DETERMINANTS OF PERCEIVED HEALTH STATUS
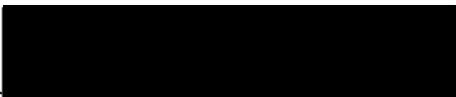
IN HOSPITALIZED HEART PATIENTS

by

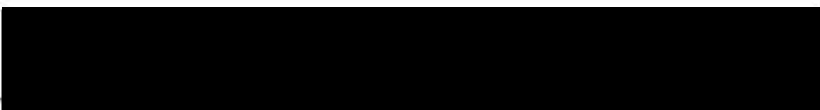Deborah Mayfield Hefty, B.S.N.

A Clinical Investigation

Presented to
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of the requirements for the degree of
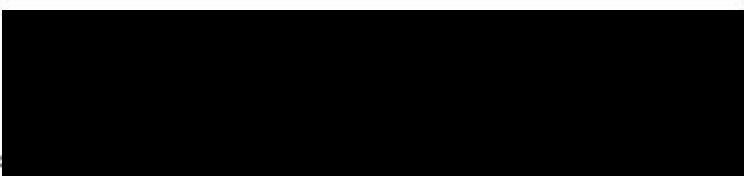Master of Nursing

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APPROVED:

_____
May Rawlinson, Ph.D., Professor, Thesis Advisor

_____
M. Katherine Crabtree, M.S., A.N.P., Associate Professor, First Reader

_____
Sharon R. Clark, M.S.N., F.N.P., Assistant Professor, Second Reader

_____
Carol A. Lindeman, Ph.D., Professor of Nursing, Dean

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Chapter I

INTRODUCTION

Health status is a socio-psychological phenomenon as well as a
biological one. The existence of a morbid condition does not predeter-
mine a uniform pattern of response from an individual. A chronically-
ill persons's basis for action is a composite of many factors but a
crucial variable is the way that the individual 'sees' or perceives the
situation of disease (Croog, Levine & Lurie, 1968). Perception is an
important intervening variable between stimuli and behavior and is de-
termined by a multitude of physiologic, psychologic, and socio-cultural
factors. Thus, whether or not an individual with a particular afflic-
tion will assume the sick role is considerably variable in any given
situation.

Self-assessed health status, because of its subjective as well as
objective aspects, is believed to be a more valid predictor of health
and illness behavior than any other kind of measure (Ware, Davies-Avery
and Donald, 1978). Only recently has perceived health become a primary
focus of behavioral science research. A model to locate this variable
in the causal networks of health and illness behavior has been proposed
(NHLI, 1975). It is believed that understanding and control of the pro-
cess by which health perception influences behavior could be achieved
through greater knowledge of the determinants of self-assessed health
status.

Research on factors associated with perceptions of health has relevance in understanding the behavior of persons living with a chronic illness such as heart disease. Heart disease, as compared with other serious illnesses, is particularly unique in its association with sudden death. While the recognition that one has heart disease is initially a crisis event, the individual must also adjust to the persistence of a chronic condition. The quality of life may be severely affected; one's physical and social activites abated, occupational pursuits interrupted, and future plans drastically rearranged.

It is widely accepted that an individual's perception of the diagnosis of heart disease will have an impact on treatment as well as prognosis (Rosen & Bibring, 1966). Emotional stress can adversely alter one's clinical course in that the individual's ability to exercise preventive measures and comply with the prescribed therapeutic regimen is affected. A person with a non-disabling cardiac illness may be permanently disabled, reportedly, because of a superimposed cardiac neurosis (Croog et al., 1968).

The leading causes of disability and death in this country are atherosclerosis and cardiovascular disease (Kannel in Pollock & Schmidt, 1979). Over one-third of all persons placed on the Social Security Administration disability rolls in 1973 were there because of cardiovascular disease (Fox III in Pollock & Schmidt, 1979). Within the general rehabilitation population, the cardiovascular patient group has some of the lowest rates of rehabilitation (Rosen & Bibring, 1966).

A sizeable body of research on the subject of cardiac disease and optimal functioning has been published over the last three decades. Garrity (1973) and Brown and Rawlinson (1975, 1976) reported the heart patient's health perception to be a better predictor of rehabilitation

outcome - whether measured by gainful employment, community involvement or morale - than other physical, social or psychological predictors in the literature. The 1975 National Heart and Lung Institute (NHLI) Task Group focused their literature review on the social and psychological adjustment of myocardial infarction patients and their families. Data were published in a number of studies using different designs, measures, and theoretical perspectives which demonstrated the importance of perceived health as a predictor of various adjustment outcomes. Health perception is theoretically defined as an important intervening variable between assorted physical, social and psychological predictors and several measures of rehabilitation outcome. The need for intervention studies aimed at modifying individual's health beliefs and attitudes is exemplified.

Further study of health perception and elucidation of its determinants will lead to a better understanding of its formation and content. Defining the factors that affect health perception will allow nurses and other health professionals to assist in its modification. Nurses, in providing continuity of care over time and across different professional groups, occupy a key position for input into the patient's health perception. Thus, nurses have the opportunity to favorably affect recovery and adjustment by assisting heart patients to modify their health-related attitudes and behavior. Determining the predictors of health perception is the first step toward this goal. In the present study, demographic, socio-psychological, and health-related factors are investigated to determine their influence on health perception in hospitalized heart patients.

Review of the Literature

The majority of the research on factors associated with perceptions of health has been concerned with healthy and/or elderly community residents (Ware et al., 1978). In the following pages, health perception is conceptually and operationally defined for this study and in accordance with existing literature. The nature of health perception measures is explored. Demographic, socio-psychological and health-related factors are considered in reference to their association with health perception.

The Concept of Perceived Health

Perceived health can be defined as an individual's assessment of one's own health status. How individuals feel about their own health has generally been measured by asking respondents to rate their health using a variety of single-item measures. These general health measures usually include rating terms such as "excellent", "good", "fair", or "poor". This evaluation is likely to reflect not only the existence of clinically-validated chronic conditions but also the individual's reactions to one's own health status. No single component of health is the focus of general health measures; presumably, self-assessed health ratings reflect one's integrated perception of health across the physical, psychological and social realms. General health ratings are defined as summary statements about the way in which numerous aspects of health, both objective and subjective, are combined within the perceptual framework of the respondent (Tissue, 1972).

An extensive literature review by Ware et al. (1978) investigating the reliability and validity of general health perception measures indicated that these issues have not been justly addressed. Reliability estimates were not reported by investigators using single-item measures. Two studies (DiCicco & Apple, 1958; Thompson & Streib, 1958), utilizing scales constructed from multiple general health rating items, reported high reproducibility (test-retest) coefficients, .90 and .95, respectively; and three studies reported stability over a two to three year period of time (Suchman, Phillips & Streib, 1958; Heyman & Jeffers, 1963; Maddox & Douglas, 1973).

In order to assess validity in the articles reviewed, Ware et al. (1978) formulated several hypotheses based on measurement theory and on theories about the origin and effect of general health perceptions. Strong associations were hypothesized for general health ratings (1) as determined by different methods, (2) with physician ratings, (3) with specific health component measures, and (4) with illness behavior.

In the literature, the pattern of associations was usually observed that would be expected if these measures are indeed a measure of 'general' health. A significant association between a "good" self-health evaluation and the absence of chronicity has been established by many researchers (Osborn, 1973; Tessler & Mechanic, 1978; Tornstam, 1975). In a study population of older community residents, Fillenbaum (1979) found a favorable assessment of health by individuals who expressed less concern about their health and its interference with their life, fewer reported health problems, less medication-taking and fewer illnesses and disabilities. In a clinic population of chronically ill persons over 50 years of age, Friedsam and Martin (1963) found less

favorable self-ratings of health associated with worry about health, conception of self as old, higher scores on a dejection scale, and lack of happiness with one's own life.

Using self-administered questionnaires, Garrity, Somes and Marx (1978) obtained data from college students at two points in time in order to define the correlates of perceived health. Their measure of psycho-physiological symptoms was the variable most strongly correlated $(r = -.42)$ with health perception; illness experience, life change, and perceived stressfulness of life were moderately correlated (r's $= -.27$, $-.31$, and$-.20$, respectively). The authors concluded that perceiving one's life as stressful and recent life change were better predictors of perceived health than actual health status for this student population.

The relationship between self and physician's health ratings has been explored in various populations and determined to be predominantly congruous (Fillenbaum, 1979; Friedsam & Martin, 1963; Heyman & Jeffers, 1963; Maddox, 1962, 1964; Maddox & Douglas, 1973; Palmore & Luikart, 1972; Tessler & Mechanic, 1978). In a longitudinal study of the elderly, Maddox and Douglas (1973) demonstrated that in four out of five comparisons, self-ratings of health were better predictors of subsequent physician ratings than the reverse. When incongruities did occur, the repondents tended to rate their health better than the physician.

In a clinic population of persons over 50 years of age with stable chronic illnesses, Byl and Clever (1977) correlated the patient's assessment of physical functioning with both the objective health status as rated by a health professional and the patient's subjective evaluation of health. The assessment of health status by the patient was directly related to overall function while that of the physician or nurse practitioner was not related to function. In a longitudinal study,

Heyman and Jeffers (1963) also found functional performance ratings and self-ratings of health to be significantly related in persons over the age of 60. When first interviewed, the persons who died during the three-year study period had lower ratings on both variables. Maddox and Douglas's (1973) 'health optimists' were more active despite the presence of more chronic disease in the group than the individuals that were pessimistic about their health status. The 'health optimists' also had less frequent clinic visits.

Tornstam (1975) investigated several health-related factors in persons 45 to 75 years of age to define the determinants of various self-perceptions. Factors predictive of a poor health perception were the presence of vascular or other serious disease, general exhaustedness, and less mobility. In a similar study, eighty percent of the variance in self-rated health was accounted for by a physician's performance status rating in middle age persons (Palmore & Luikart, 1972).

In summary, the validity of self-assessments of health as a measure of 'general' health was supported by the literature. Self-ratings of health were predominantly consistent with physician's ratings in various populations. General health ratings were significantly associated with the following variables in a positive direction: (1) absence of chronicity; (2) less concern about health; (3) happiness with one's own life; (4) better functional status; and, (5) less frequent clinic visits. Less favorable health ratings were associated with the following factors: (1) conception of self as old; (2) higher score on a dejection scale; (3) presence of psycho-physiological symptoms; (4) illness experience; (5) perceiving one's life as stressful; (6) recent life change; (7) mortality; (8) presence of serious and/or vascular disease; (9) general exhaustedness; and, (10) less mobility. This review demonstrates

that general health ratings represent social and psychological compo-

nents of health as well as the individual's actual health status.

Ware's Health Perceptions Questionnaire Form II

The Health Perceptions Questionnaire (HPQ) was developed by Ware

(1976) and colleagues as a standardized measure to survey people's per-

ceptions concerning their own health for use by the National Center for

Health Services Research. The conceptual orientation in the construc-

tion of the HPQ was toward general health ratings and personal assess-

ments as opposed to directly observable phenomena or specific components

or health. Through application of the HPQ, the researchers demonstrated

that respondents distinquished among perceptions of what their health

had been, what it was at present, and what they thought it would be in

the future. Based on these and other findings, Ware (1976) and associ-

ates developed a taxonomy of general health perceptions and constructed

a revised instrument, the Health Perceptions Questionnaire Form II.

The HPQ Form II measures eight perceptual dimensions of general

health and sick role propensity: prior health, current health, health

outlook, resistance/susceptibility to illness, health worry/concern,

sickness orientation, rejection of the sick role, and attitude toward

going to the doctor. Findings regarding the relationships among the

eight scales and higher order factors pertaining to health and sick

role propensity demonstrated that two of the scales were not consist-

ently correlated with the health variables investigated in field test-

ing. The 'rejection of the sick role' and 'attitude toward going to

the doctor' scales lacked validity as general health measures; instead

they tapped patient role propensity. These two scales are not included

in the present investigation. Relationships between the six other
scales and health-related variables were strong enough to conclude
that the scales measure health but weak enough to indicate that each
scale contributed unique information about health (Ware, 1976).

Rigorous criteria for scaling were used to verify that items re-
tained in the hypothesized groupings measured primarily the same health
construct. Factor analysis demonstrated that the scales tapped more
than one health construct, although each of the scales had a major source
of reliable variance. Each scale measured the perceptual construct it
was intended to measure to a greater extent than it measured the other
health constructs.

Approximately 2000 adults were field tested from five different
communities. The respondents were either interviewed in the home or
by mail. Findings were consistent across populations differing widely
in age, level of education, income, and ethnicity supporting the gener-
alizability of conclusions regarding the item groupings and defined
scales. Four of the scales (prior health, current health, health worry/
concern, and resistance/susceptibility to illness) were tested and dis-
covered to be sufficiently stable over a two-year period of time to
warrant their use in repeated measure research designs. The mean scores
were usually within one to two points of the midpoints of the scale
ranges and standard deviations were about one-fifth of the range.

A higher score on the prior health, current health, resistance/
susceptibility to illness, and health outlook scales indicated a more
favorable rating. On the sickness orientation and health worry/concern
scales, a higher score was indicative of a poorer health perception.
For all six scales, health perceptions were less favorable in conjunc-

tion with more limitations in role activity, bed days, pain, sickness, chronic health problems, and worry. The scales were positively correlated with psychological well-being and general health measured by different methods. Favorable health perceptions were negatively associated with the reporting of illness-related behavior and negatively-defined health status variables. The clinical significance of a certain score in any of the scales was not specifically investigated. The prior health, current health, and health outlook scales were negatively and significantly correlated with age (Ware, 1976). All six of the scales contained both favorably and unfavorably worded items except the sickness orientation scale.

Demographic Variables and Health Perception

The literature indicates that variations in demographic characteristics influence perceptions of health. The factors investigated and thought to be important include age, gender, ethnicity, education, income, socio-economic status, occupation, and marital status. In the following pages, the state of the literature in reference to perceived health and associated demographic characteristics is presented.

Age

Among the variables of age, gender, ethnicity, income, and education, the factor most strongly associated with self-assessed health status in healthy community residents 20 years old and above was age (Schnore & Cowhig, 1959-60). As age increased, the percentage of individuals that reported their health as favorable declined. In a similar study conducted with persons 45 to 75 years of age, the findings were consistent but to a lesser degree (Palmore & Luikart, 1972). Ware (1976)

supported these results in his field testing; health perception was significantly and negatively correlated with age in four of the six health perception scales.

Several researchers have found advancing age associated with a more favorable health rating in middle age and elderly populations. In two populations of chronic heart disease persons, Brown and Rawlinson (1975) and McKim (1980) demonstrated a positive association of age with health perception. Both populations were studied as outpatients. McKim's study was quite similar to the present study in that the purpose of her investigation was definition of the predictors of perceived health. The persons under the age of 65 years rated their health less favorably than the older individuals in two other chronically-ill populations studied (Byl & Clever, 1977; Confrey & Goldstein in Tibbetts, 1960). Ferraro (1980), in a survey of the low-income elderly, found the "old-old" persons (75 years and older) to be more positive in rating their health in spite of reporting more health-related problems and disability than the "old" subjects (64 to 74 years of age) in the survey. Fillenbaum (1979) explains this association, in part, through the application of Kelley's "reference group theory", i.e. people's practices and expectations reflect the norms of those groups of which they consider themselves a part. Age is relevant in defining appropriate normative reference groups because certain health decrements - vision, hearing loss, and increase in chronic ailments - are age related.

Singer (1974) supports this concept in her work with persons living with parkinson's disease. Younger individuals inflicted with parkinson's syndrome were less likely than the older individuals with parkinson's syndrome to report better health than healthy age-matched peers. She

believes that feelings of psychological well-being are related less to one's situation than to the comparison between that situation and what one expects it to be.

Tornstam (1975) employs the phrase "aspiration level of health" to describe the demands an individual places on one's own health in order to be satisfied. In his study of randomly selected community residents 45 to 75 years of age, he demonstrated that for every decade added to life, it took less and less of health for an individual to feel satisfied with one's own health status. In aged individuals, a poor actual health status was out-balanced by a low aspiration level resulting in a good subjective evaluation of one's own health. This finding was also demonstrated in an international study of self-reported health in the elderly of Denmark, Great Britain and the United States (Shanas, Townsend, Wedderburn, Fries, Milhoj & Stehouwer, 1968).

In support of this concept, age has been unrelated to general health ratings in a number of geriatric study populations (Desroches, Kaiman & Ballard, 1967; Maddox & Eisdorfer, 1962). Warren (1974) demonstrated little difference in perceived health status among a residential population ranging in age from 60 to 90 years despite the increasing prevalence of chronic conditions in the more aged. Johnson's (1977) findings were similar in a geriatric group of cardiac pacemaker subjects.

The literature suggests that persons over the age of 70 years may regard their chronic illnesses as a natural consequence of old age and rate their health more favorable than younger persons with the same degree of disability. Chronically-ill persons under the age of 65 to 70 years perceived their health as poorer than chronically-ill persons

over the age of 70 years. Difference in health aspirations may explain the narrow range of health perception ratings observed for middle-aged and elderly individuals widely diversified in terms of actual health status.

Gender

In searching for the determinants of self-perceived health, many authors have investigated the role of gender. Garrity et al. (1978) found no relationship between sex and perceived health in a college student population. Comparing physicians' evaluations with self-assessments of health in an elderly population, Maddox (1964) discovered that males were more likely to be optimistic about their health than females. Shanas et al. (1968) also found elderly men more likely than women to report good health except between the ages of 65 and 70 years. At this age, men in the U. S. and Denmark were more likely than women to say their health was poor.

After controlling for age, a slight association between sex and self-ratings of health was reported in a large sample of persons 20 years of age and older (Schnore & Cowhig, 1959-60). Seventy-six percent of the men and 68% of the women reported "good" or "excellent" health. This difference was not statistically significant. Wan (1976) demonstrated that men and women were equal in their health assessment in a 10-year study of health status and the retirement process. His population consisted of 11,153 persons between the ages of 58 and 63 years.

In researching the relationship between sex and objective measures of health in the elderly, Ferraro (1980) demonstrated that males tended to rate themselves as having poorer health than females even though

they reported fewer physiological disorders and less disability. In explaining the role of gender in health matters, Fillenbaum (1979) again spoke of "normative reference groups" and of actual health differences between men and women. By self-report, women had more health problems, took a greater variety of medications, and suffered from more illnesses than men with an identical self-assessment of health.

These results are also consistent with those of Verbrugge(1976). Her data came from an ongoing federal survey on health conditions and practices in the U. S. population. The information was obtained by interviews conducted in the home; information was gathered on all members of the household. Women had a higher incidence of both acute and chronic conditions but were less severely disabled than the men. A higher percentage of the males of all ages were completely unable to carry on the major activities of their age-sex group.

To summarize, the sex-related differences in health perception are equivocal. The fact that women report more illnesses than men could be secondary to the presence of more conditions or to a willingness to talk about health problems. Men's health optimism could be related to less chronic conditions or to the absence of willingness to talk about health problems. The higher rate of disability in the men could also be a result of difference in role definitions in reference to age-sex group activities.

Ethnicity

The priority assigned to health and the criteria used to assess health status can both be expected to vary within societies (Twaddle, 1974). It is believed that the ethnic-related differences in the rewards and costs attached to illness lead to differences in illness

behavior and health status designation. However, the literature on this topic is scant.

A few researchers have investigated ethnicity as a variable influencing health perception. Tessler and Mechanic (1978) collected data on perceived health and a variety of factors by interview or questionnaire from four diverse population groups. Two of the populations consisted of only whites; of the other two groups, one was a prison population containing 50% blacks. The authors reported a poorer health perception associated with being non-white. Maddox (1962) reported blacks to be more likely than whites to rate their health as poor regardless of the physician's evaluation in an elderly community population.

Hochstim, Athanasopoulos and Larkins (1968) refuted these findings in a study of urban whites and blacks living in the same area of a large metropolis. Blacks with adequate income were as healthy by self-assessment as whites with adequate income. The high income blacks had better health perception ratings than the low income whites.

These findings indicate that controlling for socio-economic status may alleviate the difference in health perception reported by white and black individuals living in the same culture. Before any statements in reference to this can be made, controlled studies need to be conducted that take socio-economic status into consideration.

Socio-Economic Status

Higher educational attainment, income, and social status have been correlated with more favorable general health ratings in the literature. Palmore and Luikart (1972), in an analysis of health, social and psychological variables and life satisfaction in healthy 45 to 75 year old com-

munity residents, found intelligence (or education in men) to be the strongest correlate of self-rated health in the positive direction. (The physician's rating of performance status accounted for 80% of the variance in self-rated health). Schnore and Cowhig (1959-60) demonstrated that higher income and education levels were associated with better health perceptions in a similar population. These findings remained significant after controlling for age and marital status.

In a study of 605 randomly-selected 60 to 64 year old males published by Osborn (1973), income and education were noted to be significantly related to one's self-evaluation of health. This correlation was stronger among the men reporting "serious" morbid conditions (neoplasms, heart conditions and/or three chronic health conditions). Eighty percent of the lower income-education group evaluated their health as poor while only 48% of the men in the higher income-education group evaluated their health as poor.

Tessler and Mechanic (1978) reported a significant association between perceived health and education in the two community populations they studied. A lower education was associated with a poorer health perception in both groups (beta = .12 & .29). Controlling for measured differences in objective health status and psychological distress did not significantly affect these findings.

Hochstim et al. (1968), as mentioned earlier, investigated the health and social status of whites and blacks living in a metropolitan area. In both the poverty and non-poverty areas of the city, lower income was associated with a higher incidence of reported sickness and more negative health evaluations. Also, the authors noted that blacks were more likely than whites to be in lower income and lower status occupations.

In a longitudinal study of persons 60 to 94 years of age, Maddox (1964) investigated the factors associated with one's predisposition to optimism or pessimism in evaluating one's own health. The individual's self-assessment was compared to a medical evaluation to determine optimism, pessimism, or congruity. The health "optimists" were more likely to be of higher social status, non-manual occupations, and less likely to have maintained a work role. Heyman and Jeffers (1963) supported these findings in a similar study group of the same age: More manual workers than non-manual workers changed their general health rating to a more negative one over a two to three year period of time.

Consistently, perceived health has been positively correlated with education, income, occupational status, and social class in the literature on presumably healthy middle-aged and older populations. However, in two study groups with heart disease, perceived health was unrelated to socio-economic status, education or occupation (Johnson, 1977; McKim, 1980). The only other study reviewed that did not find a relationship between socio-economic status and perceived health was Garrity et al.'s (1978) investigation of a homogeneous population of college students.

Employment Status

The effect of employment status was greater than any other predictor of health perception in Wan's (1976) extensive investigation. He utilized a number of social, psychological and physical indicators of well-being to define the determinants of health perception in 11,153 persons ranging in age from 58 to 63 years. Self-assessed health status was determined by comparing one's self to others of the same age and dichotomizing health ratings to better or worse than others. Employment status alone accounted for 17% of the total variance in self-assessed

health status. The individuals who were unable to work or retired had a poorer view of their health than those employed or looking for work. Maddox (1962) supported these findings in his investigation into the differences between physicians' evaluations and individuals' self-assessments of health in the elderly. Individuals that had experienced minimal change in their usual work role and had remained relatively active estimated their own health as being good regardless of the clinical evaluation of their health.

However, in another study published by Maddox (1964), health optimism was more likely to exist in males out of the work force and in females that had given up major responsibilities at home. Again, the population was elderly community residents. Maddox attributes these findings to the social status of the individual and believes that higher status persons have more control over the work situation and a more orderly withdrawal from the work force. Thompson and Strieb (1958) published data validating these findings; an improvement in self-assessment of health was concomitant with retirement. The elderly remaining gainfully employed were more likely to decline in health. These authors attributed their findings to the positive value of retirement in allowing a given state of health to be more acceptable because of the less taxing life style after retirement. There are no data available on the subject of forced retirement at an earlier age because of chronic illness and the effect on perceived health.

Marital Status

Very little data exists on the relationship between perceived health and marital status. In a population of college students, Tessler and Mechanic (1978) observed a less favorable health perception in unmarried

versus married students. A large random sample (N = 974) of men and women living in large cities was studied by Schnore and Cowhig (1959-60). The single and married persons across all age groups (ranging from 21 to 60 years and over) reported substantially better health than the widowed, separated, and divorced individuals.

Verbrugge (1979) utilized federal surveys to obtain data on health and marital status; the data was gathered through interviews in the home. Among non-institutionalized persons, divorced and separated persons had higher rates of acute and chronic conditions including disability problems. Widowed persons ranked second overall for number of health conditions. Although the single group had the lowest prevalence for many conditions, the married persons appeared to be the healthiest group. In terms of morbidity rates, the single and married persons were similar; the formerly married individuals had the higher rates. Renne (1971) incorporated marital "happiness" into a similar investigation. Her sample population consisted of 6,928 white and black adults. Marriage was associated with better health ratings only when the relationship was satisfactory to the respondent. Persons complaining about their marriage were more likely to report poor health. Divorcees were healthier and happier by self-assessment than persons remaining in an unhappy marriage. The unhappily married people registered distress on every health index measured – disability, chronic illness, neurosis, depression, and isolation – though financially they were comparable to the happily married group. Renne concluded that "unhappy marriage is a social disability, analogous in its consequences to physical disability or chronic illness" (p. 348).

In three middle-age to elderly heart disease populations, marital status was unrelated to health perception (Brown & Rawlinson, 1975;

Johnson, 1977; McKim, 1980). All three of these groups were inter-
viewed in a clinic setting. Almost all of the subjects were married.
Thus the role of marital status as a correlate of health perception
does not seem to be of importance in chronically-ill heart patients.
However, in presumably healthy populations, married persons report better
health than unmarried, separated, divorced or widowed persons. Of the
married persons, those expressing happiness with their marriage were more
likely to rate their health favorably than those in unhappy marriages.

Socio-Psychological Measures and Perceived Health

The literature on specific socio-psychological measures in associ-
ation with perceived health is quite limited. One's orientation in re-
ference to locus of control and repression-sensitization has been sug-
gested, along with other social, psychological and physical character-
istics, to be influential in one's health perception.

Locus of Control

Internal-external locus of control refers to the degree to which
an individual perceives the events that happen to one's self as depen-
dent on one's own behavior or as a result of luck, chance, fate, or
powers beyond personal control and understanding. The implication
that locus of control expectations are related to behaviors comes from
Rotter's social learning theory (Rotter, 1966). Locus of control instru-
ments have been devised that are specific to health.

The Multidimensional Health Locus of Control (MHLC) scales were devel-
oped to tap beliefs that the source of reinforcements for health-re-
lated behaviors is primarily internal, a matter of chance, or under the
control of others (Wallston, Wallston & DeVellis, 1978). These scales

parallel Levenson's (1974) work; she developed a general multidimensional locus of control measure consisting of an internal scale and a powerful other and a chance scale to measure external locus of control expectancies. In developing the Multidimensional Health Locus of Control measure, the authors constructed two equivalent forms for use in repeated measure designs and changed all items to be personally-worded. An intercorrelation matrix demonstrated that the internal scale was statistically independent of the powerful other scale and significantly negatively correlated with the chance scale in both forms. The chance and powerful other scales were positively correlated although the association lacked statistical significance in one of the forms. As a measure of predictive validity, correlations were computed between the MHLC scales and health status. Health status correlated with the internal scale ($r = .40$, $p \leq .001$) and the chance scale ($r = -.28$, $p \leq .01$) but not with the powerful other scale ($r = -.05$). In reference to demographic variables, only one of the scales (Form A's powerful other scale) correlated significantly with age ($r = .20$) and education level ($r = -.22$). There was no significant correlation with gender.

Kirscht (1972) investigated the relationship among beliefs about control over health, perceptions of disease, and health-related practices in two groups of non-academic staff at a university. The subjects ranged in age from 18 to 68 years with a median age of 35 years; eighty-six percent were women. In this healthy population, women and younger subjects were more internally-oriented. And, as hypothesized by the author, those more internally-oriented regarded themselves less vulnerable to illness. Taking the investigation a step further, Kirscht also demonstrated that one's expectancy for control was associated with the reduction in vulnerability possible by one's own personal health actions.

Whether or not one perceived general health as protectable greatly
influenced the expectancy for control.

A comprehensive review of the research on locus of control expect-
ancies and health attitudes and behaviors by Strickland (1978) revealed
that one's beliefs about internal and external locus of control were
significantly related to one's health-related behavior. Several studies
demonstrated a greater adaptive functioning in persons holding internal
expectancies. Internal individuals were more likely than externals to
seek information about disease and health maintenance and to take res-
ponsibility for their own health actions. Internally-oriented persons
were also more likely to express contentment with their life situation
than were those more externally-oriented. Palmore and Luikart (1972)
demonstrated that an internal control orientation was associated with
a better health perception in women ages 45 to 70 years in their life
satisfaction study. (Internal orientation was the third strongest corre-
late of life satisfaction.)

A major finding in the research was that congruence of locus of
control expectancies and situations enhance behavioral change. This
finding was based, in part, on Cromwell, Butterfield, Brayfield and
Curry's (1977) data on myocardial infarction patients' stress, recovery
and personality traits. Utilizing the Rotter scale, the authors demon-
strated the coronary patients to be more external than the medical con-
trols. They found the internal patients to be more cooperative in res-
ponse to treatment demands and to leave the coronary care unit and hos-
pital earlier than the external individuals. Morbidity and mortality
rates were less in patients with congruent locus of control beliefs and
treatment modalities, i.e. internals need to participate in their treat-

ment more than externals. In another heart disease population, Garrity (1973) found a belief in external control, perceiving one's health as good, and higher social class to predict return to work after a first myocardial infarction in 58 male patients. McKim (1980), however, found health locus of control and health perception to be unrelated in her heart disease patient group.

In summary, the relationship of locus of control to health perception is equivocal in the literature. Wallston et al. (1978) point out the importance of keeping in mind the theoretical and empirical underpinnings of the locus of control construct so that one does not expect to explain variance in health behavior by this measure alone. It is influential and important only in combination with other characteristics.

Repression-Sensitization

The repression-sensitization (R-S) scale measures a fairly constant personality predisposition related to coping behavior in dealing with anxiety. Low scorers on the R-S scale tend to repress or deny threatening stimuli while high scorers tend to seek more information regarding the threatening stimuli. The person who scores low on this instrument is viewed as a high denier, an avoider or repressor; one who scores high is characterized as a low denier, a coper or sensitizer.

Studies of heart patients in relation to the R-S factor have shown that patients who are "repressors" generally have more positive outcomes than "sensitizers". Gentry, Foster and Haney (1972) investigated denial as a determinant of perceived health status in 16 coronary care unit patients. The non-deniers reported an average level of anxiety notably higher than the deniers. These patients were studied over a five-day period of time after their admission to the coronary care unit with the

diagnosis of myocardial infarction. On day one, the deniers reported a level of anxiety remarkably below that of normal non-stressed individuals while that of the non-deniers was commensurate with that of a patient with the diagnosis of anxiety reaction. The deniers rated their current health much higher than did the non-deniers and more in keeping with their own general health status. By day five, the non-deniers had sufficiently increased their current health rating while that of the deniers slightly declined. On day five, the non-deniers, as a group, still characterized themselves as being more anxious and in worse current health than were the deniers on day one. Non-denial and anxiety were associated with poorer perceived health throughout the study period.

Cromwell et al. (1977) also measured repression-sensitization in coronary care unit patients along with a number of physical and other psychological parameters. Repressors with little information about their condition and sensitizers with extensive information were more cooperative and out of the coronary care unit sooner. These authors surmised that denial, for some individuals with heart disease, may be facilitative in alleviating anxiety.

Studying the psychological adjustment of persons after a myocardial infarction, Stern, Pascale and Ackerman (1977) discovered that anxiety and depression occurred together in heart patients. Those individuals comprised a population at risk both psychologically and physiologically in this investigation. The deniers returned to work sooner and continued to function well during their hospitalization. Their re-admission rate was significantly lower than the "depressives" (20% for the deniers versus 70% for the depressives).

In sum, denial as measured by one's score on a repression-sensitization scale has been associated with a more favorable health perception as well as a more positive outcome in hospitalized and non-hospitalized heart patients.

Socio-Medical Variables and Health Perception

A number of health-related factors have been studied in association with perceived health in healthy and chronically-ill populations. Those variables inplicated in the literature include duration and degree of disability, employment-related changes, activity-related changes, psycho-physiologic symptoms, and role-function changes; the impact that a chronic illness can have is diverse and affects many components of one's life.

Duration of illness has been associated with one's health rating in presumably healthy as well as chronically-ill groups studied. McKim (1980) found a longer duration of illness to be predictive of a more favorable health perception in coronary artery disease patients. However, Brown and Rawlinson (1975) demonstrated that heart patients who had been ill longer were less likely to relinquish the sick role after open heart surgery than those who had been ill for a shorter period of time. In Wan's (1976) study of community residents, the socio-medical factors proved to be more influential than demographic, socio-economic, and psychological indicators of well-being in predicting self-assessed health status. Severity and duration of disability accounted for most of the explained variance in health perception. Those persons retired or unable to work because of health problems viewed their health less favorably than the employed individuals or those looking for work.

Garrity et al.'s (1978) research into factors predictive of per-
ceived health dealt with a homogeneous college population. Psycholog-
ical strain (measured by Langner's measure of psycho-physiologic symp-
toms) accounted for most of the explained variance in health perception.
This factor accounted for 17.6% of the variance. The second strongest
correlate was recent life change; it accounted for 2.4% of the explained
variance in health perception. In explaining similar findings, Mechanic
(1974) postulated that stressful life changes cause individuals to be-
come unhappy and discontent enough to attribute their psychological
malaise to illness symptoms. The person perceives her/his health as
poor and enacts illness behavior.

The recognition that one has heart disease causes an individual
to make drastic changes in one's pattern of living. Many aspects of
one's own life will be affected including social activities, physical
capabilities, and professional aspirations. The sudden shift to a role
of helplessness, passivity, and dependency imposed by hospitalization
constitutes a serious threat. There are little data available on the
effect of this situation on an individual's health perception. There
are data, however, that support the belief that the health perception
is of major importance in determining the adjustment and rehabilitation
in this population.

Purpose of the Study

The review of the literature has demonstrated health perception to
be an important determinant of outcome in heart patient populations.
Lack of knowledge of the factors that influence health perceptions in
these persons prevents health professionals from effectively intervening
to modify health perception and, thus, affect a more favorable adjust-

ment outcome. In this study, various demographic, socio-psychologic, and health-related factors are investigated in reference to their influence on health perception in hospitalized heart patients. Defining the factors that influence health perception will allow health professionals, when indicated, to assist in its modification.

Research Questions

1. What relationship exists between specific demographic (age, gender, marital status, ethnic group, education, income, SES, and employment-occupational status), socio-psychologic (locus of control and re-repression-sensitization), and socio-medical (length of time in hospital, length of illness, time when changes were made in one's living routine as a consequence of illness, and changes that were made in one's living routine because of illness) variables investigated and the hospitalized heart patients' health perception?

2. What is the relative contribution of each of the variables investigated in explaining the variance in perceived health in this population?

Chapter II

METHODS

Subjects and Setting

Data for this study were obtained from an ongoing Patient Education Trait-Treatment Interaction study. The ongoing study is being conducted by a consortium group; the investigators are each affiliated with one of the hospitals chosen as a study setting. Four hospitals are being utilized; three located in Portland, Oregon and one in San Diego, California. The hospital in San Diego is a proprietary hospital with a bed capacity of 175. One of the hospitals in Portland is also proprietary and has a bed capacity of 475. The other two Portland hospitals are teaching hospitals; one is a state-operated facility with 449 beds and the other is a federally-operated Veteran's Administration hospital with a 543-bed capacity.

Persons admitted to one of the four hospitals between August 1979 and November 1980 with heart disease as their primary illness and who met the specified criteria were asked to participate as subjects in this research. Two nurse researchers at each site utilized nursing care cardexes and medication lists to identify potential candidates on General Medicine and Cardiac wards. For this research, the total number of subjects with complete data is 79 persons. Individuals that refused to continue in the ongoing study after the initial interview and data

collection are included in the sample. To meet the criteria for in-
clusion in the study the persons had to be:

1. Eighteen years of age or older.

2. Capable of reading and speaking the English language.

3. In the non-acute state of illness.

4. Receiving a minimum of two of the designated medications in-
   cluded in the teaching materials for the ongoing study.

5. Below the cut-off point on the pretests of medication know-
   ledge indicating the need for learning a self-administered
   medication regimen.

6. Potentially able to take responsibility for managing one's
   own medication regimen.

7. Discharged to home or other self-care facility within a two
   to three week period after receiving the teaching.

8. Living within a geographical area of close enough proximity
   to the hospital for purposes of the follow-up home interview.

9. Able to achieve a subscale score of eight on the Digit Span
   and a subscale score of eight on the Associate Learning sec-
   tions of the Wechsler Memory Scale.

Upon meeting the above criteria and signing a consent form, the indiv-
iduals were admitted to the study.

Data Collection Instruments

Data were collected using a structured interview and the admin-
istration of standardized tests. Nurse researchers at each site parti-
cipated in a training program to assure consistency in data collection
across the four sites.

<u>Criterion Variable</u>

The measure of perceived health status using <u>Ware's Health Percep-</u><u>tions Questionnaire Form II</u> is the criterion variable in this study. This instrument consists of 32 items and measures eight perceptual dimensions of general health and patient role propensity. The eight HPQ Form II scales, number of items in each scale, and range of scores for each scale are listed:

a) Prior health, 3 items, range 3-15 points

b) Current health, 9 items, range 9-45 points

c) Health outlook, 4 items, range 4-20 points

d) Resistance/susceptibility to illness, 4 items, range 4-20 points

e) Health worry/concern, 4 items, range 4-20 points

f) Sickness orientation, 2 items, range 2-10 points

g) Rejection of the sick role, 4 items, range 4-20 points

h) Attitude toward going to the doctor, 2 items, range 2-10 points

The 'rejection of the sick role' and 'attitude toward going to the doctor' scales lacked validity as general health measures and were not included in this analysis. The HPQ Form II was discovered to be reliable, valid and stable over time for five diverse adult populations (Ware, 1976). This tool uses a 5-point Likert scale with responses ranging from "definitely false" (scored 1 point) to "definitely true" (scored 5 points). Six of the eight scales are balanced, i.e. they contain favorably and unfavorably worded items. The other two scales contain only two items; both items are worded in the same direction. Scale scores were found to be sufficiently reliable in terms of internal consistency and test-retest reliability coefficients for purposes

of group comparisons. Product-moment correlations between scores obtained two years apart were positive and significant (p < .001, one-tailed test) for the four scales studied demonstrating intertemporal stability. All scales measured the perceptual content they were designed to measure to a greater extent than they measured other constructs (Ware, 1976). (See Appendix A for HPQ Form II.)

For the prior health, current health, health outlook, and resistance/susceptibility to illness scales, a higher score is indicative of a more favorable perception. However, a higher score on the health worry/concern and sickness orientation scales indicates a more negative perception. Health perceptions in all six dimensions tended to be less favorable in conjunction with increases in role activity limitations, bed days, chronic health problems, pain, and worry. They were more favorable in the presence of psychological well-being and favorable health ratings obtained using another method. The current health, prior health, and health outlook scales were significantly and negatively correlated with age supporting the validity of these scales as measures of health (Ware, 1976).

Predictor Variables

The Epstein-Fenz Repression-Sensitization (R-S) Modification Scale. The Epstein-Fenz R-S scale consists of 66 true-false items of which 30 are scored; fifteen if marked "true" and 15 if marked "false". The other items are filler items from the Minnesota Multiphasic Personality Inventory (MMPI). Prior to Epstein's and Fenz's modification, Byrne's Revised R-S scale had a corrected half-split reliability of .94 and a test-retest reliability of .82 at three months (Byrne, Barry & Nelson, 1963). In revising this R-S scale, Epstein and Fenz removed

items of less reliability in favor of those which could be scored more
consistently. The Epstein-Fenz R-S scale has been used in nursing re-
search investigating the surgical patients' response to early versus
late definite scheduling of the elective surgery (Minckley, 1971).
(See Appendix B for Epstein-Fenz R-S scale.)

The Multidimensional Health Locus of Control (MHLC) Scale. The
MHLC consists of three dimensions of locus of control in relationship
to health: internal control as one dimension and external control meas-
ured by the two dimensions of chance and powerful other control (Wall-
ston et al., 1978). All items in the scale are personally-worded.
The scale is based on a 6-point Likert type format with the six responses
ranging from "strongly disagree" (1 point) to "strongly agree" (6 points).
One's orientation in each dimension is measured by six items; one's
score on each dimension can range from a low of 6 points to a high of 36
points. A higher score was indicative of a stronger locus of control
orientation on that dimension. Evidence of the discriminant validity of
the three dimensions has been demonstrated (Wallston et al., 1978).
Alpha reliabilities for the MHLC scales (Form A) utilized in the present
study ranged from .67 to .77, indicating internal consistency. (See
Appendix C for Multidimensional Health Locus of Control Scale, Form A.)

Patient Profile Questionnaire. The Patient Profile Questionnaire
was administered by a health professional and collected data on a variety
of demographic and socio-medical factors. The demographic character-
istics included age, gender, marital status, ethnic group, years of
education, income, and occupation-employment status. Information was
obtained on a number of socio-medical factors including the following:
(1) length of illness; (2) length of time at the health care facility
this admission; (3) time when changes were made in one's living routine

as a consequence of illness; and, (4) changes that were made in one's

living routine because of illness. These variables served as predictor

variables in the present study. (See Appendix D for Patient Profile

Questionnaire.)

Design and Procedure

This study is descriptive and correlational in design. Subjects

who met the specified criteria and signed the consent forms were inter-

viewed in their hospital room or a quiet area on the ward by a nurse

researcher. (See Appendix E for consent form.) The average length of

time for the interview was one and one-half to two hours. Complete

data were obtained from all subjects included in this study.

Analysis

The data analysis included the calculation of zero-order corre-

lations and formation of prediction equations for the six perceptual

dimensions of health investigated using stepwise multiple regression

analyses. Prior health, current health, health outlook, health worry/

concern, resistance/susceptibility to illness, and sickness orientation

were the criterion variables for the equations. The predictor variables

included were demographic characteristics (age, gender, marital status,

ethnic group, years of education, income, and occupation-employment

status); socio-psychological measures (repression-sensitization and

health locus of control); and socio-medical variables (length of illness,

length of time in the hospital at the time of interview, most signifi-

cant change in one's living routine as a consequence of illness, and

time when changes were made in one's life consequential to illness).

The predictor variables were entered into the equation in the order of

their weight and significance in explaining variance in the six percep-

tual dimensions of health investigated in the present study. (See

Appendix F for Coding Key for Data Analysis).

Chapter III

RESULTS AND DISCUSSION

In this section, the results of the study are presented and discussed. First, the study population is described in reference to the demographic, socio-psychological and health-related variables investigated. Secondly, the correlations between the health perception scales and selected demographic, socio-medical and socio-psychological variables are presented. Thirdly, the results of a stepwise multiple regression analysis for each of the health perception scales are presented and discussed.

Demographic Characteristics

The study population consisted of 79 heart patients admitted to one of the four hospitals utilized for data collection. Eighty percent of the subjects included in the study were admitted for medical management; the remaining subjects had heart surgery during this admission. The demographic characteristics of the sample are presented in Table 1. The study population was predominantly white; two of the subjects were black. The mean age of the total group was 61 years with 58% of the subjects less than 65 years of age. In reference to gender and marital status, the study population was predominantly male (62%) and married (63%).

Information was obtained on a variety of factors pertaining to social status; these included education, income, occupation and employment status. A socio-economic status (SES) rating was assigned utilizing the SES Index developed by Duncan (in Reiss, 1961). This scale is a

Table 1

Demographic Characteristics of Heart Patients (N=79)

Characteristic (N=79) (range)	Mean	Standard Deviation	Percentage
Age (40-82 years)	61.2	9.7	
40-54 years			24
55-64 years			34
65 years or more			42
Sex			
Women (N=30)			38
Men (N=49)			62
Marital Status			
Married (N=50)			63
Widowed (N=14)			18
Divorced (N=10)			13
Never Married (N=4)			5
Cohabitation (N=1)			1
Socio-Economic Status[a] (7-93)	40.8	22.7	
Education (3-17+ years)	11.7	3.1	
3-11 years (N=28)			35
12 years (N=24)			30
College (N=21)			27
Post-graduate (N=6)			8
Occupation			
Professional, Managerial (N=18)			23
Clerical, skilled, semi- skilled (N=27)			34
Unskilled (N=22)			28
Housewife (N=12)			15
Employment Status			
Retired (N=55)			70
Unemployed (N=6)			8
Part-time (N=1)			1
Full-time (N=17)			21
Annual Income			
$ 1,500-7,999 (N=27)			34
8,000-11,999 (N=27)			34
12,000-50,000 (N=25)			32

[a] Duncan's Socio-Economic Status Index (in Reiss, 1961)

composite of income and education and ranges from 1 to 100 points. The mean score of the sample was 40.8 indicating a lower than average socio-economic status. The mean education level was 11.3 years; 65% had completed high school and/or attended college. Both the mean and median values for annual family income fell within the $9,000 to $9,999 range. According to the U. S. Bureau of Census (1978), the median income in 1977 for families headed by persons 45 to 54 years of age was $23,927; for those headed by persons 55 to 64 years of age, $20,918; and, for those headed by persons 65 years and older, $12,889. Thus the present sample's income, for all age groups represented, was much lower than the general population.

When employed, the subjects had worked predominantly in occupations classified as skilled, semi-skilled or unskilled. At the time of the investigation, the majority (70%) of the sample was retired; half of the patients mentioned retirement as a consequence of chronic illness.

To summarize, the study population was predominantly white, married males who had completed high school and/or attended college. The average age was 61 years; most of the patients were retired. When employed, they had worked in occupations classified as unskilled, semi-skilled or skilled. The average SES score and family income was lower than the general population.

Socio-Medical Characteristics

The socio-medical variables investigated were length of illness, length of hospital stay, major life changes consequential to illness, and time when changes were made in one's living routine because of illness. There was a wide range of variability in the study population in reference to these items (see Table 2).

Table 2

Health-Related Characteristics of Heart Patients (N=79)

Variable (range)	Mean	Standard Deviation	Percentage
Length of illness (1 mo. to 64 yrs.)	8.35[b]	10.7	
6 mos. or less			25
7 mos. to 1 yr.			9
2 to 10 yrs.			31
11 to 64 yrs.			35
Time changes made in living routine			
because of illness (0 to 33 yrs.)	6.2[b]	7.2	
6 mos. or less			28
7 mos. to 1 yr.			9
2 to 9 yrs.			36
10 to 33 yrs.			27
Length of hospital stay (1 to 56 das.)	8.5	6.8	
1 to 8 days			67
9 to 18 days			30
23 to 56 days			3
Most significant life change made as			
a consequence of illness[a]			
Forced retirement			25
Change in work			39
Change in physical activity			30
Change in social or recreational			
activity			32

[a] Many subjects volunteered more than one item and did not specify one as more significant.

[b] Length of time in years.

The length of illness ranged from less than one month to 64 years; the median length of illness was 4.3 years. Approximately the same number of patients had been ill for the following time segments: less than one year, two to ten years, and over ten years.

The reported length of time the subjects had lived with changes in their routine as a consequence of illness ranged from less than one month to 33 years. The distribution is similar to the length of illness variable; the median length of time was 4 years. Six subjects reported making no changes in their living routine as a consequence of illness. The four items listed on the interview form were not relevant to the present investigation thus were excluded from the analysis. The changes most frequently mentioned as a consequence of illness were related to work, physical activity, social and recreational activity; these factors are listed in the table. Many people mentioned more than one change as the most significant.

The length of hospital stay was calculated from the day of admission to the day the patient consented to participate in the study and was interviewed. The majority (62%) of the subjects had been in the hospital from three to eight days at the time of the interview.

In sum, most of the study patients had been ill for more than two years. The most significant life changes were related to work, physical and social activity. Usually, these changes had occurred more than two years prior to the present hospital admission. Most of the subjects had been in the hospital from three to eight days when interviewed.

Socio-Psychological Characteristics

Repression-sensitization and locus of control were the two socio-psychological traits included in this investigation.

Repression-Sensitization

Scores on the Epstein-Fenz R-S scale ranged from 3 to 20. The mean score was 13.3 with a standard deviation of 3.3. A mean score of 16.47 was reported for Epstein's field test population of college students (Minckley, 1971). In a study of pre-operative elective surgery patients, Minckley (1971) reported a range of 5 to 18 with a mean score of 11.5. The heart patient population was more repressive than the healthy and younger field test population; this difference was of statistical significance by t test determinations. However, the present sample was significantly less repressive than the pre-operative patient group by t test.

Health Locus of Control

The means and standard deviations for the three scales of the MHLC instrument are listed in Table 3. Wallston et al.'s (1978) field test results are included for comparison. A t test was utilized to determine significance of difference between the present study and the field test results. The present population was significantly more external than the field test subjects in both the chance and powerful other dimensions. Although the heart patients scored slightly lower on the internal locus of control scale, this difference was not statistically significant. This is in accordance with the results in a similar study utilizing the original Health Locus of Control scale (Wallston, Wallston, Kaplan & Maides, 1976) in which a heart patient population was shown to be more external than the community population field tested (McKim, 1980).

Wallston et al. (1978) reported an external orientation in the powerful other dimension to be significantly correlated with age ($r = .20$, $p \leq .05$) and education ($r = -.22$, $p \leq .05$). The mean age of their population was 42 years and 75% of the subjects had some college education.

Table 3

Values for Multidimensional Health Locus of Control Scales Form A:
Results for Heart Patients (N = 79) and Field Tests (N = 115)

Scale (range)	Heart Patients Mean(S.D.)	Wallston et al.'s Mean(S.D.)
Internal HLC (6-35)	24.4(5.9)	25.1(4.9)
Powerful Other HLC (8-36)	25.2(5.6)	20.0(5.2)
Chance HLC (6-32)	18.3(5.9)	15.6(5.8)

In the present sample, age was not significantly correlated with any of the health locus of control scales, however, education was significantly correlated with the external scale in the chance dimension ($r = -.26$, $p \leq .01$). In both populations, higher educational attainment was correlated with less belief in the chance dimension. Income was also correlated with an external orientation in the chance dimension ($r = .38$, $p \leq .01$); a stronger belief in chance control was correlated with a lower income.

The findings in reference to intercorrelations among the locus of control scales were unexpected (see Table 5). The external locus of control scale in the chance dimension was not significantly correlated with either the internal scale or the external scale in the powerful other dimension. However, the external scale in the powerful other dimension was strongly and positively correlated with the internal scale ($r = .33$, $p \leq .01$) indicating that this population believed their health to be under their control while acknowledging their dependence on powerful others. Perhaps this finding is not too surprising in a hospitalized chronically-ill population in that reference is made to health professionals as "powerful others" in this scale.

In Wallston et al.'s (1978) field testing, only the internal and chance locus of control scales were strongly, and negatively, correlated ($r = -.34$, $p \leq .01$); the powerful other scale failed to reach statistical significance in association with either or the other two scales.

Thus, in reference to the socio-psychological traits investigated, the heart patients were more repressive and more externally-oriented in both the chance and powerful other dimensions than the general population.

Perceived Health

The means, ranges, and standard deviations for the six health perception scales utilized in this analysis are listed in Table 4. Ware's (1976) results from testing 2000 adults from four household populations have been included for comparison. Ware's mean scores were above the midpoint for all six health dimensions except for the health worry/concern scale in which the mean was at the midpoint. Surprisingly, both populations had the same mean score on the sickness orientation scale (6.8). For the health outlook, health worry/concern, and resistance/susceptibility to illness scales, the mean scores were within one to two points of both the midpoint and the average of Ware's mean scores indicating very little difference from the normal population in these health dimensions. However, as demonstrated in Table 4, the heart patients had much lower mean scores for the prior and current health perceptions. These scores were 1.0 and 1.5 standard deviations below the mean score for the normal population for the prior and current health, respectively.

Among the health perception scales, the prior and current health, resistance/susceptibility, health outlook, and health worry/concern scales were highly intercorrelated; the sickness orientation scale was significantly correlated with only the resistance/susceptibility and health worry/concern perception measures (see Table 5). The current health perception was quite strongly correlated with the prior health and health outlook ratings (r = .44 and .65, respectively). The intercorrelations were positive for the prior health, current health, health outlook, and resistance/susceptibility measures; a higher score indicated

Table 4

Values for Ware's Health Perception Questionnaire Form II Scales:
Results for Heart Patients (N = 79) and Field Tests (N = 2000)

HPQ Scale (range)[a]	Heart Patients Mean(S.D.)	Ware's Mean(S.D.)[b]
Prior Health (3-14)	6.5(3.2)	10.2(3.6)
Current Health (9-44)	18.9(7.6)	31.5(7.9)
Health Outlook (4-20)	12.3(3.6)	13.9(2.7)
Health Worry/Concern (7-19)	13.2(2.8)	12.1(2.9)
Resistance/Susceptibility (4-20)	13.9(3.6)	14.6(2.9)
Sickness Orientation (2-10)	6.8(2.4)	6.8(2.0)

[a] Numbers in parentheses indicate minimum and maximum values for heart patients.

[b] Numbers represent average values computed from Ware's field tests' means and standard deviations.

a more favorable health perception in these four dimensions. Health worry/concern was negatively correlated with these four perceptions as expected; a higher score reflected more worry about health. For the sickness orientation scale, more orientation toward sickness was associated with more worry about health and less perceived resistance to illness. The intercorrelations were consistently in the direction that was expected in reference to the literature and Ware's (1976) reliability and validity data.

Health Perception Scales in Relation to Selected Demographic, Socio-Medical and Socio-Psychological Variables

A correlation matrix was utilized to determine which predictor variables were significantly correlated with the six perceptual dimensions of health. This method of analysis allowed for an examination of significant relationships among the predictor variables and criterion variables as well. The correlations were determined to select variables correlated with the health dimensions to enter into the regression analysis (see Table 5). (See Appendix F for Coding Key.)

Prior Health

Of the demographic variables investigated, only the SES Index ($r = .22$, $p < .01$) and the employment status ($r = -.28$, $p < .01$) were significantly correlated with the perceptual dimension of prior health. Individuals with a higher SES rating had a more positive health perception. This finding supported Ware's (1976) data; the more economically-disadvantaged of the field test populations consistently scored lower on the prior health scale. Maddox (1964) and Osborn (1973) also demonstrated that the higher socio-economic status persons were more likely than lower status persons to report good health. However, McKim (1980)

Table 5

Intercorrelations Among the Variables

Variable[a]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Internal HLC	—	-.33**	.13	-.09	.16	.11	.14	-.10	.18	.18	-.07	-.11	.13	.03	-.15	-.28**	-.16	.17	-.16	.02	.03
2. Poweful Other HLC		—	.18	.08	-.04	-.04	-.04	-.09	-.15	.22*	.09	-.10	-.05	.12	-.07	.08	-.01	-.12	.14	.13	.01
3. Chance HLC			—	.26**	.08	-.02	-.02	.14	-.03	.03	-.06	-.10	.10	-.26**	.09	.10	.38**	.10	.01	-.08	-.16
4. Repression/Sensitization				—	-.23*	-.05	-.09	.18	.25**	.02	-.16	-.10	-.02	-.03	.04	.03	-.11	-.10	.05	-.03	-.16
5. Prior Health					—	.44**	.39**	-.25**	.37**	.03	-.12	.02	.00	-.05	-.07	.28**	-.05	.25**	-.05	.22*	.08
6. Current Health						—	.65**	-.29**	.29**	-.07	-.12	.04	-.07	-.02	-.14	-.28**	-.03	.27**	-.11	.07	.12
7. Health Outlook							—	-.38**	.35**	-.07	-.02	.24*	.01	-.06	-.03	-.18	.00	.25**	-.11	.12	.16
8. Health Worry/Concern								—	-.35**	.26**	-.19	-.17	-.23*	.07	.03	.09	.08	-.15	-.02	-.11	-.18
9. Resistance/Susceptibility									—	-.32**	.13	-.03	-.02	-.09	-.19*	-.13	-.05	.23*	-.12	.20*	.17
10. Sickness Orientation										—	-.11	.29**	.07	.38**	.05	-.07	-.15	.11	.11	.17	.07
11. Age											—	.11	.12	-.21*	.10	.49**	.30**	.01	.25*	-.08	-.02
12. Sex												—	.32**	.03	.44**	.03	.15	.15	.16	-.13	.09
13. Marital Status													—	-.08	.05	-.09	.30**	.17	.03	-.12	-.10
14. Education														—	-.30**	-.37**	-.50**	-.06	-.16	.39**	.18*
15. Occupation															—	.35**	.25**	.00	.23**	-.62**	-.05
16. Employment Status																—	.41**	-.08	.14	-.23**	-.19*
17. Income																	—	.15	.16	-.36**	-.34**
18. Length of Hospital Stay																		—	-.02	-.05	-.07
19. Length of Illness																			—	-.13	-.13
20. Socio-Economic Status																				—	.21*
21. Change in Work Status																					—

a   See Code Manual (Appendix E) for interpretation of data.

* $p \leq .05$

** $p \leq .01$

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found no significant correlation between SES and prior health in her heart patient population. The negative correlation with employment status indicated that the heart patients who were employed full-time at the time of their hospital admission rated their prior health more favorably. Retired persons had the lowest perception in the prior health dimension. Forced retirement was mentioned frequently as a significant change brought about by illness in the present study. In the literature, the report of minimal change in the usual work role was associated with a more favorable health perception (Maddox, 1962; Wan, 1976).

In reference to other demographic characteristics, the absence of significant correlation coefficients between prior health and age, gender and marital status is consistent with McKim's (1980) and Johnson's (1977) health perception research with chronically-ill subjects. In the field test populations, advancing age was associated with declining prior health values (Ware, 1976).

Of the socio-psychological variables, only R-S was significantly correlated with the prior health score ($r = -.23$, $p \leq .05$). A lower score (repression) was associated with a higher prior health value. This finding is consistent with Gentry et al.'s (1972) data on denial as a determinant of health perception in heart patients in a coronary care unit. The non-deniers had a poorer perception of their health than the deniers throughout the 5-day study period. The locus of control scales did not significantly correlate with the prior health dimension in the present study or in McKim's (1980) similar investigation.

The length of time the heart patient was in the hospital prior to testing was significantly related to the prior health rating ($r = .25$, $p = .01$); the longer the hospitalization, the better the health rating. These results are in contrast to the findings in Ware's (1976) field

tests in which prior health was negatively and significantly correlated with "bed days" and hospitalization. No other data were found in the literature relating to health perception and length of hospital stay, although one would assume that an individual's health status would improve during the course of hospitalization. In accordance with McKim's (1980) research, length of illness was not significantly associated with one's perception in the prior health dimension.

Current Health

Employment status ($r = -.28$, $p = .006$) was the only demographic characteristic significantly correlated with the current health measure. Again, heart patients who were employed full-time had a more positive perception of their health than retired persons. The effect of employment status was greater than any other predictor in Wan's (1976) study; employment status alone accounted for 17% of the total variance in self-assessed health status. Minimal change in one's usual work role was associated with health optimism (Maddox, 1962; Wan, 1976). However, other studies (Maddox, 1964; Thompson & Streib, 1958) have demonstrated an improvement in health perception concomitant with retirement. The authors attributed these findings to the social status of their elderly population allowing for an orderly withdrawal from the labor force. Another consideration would be the age and health status of the study populations; forced retirement at an early age because of illness would more likely be associated with a poorer health perception. Voluntary retirement in the elderly, presumably, would not be associated with a decline in health.

Contrary to the findings in the field test populations (Ware, 1976) and presumably healthy community residents investigated (Palmore &

Luikart, 1972; Schnore & Cowhig, 1959-60), advancing age was not assoc-
iated with a decline in perceived health values in heart patients. The
present finding is in support of more recent research data from chronic-
ally ill persons. Johnson (1977) reported health perception to be un-
related to age, education, employment status, occupation, and marital
status in cardiac pacemaker subjects studied outside the hospital. In
another outpatient heart disease population, McKim (1980) demonstrated
that one's current health perception was not associated with gender,
SES, or marital status.

The current health perception was not significantly correlated
with any of the MHLC scales or the R-S scale. The present study failed
to support the field test data (Wallston et al., 1978) in which health
status was strongly and positively correlated with the internal locus
of control scale ($r = .40$, $p < .01$) and negatively correlated with the
chance locus of control scale ($r = -.28$, $p < .01$). The powerful other
dimension was not significantly correlated with health status in the
field test. An internal control orientation was significantly corre-
lated with a better health perception among healthy women of a similar
age group in research by Palmore and Luikart (1972). Gentry et al.'s
(1972) study of coronary care unit patients found that deniers rated
their current health much higher than non-deniers and more in keeping
with their general health status. Again, the present study findings
supported McKim's (1980) research; current health was not significantly
related to either of these socio-psychological measures in her heart
disease population.

Of the health-related variables, length of time in the hospital
prior to the interview was the only factor significantly correlated
with the current health rating ($r = .27$, $p < .01$). The positive rela-

tionship indicated that the longer the individual had been in the hospital prior to inclusion in the study, the better he/she rated one's current health. Again, this finding most likely demonstrates the subsequent improvement in health status that one would expect to occur throughout the course of hospitalization.

The length of illness variable did not reach statistical significance as a correlate of one's current health perception in the present study. In a similar heart disease population, McKim (1980) reported a longer duration of illness to be significantly associated with a more favorable current health rating (r = .31). McKim hypothesized that allowing time for adjustment to a dramatic change in health and subsequent changes in role function would allow the individual to view one's health more positively. Her data contradicts some earlier findings by Wan (1976) in that the longer the duration of disability, the less favorable the self-assessed health status. These differences may be secondary to the differences in the two populations.

Health Outlook

Gender was the only demographic variable significantly correlated with the health outlook perception (r = .24, p < .05). The positive association indicated that women had a more favorable health outlook than did the men in the study. There are data in the literature based on community population studies both supporting and refuting this finding. Maddox (1964) and Shanas et al. (1968) demonstrated that elderly males were more likely to be optimistic about their health than females, except between the ages of 65 and 70 in Shanas et al.'s group. At this age, men in the U. S. were more likely than women to report poor health. Verbrugge (1976), Fillenbaum (1979), and Ferraro

(1980) reported men to view their health worse than women with similar health conditions and the same degree of disability. In field testing, Ware (1976) demonstrated a decline in health outlook with age, however, this was not true in the present study.

Again, length of hospital stay was the only health-related item associated with the health perception scale (r = .25, p < .01). The longer the hospital stay, the more favorable the health outlook. As one's actual health status improves, one would expect the health outlook value to also improve in that this scale was strongly associated with current health and actual health status measures in field testing (Ware, 1976). The R-S and MHLC scales were not significantly correlated with the health outlook dimension.

Resistance/Susceptibility to Illness

The SES Index (r = .20) and occupational status (r = -.19) were significantly related to the resistance/susceptibility to illness perception at the .05 level. The direction of the relationships indicated that persons of higher status perceived themselves to be more resistant to illness. Manual workers had less favorable health ratings than non-manual workers in research by Heyman and Jeffers (1963) and Maddox (1964). Occupational status was not related to one's health perception in Osborn's (1973) longitudinal study though income and education were important correlates. The demographic characteristics Kirscht, Haefner, Kegeles and Rosenstock (1966) found to be associated with more perceived susceptibility to illness were less education, less income, older age, and female gender.

Of the socio-psychological measures, only the repression-sensitization scale was significantly associated with the resistance/suscep-

tibility to illness health perception (r = -.25, p = .01). Repressors perceived themselves to be more resistant to illness. From the literature on repression-sensitization and denial as a coping mechanism, one would expect that repressors would consider themselves less vulnerable to illness than would sensitizers. This is consistent with Gentry et al.'s (1972) coronary care study in which deniers persistently rated their health status better and were less anxious than the non-deniers throughout the study period. In the present study, one's locus on control orientation did not correlate with this health dimension. This data does not support Kirscht's (1972) association of perceived resistance to illness with an internal locus of control orientation.

Length of hospital stay prior to inclusion in the study was again a significantly related factor (r = .24, p < .05). The more recent the date of admission, the more susceptibility to illness the individual expressed. In Ware's (1976) populations, resistance/susceptibility was not associated with the number of bed days but was associated with hospitalization; a recent hospitalization was significantly associated with more perceived susceptibility to illness. One might have expected this difference in that Ware's population were largely healthy community residents and those needing hospitalization would probably have actually had a poorer health status than the other individuals field tested.

Health Worry/Concern

In contrast to the previous four health dimensions, a higher score on the health worry/concern measure reflects a more negative health perception. Age (r = -.19) and marital status (r = -.23) were

both correlated with the health worry/concern dimension at the .05 level of significance. Younger heart patients that were married were more likely to express more worry or concern about their health than older persons who were widowed or divorced. In the literature review, married persons reported better health than unmarried, separated, divorced or widowed persons. Formerly married persons reported the worst health. The literature on marital status did not specifically address one's worry about health.

In reference to age, the results of this study support McKim's (1980) data based on a heart disease patient group in which advancing age was predictive of a better health perception. The majority of the literature that associates a poorer self-rating of health with increasing age has dealt with healthy and somewhat younger populations (Palmore & Luikart, 1972; Schnore & Cowhig, 1959-60; Ware, 1976). However, the present findings in reference to age have been demonstrated consistently in chronically-ill study groups (Byl & Clever, 1977; Confrey and Goldstein in Tibbetts, 1960; Maddox, 1964). Persons under the age of 65 rated their health more negatively than the older individuals in these studies. Ferraro's (1980) "old-old" subjects (75 years of age and older) expressed better health than the "old" subjects (64 to 74 years of age) in his investigation despite more disability and reported physiologic disorders. The younger elderly may be more predisposed to worry about their health because of role responsibilities and changes occurring between the ages of 55 and 70 years. Forced retirement was mentioned frequently as a significant change in role responsibility brought about by illness in the present study and has been associated with a less favorable health perception. Age was not associated with the health worry/concern dimension in field testing (Ware, 1976).

None of the socio-psychological or health-related variables invest-
igated were significant correlates of the health worry/concern dimension.

Sickness Orientation

A higher score on the sickness orientation scale indicates a more
negative health evaluation, or acceptance of sickness as a part of one's
life. Both gender ($r = .29$) and education level ($r = .39$) were corre-
lated with this scale at the .01 level of significance. The women
heart patients with a higher level of education were more oriented to-
ward sickness than men and those less educated. Contrary to this find-
ing, a higher educational attainment has been associated with more favor-
able general health ratings in the existing literature (Ferraro, 1980;
Tessler & Mechanic, 1978; Osborn, 1973; Palmore & Luikart, 1972; Schnore
and Cowhig, 1959-60; Wan, 1976). This discrepancy may, in part, be ex-
plained by the lack of data on chronically ill persons and how they per-
ceive their health. The present information may reflect a difference
in heart patients from the normal population: having heart disease and
being educated may force one to accept illness, realistically.

In reference to gender and health perception, the literature has
been contradictory. In Maddox's (1964) study on health optimism in the
elderly, a comparison of physician's evaluations with self-assessments
revealed that men were more optimistic about their health than women.
In accordance with this finding, Brown and Rawlinson (1975) demon-
strated that older women with a longer duration of illness were less
likely to abandon the sick role than younger men who had been ill for
a shorter period of time; the study population consisted of heart pa-
tients recovering from open heart surgery. However, Fillenbaum (1979),
Ferraro (1980), and Verbrugge (1976) reported men to view their health

less favorably than women with similar health conditions and/or more disability. All of the data could mean that women actually were sicker than men in the study, as demonstrated by Verbrugge (1976) in her survey, and/or that chronically-ill women are more realistic in reference to their health perception than men.

A higher score in the "powerful other" dimension of the locus of control scale was correlated with this health perception ($r = .22$, $p < .05$). Heart patients who were more external in this dimension were more oriented toward sickness. In the literature, an internal orientation was associated with a more positive health perception and less perceived vulnerability to illness.

In summary, almost all of the predictor variables included in this study were correlated with at least one perceptual dimension of health. The characteristics that were not significant as correlates with the health perception scales were as follows: length of illness, income, and change in work status. In the literature these characteristics have been important predictors of self-assessed health status. Because of this fact and the strong association with other significant correlates, these variables were included in the multiple regression analysis.

Results of a Stepwise Multiple Regression Analysis

Given the previous intercorrelations, multiple regression analysis was utilized to explore the effect of introducing control variables. This method allows the investigator to determine whether the zero-order correlations between the predictor variables and health perception scales continue to be significant, or insignificant, when controlling for the effect of the other predictor variables. A stepwise multiple regression analysis provides a measure of the relative effect of each successively-

introduced predictor variable; a test of significance (F test) is performed at each successive step. The results of the regression for each health perception scale are presented in Table 6 including only those items significant at the $p \leq .10$ level of significance.

Prior Health

Six of the predictor variables explained 28% of the variance in the prior health dimension. Four of these six characteristics were social status measures: education, occupation, employment status, and socio-economic status. Less education, a lower occupational status, being employed at the time of hospitalization, and a higher SES Index rating were predictive of a more positive prior health assessment. The only socio-medical variable influential as a predictor in this health dimension was the length of hospital stay. A longer hospital stay prior to inclusion in the study was predictive of a better perception. The repression/sensitization score was also an important predictor; repressors rated their prior health more favorably. A multiple correlation coefficient (R) of .53 for the prior health perception scale was obtained when the simultaneous effects of these six variables were included in the regression analysis.

Current Health

In the stepwise regression for the current health perception, only two of the characteristics investigated substantially contributed to the total variance. Being employed immediately prior to hospitalization and having been in the hospital for a longer period of time when included in the study was predictive of a more favorable current health perception. These two items explained 14% of the variance in current health.

Table 6

Stepwise Multiple Regression of Predictor Variables in Relation
To Ware's Health Perception Scales (N = 79)

Criterion Variable	Predictor Variable	Multiple Correlation	Cumulative Variance	F to enter	Beta
Prior Health					
	Employment status	.28	.08	6.62***	-.34
	Length of hospital stay	.37	.13	4.77**	.21
	Repression/sensitization	.42	.17	3.73**	-.21
	Socio-economic status	.45	.20	2.81*	.38
	Education	.50	.25	4.90**	-.26
	Occupation	.53	.28	2.78*	.22
Current Health					
	Employment status	.28	.08	6.61***	-.27
	Length of hospital stay	.37	.14	5.26**	.26
Health Outlook					
	Length of hospital stay	.25	.06	5.06**	.19
	Sex	.32	.10	3.43*	.27
Resistance/Susceptibility					
	Repression/sensitization	.25	.06	4.98**	-.17
	Length of hospital stay	.32	.11	3.77**	.17
	Socio-economic status	.38	.15	3.73**	.27
	Education	.42	.18	2.65*	-.19
Health Worry/Concern					
	Marital status	.23	.05	4.39**	-.29
	Change in work status	.31	.10	3.52*	-.12
Sickness Orientation					
	Education	.38	.15	13.38***	.47
	Sex	.48	.23	7.76***	.30
	Internal HLC	.52	.27	4.20**	.26
	Length of illness	.54	.29	2.67*	.19

*   p ≤ .10

**   p ≤ .05

***   p ≤ .01

None of the socio-psychological measures were influential as predictors of one's current health perception in this population of hospitalized heart patients.

Health Outlook

A multiple correlation coefficient (R) of .32 for health outlook was attained when the effects of the two most important predictors were included in the analysis. Gender and length of hospital stay together explained 10% of the variance in this perceptual dimension. Being a woman and a longer hospitalization prior to inclusion in the study was predictive of a more positive health outlook. As in the current health dimension, none of the socio-psychological characteristics were significant predictors of one's health perception.

Resistance/Susceptibility to Illness

A multiple correlation coefficient (R) of .49 was attained by including four steps in the regression analysis for the resistance/susceptibility scale. The factor most highly correlated with this perception was the R-S scale; this characteristic was responsible for 6% of the total variance. Being more repressive was predictive of perceiving one's self to be more resistant to illness. Two social status measures were among these four significant predictors: a higher SES score and less education were predictive of more perceived resistance to illness. The length of hospital stay explained 5% of the total variance in this dimension. Again, a longer time in the hospital prior to interview resulted in a more favorable rating, or less susceptibility to illness perceived. Together, these four characteristics explained 18% of the variance in the resistance/susceptibility to illness dimension.

Health Worry/Concern

Marital status was the most significant predictor of the health worry/concern perception and was responsible for 5% of the variance in this dimension. Unmarried persons (single, divorced or widowed) worried less about their health than married individuals. A change in work status as a consequence of illness added another 5% to the cumulative variance; a change was predictive of more worry about health. Forced retirement was mentioned frequently as a significant change in one's life brought about by illness in the present study. These two factors explained 10% of the variance in this dimension leaving 90% unexplained.

Sickness Orientation

A multiple correlation coefficient (R) of .54 for sickness orientation was achieved when the effects of the four most influential predictors were included in the regression. Education alone was responsible for 15% of the variance in this health perception; a higher educational attainment was predictive of more orientation toward sickness. Gender increased the cumulative variance to 23%; women were more oriented toward sickness. The third and fourth strongest predictors were socio-psychological and socio-medical variables, respectively. A higher score on the internal dimension of the locus of control measure (more internally oriented) and a longer duration of illness were predictive of more acceptance of sickness as a part of one's life. These four characteristics explained 29% of the variance in this health perception scale. The predictor variables investigated explained more variance in the sickness orientation dimension than any of the other perceptual dimensions in Ware's HPQ Form II utilized in this study.

To summarize, most of the variables included in the regression analysis influenced one's perception in at least one and not all health dimensions. Thus, the present data supported Ware's belief in reference to the uniqueness of the individual scales. Of the demographic characteristics investigated, the following were predictive of a more favorable health perception: (1) less education; (2) lower occupational status; (3) higher SES Index rating; (4) being unmarried; and, (5) being employed prior to hospitalization. The findings in reference to gender were discordant: being a women was predictive of a better health outlook as well as more orientation toward sickness. Though age was a significant correlate of the health worry/concern score, it was not significant as a predictor in the regression analysis. Income lacked significance in the correlation matrix as well as the multiple regression analysis as a predictor of health perception.

All of the socio-psychological and socio-medical variables included in the stepwise regression were significant predictors in at least one of the health dimensions. Being a "sensitizer" and more internally-oriented influenced one's health perception in the negative direction. Expressing a change in work status as a consequence of illness, a longer duration of illness, or a shorter hospital stay were predictive of a less favorable health perception in all six scales.

As represented in the table, the characteristics investigated accounted for a total of 10 to 29% of the variance in the six health perception scales. When one considers that none of the variables are based on one's actual physical status, the percentage of variance explained in these scales seems more substantial. In fact, the large percentage of unexplained variance in some of the scales, especially the current health dimension, is probably a result of this. Only 10%

of the variance in current health was accounted for by the predictor variables included in this analysis.

Finally, mention should be made of the limitations of the present study. Ware's HPQ Form II was applied to a population for which it has not been systematically evaluated in terms of reliability, validity, and predictability. Discovering that the heart patients did not differ from the normal population in four of the six health perception scales utilized further raised the question of validity for this instrument in chronically-ill hospitalized persons. Whether the present findings would be supported by retesting the same population out of the hospital is equivocal.

The findings in reference to the health locus of contol scales were unexpected in that one would expect a negative relationship between the internal scale and the two external dimensions. This raises the question of validity for this instrument in a hospitalized study group. The subjects possibly were more internally-oriented yet acknowledged their dependence on powerful others, or health professionals, while in the hospital setting. Again, the measure has not been retested under different conditions such as institutionalization.

As mentioned earlier, this paper is one phase of an ongoing Trait-Treatment Interaction study. The purpose of the present study was to define the determinants of perceived health in persons with heart disease; health perception was investigated as a criterion variable and not causally in reference to outcome. The next step would be to look at outcome as influenced by health perception and the implications for practice. Intervention studies to modify attitudes or beliefs, when indicated, would be forthcoming.

Chapter IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Cardiovascular disease is a major health problem in many indus-
trialized nations throughout the world; in the United States it is
the leading cause of death. For those who live with heart disease,
the impact is great in terms of disability and alteration in one's
life style. How an individual perceives the diagnosis of heart
disease will greatly influence one's response in reference to health-
related behavior. Health perception is widely accepted to be an im-
portant intervening variable between assorted physical, social and
psychological predictors and rehabilitation outcome. Defining the
determinants of health perception in persons living with heart disease
will allow health professionals to assist in its modification. Nurses,
in their unique position of providing continuity of care over time and
across many disciplines, have the opportunity to affect recovery and
outcome, when indicated, through this mechanism. The first step toward
attaining this goal is identifying the predictors of perceived health
in persons with heart disease.

The study population consisted of 79 individuals admitted to one
of the four hospitals utilized for data collection for medical or surg-
ical management of their heart disease. Nurse researchers obtained the
information through the use of interview forms and questionnaires admin-
istered at the subjects' bedside. At each site, the same nurse inter-

viewed the subjects and administered the forms. The subjects (30 female and 49 male) ranged from 40 to 82 years in age and were predominantly white. Sixty-five percent had a high school and/or some college education; seventy percent were retired. When employed, the subjects had worked in occupations classified as skilled, semi-skilled or unskilled. The mean and median family incomes were much lower than the general population. When entered into the study, most of the subjects had been in the hospital eight days or less and had known about their heart disease for more than two years. In reference to the socio-psychological measures, the subjects were slightly more repressive than the normal population and more externally-oriented in both the powerful other and chance dimensions. The socio-psychological characteristics of the present sample were consistent with the literature on heart disease and other chronically-ill populations.

The heart patients had much lower health perception scores than the normal population in the prior and current health dimensions. However, their mean scores in the health outlook, health worry/concern, resistance/susceptibility to illness, and sickness orientation dimensions were the same as the normal means or only slightly different. Almost every predictor variable was significantly correlated with at least one of the perceptual dimensions investigated and was included in the stepwise regression analysis. Being employed prior to hospitalization, a longer hospital stay, being less educated and having a lower status occupation, being "repressive" and having a higher SES Index score in combination predicted 28% of the variance in the prior health perception. Fourteen percent of the variance in current health was predicted by being employed prior to hospitalization and a longer period of time in the hospital prior to inclusion in the study. A more posi-

tive health outlook was explained, in part, by a longer hospital stay and being a woman. Reporting a change in work status as being the most significant life change as a consequence of illness and being married indicated more worry and concern about health. Perceiving one's self as more resistant to illness was predicted by being repress-ive, spending a longer period of time in the hospital prior to inclu-sion in the study, a higher SES score and less education. Finally, internally-oriented women with a higher level of education and longer duration of illness were more oriented toward sickness; 29% of the variance in the sickness orientation dimension was explained by these characteristics.

Conclusions

The present study population perceived their health less favorably than the normal population in the prior and current health dimensions only; hospitalized heart patients did not differ from presumably healthy normals in the other four perceptual dimensions investigated. A diversity of demographic, socio-psychologic, and health-related character-istics, in various combinations, were influential in determining one's health perception in the different health dimensions. Less educated, repressive individuals who were employed prior to their hospitalization and had been in the hospital longer had more positive health perceptions. More educated, retired persons who are sensitizers are at risk for a poorer health perception thus a less favorable rehabilitation outcome. Identifying the persons at risk will allow health professionals to assist individuals to modify their health-related attitudes and behaviors and affect a more favorable rehabilitation outcome.

Recommendations

Further study is needed to validate the present study findings in light of the absence of research on health perception in hospitalized persons. Also, it is recommended that the health perception measure be administered to the same patient population out of the hospital in order to assess the reliability of health assessments in the hospital setting as compared to those at home. Further investigation of Ware's HPQ Form II in chronically-ill populations is warranted to evaluate its applicability, predictability and validity as a general health status measure in these individuals.

Perceived health has been demonstrated to be an important predictor of various adjustment outcomes for heart disease populations in the literature. Health perception is theoretically defined as an intervening variable between assorted physical, social, and psychological predictors and several measures of rehabilitation outcome. Describing the variables that determine one's health perception is of importance for this reason. To identify those predictors that are modifiable will allow health professionals to assist heart patients to develop health beliefs and attitudes that will assure a more favorable adjustment and recovery. Further validation of the present study findings is indicated with subsequent intervention studies aimed at modifying health perceptions in persons living with heart disease.

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APPENDIX A

Health Perceptions Questionnaire Form II

(Ware, 1976)

HEALTH PERCEPTIONS

lease read each of the following statements, and then circle one of the numbers
1 each line to indicate whether the statement is true or false for you.

here are no right or wrong answers.

> If a statement is definitely true for you, circle 5.
> If it is mostly true for you, circle 4.
> If you don't know whether it is true or false, circle 3.
> If it is mostly false for you, circle 2.
> If it is definitely false for you, circle 1.

ome of the statements may look or seem like others, but each statement is different
1d should be rated by itself.

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
According to the doctors I've seen, my health is now excellent.	5	4	3	2	1
I try to avoid letting illness interfere with my life.	5	4	3	2	1
I seem to get sick a little easier than other people.	5	4	3	2	1
I feel better now than I ever have before.	5	4	3	2	1
I will probably be sick a lot in the future.	5	4	3	2	1
I never worry about my health.	5	4	3	2	1
Most people get sick a little easier than I do.	5	4	3	2	1
I don't like to go to the doctor.	5	4	3	2	1
I am somewhat ill.	5	4	3	2	1
In the future, I expect to have better health than other people I know.	5	4	3	2	1
I was so sick once I thought I might die.	5	4	3	2	1
I'm not as healthy now as I used to be.	5	4	3	2	1
I worry about my health more than other people worry about their health.	5	4	3	2	1

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
When I'm sick I try to just keep going as usual.	5	4	3	2	1
My body seems to resist illness very well.	5	4	3	2	1
Getting sick once in a while is a part of my life.	5	4	3	2	1
I'm as healthy as anybody I know.	5	4	3	2	1
I think my health will be worse in the future than it is now.	5	4	3	2	1
I've never had an illness that lasted a long period of time.	5	4	3	2	1
Others seem more concerned about their health than I am about mine.	5	4	3	2	1
When I'm sick, I try to keep it to myself.	5	4	3	2	1
My health is excellent.	5	4	3	2	1
I expect to have a very healthy life	5	4	3	2	1
My health is a concern in my life.	5	4	3	2	1
I accept that sometimes I'm just going to be sick.	5	4	3	2	1
I have been feeling bad lately.	5	4	3	2	1
It doesn't bother me to go to a doctor.	5	4	3	2	1
I have never been seriously ill.	5	4	3	2	1
When there is something going around, I usually catch it.	5	4	3	2	1
Doctors say that I am now in poor health	5	4	3	2	1
When I think I am getting sick, I fight it.	5	4	3	2	1
I feel about as good now as I ever have.	5	4	3	2	1

APPENDIX B

Epstein-Fenz Repression Sensitization (R-S)

Modification Scale

(Epstein, 1967)

R-S SCALE
EPSTEIN-FENZ MODIFICATION SCALE

tructions: The following are some statements on feeling, attitudes, and behavior.
d each statement and decide if it is true or false in reference to yourself.
ck "T" if the statement is true, and "F" if it is false.

honest, but do not spend too much time over any one statement. As a rule, first
ressions are as accurate as any. Any questions?

___ 1. People often disappoint me.

___ 2. If I could get into a movie without paying and be sure I was not seen
I would probably do it.

___ 3. I tend to keep on at a thing until others lose their patience with me.

___ 4. I do not always tell the truth.

___ 5. I frequently find myself worrying about something.

___ 6. I have often met people who were supposed to be experts who were no
better than I.

___ 7. I sweat very easily even on cool days.

___ 8. I like to know some important people because it makes me feel important.

___ 9. I think of ways to get even with certain people.

___ 10. I often think, "I wish I were a child again."

___ 11. Most people who know me would say I am a cheerful person.

___ 12. I do not like everyone I know.

___ 13. I find discussions about sex slightly annoying.

___ 14. I gossip a little at times.

___ 15. Sometimes at elections I vote for men whom I know very little.

___ 16. I usually have to stop and think ·before I act even in trifling matters.

___ 17. Once in awhile I laugh at a dirty joke.

___ 18. Sometimes when I am not feeling well I am cross.

___ 19. I have never felt better in my life than I do now.

___ 20. I am more of a "happy-go-lucky" person than a deep thinker.

___ 21. I do not read every editorial in the newspaper every day.

___ 22. I try to plan in advance what to do if certain threatening situations were to arise.

___ 23. Once in a while I put off until tomorrow what I ought to do today.

___ 24. I work under a great deal of tension.

___ 25. My table manners are not quite as good at home as when I am out in company.

___ 26. When things go wrong, I cannot rest until I've corrected the situation.

___ 27. I would rather win than lose in a game.

___ 28. I worry over money and business.

___ 29. I like to let people know where I stand on things.

___ 30. I think a great many people exaggerate their misfortune in order to gain the sympathy and help of others.

___ 31. When I leave home I tend to worry about such things as whether the door is locked and the windows closed.

___ 32. It takes a lot of argument to convince most people of the truth.

___ 33. I am not easily awakened by noise.

___ 34. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.

___ 35. I have very few quarrels with members of my family.

___ 36. Often I can't understand why I have been so cross and grouchy.

___ 37. I rarely wonder what hidden reason another person may have for doing something nice for me.

___ 38. Criticism or scolding hurts me terribly.

___ 39. I am not often troubled with disturbing thoughts.

___ 40. I certainly feel useless at times.

___ 41. I have daydreams that I make a fool of someone who knows more than I do.

___ 42. At times my thoughts have raced ahead faster than I could speak them.

___ 43. I never get angry.

___ 44. It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important.

____ 45. I have sometimes felt that difficulties were piling up so high that I could not overcome them.

____ 46. Everything is turning out just like the prophets of the Bible said it would.

____ 47. At times I feel like swearing.

____ 48. People have too much sex on their minds.

____ 49. What others think of me does not bother me.

____ 50. I sometimes tease animals.

____ 51. I am against giving money to beggars.

____ 52. Most nights I go to sleep without thoughts or ideas bothering me.

____ 53. It makes me uncomfortable to put on a stunt at a party even when others are doing the same sort of thing.

____ 54. I tend to get along well with people and am liked by almost everybody.

____ 55. At times I am all full of energy.

____ 56. Bad words, often terrible words, come into my mind and I cannot get rid of them.

____ 57. I find it hard to make talk when I meet new people.

____ 58. I have a habit of counting things that are not important such as bulbs on electric signs, and so forth.

____ 59. I get mad easily and then get over it soon.

____ 60. I find it hard to set aside a task that I have undertaken, even for a short time.

____ 61. Sex education should not be part of the high school curriculum.

____ 62. When in a group of people I have trouble thinking of the right things to talk about.

____ 63. I never get so mad as to feel like beating or smashing things.

____ 64. I think nearly anyone would tell a lie to keep out of trouble.

____ 65. I almost never think of things too bad to talk about.

____ 66. I have periods in which I feel unusually cheerful without any special reason.

APPENDIX C

Multidimensional Health Locus of Control Scale

(Wallston, Wallston & DeVellis, 1978)

Multidimensional Health Locus of Control
(MHLC)

This is a questionnaire designed to determine the way in which different
people view certain important health-related issues. Each item is a belief
statement with which you may agree or disagree. Beside each statement is a
scale which ranges from strongly disagree (1) to strongly agree (6). For each
item we would like you to circle the number that represents the extent to which
you disagree or agree with the statement. The more strongly you agree with a
statement, then the higher will be the number you circle. The more strongly
you disagree with a statement, then the lower will be the number you circle.
Please make sure that you answer every item and that you circle only one number
per item. This is a measure of your personal beliefs; obviously, there are no
right or wrong answers.

Please answer these items carefully, but do not spend too much time on
any one item. As much as you can, try to respond to each item independently.
In making your choice, do not be influenced by your previous choices. It is
important that you respond according to your actual beliefs and not according
to how you feel you should believe or how you think we want you to believe.

Strongly Disagree	- 1
Moderately Disagree	- 2
Slightly Disagree	- 3
Slightly Agree	- 4
Moderately Agree	- 5
Strongly Agree	- 6

If I get sick, it is my own behavior which
determines how soon I get well again.   1 2 3 4 5 6

No matter what I do, if I am going to get
sick, I will get sick.   1 2 3 4 5 6

Having regular contact with my physician is
the best way for me to avoid illness.   1 2 3 4 5 6

Most things that affect my health happen to
me by accident.   1 2 3 4 5 6

Whenever I don't feel well, I should consult
a medically trained professional.   1 2 3 4 5 6

I am in control of my health.   1 2 3 4 5 6

My family has a lot to do with my becoming
sick or staying healthy.   1 2 3 4 5 6

When I get sick I am to blame.   1 2 3 4 5 6

Strongly Disagree   - 1
Moderately Disagree - 2
Slightly Disagree   - 3
Slightly Agree   - 4
Moderately Agree   - 5
Strongly Agree   - 6

9. Luck plays a big part in determining how
    soon I will recover from an illness.   1 2 3 4 5 6

). Health professionals control my health.   1 2 3 4 5 6

.. My good health is largely a matter of
    good fortune.   1 2 3 4 5 6

'. The main thing which affects my health
    is what I myself do.   1 2 3 4 5 6

.   If I take care of myself, I can avoid
    illness.   1 2 3 4 5 6

.   When I recover from an illness, it's
    usually because other people (for
    example, doctors, nurses, family,   1 2 3 4 5 6
    friends) have been taking good care of me.

    No matter what I do, I'm likely to get sick.   1 2 3 4 5 6

    If it's meant to be, I will stay healthy.   1 2 3 4 5 6

    If I take the right actions, I can stay
    healthy.   1 2 3 4 5 6

    Regarding my health, I can only do what
    my doctor tells me to do.   1 2 3 4 5 6

APPENDIX D

Patient Profile Questionnaire

Patient Profile Questionnaire

Hospital Interview Schedule

Identification Number _____   Diagnosis: Primary _____

                                                Secondary _____

r Variable

Date of birth _____   Age (at last birthday) _____

Sex: Male _____ Female _____

Present marital status (circle one)
1. Married: living with spouse
2. Married: not living with spouse
3. Divorced or legally separated
4. Widowed
5. Never married
6. Other (cohabitation) _____

Ethnic group (circle one)
1. Caucasian
2. Black
3. Mexican-American
4. American Indian
5. Other (identify) _____

Highest grade of school completed (circle one)

1 2 3 4 5 6 7 8 9 10 11 12*

College: 13 14 15 16*

Postgraduate: 17+ Highest degree attained:* _____

     *If 10-12 are circled, note if high school graduate
      If 13-16 are circled, note if any type of degree was awarded
      (such as Associate degree/Baccalaureate)

Occupation-Employment Status
A. Please classify the patient's usual occupation (circle one)
1. Professional
2. Manager or owner of business
3. Farmer (owner or manager of at least 100 acres)
4. Clerical, sales, technician
5. Skilled craftsman, foreman
6. Operative, semi-skilled
7. Service worker
8. Unskilled
9. Farm labor (owner of less than 100 acres)
10. Housewife

B. Probes to be used to correctly classify work (add other information the patient may give). Ask patient.
  1. What is the title of your position? _____
  2. State the general duties of the job. _____
  3. What is the name of the company? _____
  4. What is the approximate size of the company? _____
    (number of employees)

C. Employment status: (circle one and write in)
  1. Employed (employed before illness and plans to return)
      Full time _____
      Part time _____ Hours per week _____
  2. Unemployed _____
  3. Unemployed and looking for work _____
  4. Retired _____ How long? _____

D. How important is it to you or your family for you to be gainfully employed? (circle one)
  1. Critical
  2. Very important
  3. Important
  4. Not important

E. (If patient was housewife before illness) did you manage household tasks? (circle one)
  1. Most of household tasks
  2. Only some of household tasks
  3. None of household tasks

F. Ask patient to try to estimate his/her total income (including spouse's income, if any) from all sources for the past 12 months. (circle one)
  1. $50,000 or more
  2. $25,000 to $49,999
  3. $15,000 to $24,999
  4. $12,000 to $14,999
  5. $10,000 to $11,999
  6. $ 9,000 to $ 9,999
  7. $ 8,000 to $ 8,999
  8. $ 7,000 to $ 7,999
  9. $ 6,000 to $ 6,999
  10. $ 5,000 to $ 5,999
  11. $ 4,000 to $ 4,999
  12. $ 3,500 to $ 3,999
  13. $ 3,000 to $ 3,499
  14. $ 2,500 to $ 2,999
  15. $ 2,000 to $ 2,499
  16. $ 1,500 to $ 1,999
  17. $ 1,000 to $ 1,499
  18. Less than $1,000

Living arrangements
  A. Do you live alone?
    1. Yes _____
    2. No _____

  B. Do you have anyone who will be concerned about your following the medical regimen? (circle one)
    1. Yes
    2. Probably Yes
    3. Probably No
    4. No
    5. I don't know.

C. Will some other person (besides yourself) be involved in helping you
    follow the medical regimen? (within the next 3 months)
    1. Yes - considerably
    2. Yes - to some extent
    3. No - probably not
    4. No
    5. I don't know

    Probe to C if 1 or 2 is circled
    With what aspects of the medical regimen will the other person be
    involved? (circle all that apply)
    1. Diet
    2. Medication
    3. Exercise
    4. Physical care (bathing)
    5. Other _____

Payment for health care
A. Who will pay for your prescribed medications when you leave the hospital?

    1. Patient pays   2. Patient pays   3. Another source   4. Don't know.
        in full   in part (includes   pays (i.e.,
                              insurance coverage)   individual,
                                                      governmental/
                                                      private agency/
                                                      insurance)

    ┌───┐
    │ A. Does the patient consider medications as expensive?   │
    │   │
    │   1. Yes   2. No   │
    │   │
    │   A. Will it be: │
    │   1. not a problem   │
    │   2. a problem, but will manage   │
    │   3. a problem and will have to consider if they   │
    │   are worth the expense   │
    │   4. a problem and not able or willing to buy them   │
    │   5. Don't know.   │
    └───┘

B. Do you believe that your financial resources are <u>adequate</u> to cover the
    cost of your health care? (circle one)
    1. Yes (adequate)
    2. No (inadequate)

C. Do you believe that your financial resources are adequate to cover living
    expenses during recovery period? (circle one)
    1. Yes (adequate)
    2. No (inadequate)

IU # _____

Length of Illness (as defined by the patient)
  A. The date when you were aware of having symptoms of poor health
      (i.e., aware of having a health problem).
      Write in the approximate date _____

  B. The date when you made changes in living routine because of symptoms
      Write in the approximate date _____

  C. What change in your living routine was most significant? (circle one)
      1. In dietary routine
      2. In rest-sleep patterns
      3. In taking medications
      4. In frequent visits to doctor
      5. Other _____
          Explain _____
                  _____

  D. Interviewer calculates length of illness

          Number of days _____, weeks _____, months _____

Length of time of treatment at present hospital
  Interviewer calculates this
          Number of days _____, weeks _____, months _____

APPENDIX E

Consent Form for Human Research

UNIVERSITY OF OREGON HEALTH SCIENCES CENTER

CONSENT FOR HUMAN RESEARCH PROJECT

I, _____

(First Name)   (Middle Initial)   (Last Name)

with agree to serve as subject in the investigation named, Patient Teaching:
ait-Treatment Interaction Strategy, under the supervision of Dr. May Rawlinson
M. Katherine Crabtree, R.N., M.S., A.N.P. The investigation aims at finding the
 way to teach particular types of patients about their self-administered
cribed medications.

It is my understanding that I will participate in a planned, systematic
hing method to learn more about the medications the doctor has ordered in my
tment. I will be required to answer some questions during an interview and to
lete paper and pencil tests. The questions relate to my knowledge of and
tice in taking prescribed medications. The paper and pencil tests are commonly
 personality tests. The time required for my participation will not exceed
hour a day for four consecutive days prior to discharge from the hospital.
r I have returned home, I will be visited by one of the research workers for an
rview that will take about an hour.

All information that I give will be handled confidentially. My anonymity
 be maintained on all documents, which will be identified by means of code
ers.

I may benefit from these procedures by knowing more about the medications that
doctor has ordered for me to take when I leave the hospital.

Denise Demaray, R.N., B.A. and Mary Shick, R.N., B.S. have offered to answer
questions I might have about the procedures I am submitting to.

It is not the policy of the Department of Health, Education and Welfare, or
 other agency funding the research project in which you are participating, to
ensate or provide medical treatment for human subjects in the event the research
lts in physical injury. The University of Oregon Health Sciences Center, as an
cy of the state, is covered by the State Liability Fund. If you suffer injury
n the research project, compensation would be available to you only if you
blish that the injury occurred through the fault of the Center, its officers
employees. If you have further questions, please call Dr. Michael Baird
(503) 225-8014.

I understand that I am free to not participate or to withdraw from participation
the investigation at any time without this decision otherwise affecting my
ationship with or medical treatment in the hospital.

I have read the above explanation and agree to participate as a patient in
 study described.

Signature: _____

Witness: _____

e: _____

ls
1/80

APPENDIX F

Coding Key for Data Analysis

Coding Key

Column	Variable (range)
1-4	Patient ID Number
1	Hospital 1 = VAH Portland 2 = OHSU Portland 3 = St. Vincents Portland 4 = Alvarado San Diego
5-6	Internal HLC (6-36) Higher score indicates internalization.
7-8	Powerful Others HLC (6-36) Higher score indicates externalization to powerful others.
9-10	Chance HLC (6-36) Higher score indicates externalization to chance.
11-12	Repression/Sensitization (0-30) Higher score indicates sensitization; lower score indicates repression.
13-14	Prior Health (3-15) Higher score indicates a more positive perception.
15-16	Current Health (9-45) Higher score indicates a more positive perception.
17-18	Health Outlook (4-20) Higher score indicates a more positive outlook.
19-20	Health Worry/Concern (4-20) Higher score indicates more worry and concern about health.
21-22	Resistance/Susceptibility to Illness (4-20) Higher score indicates more perceived resistance to illness.
23-24	Sickness Orientation (2-10) Higher score indicates more orientation toward sickness.
25-26	Age in Years (18-82)
27	Gender (1-2) 1 = Male 2 = Female

Column	Variable (range)

28   Marital Status (1-5)
- 1 = Married
- 2 = Divorced
- 3 = Widowed
- 4 = Never married
- 5 = Cohabitation

29-30   Education (1-17)
- Highest grade 1-12
- College 13-16
- Postgraduate 17

31-32   Occupation (1-10)
- 1 = Professional
- 2 = Manager or owner of business
- 3 = Farmer (owner or manager of at least 100 acres)
- 4 = Clerical, sales, technician
- 5 = Skilled craftsman, foreman
- 6 = Operative, semi-skilled
- 7 = Service worker
- 8 = Unskilled
- 9 = Farm labor (owner of less than 100 acres)
- 10 = Housewife

33   Employment (1-4) Mode used for housewife
- 1 = Full-time
- 2 = Part-time
- 3 = Unemployed
- 4 = Retired

34-35   Income (1-18) Mean used when not specified
- 1 = $50,000 or more
- 2 = $25,000 to $49,999
- 3 = $15,000 to $24,999
- 4 = $12,000 to $14,999
- 5 = $10,000 to $11,999
- 6 = $ 9,000 to $ 9,999
- 7 = $ 8,000 to $ 8,999
- 8 = $ 7,000 to $ 7,999
- 9 = $ 6,000 to $ 6,999
- 10 = $ 5,000 to $ 5,999
- 11 = $ 4,000 to $ 4,999
- 12 = $ 3,500 to $ 3,999
- 13 = $ 3,000 to $ 3,499
- 14 = $ 2,500 to $ 2,999
- 15 = $ 2,000 to $ 2,499
- 16 = $ 1,500 to $ 1,999
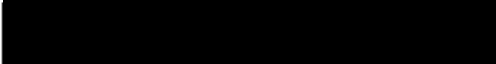- 17 = $ 1,000 to $ 1,499
- 18 = less than $ 1,000

Column	Variable (range)
36-37	Length of time in hospital in days (1-56)
38-40	Length of illness - awareness of symptoms - in months (1-391)
41-43	Period of time since changes were made in one's living routine because of illness (1-391)
44	Primary diagnosis for current admission (1-3) 1 = Surgical - heart-related 2 = Medical - heart-related 3 = Medical - other
45-46	Socio-Economic Status (1-100) From Duncan in Reiss; Table B-1 Socio-Economic Status Index for Occupations in the Bureau of Census in 1950. (Duncan in Reiss, 1961)
47	Changes in living routine (1-5) Volunteered responses 1 = Forced retirement 2 = Reduced activity - physical, social and/or recreational 3 = Frequent hospitalizations 4 = Stopped smoking 5 = No other changes
48	Changes in work routine (1-2) volunteered 1 = Yes 2 = None mentioned
49	Changes in activity pattern (1-2) volunteered 1 = Yes 2 = None mentioned

AN ABSTRACT OF THE CLINICAL INVESTIGATION OF

DEBORAH MAFIELD HEFTY

For the MASTER OF NURSING

Date of Receiving this Degree: June 11, 1982

Title: DETERMINANTS OF PERCEIVED HEALTH STATUS IN HOSPITALIZED

HEART PATIENTS

Approved: _____
May Rawlinson, Ph.D., Professor, Thesis Advisor

Cardiovascular disease is a leading cause of death and disability
in this country. Over the last three decades, a sizeable body of re-
search on cardiac disease and optimal functioning has been published.
There are data that demonstrate the importance of perceived health as
a predictor of various adjustment outcomes in a number of studies using
different designs, measures, and theoretical perspectives. Health
perception is theoretically defined as an important intervening variable
between assorted physical, social and psychological predictors and
several measures of rehabilitation outcome for heart disease popula-
tions. Further study of health perception and elucidation of its deter-
minants will lead to a better understanding of its formation and content.

Data were collected from 79 hospitalized heart patients on selected
demographic, socio-psychological and health-related characteristics in
order to define the determinants of health perception. In this correla-
tional study, each independent variable was examined in reference to its

relationship with the six perceptual dimensions of health including prior health, current health, health outlook, resistance/susceptibility to illness, health worry/concern, and sickness orientation. The characteristics statistically significant as correlates of health perception were included in a multiple regression analysis.

Of the six health perception dimensions, the hospitalized heart patients only differed from the normal population on the prior health and current health measures. The most important determinants of health perception were employment status, length of hospital stay, repression-sensitization, socio-economic status, and education. The following characteristics were predictive of health perception in at least one of the health dimensions: (1) employment status; (2) marital status; (3) socio-economic status; (4) education; (5) occupation; (6) gender; (7) length of illness; (8) length of hospital stay; (9) repression-sensitization; (10) health locus of control; and, (11) a change in work status as a consequence of heart disease. Recommendations were made for further study.