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PREVIEW

**THE RELATIONSHIPS OF PERCEIVED HEALTH STATUS,  
COGNITIVE-PERCEPTUAL VARIABLES, AND  
PHYSIOLOGIC AND DEMOGRAPHIC  
PARAMETERS TO HEALTH  
BEHAVIORS**

by  
**Karen Floersch Ryan**

**A DISSERTATION**

**Presented to the Faculty of  
The Graduate College at the University of Nebraska  
In Partial Fulfillment of Requirements  
For the Degree of Doctor of Philosophy**

**Interdepartmental Area of  
Major: Community and Human Resources**

**Under the Supervision of Professor David Corbin**

**Lincoln, Nebraska**

**August, 1996**

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DISSERTATION TITLE

The relationships of perceived health status, cognitive-perceptual variables,  
and physiologic and demographic parameters to health behaviors

BY

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GRADUATE COLLEGE  
UNIVERSITY OF NEBRASKA

THE RELATIONSHIPS OF PERCEIVED HEALTH STATUS,  
COGNITIVE-PERCEPTUAL VARIABLES, AND  
PHYSIOLOGIC AND DEMOGRAPHIC  
PARAMETERS TO HEALTH  
BEHAVIORS

Karen Floersch Ryan, Ph.D.

University of Nebraska, 1996

Advisor: David Corbin

The purpose of this study was to test the relationships of perceived health status and other cognitive-perceptual parameters of life satisfaction, self-esteem, happiness, and stress, and the demographic factors of age, sex, and education, and the physiologic parameters of total serum cholesterol and ratio of total cholesterol to high density lipoprotein (HDL), to the behaviors of smoking, drinking more than two alcoholic beverages per day, and regular exercise. The Pender Health Promotion Model (HPM, 1989), which postulates a predictive nature of cognitive-perceptual factors (when controlled for demographic and physiologic factors) upon health behaviors, was also tested. The population that was studied was composed of 7,828 volunteer participants of a 1993 community health fair in the Omaha, Nebraska vicinity. Chi-square analyses were performed for each of the dependent variables. Forward logistic regression analyses were also performed for each of the dependent analyses. Results included numerous relationships with each

of the behavioral variables. Perceived health status and stress consistently predicted smoking, drinking more than two alcoholic beverages per day, and regular exercise. Statistical results were interpreted as weak support for the Pender HPM.

PREVIEW

## TABLE OF CONTENTS

	Page
CHAPTER I: INTRODUCTION . . . . .	1
The Problem . . . . .	2
Model . . . . .	3
Significance of Study . . . . .	6
Purpose . . . . .	8
Research Questions . . . . .	9
Hypotheses . . . . .	11
Limitations . . . . .	12
Operational Definitions . . . . .	13
 CHAPTER II: REVIEW OF LITERATURE . . . . .	 16
Related Literature . . . . .	16
Health Behavior . . . . .	16
Alcohol . . . . .	17
Smoking . . . . .	18
Exercise . . . . .	18
Demographics . . . . .	24
Health Status . . . . .	26
Perceived Health Status . . . . .	28
Perceived Health and Cognitive-Perceptual Variables . . . . .	35
Perceived Health and Demographics . . . . .	40
Perceived Health and Serum Cholesterol . . . . .	41
Summary . . . . .	42
 CHAPTER III: METHODS . . . . .	 44
Procedures . . . . .	44
Sample . . . . .	45
Analysis of Data . . . . .	46
 CHAPTER IV: RESULTS . . . . .	 50
Frequencies . . . . .	51
Demographic (Independent) Variables . . . . .	51
Biologic (Independent) Variables . . . . .	51
Cognitive-Perceptual (Independent) Variables . . . . .	55
Dependent Variables . . . . .	59
Analysis of Question No. 1 (Chi-Square Analysis--Smoking) . . . . .	60
Analysis of Question No. 2 (Chi-Square Analysis--Drinking) . . . . .	65
Analysis of Question No. 3 (Chi-Square Analysis--Exercise) . . . . .	70
Analysis of Question No. 4 . . . . .	75



## TABLE OF CONTENTS (Continued)

CHAPTER V: DISCUSSION . . . . .	78
Smoking . . . . .	80
Drinking . . . . .	81
Exercise . . . . .	83
Health-Promoting, Lifestyle Behaviors . . . . .	84
CHAPTER VI: CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS . . . . .	89
Assumptions . . . . .	90
Conclusions . . . . .	90
Implications . . . . .	92
Recommendations for Future Research . . . . .	92
Implications for Future Practice . . . . .	93
REFERENCES . . . . .	95
APPENDICES	
A: Explanation of Instrument . . . . .	101
B: Complete Health History Questionnaire from HFM . . . . .	105
C: Permission from Health Fair of the Midlands . . . . .	112
D: IRB Review Information . . . . .	114
E: Signed Permission Form from the IRB . . . . .	121
F: Exemption Form from IRB . . . . .	123
G: Report Forms . . . . .	125

## TABLE OF FIGURES

1. Pender's Health Promotion Model . . . . .	4
2. Aspects of the Pender HPM under Examination . . . . .	10

## TABLE OF TABLES

1. Significant Variables from Mossey and Shapiro (1982) Study . . . . .	29
2. Selected Variables from Health Fair of the Midlands Data . . . . .	47
3. Female Age Distribution . . . . .	52
4. Male Age Distribution . . . . .	52
5. Male and Female Age Distribution . . . . .	53
6. Years of Education . . . . .	53
7. Total Serum Cholesterol Categories . . . . .	54
8. HDL Cholesterol Categories . . . . .	54
9. Ratio of Total Serum Cholesterol to HDL . . . . .	55
10. Perceived Health Status Categories . . . . .	56
11. Self-Esteem Categories . . . . .	57
12. Life Satisfaction Categories . . . . .	57
13. Happiness Categories . . . . .	58
14. Stress Categories . . . . .	58
15. Smoking Behavior . . . . .	59
16. Drinking Behavior . . . . .	59
17. Exercise Behavior . . . . .	60
18. Chi-Square Analysis of Relationships of Independent Variables to Smoking . . . . .	61
19. Classification for Smoking . . . . .	64
20. Chi-Square Analysis of the Relationships of Independent Variables to Drinking . . . . .	66
21. Goodness of Fit for Drinking . . . . .	69
22. Chi-Square Analysis of the Relationship of the Independent Variables to Regular Exercise . . . . .	71
23. Regular Exercise: Classification Chart for Regular Exercise . . . . .	75

## CHAPTER I

### INTRODUCTION

While the meaning of health may be as unique to each individual as fingerprints, certain themes about health have recurred throughout history. Cicero issued the command to guard health in the Epistolae ad Diversos, and according to Publilius Cyrus in Sententiae, good health is one of life's two greatest blessings. Emerson proclaimed the first wealth to be health (Stevenson, 1967). Health has clearly been highly valued from ancient history to more recent times.

The pursuit of health has a colorful history. Aristotle prescribed good drainage, clean water, and healthy conditions as necessary ingredients for a healthy society (Barker, 1978). In 1758, Benjamin Franklin decreed that "early to bed and early to rise" comprised the recipe for health, wealth, and wisdom (Bartlett, 1980). But Mark Twain believed a more restrictive approach to health practices was required as evidenced by his assertion that the only way to keep your health is to eat and drink what you do not want or like, and to do what you would rather not (Twain, 1911).

Rowe and Kahn (1987) believed that the effects of a healthy lifestyle upon successful aging have been underestimated. Walker, Volkan, Sechrist, and Pender (1988) found great diversity in the patterns of adult lifestyle behaviors as they related to health-promoting or

health-damaging actions. Whether health is seen as a key element for happiness, wealth, or healthy aging, the notion that lifestyle behaviors influence health is certainly not new.

Presently, the value of health is an issue of great concern as an aging society struggles with the contexts of quality and quantity of life. The controversies surrounding health care reflect this quandary. Health care expenditures in the United States will exceed \$1 trillion in 1996, according to Wellness Councils of America (WELCOA, 1993). Intangible costs such as premature loss of loved ones seriously add to the weight of the matter.

#### The Problem

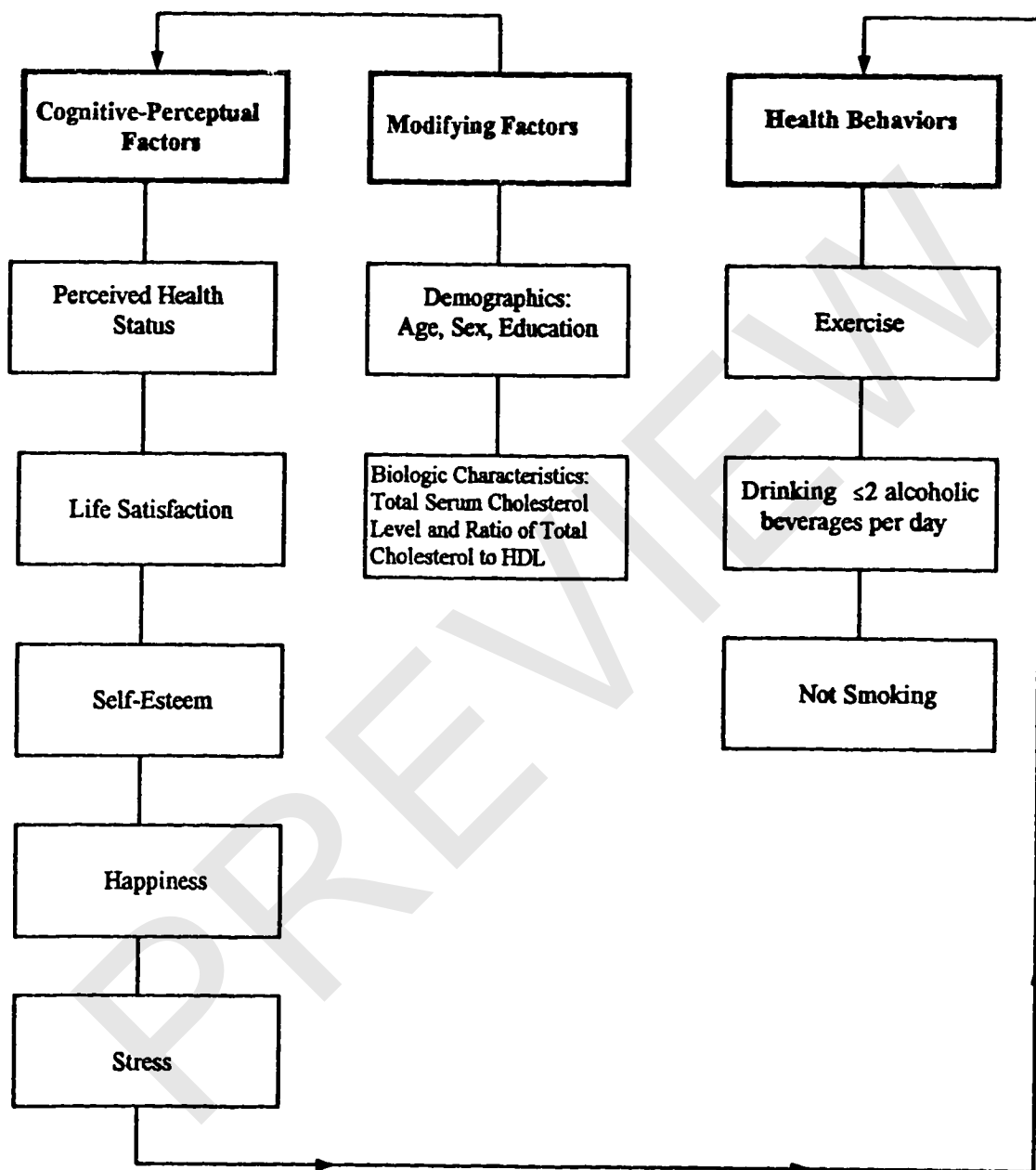
The majority of premature deaths and disabilities can be mediated by healthy lifestyles. Over 20 years ago, researchers identified a handful of health practices that correlated with longevity (Belloc & Breslow, 1972). These health-promoting practices (lifestyle behaviors) included not smoking, zero to moderate alcohol consumption, and regular exercise. Health problems are not diminishing. Fries et al. (1993) estimated that 70% of all illnesses and premature deaths are caused by poor lifestyle behavior choices. Prevention, primarily through health-promoting, lifestyle behaviors, seems to be one reasonable approach to these monumental societal issues. In response, the U.S.

government has gone to great lengths to prescribe health-promoting lifestyles (behaviors) for Americans, as evidenced by established 1990 and 2000 objectives for the nation. One of the most pertinent issues in health promotion today lies in determining what influences peoples' decisions to engage in health-promoting, lifestyle behaviors.

### Model

Pender (1987) proposed a model for understanding the reasons for engagement in health-promoting, lifestyle behaviors. The Health Promotion Model (HPM) was derived from Bandura's social learning theory. The HPM categorizes determinants of health-promoting, lifestyle behaviors into cognitive-perceptual factors (individual perceptions that are primary motivators for initiating and maintaining behaviors) and modifying factors, including demographics such as age, sex, and education, and biologic characteristics such as total serum cholesterol level and ratio of total cholesterol to high density lipoprotein (HDL). The HPM is depicted in Figure 1.

In a study of 297 elderly volunteers by Speake, Cowart, and Pellett (1989), the Pender Health Promotion Model was supported. Their results indicated that, with demographic variables controlled, perceived health status (PHS) and locus of control accounted for 24% of the variance in health-promoting, lifestyle behaviors, thus validating the



**Figure 1. Pender's Health Promotion Model.**

predictive capability of the HPM. Weitzel (1989) tested the HPM with a volunteer sample of 179 blue-collar workers. She found PHS to be a strong predictor of health-promoting, lifestyle behaviors in this group, accounting for 19% of the variance. Pender, Walker, Sechrist, and Frank-Stromberg (1990) also found the HPM valid in predicting health-promoting, lifestyle behaviors among 589 corporate employees enrolled in six corporate-sponsored health promotion programs. Of special interest was the observation that cognitive-perceptual factors, including perceived health status, accounted for 31% of the variance in health-promoting, lifestyle behaviors in their sample of subjects.

Data from the 1979-1980 National Survey of Personal Health Practices and Consequences ( $N = 1,512$  noninstitutionalized adults) were examined by Ratner, Bottorff, Johnson, and Hayduk (1994) for differences in the predictive capability of the HPM among males and females. Specifically, they were interested in the validity of the claim that Pender asserted in 1987 (p. 48) that sex is the demographic factor most predictive of preventive behaviors, with women being most likely to engage in healthy lifestyle behaviors. Their findings supported the assertion that gender was a significant predictor in explaining the variance in health-promoting, lifestyle behaviors; however, this direct effect was not found to operate through Pender's

HPM design of cognitive-perceptual or modifying variables. Consequently, this study challenged the validity of the HPM.

Barnett (1989) also examined the validity of the HPM with a convenience sample of 175 adolescents aged 12 through 19 years. Though many differences were found to exist among the adolescents in terms of health behaviors, Barnett found no significant predictors of health-promoting, lifestyle behaviors among the cognitive-perceptual factors of perceived health status, importance of health, or definition of health, and therefore characterized results as lacking support for the hypothesized relationships within the HPM.

#### Significance of the Study

A wide variety of measurements have been utilized to describe health status. Suchman, Phillips, and Streib (1958) discovered a positive relationship between physicians' ratings of health status and self-rated (perceived) health. Blazer and Haupt (1979) supported the accuracy of perceived health status ratings, as compared with more objective ratings including physical examination data.

Kaplan, Barell, and Lusky (1988) found a strong predictive relationship between perceived health status and survival. Their findings were further explored by Idler, Kasl, and Lemke (1990) who attempted to index predictors of mortality. The following predictors emerged from their



analysis: age, the health risk of smoking, and perceived health status.

From their extensive review of scientific literature, Dishman, Sallis, and Orenstein (1985) concluded that perception of health significantly influences health-promoting, lifestyle behaviors.

Lawton (1984) questioned the construct of well-being as it related to health. He posed the need to test reciprocal relationships between health status and other indices of well-being. Life satisfaction, self-esteem, and happiness are general cognitive-perceptual indices of well-being.

Pender's 1987 Health Promotion Model describes the goal of health promotion as moving beyond the avoidance of morbidity and mortality toward well-being, fulfillment, and self-actualization. The HPM attempts to articulate the dimensions of health that are indicators for the overall unitary concept of health status. Pender's model postulates the influence of cognitive-perceptual factors and modifying factors upon decisions to engage in health-promoting, lifestyle behaviors. Though the Pender model has been tested several times, there exists some question as to the validity of the model; a construct that could provide valuable strategy to promoting healthy lifestyle behaviors.

### Purpose

A framework for understanding the factors related to engagement in health-promoting, lifestyle behaviors has been proposed by the Pender model (1987). As previously stated, the Pender HPM categorizes specific dimensions of health and well-being that predict lifestyle health-promoting behaviors: cognitive-perceptual factors (individual perceptions) and modifying factors (such as demographic and biological variables). Perceived health status has been found to predict health-promoting, lifestyle behaviors in many, but not all, previous tests of the HPM (Pender et al., 1990). The data from the 1993 Health Fair of the Midlands provide a unique opportunity to test the theoretical construct proposed in the Pender HPM with an original combination of factors and a very large population of subjects. The major cognitive-perceptual parameter chosen for the purpose of this study is perceived health status. The parameters of life satisfaction, self-esteem, happiness, and stress will also be tested as these types of variables have been shown in prior studies to correlate with perceived health status (Hooker & Siegler, 1992; Okun, Stock, Haring, & Witter, 1984). Demographic variables (age, sex, and education) and the biological factors of total serum cholesterol, HDL cholesterol, and total cholesterol to HDL ratio comprise the modifying variables chosen for the present study to examine the predictive value of the HPM

upon the lifestyle behaviors of smoking, drinking alcohol in excess of two alcoholic beverages per day, and regular exercise.

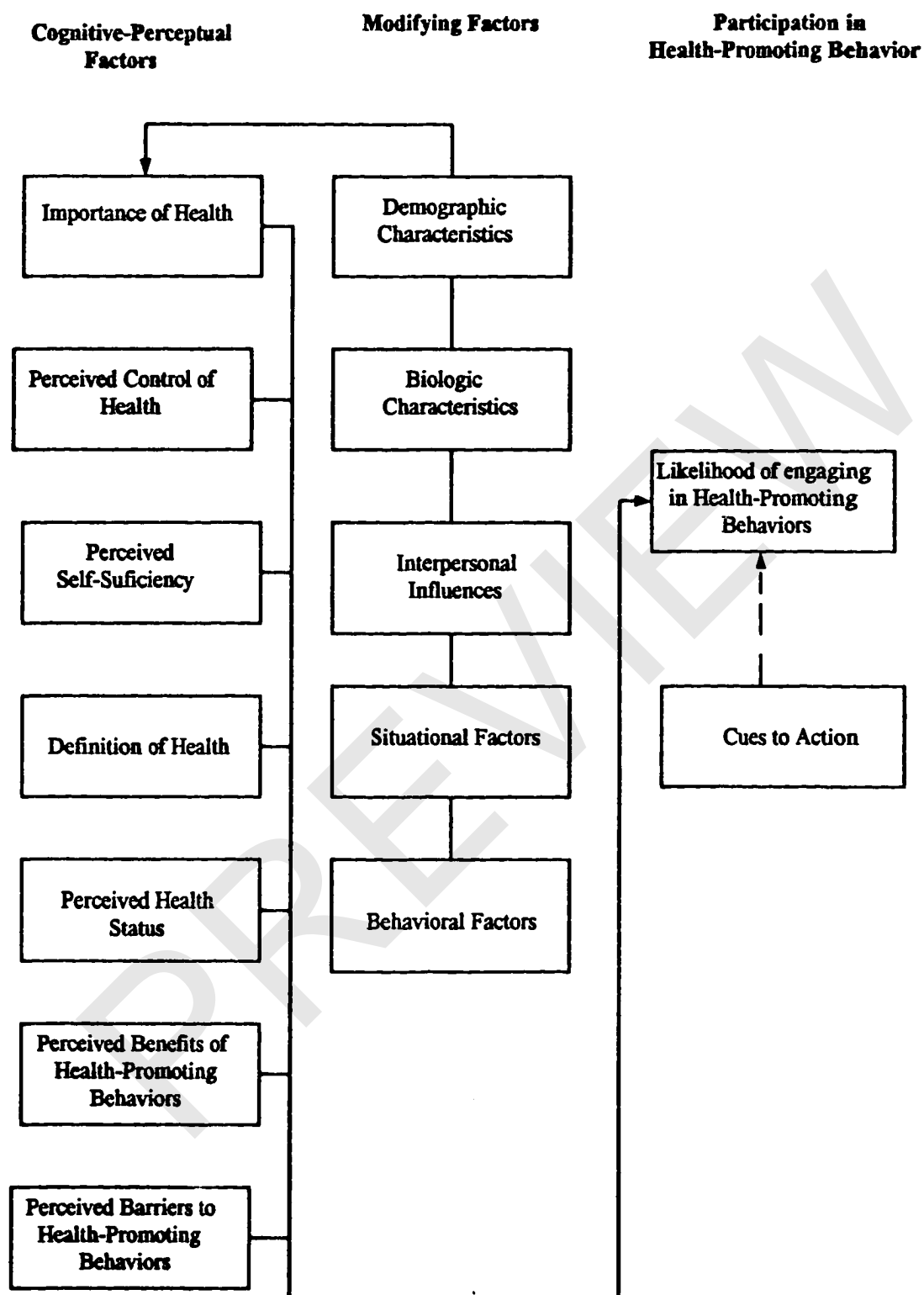
As noted, the Health Fair of the Midlands data from 1993 offer an opportunity to examine various factors of the Pender model for the predicted effects. The purpose of this study is to evaluate the efficacy of the Pender Health Promotion Model in describing the relationship between perceived health status and health-promoting, lifestyle behaviors. If a predictive relationship is established, PHS would provide a possible avenue for intervention to influence engagement in health-promoting, lifestyle behaviors. Demographic factors, additional cognitive-perceptual factors, and biological factors will also be examined within the context of the model.

For the purposes of illustration, Figure 2 describes the aspects of the Pender Health Promotion Model to be tested.

### Research Questions

The following research questions will be investigated utilizing the 1993 Health Fair of the Midlands data set:

1. Do PHS and the additional cognitive-perceptual variables of life satisfaction, happiness, self-esteem, and stress (adjusted for the modifying influences of the demographics of age, sex, and education and the biological



**Figure 2.** Aspects of the Pender HPM under examination.

parameters of total serum cholesterol level and ratio of total cholesterol to HDL), significantly predict the health-promoting, lifestyle behavior of not smoking?

2. Do PHS and the additional cognitive-perceptual variables of life satisfaction, happiness, self-esteem, and stress (adjusted for the modifying influences of the demographics of age, sex, and education and the biological parameters of total serum cholesterol level and ratio of total cholesterol to HDL), significantly predict the health-promoting, lifestyle behavior of not drinking alcohol in excess of two drinks per day?

3. Do PHS and the additional cognitive-perceptual variables of life satisfaction, happiness, self-esteem, and stress (adjusted for the modifying influences of the demographics of age, sex, and education and the biological parameters of total serum cholesterol level and ratio of total cholesterol to HDL), significantly predict the health-promoting, lifestyle behavior of regular exercise?

4. Do the data examined from the 1993 HFM support the conceptual framework of the 1989 Pender Health Promotion Model?

### Hypotheses

This study will test the 1993 HFM data to determine the relationship of perceived health status (and the other cognitive-perceptual variables of self-esteem, life

satisfaction, happiness, and stress) to health-promoting, lifestyle behaviors (regular exercise, not smoking, and not drinking alcohol in excess of two drinks per day). It is expected that high PHS will have a significant predictive relationship upon the health-promoting, lifestyle behaviors of regular exercise, not smoking, and not drinking alcohol in excess of two drinks per day. Furthermore, it is expected that a similar and statistically significant predictive relationship will be found for the other cognitive-perceptual variables of high happiness, high self-esteem, high life satisfaction, and low stress. Demographics (age, sex, and education) are expected to modify these predictive relationships, as are the biological parameters of total serum cholesterol level and the ratio of total serum cholesterol to high density lipoprotein. The results will also be examined for fit with the conceptual framework of the 1989 Pender HPM, and it is expected that these data will support the Pender model. These hypotheses are consistent with the majority of the findings in the reviewed literature.

#### Limitations

1. The results analyzed in this study are primarily based upon self-report data which are inherently subjectively biased. Direct observation would yield more objective results.

2. The participants in the Health Fair were self-selected volunteers from the nine counties in Nebraska and Iowa that surround Omaha, Nebraska. Participants were able to attend the HFM, suggesting a level of health that allowed access to community events. Some would even speculate that health fair attenders are the "worried well" of the general population. Therefore, these subjects represent a unique sample, and results will not be generalizable to the population at large.

3. The 1993 HFM questionnaire called for nominal and ordinal responses in some cases. Interval/ratio data would have provided greater precision and robustness.

#### Operational Definitions

Biological variables. Also described as modifying factors in the 1989 Pender HPM: total serum cholesterol level, and ratio of total cholesterol to high density lipoprotein (HDL) were selected for the purpose of this study.

Cognitive-perceptual factors. Primary motivating mechanisms as described by Pender: the well-being variables of perceived health status, life satisfaction, self-esteem, and happiness. Stress was added to this group for the purpose of this investigation.

Health behaviors. Selected lifestyle traits conducive to health promotion: not smoking, not drinking alcohol in excess of two drinks per day, and exercising regularly.

HDL. High density lipoprotein, a protein coating that helps remove cholesterol molecules from the bloodstream, and helps prevent fatty buildup along arterial walls. An HDL cholesterol level of less than 35 mg/dl is considered low, and is considered to be a risk factor for cardiovascular disease by the National Heart Lung and Blood Institute (NHLBI, 1995).

Perceived health status. Subjective or self-rated health, response to a single item question: In general, how would you rate your health (Excellent, Good, Fair, or Poor)?

Sociodemographic variables. Factors that are described in the Pender model as modifying variables. This group includes age, sex, and education level.

Serum cholesterol. A fat soluble crystalline steroid alcohol found in the bloodstream. Higher levels are associated with cardiovascular disease. A total serum cholesterol level less than 200 mg/dl is considered desirable for adults, 200-239 mg/dl is considered borderline, and a level >240 mg/dl is considered high risk by the National Heart Lung and Blood Institute (1995).

Total cholesterol-to-HDL ratio. A calculation of total serum cholesterol level divided by HDL cholesterol level for the purpose of diagnosing cardiovascular risk. A ratio of