9. There will be no relationship between extrinsic variables (X1, X2, X3, X4, X5, X6, and X7) and past habit of seeking health care (H). Kerlinger (1986) describes ANOVA as a dividing of the total variance of scores into a between-groups variance (that associated with the extrinsic

variable) and a within-groups variance (that associated with error) and then contrasting the two. A statistically significant difference for the between-groups variance provides the basis to infer a relationship between the extrinsic and intrinsic variables. Using ANOVA permits tests of more than two groups, whereas the t -test only allows one such contrast (Kerlinger, 1986). Use of ANOVA requires the dependent (intrinsic) variable be measured at the interval level or higher and the independent (extrinsic) variable be discrete (Waltz & Bausell, 1981). In order to meet this prerequisite, the investigator changed interval level extrinsic variables to categories.

CHAPTER 4

ANALYSIS OF DATA

For the purpose of data analysis the first 30 cases of data became Subgroup 1 and the remaining 30 cases of data became Subgroup 2. The division was not determined by any characteristic of the participants. There are two sections to this chapter. The first section presents a description of the participants and member of each subgroup using variables extrinsic to the theory of reasoned action. The second section presents Cronbach's alpha and relationships among items representing the intrinsic variables (from the theory of reasoned action and past habit of seeking health care) and then examines the influence of the extrinsic variables on the intrinsic variables.

Description of Participants

This section discusses results for variables extrinsic to the theory of reasoned action. The investigator used SPSSx Frequencies and Condescriptives to analyze the data. Fifty-eight of the 60 participants (96.7%) were white, non-Hispanic. The 60 participants ranged in age from 66 to 90 years, with a mean age of 76.8 years. Subgroup 1 participants ranged in age from 66 to 86 years, with a mean

age of 75.5 years. Subgroup 2 participants ranged in age from 68 to 90 years, with a mean age of 78.0 years. Table 4 displays comparisons of the age distributions among the groupings.

Table 4

Age Comparisons of the Participants by Grouping

Statistic	Subgroup 1 ($\underline{n}$ = 30)	Subgroup 2 ($\underline{n}$ = 30)	Total ($\underline{N}$ = 60)
Mean	75.5	78.0	76.8
Range	66-86	68-90	66-90

In order to prepare the data to analyze the effect of extrinsic variables on the intrinsic variables, the investigator converted the continuous variable of age into five categories. Table 5 shows the categorizations for Subgroup 1, Subgroup 2, and the total sample.

Table 5

Distribution of Participants by Age

Category	Subgroup 1	Subgroup 2	Total
85 and up	3 (10.0%)	3 (10.0%)	6 (10.0%)
80-84	7 (23.3%)	7 (23.3%)	14 (23.3%)
75-79	7 (23.3%)	14 (46.7%)	21 (35.0%)
70-74	5 (16.7%)	4 (13.3%)	9 (15.0%)
65-69	<u>8</u> (26.7%)	<u>2</u> (6.7%)	<u>10</u> (16.7%)
Total	30 (100.0%)	30 (100.0%)	60 (100.0%)

In self ratings of general health, 8 participants reported their health as "excellent," 23 as "good," 23 as "fair," and 6 as "poor." In Subgroup 1 the breakdown was 6 participants reporting their health as "excellent," 8 as "good," 13 as "fair," and 3 as "poor." In Subgroup 2, 2 participants reported their health as "excellent," 15 as "good," 7 as "fair," and 3 as "poor." Table 6 displays these results.

Table 6

Distribution of Health Ratings

Category	Subgroup 1	Subgroup 2	Total
Excellent	6 (20.0%)	2 (6.7%)	8 (13.4%)
Good	8 (26.7%)	15 (50.0%)	23 (38.3%)
Fair	13 (43.3%)	10 (33.3%)	23 (38.3%)
Poor	<u>3</u> (10.0%)	<u>3</u> (10.0%)	<u>6</u> (10.0%)
Total	30 (100.0%)	30 (100.0%)	60 (100.0%)

For months since last visit to a doctor, the total sample reported a range of less than 1 month to 180 months (15 years). The mean interval was 7.3 months. For Subgroup 1 the range was less than 1 month to 12 months. The mean interval was 2.6 months. For Subgroup 2 the range was less than 1 month to 180 months. The mean interval was 12 months. Table 7 displays the results.

Table 7

Months Since Last Visit to a Doctor

Statistic	Subgroup 1 (<u>n</u> = 30)	Subgroup 2 (<u>n</u> = 30)	Total (<u>N</u> = 60)
Mean	2.6	12	7.3
Range	0 TO 12	0 TO 180	0 TO 180

In order to prepare the data to analyze the effect of extrinsic variables on the intrinsic variables, the investigator collapsed the continuous variable of months since last visit to the doctor into the three discrete categories shown in Table 8. A visit lapse of less than 12 months represents achievement of all opportunities for secondary prevention of health problems. All participants in Subgroup 1 were members of this category. A visit lapse between 13 to 36 months reduced the opportunity for secondary prevention to those screenings performed at two to three year intervals. Only one individual from Subgroup 2 was a member of this category. A visit lapse of more than 36 months meant the participant missed all opportunities for secondary prevention. Three participants from Subgroup 2 were members of this category.

Table 8

History of Opportunities Taken for Screenings for Secondary Prevention

Screenings	Subgroup 1	Subgroup 2	Total
None	-	3 (10.0%)	3 (5.0%)
Some	-	1 (3.3%)	1 (1.7%)
All	<u>30</u> (100.0%)	<u>26</u> (86.7%)	<u>56</u> (93.3%)
Total	30 (100.0%)	30 (100.0%)	60 (100.0%)

For being currently concerned about health, 27 participants had concerns and 33 did not. In Subgroup 1, 10 participants had current concerns and 20 did not. In Subgroup 2, 17 participants had current health concerns and 13 did not. Table 9 displays the results.

Table 9

Participants Currently Concerned About Health

Concerned	Subgroup 1	Subgroup 2	Total
Yes	10 (33.3%)	17 (56.7%)	27 (45%)
No	<u>20</u> (66.7%)	<u>13</u> (43.3%)	<u>33</u> (55%)
Total	30 (100.0%)	30 (100.0%)	60 (100.0%)

For the total sample, length of formal education ranged from 4 to 20 years. The mean length was 11.3 years. Length of formal education in Subgroup 1 ranged from 4 to 20 years. The mean length was 11.6 years. For Subgroup 2 length of formal education ranged from 6 to 18 years. The mean length was 11.0 years. Table 10 displays the results.

Table 10

Years of Formal Education Completed by the Participants

Statistic	Subgroup 1 ($\underline{n}$ = 30)	Subgroup 2 ($\underline{n}$ = 30)	Total ($\underline{N}$ = 60)
Mean	11.6	11.0	11.3
Range	4 TO 20	6 TO 18	4 TO 20

In order to prepare the data to analyze the effect of extrinsic variables on the intrinsic variables, the investigator converted the continuous variable of level of education into the three discrete categories shown in Table 11. One category contained participants with the termination of education at some elementary level. Twenty percent of the total sample were members of this category. The second contained participants who concluded their education during the secondary level. Slightly more than half of all participants were members of this category. The third category contained participants who completed some post-secondary education. Slightly more than 28% of the total sample were members of this category.

Table 11

Terminal Educational Level of the Participants

Category	Subgroup 1		Subgroup 2		Total	
College	10	(33.3%)	7	(23.3%)	17	(28.3%)
High school	13	(43.4%)	18	(60.0%)	31	(51.7%)
Grade school	<u>7</u>	(23.3%)	<u>5</u>	(16.7%)	<u>12</u>	(20.0%)
Total	30	(100.0%)	30	(100.0%)	60	(100.0%)

For level of income in the total sample, 2 participants reported having more than enough money, 25 reported having enough, 18 reported sometimes not having enough, and 15 reported mostly not having enough. For Subgroup 1, 10 participants reported having enough money, 13 sometimes not having enough, and 7 mostly not having enough. For Subgroup 2, 2 participants described themselves as having more than enough money, 15 as having enough, 5 as sometimes not having enough, and 8 as mostly not having enough. No one marked the option "much more than enough." Perhaps the item "much more than enough" was redundant with "more than enough." Table 12 displays the results.

Table 12

Reported Satisfaction with Current Income

Category	Subgroup 1	Subgroup 2	Total
More than enough	0	2 (6.7%)	2 (3.3%)
Enough	10 (33.3%)	15 (50.0%)	25 (41.7%)
Sometimes not enough	13 (43.4%)	5 (16.7%)	18 (30.0%)
Mostly not enough	<u>7</u> (23.3%)	<u>8</u> (26.6%)	<u>15</u> (25.0%)
Total	30 (100.0%)	30 (100.0%)	60 (100.0%)

Findings

SPSSx Reliability determined Cronbach's alpha for each subgroup and then the total sample. Table 13 displays the results. The subscale of evaluations of likely outcomes was consistently greater than .92 across all groupings. Reliability of the shorter subscales of attitude toward the behavior and motivation to comply with normative beliefs was problematic in Subgroup 2. Aiken (1976) says a reliability coefficient as low as .65 is satisfactory for between group comparisons. Since attitude toward the behavior was the only subscale used in cross validating the results and the alpha for subgroup two was only .60, this

meant error variance could have obliterated true differences between the subgroups.

Table 13

Cronbach's Alpha for the Health Care Intention Index

Subscale	Subgroup 1 ($n = 30$)	Subgroup 2 ($n = 30$)	Total ($N = 60$)
Attitude toward			
the behavior	.7722	.6001	.7122
Evaluations of			
likely outcomes	.9242	.9217	.9225
Normative			
beliefs	.7771	.5476	.6769

In order to prepare the negatively worded outcomes for data analysis the answers to two items, "The doctor saying, 'Nothing is wrong with you. Go home,'" and "I will get expensive medicines," were rescored by multiplying the answer by -1. This made the people who intend to seek formal health care in the next two weeks have positive outcomes and those who do not intend to seek formal health care in the next two weeks have negative outcomes. Items

measuring motivation to comply were rescored to 0 to +6 as directed by Ajzen and Fishbein (1980). The investigator used SPSSx condscriptives and Pearson correlation to analyze the data for the first hypothesis. Table 14 shows the results supporting the first two parts of the first hypothesis. These parts predicted relationships between (a) the sum of evaluations of likely outcomes and attitude toward the behavior (Equation 2) and (b) the sum of evaluations of likely outcomes ($\sum OE$) and health care intention (BI). The sum of evaluations of likely outcomes showed a significant relationship with attitude toward the behavior across Subgroup 1, Subgroup 2, and the total sample but to intention only for the total sample and Subgroup 1. Table 14 also displays the means and standard deviations.

Table 14

Correlations Between the Sum of Evaluations of Likely Outcomes (ΣOE) With Attitude Toward the Behavior (Aact) and Health Care Intention (BI)

ΣOE	Aact	BI		
	<u>r</u>	<u>r</u>	<u>M</u>	<u>SD</u>
Subgroup 1	.5938**	.4759*	185.63	185.70
Subgroup 2	.4719*	.1827	110.87	140.56
Total sample	.5494**	.2934*	136.87	157.70

* $p < .05$. ** $p < .01$.

Table 15 shows the relationships described in the last two parts of the first hypothesis between (c) the sum of motivation to comply with normative beliefs and subjective norm (Equation 3) and (d) the sum of motivation to comply with normative beliefs ($\Sigma McNB$) and health care intention (BI). The table also displays the mean and standard deviation for each sum. The sum of motivation to comply with normative beliefs showed a significant relationship with both subjective norm and intention across all groupings.

Table 15

Correlation Between the Sum of Motivation to Comply with Normative Beliefs (Σ McNB) With Subjective Norm (SN) and Health Care Intention (BI)

Σ McNB	SN	BI		
	<u>r</u>	<u>r</u>	<u>M</u>	<u>SD</u>
Subgroup 1 (<u>n</u> = 30)	.7129*	.8387*	-2.00	30.10
Subgroup 2 (<u>n</u> = 30)	.5868**	.7238**	4.07	20.15
Total sample (<u>N</u> = 60)	.6655*	.7829*	1.03	25.58

* $p < .05$. ** $p < .01$.

The second hypothesis predicted a relationship between health care intention and the sum of the subjective norm, attitude toward the behavior, and past habit of seeking health care. Hierarchical regression determined the contributions of attitude toward the behavior, subjective norm, and past habit of seeking health care to the prediction of health care intention. SPSSx REGRESSION analyzed the data. Tables 16 and 17 display the results for Subgroup 1 and Subgroup 2, respectively.

Evaluation of assumptions ruled out multicollinearity and singularity. Residuals were linear, normally distributed, and homoscedastic. There were no outliers. No cases had missing data and there were no suppressor variables.

Tables 16 and 17 display the correlations between the variables, the unstandardized regression coefficients (B), the intercept, the standardized regression coefficients (β), the semipartial correlations (sr^2), multiple R , multiple R^2 , and adjusted multiple R^2 after entry of all three independent variables. Multiple R was significantly different from 0 with the addition of attitude toward the behavior for Subgroup 1. Attitude toward the behavior did not contribute significantly to the prediction of health care intention in Subgroup 2. Past behavior did not

contribute meaningfully to the prediction of health care intention in either of the subgroups. After the third step, multiple R was 0.83 for Subgroup 1 and 0.63 for Subgroup 2.

Table 16

Hierarchical Regression of Subjective Norm (SN), Attitude Toward the Behavior (Aact), and Past Habit of Seeking Health Care (H) on Health Care Intention (BI) for Subgroup 1 (n = 30)

Variables	BI (DV)	SN	Aact	H	<u>B</u>	<u>β</u>	<u>sr</u> ²
	<u>r</u>	<u>r</u>	<u>r</u>				
SN	.7544**				.685	.58	.57**
Aact	.6436**	.4293*			.141	.40	.12**
H	-.0508	-.1567	.1356		-.014	-.01	.00
					Intercept = -1.38		
<u>M</u>	-.73	-.03	4.77	.20			
<u>SD</u>	2.80	2.39	7.87	2.57			
					<u>R</u> ² = .6946		
					Adjusted <u>R</u> ² = .6594		
					<u>R</u> = .8334**		

*p<.05. **p<.01

Table 17

Hierarchical Regression of Subjective Norm (SN), Attitude Toward the Behavior (Aact), and Past Habit of Seeking Health Care (H) on Health Care Intention (BI) for Subgroup 2 (n = 30)

Variables	BI (DV)	SN	Aact	H	<u>B</u>	<u>β</u>	<u>sr</u> ²
	<u>r</u>	<u>r</u>	<u>r</u>				
SN	.5698**				.598	.45	.32**
Aact	.4679**	.4020*			.110	.28	.07
H	.1005	.1214	.0922		.026	.02	.00
Intercept = -.982							
<u>M</u>	-.20	1.13	1.03	-.37			
<u>SD</u>	2.72	2.06	7.02	1.99			
<u>R</u> ² = .3931							
Adjusted <u>R</u> ² = .3231							
<u>R</u> = .6270**							

* $p < .05$. ** $p < .01$.

This section presents results supporting the third hypothesis: there will be no group differences on prediction of health care intention. Program BMDP 1r

analyzed the variance of regression coefficients over the subgroups. The slopes and intercepts did not differ beyond chance between the subgroups. This meant that the same regression formula could account for the relationships in both data sets. Table 18 displays the results of analysis of variance.

Table 18

Analysis of Variance of the Regression Coefficients Over the Subgroups

Source of variation	<u>ss</u>	<u>df</u>	<u>MS</u>	<u>F</u> Ratio	<u>F</u> Prob.
Regression over Groups	2.463	3	.821	.222	.8810
Residual within Groups	200.072	54	3.075		
Total	202.535	57			

The remaining hypotheses all concerned the effect of the extrinsic variables on the variables of the theory of reasoned action and past habit of seeking health care. SPSSx ONEWAY analyzed the data. Since the investigator conducted multiple statistical tests to search for relationships, the criterion used was .043, a more

stringent level than .05 (Levine, 1981). Since the members of Subgroup 1 were all white, non-Hispanic and all had been to the doctor within one year, the effects of race and months since last visit to a doctor showed no variation for that subgroup. Hypothesis 4 was the following: there will be no relationship between extrinsic variables and health care intention. Table 19 shows the results for the total sample. This hypothesis was not supported since the mean of the participants reporting poor health differed significantly for health care intention from the means of the participants reporting fair, good, or excellent health.

Table 19

One-Way Analysis of Variance of Health Care Intention by the
Extrinsic Variables in the Total Sample (N = 60)

Extrinsic variable	Variation Source	<u>ss</u>	<u>df</u>	<u>MS</u>	<u>F</u> Ratio	<u>F</u> Prob.
By race	Between	14.4333	2	7.2167	.9511	.3924
	Within	432.5000	57	7.5870		
By health	Between	72.4768	3	24.1589	3.6130	.0186*
	Within	374.4565	56	6.6867		
By concern	Between	25.8694	1	25.8694	3.5634	.0641
	Within	421.0640	58	7.2597		
By income	Between	24.7822	3	8.2607	1.0958	.3585
	Within	422.1511	56	7.5384		
By age	Between	10.8111	4	2.7028	.3409	.8492
	Within	436.1222	55	7.9295		
By education	Between	5.5119	2	2.7560	.3559	.7021
	Within	441.4214	57	7.7442		
By last doctor visit	Between	7.5762	2	3.7881	.4914	.6143
	Within	439.3571	57	7.7080		
	Total	446.9333	59			

* $p < .043$

Hypothesis 5 concerned the following: there will be no relationship between the extrinsic variables and attitude toward the behavior. Table 20 displays the results supporting this position.

Table 20

One-Way Analysis of Variance of Attitude Toward the Behavior by the
Extrinsic Variables in the Total Sample (N = 60)

Extrinsic variable	Variation Source	<u>ss</u>	<u>df</u>	<u>MS</u>	<u>F</u> Ratio	<u>F</u> Prob.
By race	Between	50.0207	2	25.0103	.4211	.6583
	Within	3385.3793	57	59.3926		
By health	Between	85.9580	3	28.6527	.4790	.6982
	Within	3349.4420	56	59.8115		
By concern	Between	63.4673	1	63.4673	1.0917	.3004
	Within	3371.9327	58	58.1368		
By income	Between	299.6822	3	99.8941	1.7840	.1607
	Within	3135.7178	56	55.9950		
By age	Between	125.5000	4	31.3750	.5214	.7204
	Within	3309.9000	55	60.1800		
By education	Between	83.2348	2	41.6174	.7077	.4971
	Within	3352.1652	57	58.8099		
By last doctor visit	Between	130.5190	2	65.2595	1.1255	.3316
	Within	3304.8810	57	57.9804		
	Total	3435.4000	59			

Hypothesis 6 concerned the following: there will be no relationship between extrinsic variables and subjective norm. Table 21 shows the results supporting this position.

Table 21

One-Way Analysis of Variance of Subjective Norm by the Extrinsic Variables in the Total Sample (N = 60)

Extrinsic variable	Variation Source	<u>ss</u>	<u>df</u>	<u>MS</u>	<u>F</u> Ratio	<u>F</u> Prob.
By race	Between	8.3672	2	4.1836	.7936	.4571
	Within	300.4828	57	5.2716		
By health	Between	17.1254	3	5.7085	1.0958	.3585
	Within	291.7246	56	5.2094		
By concern	Between	19.8062	1	19.8062	3.9744	.0509
	Within	289.0438	58	4.9835		
By income	Between	14.1456	3	4.7152	.8960	.4490
	Within	294.7044	56	5.2626		
By age	Between	4.5833	4	1.1458	.2071	.9334
	Within	304.2667	55	5.5321		
By education	Between	3.5273	2	1.7636	.3292	.7208
	Within	305.3227	57	5.3565		
By last doctor visit	Between	4.1833	2	2.0917	.3913	.6780
	Within	304.6667	57	5.3450		
	Total	308.8500	59			

Hypothesis 7 concerned the following: there will be no relationship between extrinsic variables and the sum of evaluations of likely outcomes. Table 22 displays the results supporting this position.

Table 22

One-Way Analysis of the Sum of the Evaluations of LikelyOutcomes by the Extrinsic Variables in the Total Sample (N = 60)

Extrinsic variable	Variation Source	<u>ss</u>	<u>df</u>	<u>MS</u>	F Ratio	F Prob.
By race	Between	30784.8579	2	15392.4290	.7896	.4598
	Within	935726.1224	48	19494.2942		
By health	Between	52337.0471	3	17445.6824	.8969	.4498
	Within	914173.9333	47	19450.5092		
By concern	Between	4336.0650	1	4336.0650	.2208	.6405
	Within	962174.9154	49	19636.2228		
By income	Between	46779.5130	3	15593.1710	.7968	.5018
	Within	919731.4674	47	19568.7546		
By age	Between	24172.7935	4	6043.1984	.2950	.8797
	Within	942338.1869	46	20485.6128		
By education	Between	31535.9734	2	15767.9867	.8095	.4511
	Within	934975.0070	48	19478.6460		
By last doctor visit	Between	87504.4804	2	43752.2402	2.389	.1025
	Within	879006.5000	48	18312.6354		
	Total	966510.9804	50			

Hypothesis 8 concerned the following: there will be no relationship between extrinsic variables and the sum of motivation to comply with normative beliefs. Table 23 displays the results supporting this position.

Table 23

One-Way Analysis of Variance of the Sum of Motivation to Comply with Normative Beliefs by the Extrinsic Variables in the Total Sample (N = 60)

Extrinsic variable	Variation Source	<u>ss</u>	<u>df</u>	<u>MS</u>	F Ratio	F Prob.
By race	Between	328.8126	2	164.4063	.2449	.7836
	Within	38271.1207	57	671.4232		
By health	Between	2500.5420	3	833.5140	1.2930	.2858
	Within	36099.3913	56	644.6320		
By concern	Between	1003.9333	1	1003.9333	1.5488	.2183
	Within	37596.0000	58	648.2069		
By income	Between	2713.9933	3	904.6644	1.4117	.2489
	Within	35885.9400	56	640.8204		
By age	Between	1296.6048	4	324.1512	.4779	.7518
	Within	37303.3286	55	678.2423		
By education	Between	72.7531	2	36.3765	.0538	.9477
	Within	38527.1803	57	675.9154		
By last doctor visit	Between	241.9333	2	120.9667	.1798	.8359
	Within	38358.0000	57	672.9474		
	Total	38599.9333	59			

Hypothesis 9 concerned the following: there will be no relationship between the extrinsic variables and past

habit of seeking health care. Table 24 displays the results supporting this position.

Table 24

One-Way Analysis of Variance of Past Habit of Seeking Health Care by the Extrinsic Variables for the Total Sample (N = 60)

Extrinsic variable	Variation Source	<u>ss</u>	<u>df</u>	<u>MS</u>	<u>F</u> Ratio	<u>F</u> Prob.
By race	Between	14.3075	2	7.1537	1.3763	.2608
	Within	296.2759	57	5.1978		
By health	Between	9.7301	3	3.2434	.6037	.6153
	Within	300.8533	56	5.3724		
By concern	Between	14.6507	1	14.6507	2.8714	.0955
	Within	295.9327	58	5.1023		
By income	Between	13.2100	3	4.4033	.8292	.4834
	Within	297.3733	56	5.3102		
By age	Between	12.5071	4	3.1268	.5769	.6805
	Within	298.0762	55	5.4196		
By education	Between	.1828	2	.0914	.0168	.9834
	Within	310.4005	57	5.4456		
By last doctor visit	Between	9.9167	2	4.9583	.9400	.3966
	Within	300.6667	57	5.2749		
	Total	310.5833	59			

Summary of Findings

Examination of the data associated with the extrinsic variables provided a description of the women who participated in the study. Most of the participants were white, non-Hispanic (96.7%) and aged between 66 to 90. Fewer than half voiced current concerns about their health. Most (93.3%) had received formal health care within the previous twelve months. One quarter of the total sample reported mostly not having enough money to live on and 30% reported sometimes not having enough. More than half had completed some secondary education and nearly one fifth completed some elementary level. About 28% had achieved some post-secondary education. Cronbach's alpha on the three subscales of the Health Care Intention Index revealed results consistently better than .92 for the evaluation of likely outcomes subscale, .60 to .77 for the attitude toward the behavior subscale, and .55 to .78 for the motivation to comply with normative beliefs subscale. Before conducting the analysis, the investigator multiplied two negatively worded items by -1 and changed all responses to motivation to comply to range between 0 and +6.

Pearson correlation revealed the relationships between key variables representing the theory of reasoned action and past habit of seeking health care. Subjective norm,

sum of motivation to comply with normative beliefs, and attitude toward the behavior showed significant relationships with intention in both subgroups. The sum of evaluations of likely outcomes was significantly related to health care intention in Subgroup 1 but not in Subgroup 2. Attitude toward the behavior showed a stronger relationship with intention than did the sum of evaluations of likely outcomes in both subgroups. The indirect predictor (sum of motivation to comply with normative beliefs) showed a stronger relationship with health care intention than did the direct predictor (subjective norm) in both subgroups.

Hierarchical regression revealed the contributions of attitude toward the behavior, past habit of seeking health care, and subjective norm to the prediction of health care intention. Past habit of seeking health care made a negligible contribution and showed no meaningful relationship with any of the other variables. Attitude toward the behavior made a significant contribution to the explained variance of health care intention for Subgroup 1. Subjective norm was a consistent predictor of health care intention. Cross-validation of the results revealed that the same regression formula could account for the slopes and intercepts for both subgroups.

Finally, the investigator analyzed the influence of the extrinsic variables on the variables comprising the theory of reasoned action and past habit of seeking health care. Due to the number (seven) of analyses, the investigator adjusted the criterion to .043 from .05 to compensate for the cumulative effect. There was only one significant relationship. Participants reporting poor health differed significantly from the participants reporting excellent, good, or fair health with regard to health care intention.

CHAPTER 5

SUMMARY OF THE STUDY

The study problem concerned the correspondence between the relationships of the variables on the Health Care Intention Index and those posited by the theory of reasoned action (Ajzen & Fishbein, 1980). The current study treated the variable, "past habit of seeking health care" as intrinsic to the theory. The first hypothesis predicted relationships among variables intrinsic to the theory of reasoned action. The second hypothesis predicted that attitude toward the behavior, subjective norm, and past habit of seeking health care would make significant contributions to the prediction of health care intention. The third hypothesis asserted the stability of the regression coefficients over the two subgroups. The remainder of the hypotheses predicted no relationships between extrinsic variables and variables intrinsic to the theory of reasoned action.

Summary

The study had a descriptive, correlational, comparative design with a survey. The survey used a questionnaire and nonprobability sample of 60 women, aged 65 and over, who lived in government subsidized, public apartments. Setting criterion at .05, power at .80, and multiple R^2 at .30 for three independent variables determined sample size of 30 per subgroup. After rescoring two negatively worded items and items measuring motivation to comply the investigator performed (a) Pearson correlation to test for positive relationships among variables treated as intrinsic to the theory of reasoned action, (b) hierarchical multiple regression to test the contributions of attitude toward the behavior, subjective norm, and past habit of seeking health care to the prediction of health care intention, (c) cross-validation to test the generalizability of the regression solution developed from one subgroup to the other, and (d) one-way analysis of variance to contrast the extrinsic variables with variables intrinsic to the theory of reasoned action and past habit of seeking health care. A more stringent criterion than .05 (.043) compensated for the multiple tests using one-way analysis of variance.

Discussion of Findings

Even though the investigator tried to solicit members of varying ethnic backgrounds by going to five sites that were home to predominately minority residents, only Caucasians volunteered. This could have been a response to investigator characteristics, suspicion of the researcher's intentions, or inability to read with fear of embarrassment should an outsider discover this. Since this instrument requires construct validity, the need for a precisely representative sample was not as great as that for measures requiring content validity (Nunnally, 1978).

Sitting at spots of high residential traffic resulted in many refusals of, "Oh I wouldn't be a good one to use. I don't go to the doctor." The housing managers controlled access to residents. Some participants who don't engage in secondary prevention volunteered during sanctioned door to door solicitation.

One woman initially refused to participate after reading the consent statement about a question on personal income. Once she saw there was no requirement to specify an amount earned, she agreed to continue.

Examining relationships of variables to intention at several levels revealed items that best supported the relationships posited by the theory of reasoned action.

Internal validity deals with relationships. Each subgroup could have contained different types of people with unique pasts affecting current intention. Cross-validation demonstrated the slopes or intercepts did not differ beyond chance between the subgroups. This meant that the same regression formula could account for the relationships in both data sets. Cronbach's alpha for the attitude toward the behavior subscale was low for Subgroup 2 which could have obscured true differences during cross-validation. The items composing the motivation to comply with normative beliefs subscale represented a comprehensive expression of beliefs. Women may not believe all significant others hold the same expectations and certainly display no motivation to comply with such recommendations. Many volunteers asserted that they make their own decisions and don't consult family, friends, or neighbors.

Cook and Campbell (1979) say drawing false conclusions about covariation from unstable data threatens statistical conclusion validity and cite a number of points to evaluate that threat. The investigator reduced the threat in the current study by (a) using a power of .80 to determine the sample size and reduce the chance of drawing an erroneous no-difference conclusion, (b) finding the data met assumptions of the statistical tests used, (c) setting a

more stringent criterion for the multiple tests using one-way analysis of variance to reduce finding some comparisons significantly different by chance, and (d) the volunteers being engrossed in the questionnaire despite sometimes quite rowdy environments.

Threats to statistical conclusion validity not controlled in the current study were (a) the low reliability of the attitude toward the behavior subscale in Subgroup 2, possibly obscuring true differences during cross-validation; (b) the investigator's reading the questionnaire aloud for volunteers with poor vision, possibly inflating error variance and decreasing the chance of obtaining true differences; and (c) the possible random heterogeneity of respondents with resultant differences on factors related to intention. The cross-validation performed in the current study represented replicability of relationships as part of statistical conclusion validity and contributed to the external validity of the results (Brinberg & McGrath, 1985).

Cook and Campbell (1979) say the construct validity of causes or effects is the approximate validity with which one can make generalizations about the relationships between theoretical constructs from research operations and cite a number of methods to reduce threats of associated

bias. Two methods used in the current study were (a) varying the positive and negative wording of statements to reduce the threat of bias from using one method and (b) measuring the dependent and independent variables at many levels to look for a relationship. Mono-operation bias from using the same five evaluative scales was the only threat to the construct validity of cause or effect (Cook & Campbell) not controlled in the current study. Mono-operation could result in response bias. Guessing the hypothesis and evaluation apprehension are two other threats to construct validity of causes or effects (Cook & Campbell). After completing the questionnaire one volunteer guessed the hypothesis as diagnosing who was "nuts." This also could have been part of evaluation apprehension. Another volunteer demonstrated evaluation apprehension by repeatedly stating, "I am not confused," when reading the scale bounded by the terms confusing and clearing. Three threats not entering into the current study were (a) experimenter expectancies, (b) interaction of different treatments, and (c) interaction of testing and treatment (Cook & Campbell).

Conclusions and Implications

A key consideration in drawing conclusions about the findings is evaluating the statistical conclusion validity. Using power analysis (Cohen & Cohen, 1983) to determine sample size for multiple regression enhanced statistical conclusion validity. As a follow-up to multiple regression testing, Waltz and Bausell (1981) advise judging the accuracy of prediction by comparing the size of each beta weight to its standard error. The smaller the size of the error and the larger the beta, the more accurate is the prediction. This ratio was greatest in Subgroup 1 for subjective norm at 4.8:1 and for attitude toward the behavior at 3.3:1. In Subgroup 2 the ratio was 2.6:1 for subjective norm and 1.6:1 for attitude toward the behavior. This means the prediction for Subgroup 2 is less accurate than that for Subgroup 1.

The increase in sampling error as sample size decreases (Burns & Grove, 1987) could explain the lack of effect for some of the bivariate tests. In future studies, analysis of data accumulated from additional participants can demonstrate whether these findings hold.

The relationships among variables on the Health Care Intention Index supported those posited by the theory of reasoned action. In both subgroups subjective norm was

predictive of health care intention. The beliefs underlying subjective norm showed a significant and stronger relationship with health care intention in both subgroups. One may conclude that normative considerations control health care intention for these women (Ajzen & Fishbein, 1980).

In Subgroup 2, attitude toward the behavior did not contribute to the prediction of intention and as the theory of reasoned action predicts, there was also no meaningful relationship between the sum of evaluations of likely outcomes and health care intention, as well. In Subgroup 1, attitude toward the behavior contributed to the prediction of health care intention and the sum of evaluations of likely outcomes also showed a significant relationship with health care intention. Since the relationships shown in this study support the theory of reasoned action, this contributes to the construct validity of the Health Care Intention Index (Kerlinger, 1986).

The only significant relationship between extrinsic and intrinsic items was between the means of the participants reporting poor health and health care intention. There were no meaningful relationships between extrinsic variables and attitude toward the behavior, subjective norm, the sum of evaluations of likely outcomes,

the sum of motivation to comply with normative beliefs, or past habit of seeking health care. This finding may not hold for new samples since Ajzen and Fishbein (1980) say the relationship between extrinsic and intrinsic variables is inconsistent from sample to sample.

Since this study relied on predictions using small samples, the Health Care Intention Index needs further testing before expert nurses can use it to effect secondary prevention. Continuing along this path to further develop the instrument is promising since the Cronbach's alpha for all subscales (attitude toward the behavior subscale, .71; outcome evaluations subscale, .92; and normative beliefs subscale, .68) was greater than .60 (Nunnally, 1978).

There are some recommendations for changes on the instrument as a result of the findings. Further investigation of past habit of seeking health is not necessary since it made a negligible contribution to the prediction of health care intention. Also, for the question on income no one marked the option "much more than enough." The item, "much more than enough" was redundant with "more than enough" and will be dropped.

In Subgroup 2 the coefficient alpha of the attitude toward the behavior subscale was low. Using Nunnally's (1978) formula to double the length by adding five more

items from the same domain should improve its reliability to .75. Even though Cronbach's alpha was low for the motivation to comply with normative beliefs subscale in Subgroup 2, the items represent a comprehensive expression of beliefs and there will be no attempt to add items.

The threat from mono-method bias of using the same five evaluative scales could affect the construct validity of causes and effects. Nunnally (1978) says one way to control the possible resultant response bias is to place faith in the findings only if they are reproducible under a variety of social settings, experimenters, and measurement methods.

Another consideration is the external validity of the results. There was no evaluation of the effect of history or setting on the answers. Selection by making participation as convenient as possible occurred during door to door solicitation since a few volunteers reported a history of inconsistent participation in secondary prevention. It would help if the housing managers had permitted door to door solicitation for all volunteers. Few Hispanics and African Americans volunteered. It might be helpful to have members of the same racial and ethnic groups as data gatherers.

Recommendations for Further Study

The next step in instrument development is gathering enough volunteers to perform an item analysis to create a homogeneous set of scales meeting reliability requirements. Nunnally (1978) advises that the minimum number of subjects for item analysis is five persons per item. This means the evaluation of likely outcomes subscale requires 330 more volunteers. The investigator should also cross-validate the beta weights and intercepts of these additional subgroups with those obtained in the current study. Subsequent tests need to examine criterion-related validity since the instrument predicts individual actions. Predictive validity concerns the extent to which one can predict subsequent behavior from scores on health care intention (Nunnally). The investigator should also control for the change from completing the instrument.

These future studies should control the threats to external validity. Using door to door solicitation and data gatherers from the same ethnic and racial groups, varying the settings and looking for a causal relationship within each, and replicating the experiment at a different time and in a state other than Texas to examine the interaction of history and answers would enhance external validity (Cook & Campbell, 1979).

Cook and Campbell (1979) say both construct and external validities are matters of replication. Proving external validity means showing the relationships are generalizable to and across alternate measures and across different types of persons, settings, and times (Cook & Campbell). Testing whether the independent variables vary with related but different constructs, performing inter-item correlations on intention, and seeing that the dependent variable isn't dominated by irrelevant factors are the steps in building construct validity (Cook & Campbell). One also needs convergence and divergence but not necessarily both (Cook & Campbell). The additional testing would reveal the scope and limits of the results of the current study. Competing theoretical explanations might be self-determination (Deci, 1975, 1980) and locus of control (Rotter, 1966, 1975). Comparing prediction of health care intention afforded by the Health Care Intention Index with that by other instruments based on these competing theories would provide convergence and boundary search in the conceptual domain (Brinberg & McGrath, 1985).

REFERENCES

- Aday, L. A., & Andersen, R. (1974). A framework for the study of access to medical care. Health Services Research, 9, 208-220.
- Adler, N. E. (1979). Decision models in population research. Journal of Population, 2 (3), 187-202.
- Aiken, L. R. (1979). Psychological testing and assessment (3rd ed.). Boston: Allyn and Bacon.
- Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall.
- Andersen, R., & Newman, J. F. (1973). Societal and individual determinants of medical care utilization in the United States. Milbank Memorial Fund Quarterly, 51, 95-124.
- Arling, G. (1985). Interaction effects in a multivariate model of physician visits by older people. Medical Care, 23, 361-371.
- Bass, D. M., & Noelker, L. S. (1987). The influence of family caregivers on elder's use of in-home services: An expanded conceptual framework. Journal of Health and Social Behavior, 28, 184-196.
- Bentler, P. M., & Speckart, G. (1979). Models of attitude-behavior relations. Psychological Review, 86, 452-464.
- Berkanovic, E., Telesky, C., & Reeder, S. (1981). Structural and social psychological factors in the decision to seek medical care for symptoms. Medical Care, 19, 693-709.
- Branch, L., Jette, A., Evashwick, M. P., Rowe, G., & Diehr, P. (1981). Toward understanding elders' health service utilization. Journal of Community Health, 7, 80-92.

- Brinberg, D., & McGrath, J. E. (1985). Validity and the research process. Newbury Park, CA: Sage.
- Brubaker, R. G., Prue, D. M., & Rychtarik, R. G. (1987). Determinants of disulfiram acceptance among alcohol patients: A test of the theory of reasoned action. Addictive Behaviors, 12, 43-51.
- Budd, R. J., North, D., & Spencer, C. (1983). Understanding seat-belt use: A test of Bentler and Speckart's extension of the 'theory of reasoned action.' European Journal of Social Psychology, 14, 69-79.
- Budd, R. J., & Spencer, C. P. (1985). Exploring the role of personal normative beliefs in the theory of reasoned action: The problem of discriminating between alternative path models. European Journal of Social Psychology, 15, 299-313.
- Burns, N., & Grove, S. K. (1987). The practice of nursing research: Conduct, critique, and utilization. Philadelphia: W. B. Saunders.
- Calnan, M., & Rutter, D. R. (1986). Do health beliefs predict health behavior? An analysis of breast self-examination. Social Science and Medicine, 22, 673-678.
- Celentano, D. D., Klassen, A. C., Weisman, C. S., & Rosenshein, N. B. (1988). Cervical cancer screening practices among older women: Results from the Maryland cervical cancer case control study. Journal of Clinical Epidemiology, 41, 531-541.
- Celentano, D. D., Shapiro, S., & Weisman, C. S. (1982). Cancer preventive screening behavior among elderly women. Preventive Medicine, 11, 454-463.
- Center for Disease Control. (1992a). Cerebrovascular disease mortality and Medicare hospitalization - United States, 1980-1990. Morbidity and Mortality Weekly Report, 41, 477-480.

- Center for Disease Control. (1989a). Chronic disease reports: Deaths from cervical cancer - United States, 1984-1986. Morbidity and Mortality Weekly Report, 38, 650-654, 659.
- Center for Disease Control. (1989b). Chronic disease reports: Deaths from colorectal cancer - United States, 1986. Morbidity and Mortality Weekly Report, 38, 725-728.
- Center for Disease Control. (1989c). Hospital discharge rates for cerebrovascular disease - United States, 1970-1986. Morbidity and Mortality Weekly Report, 38, 194, 199-201.
- Center for Disease Control. (1990). Hospitalizations for the leading causes of death among the elderly - United States, 1987. Morbidity and Mortality Weekly Report, 39, 777-779, 785.
- Center for Disease Control. (1992b). Incidence of treatment for end-stage renal disease attributed to diabetes mellitus - United States, 1980-1989. Morbidity and Mortality Weekly Report, 42, 191-195.
- Center for Disease Control. (1989d). Lower extremity amputations among persons with diabetes mellitus - Washington, 1988. Morbidity and Mortality Weekly Report, 40, 737-739.
- Center for Disease Control and Prevention. (1993). Public health focus: Prevention of blindness associated with diabetic retinopathy. Morbidity and Mortality Weekly Report, 42, 191-195.
- Coe, R. M., Wolinsky, F. D., Miller, D. K., & Prendergast, J. M. (1985). Elderly persons without family support networks and use of health services. Research on Aging, 7, 617-622.
- Cohen, J., & Cohen, P. (1983). Applied multiple regression/correlation analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.

- Cook, T. D., & Campbell, D. T. (1979). Quasi-experimentation: Design & analysis issues for field settings. Boston: Houghton Mifflin.
- Coulton, C., & Frost, A. K. (1982). Use of social and health services by the elderly. Journal of Health and Social Behavior, 23, 330-339.
- Coultas, D. B., & Samet, J. M. (1992). Respiratory disease prevention. In J. M. Last & R. B. Wallace (Eds.), Maxcy-Rosenau-Last public health & preventive medicine (pp. 885-889). Norwalk, CT: Appleton & Lange.
- Deci, E. L. (1975). Intrinsic motivation. New York: Plenum.
- Deci, E. L. (1980). The psychology of self-determination. Lexington, MA: Lexington Books.
- Dulany, D. E. (1968). Awareness, rules, and propositional control: A confrontation with S-R behavior theory. In T. R. Dixon & D. L. Horton (Eds.), Verbal behavior and general behavior theory (pp.340-387). Englewood Cliffs, NJ: Prentice-Hall.
- Dulany, D. E. (1961). Hypotheses and habits in verbal "operant conditioning." Journal of Abnormal and Social Psychology, 63, 251-263.
- Evashwick, C., Rowe, G., Diehr, P., & Branch, L. (1984). Factors explaining the use of health care services by the elderly. Health Services Research, 19, 357-381.
- Eve, S. B. (1988). A longitudinal study of use of health care services among older women. Journal of Gerontology: Medical Sciences, 43, M31-M39.
- Eve, S. B. (1984). Age strata differences in utilization of health care services among adults in the United States. Sociological Focus, 17, 105-120.
- Eve, S. B., & Friedsam, H. J. (1980). Multivariate analysis of health care services utilization among older Texans. Journal of Health and Human Resources Administration, 3, 169-191.

- Farley, J. U., Lehman, D. R., & Ryan, M. J. (1981). Generalizing from 'imperfect' replication. Journal of Business, 54, 597-610.
- Fishbein, M. (1980). A theory of reasoned action: Some applications and implications. In M. M. Page (Ed.), Nebraska symposium on motivation 1979 (pp. 65-116). Lincoln, NE: University of Nebraska.
- Fishbein, M. (1967). Attitude and the prediction of behavior. In M. Fishbein (Ed.), Readings in attitude theory and measurement (pp. 471-492). New York: John Wiley.
- Fishbein, M. (1973). Introduction: The prediction of behaviors from attitudinal variables. In C. C. Mortensen & K. K. Sereno (Eds.), Advances in communication research (pp. 3-31). New York: Harper & Row.
- Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to the theory and research. Reading, MA: Addison-Wesley.
- Fredricks, A. J., & Dossett, D. L. (1983). Attitude-behavior relations: A comparison of the Fishbein-Ajzen and the Bentler-Speckart models. Journal of Personality and Social Psychology, 45, 501-512.
- Funch, D. P. (1985). Diagnostic delay in symptomatic colorectal cancer. Cancer, 56, 2120-2124.
- Gibbs, J. P. (1972). Sociological theory construction. Hinsdale, IL: Dryden.
- Hardy, M. E. (1978). Perspectives on nursing theory. Advances in Nursing Science, 1 (1), 27-48.
- Haug, M. R. (1981). Age and medical care utilization patterns. Journal of Gerontology, 36, 103-111.
- Hill, D., Gardner, G., & Rassaby, J. (1985). Factors predisposing women to take precautions against breast and cervix cancer. Journal of Applied Social Psychology, 15, 59-79.

- Keith, P. M. (1987). Postponement of health care by unmarried older women. Women & Health, 12 (1), 47-60.
- Kelman, H. R., & Thomas, C. (1988). Hospital and ambulatory service use by the urban elderly under different health care delivery systems. Medical Care, 26, 739-749.
- Kerlinger, F. N. (1986). Foundations of behavioral research (3rd ed.). New York: Holt, Rinehart, and Winston.
- Larimer, G., & Rutenberg, G. (1991). Texas vital statistics 1989. Austin: Texas Department of Health.
- Leavell, H. R., & Clark, E. G. (1965). Preventive medicine for the doctor in his community: An epidemiologic approach. New York: McGraw-Hill.
- Leventhal, E. A. (1984). Aging and the perception of illness. Research on Aging, 6, 119-135.
- Leventhal, E., & Prohaska, T. R. (1986). Age, symptom interpretation and health behavior. Journal of the American Geriatrics Society, 13, 185-191.
- Levine, G. (1981). Introductory statistics for psychology: The logic and the methods. New York: Academic Press.
- Levkoff, S. E., Cleary, P. D., & Wetle, T. (1987). Differences in determinants of physician use between aged and middle-aged persons. Medical Care, 25, 1148-1160.
- Levkoff, S. E., Cleary, P. D., Wetle, T., & Besdine, R. W. (1988). Illness behavior in the aged: Implications for clinicians. Journal of the American Geriatrics Society, 36, 622-629.
- Liska, A. E. (1984). A critical examination of the causal structure of the Fishbein/Ajzen attitude-behavior model. Social Psychology Quarterly, 47, 61-74.

- Louis Harris and Associates. (1981). Aging in the eighties: America in transition. Washington, DC: National Council on Aging.
- MacArthur, C., & Smith, A. (1984). Factors associated with speed of diagnosis, referral, and treatment in colorectal cancer. Journal of Epidemiology and Community Health, 38, 122-126.
- Mandel, J. S., Bond, J. H., Church, T. R., Snover, D. C., Bradley, M., Schuman, L. M., & Ederer, F. (1993). Reducing mortality from colorectal cancer by screening for fecal occult blood. The New England Journal of Medicine, 328, 1365-1371.
- Mandelblatt, J. S., & Fahs, M. C. (1988). The cost-effectiveness of cervical cancer screening for low-income elderly women. Journal of the American Medical Association, 259, 2409-2413.
- Manfredo, M. J., & Shelby, B. (1988). The effect of using self-report measures in tests of attitude-behavior relationships. The Journal of Social Psychology, 128, 731-743.
- Manstead, A. S. R., Proffitt, C., & Smart, J. L. (1983). Predicting and understanding mother's' infant-feeding intentions and behavior: Testing the theory of reasoned action. Journal of Personality and Social Psychology, 44, 657-671.
- Markides, K. S., Levin, J. S., & Ray, L. A. (1985). Determinants of physician utilization among Mexican-Americans: A three-generations study. Medical Care, 23, 236-246.
- Marshall, J. R., Gregorio, D. I., & Walsh, D. (1982). Sex differences in illness behavior: Care seeking among cancer patients. Journal of Health and Social Behavior, 23, 197-204.
- McCall, N., & Wai, H. S. (1983). An analysis of the use of medicare services by the continuously enrolled aged. Medical Care, 21, 567-585.

- McIntosh, M. E. (1983). Health care utilization: Nonuse and high use of physician services among older women, 1969-1979. (Doctoral dissertation, North Texas State University). Dissertation Abstracts International, 44, 2598A.
- Miller, L. E., & Grush, J. E. (1988). Improving predictions in expectancy theory research: Effects of personality, expectancies, and norms. Academy of Management Journal, 31, 107-122.
- Miniard, P. W., & Cohen, J. B. (1981). An examination of the Fishbein-Ajzen behavioral intentions model's concepts and measures. Journal of Experimental Social Psychology, 17, 309-339.
- Miniard, P. W., & Cohen, J. B. (1983). Modeling personal and normative influences on behavior. Journal of Consumer Research, 10, 169-180.
- Montano, D. E. (1986). Predicting and understanding influenza vaccination behavior. Alternatives to the health belief model. Medical Care, 24, 438-453.
- Montano, D. E., & Taplin, S. H. (1991). A test of an expanded theory of reasoned action to predict mammography participation. Social Science & Medicine, 32, 733-741.
- Mullen, P. D., Hersey, J. C., & Iversen, D. C. (1987). Health behavior models compared. Social Science & Medicine, 24, 973-981.
- Nersesian, W., Zaremba, M., & Wilhoite, B. (1982). Impact of diabetes outpatient education program - Maine. Morbidity and Mortality Weekly Report, 31, 307-314.
- Nunnally, J. C. (1978). Psychometric theory (2nd ed.). New York: McGraw-Hill.
- Oliver, R. L., & Bearden, W. O. (1985). Crossover effects in the theory of reasoned action: A moderating influence attempt. Journal of Consumer Research, 12, 324-340.
- Parse, R. R. (1981). Man-Living-Health: A theory of nursing. New York: John Wiley.

- Petchers, M. K., & Milligan, S. E. (1988). Access to health care in a black urban elderly population. The Gerontologist, 28, 213-217.
- Ried, L. D., & Christensen, D. B. (1988). A psychosocial perspective in the explanation of patients' drug-taking behavior. Social Science & Medicine, 27, 277-285.
- Roscoe, J. T. (1975). Fundamental research statistics for the behavioral sciences (2nd ed.). New York: Holt, Rinehart, and Winston.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs: General and Applied, 80 (1), 1-28.
- Rotter, J. B. (1975). Some problems and misconceptions related to the construct of internal versus external control of reinforcement. Journal of Consulting and Clinical Psychology, 43, 56-67.
- Ryan, M. J. (1978). An examination of an alternative form of the behavioral intention model's normative component. In H. K. Hunt (Ed.), Advances in consumer research Vol. 5, (pp. 283-389). Ann Arbor: Association for Consumer Research.
- Ryan, M. J. (1982). Behavioral intention formation: The interdependency of attitudinal and social influence variables. Journal of Consumer Research, 9, 263-278.
- Sachs, B. (1986). Reproductive decisions in adolescence. Image: Journal of Nursing Scholarship, 18, 69-72.
- Safer, M. A., Tharps, Q. J., Jackson, T. C., & Leventhal, H. (1979). Determinants of three stages of delay in seeking care at a medical clinic. Medical Care, 17, 11-29.
- Samet, J. M., Hunt, W. C., Lerchen, M. L., & Goodwin, J. S. (1988). Delay in seeking care for cancer symptoms: A population-based study of elderly New Mexicans. Journal of the National Cancer Institute, 80, 432-438.

- Seibold, D. R., & Roper, R. E. (1979). Psychosocial determinants of health care intentions: Test of the Triandis and Fishbein models. In D. Nimmo (Ed.), Communication yearbook 3 (pp. 625-643). New Brunswick, NJ: Transaction Books.
- Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. Journal of Consumer Research, 15, 325-343.
- Sheth, J. N. (1982). Some comments on Triandis the model of choice behavior in marketing. In L. Mc Alister (Ed.), Research in marketing: Choice models for buyer behavior (pp. 163-167). Greenwich, CT: JAI.
- Shimp, T. A., & Kavas, A. (1984). The theory of reasoned action applied to coupon usage. Journal of Consumer Research, 11, 795-809.
- Stockman, S. J. (1986). Eliciting help-seeking in hospitalized alcoholics. (Doctoral dissertation, Ohio State University). Dissertation Abstracts International, 47, 3128B.
- Stoller, E. P. (1982). Patterns of physician utilization by the elderly: A multivariate analysis. Medical Care, 20, 1080-1089.
- Sutton, S. (1987). Social-psychological approaches to understanding addictive behaviours: Attitude-behavior and decision making models. British Journal of Addiction, 82, 355-370.
- Tabachnick, B. G., & Fidell, L. S. (1989). Using multivariate statistics (2nd ed.). New York: Harper & Row.
- Texas Cancer Council. (1992). Texas cancer plan: A guide to action (2nd ed.). Austin: Author.
- Texas Department of Health. (1991). Healthy Texans 2000 partnership. Austin: Author.

- Texas Statewide Health Coordinating Council (1993). 1993-1994 Texas state health plan. Austin: Author.
- Timko, C. (1987). Seeking medical care for a breast cancer symptom: Determinants of intentions to engage in prompt or delay behavior. Health Psychology, 6, 305-328.
- Triandis, H. C. (1977). Interpersonal behavior. Monterey: Brooks/Cole.
- Triandis, H. C. (1980). Values, attitudes, and interpersonal behavior. In M. M. Page (Ed.), Nebraska symposium on motivation 1979 (pp. 195-259). Lincoln, NE: University of Nebraska.
- Triandis, H. C. (1982). A model of choice in marketing. In L. Mc Alister (Ed.), Research in marketing: Choice models for buyer behavior (pp. 147-162). Greenwich, CT: JAI.
- United States Department of Health and Human Services. (1992). Breast and cervical cancer surveillance, United States, 1973-1987. Morbidity and Mortality Weekly Report: CDC Surveillance Summaries, 41 (SS-2), 1-15.
- United States Department of Health and Human Services. (1990). Healthy People 2000. Washington, DC: Government Printing Office.
- Uomoto, J. M., & Gorsuch, R. L. (1984). Japanese American response to psychological disorder: Referral patterns, attitudes and subjective norms. American Journal of Community Psychology, 12, 537-550.
- Valiquette, C. A. M., Valois, P., Desharnais, R., & Godin, G. (1988). An item-analytic investigation of the Fishbein and Ajzen multiplicative scale: The problem of a simultaneous negative evaluation of belief and outcome. Psychological Reports, 63, 723-728.
- Walker, L. O., & Avant, K. C. (1983). Strategies for theory construction in nursing. Norwalk, CT: Appleton-Century-Crofts.

- Waltz, C. F., & Bausell, R. B. (1981). Nursing research: Design, statistics, and computer analysis. Philadelphia: F.A. Davis.
- Wan, T. H. (1989). The behavioral model of health care utilization by older people. In M. G. Ory & K. Bond (Eds.), Aging and health care: Social science and policy perspectives (pp. 52-77). New York: Routledge.
- Wan, T. T. H. (1982). Use of health services by the elderly in low-income communities. Milbank Memorial Fund Quarterly: Health and Society, 60, 82-107.
- Wan, T. T. H., & Arling, G. (1983). Differential use of health services among disabled elderly. Research on Aging, 5, 411-431.
- Waxman, H. M., Carner, E. A., & Klein, M. (1984). Underutilization of mental health professionals by community elderly. The Gerontologist, 24, 23-30.
- Winawer, S. J. (1993). Colorectal cancer screening comes of age. The New England Journal of Medicine, 328, 1416-1417.
- Wolinsky, F. D. (1978). Assessing the effects of predisposing, enabling, and illness-morbidity characteristics on health service utilization. Journal of Health & Social Behavior, 19, 384-396.
- Wolinsky, F. D. (1981). The problems for academic and entrepreneurial research in the use of health services: The case of unstable structural relationships. The Sociological Quarterly, 22, 207-223.
- Wolinsky, F. D., & Coe, R. M. (1984). Physician and hospital utilization among noninstitutionalized elderly adults: An analysis of the Health Interview Survey. Journal of Gerontology, 39, 334-341.
- Wolinsky, F. D., Coe, R. M., Miller, D. K., Prendergast, J. M., Creel, M. J., & Chavez, M. N. (1983). Health services utilization among the noninstitutionalized elderly. Journal of Health and Social Behavior, 24, 325-337.

APPENDIX A
CONSENT

TEXAS WOMAN'S UNIVERSITY
SUBJECT CONSENT TO PARTICIPATE IN RESEARCH

TITLE OF STUDY: HEALTH CARE INTENTION INDEX: INSTRUMENT
DEVELOPMENT

INVESTIGATOR:

1. I hereby authorize Louise A. Autio

to give me a questionnaire asking about my opinions on things people might think about when deciding to go see a doctor. This involves circling numbers giving my opinion about what might happen, how people important to me might feel about it and how I would feel about it. There is also one page of questions asking me to circle numbers describing my race, general health, satisfaction with income, current health concerns and general habit of seeing a doctor. I will also indicate my age and years of education.

If I want a report about how the study turns out I may sign my name and address on a separate piece of paper.

The study results will be lumped so no one person, place or time will be recognized. The researcher will use the results in a paper for a school assignment, in journal articles and in speeches to health professionals.

The data will be kept for ten years and may be used in future studies. The original questionnaires will be destroyed. If I have any concerns about the way this research has been conducted I may contact the Texas Woman's University Office of Research and Grants Administration at (817) 898-3375.

2. The study has been explained to me by Louise A. Autio

3. (a) I understand that the procedures or investigations described in Paragraph 1 involve the following possible risks or discomforts:

I could become tired from all the reading involved. If I become tired, I should stop. I may withdraw at any time before, during or after signing this consent.

I could be embarrassed if my answers are public. My name will not be matched in any way to my answers. Results will be lumped and reported in a group. My address, name or the date or place I do this will not be revealed.

(b) I understand that the procedures and investigations described in Paragraph 1 have the following potential benefits to myself and/or others:

This information could guide nurses to help people who have a hard time deciding to go see a doctor when they are sick.

(c) I understand that - No medical service or compensation is provided to subjects by the university as a result of injury from participation in research.

4. An offer to answer all of my questions regarding the study has been made and I have been given a copy of the dated and signed consent form. A description of the possible attendant discomforts and risks reasonably expected have been discussed with me. I understand that I may terminate my participation in the study at any time.

Subject's Signature

Date

Witness (one required)

Date

Louise Autio
1929 Colorado, Apartment C
Denton, Texas 76205
(817) 383-3235

APPENDIX B
AUTHORIZATION LETTER FROM THE HUMAN
SUBJECTS REVIEW COMMITTEE

TEXAS WOMAN'S UNIVERSITY
DENTON DALLAS HOUSTON
OFFICE OF RESEARCH AND GRANTS ADMINISTRATION
P.O. Box 22939, Denton, Texas 76204-0939 817/898-3375



HUMAN SUBJECTS REVIEW COMMITTEE

April 12, 1993

Louise A. Autio
1929 Colorado Blvd, Apt. C
Denton, Tx 76205

Social Security #: 342-38-5561

Dear Louise A. Autio:

Your study entitled "Health Care Intention Index: Instrument Development" has been reviewed by a committee of the Human Subjects Review Committee and appears to meet our requirements in regard to protection of individuals' rights.

Be reminded that both the University and the Department of Health and Human Services (HHS) regulations typically require that signatures indicating informed consent be obtained from all human subjects in your study. These are to be filed with the Human Subjects Review Committee. Any exception to this requirement is noted below. Furthermore, according to HHS regulations, another review by the Committee is required if your project changes.

Special provisions pertaining to your study are noted below:

- ☒ The filing of signatures of subjects with the Human Subjects Review Committee is not required.
- ☒ Your study is exempt from further TWU Human Subjects Review.
- ☐ No special provisions apply.

Sincerely,

A handwritten signature in black ink, appearing to read "Jean Ryden".

Chairman
Human Subjects Review Committee

cc: Graduate School
Dr. Patti Hamilton, Nursing
Dr. Carolyn Gunning, Nursing