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THE RELATIONSHIP BETWEEN SELECTED PSYCHOLOGICAL, ENVIRONMENTAL, AND
BEHAVIORAL VARIABLES AND HEALTH STATUS OF
AMERICANS IN MIDDLE ADULTHOOD

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ABSTRACT

The purpose of this study was to examine the relationship between selected predictor variables and health status of Americans in middle adulthood. Independent variables included health locus of control, health value, stressful life events, social support, health habits, self-management effectiveness, genetic predisposition, level of education, income, and gender.

Primary data collection sites were the 1982 World's Fair and a metropolitan general hospital in Knoxville, Tennessee. Subjects were 251 individuals in various stages of the health-illness continuum in middle adulthood from 32 states in the United States of America.

Instruments included the Multidimensional Health Locus of Control Scale (Wallston, Wallston, and DeVellis, 1978); the Self-Description Form (Thomas, Williams, and Olsen, 1982); the Current Health Subscale of Ware's (1976) Health Perceptions Questionnaire, Form II; the Health Habits, Social Stress, and Social Health subscales of the Rand Medical History Questionnaire, Form A (1979); a modified form of Wallston, Maides, and Wallston's (1976) Value Survey; and two questionnaires developed by the researcher to assess genetic predisposition and sociodemographic characteristics.

Statistical analyses included measures of central tendency, t tests, analysis of variance, linear correlation, and multiple regression. The combination of independent variables selected for the study accounted for 57% of the variance in health status. Consistent

with previous studies, genetic predisposition, stressful life events, education, and income contributed to the variance in health status. However, the results of this study suggest that the modifiable attitudinal and behavioral variables are as salient, and perhaps more salient, to health than environmental or genetic factors which are uncontrollable.

Internal locus of control was the strongest predictor of good health in the multiple regression analysis. Internal locus was positively related to behavioral variables such as health habits, whereas both chance locus and powerful others locus were negatively related to health maintenance activities. Individuals with a preponderance of healthful habits had significantly better health even when there was high genetic predisposition or high levels of stress. Good self-managers achieved a better balance across the major aspects of life than poor self-managers. Implications for future research and for health teaching and counseling were discussed.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION.	1
Statement of Problem.	4
Nominal Definitions	5
Assumptions	6
Limitations	6
II. REVIEW OF LITERATURE.	8
Middle Adulthood.	8
Introduction.	8
Chronological boundaries of middle adulthood.	9
Social/psychological aspects of middle adulthood.	10
Mid-life crisis	16
Physiological aspects of middle adulthood	18
Synthesis	23
Psychological Variables Related to Health	23
Locus of control.	23
Health value.	24
Life-Style Variables Related to Health.	25
Health habits	25
Self-management effectiveness	27
Environmental Variables Related to Health	27
Stressful life events	27
Social support.	28
Genetic Predisposition.	29
Sociodemographic Factors Related to Health.	30
Gender.	30
Level of education.	31
Income.	32
III. METHOD.	33
Hypotheses.	33
Design.	34
Subjects.	34
Characteristics of the sample	35
Instruments	38
Health Perceptions Questionnaire (Form II).	38
Health habits, social stress, and social health scales.	42
Multimensional Health Locus of Control Scale.	42
Value Survey.	43
Self-Description Form	43
Demographic survey.	44
Family background survey.	44

CHAPTER

PAGE

III. (Continued)

Operational Definitions	45
Data Collection	47
Analysis.	49
Initial examination of data	49
Statistical procedures.	50

IV. RESULTS AND DISCUSSION. 53

Descriptive Statistics.	53
Descriptive data for individuals in various stages of the health-illness continuum	57
Comparisons by severity of illness.	61
Comparisons of good and poor self-managers.	66
Differentiation of work self-management and Type A behavior.	68
Tests of Hypotheses	69
Hypothesis one.	71
Hypothesis two.	71
Hypothesis three.	72
Hypothesis four	73
Hypothesis five	73
Correlational and Regression Analyses	74
Correlations of independent variables with current health status	75
Correlations of psychological and behavioral variables.	77
Correlations of self-management and other variables	78
Regression analyses	80
Summary of Findings	84
Locus of control.	84
Health habits	85
Self-management effectiveness	85
Stressful life events	86
Social support.	86
Genetic predisposition.	88
Gender.	88
Level of education.	89
Income.	89
Health value.	90

V. CONCLUSIONS AND IMPLICATIONS. 91

Implications for Future Research.	92
Implications for Health Teaching and Counseling	93
Training for internality.	95
Promotion of a self-managed life-style.	95
Prevention programs	97
Summary	98

CHAPTER	PAGE
LIST OF REFERENCES.	100
APPENDICES.	108
A. INTERCORRELATION MATRIX FOR DEPENDENT AND INDEPENDENT VARIABLES MID-LIFE HEALTH STUDY (N=251)	109
B. GENERAL INFORMATION	110
C. PARTICIPANT CONSENT FORM.	111
D. DEMOGRAPHIC SURVEY.	112
E. VALUE SURVEY.	113
F. FAMILY BACKGROUND INFORMATION	114
G. MHLC.	115
H. SELF-DESCRIPTION FORM	116
I. RAND SCALES	119
VITA.	137

LIST OF TABLES

TABLE	PAGE
1. Percentage Distribution of Sociodemographic Variables, Mid-life Health Study.	36
2. Occupations of Respondents, Mid-life Health Study.	39
3. Diagnostic Classifications of Ill Subjects, Mid-life Health Study.	41
4. N, Means, Standard Deviations, and Minimum and Maximum Scores for Dependent and Independent Variables, Mid-life Subjects .	54
5. Percentage Distribution of Sociodemographic Variables for Mid-life Subjects in Best and Worst Health	58
6. N, Means, and Standard Deviations for Independent Variables for Mid-life Subjects in Best and Worst Health	62
7. N, Means, and Standard Deviations for Dependent and Selected Independent Variables for Acutely Ill, Chronically Ill, and Severely Ill Mid-life Subjects	65
8. Means, Standard Deviations, and Results of t Tests of Hypotheses Concerning Current Health Status.	70
9. Zero-order Correlations of Variables with Current Health Status	76
10. Zero-order Correlations of Psychological and Behavioral Variables.	77
11. Correlations of Self-management Variables with Other Independent Variables.	79
12. Regression Model for Dependent Variable Current Health Obtained by Backward Elimination Procedure	82
13. Intercorrelation Matrix for Dependent and Independent Variables Mid-life Health Study (N=251).	109

CHAPTER I

INTRODUCTION

The cost of medical care in the United States currently accounts for 10% of the gross national product and continues to escalate rapidly. Americans therefore are spending \$1 in every \$10 for medical services (Michael, 1982).

A growing number of thoughtful health professionals have recognized that one approach to stemming continual increases in medical costs is to shift the focus from illness to the promotion of wellness, from physician responsibility for health to personal responsibility for one's own health. Baranowski (1981) has pointed out that medical care is in part a determinant of health and wellness (to the extent that it arrests disease) but is insufficient in promoting health once disease has been controlled. The overall contribution of medical care to wellness is deemed very slight.

Haggerty (1977) proposed that greater educational emphasis be placed on life-style factors, which he termed the most important modifiable causes of illness. Michael (1982) asserted that half of the mortality in the United States is due to unhealthy behavior or life-style; of the rest, 20% is due to environmental factors, 20% to human biological factors, and only 10% to inadequacies in medical care.

The new field of behavioral health is attracting professionals from a variety of disciplines who share a philosophy of health that

stresses individual responsibility (Matarazzo, 1982). Becker, Haefner, Kasl, Kirscht, Maiman, and Rosenstock (1977) have suggested that medical and allied health care curricula be modified to produce practitioners oriented toward prevention as well as treatment.

Concomitantly, a consumer movement emphasizing a "wellness life-style" has emerged. A number of self-help books for laymen have appeared in the last decade (Ardell, 1979; Ferguson, 1980; Marchetti, 1979; Samuels and Bennett, 1973; Sehnert, 1975). Ardell (1979) has articulated the wellness philosophy:

High level wellness is an alternative to doctors, drugs, and disease. It is a life-style approach to realizing your best potentials for physical health, emotional serenity and zest for living, and mental peace through clarity of purpose. By pursuing wellness, you will dramatically reduce your chances of becoming ill while vastly increasing your prospects for total well-being (Ardell, 1979, Introduction, p. 1).

Nurses have been involved in the wellness movement since its inception and have taken leadership roles in university and hospital-based wellness programs and community promotional efforts such as health fairs. Nurse researchers as well as other medical researchers have begun to illuminate the dynamic interplay of physical, mental, and social factors relevant to holistic health. Oelbaum (1974) has proposed criteria for optimal wellness in adults that nurses may use in assessments of clients and promotion of "wellness work."

However, further research is needed to provide accurate information on specific attitudinal and/or behavioral changes that may lead to optimal wellness. In the past, researchers primarily examined genetic and physiological factors related to the etiology of diseases.

Much research purportedly on health actually focused on illness; typical instruments consisted of lengthy catalogues of pathological symptoms (Thorne and Pishkin, 1978). Recently greater attention has been given to social-psychological, behavioral, and environmental factors that affect health status (McFarlane, Norman, Streiner, Roy, and Scott, 1980; Pesznecker and McNeil, 1975; Wan, 1976).

Unfortunately, methodological flaws have characterized much of the newer research. In some studies a single variable related to health status (e.g. stressful life events) has been examined, rather than using a multivariate approach. Even in studies including several predictor variables, only a small amount of the total variance has been accounted for. For example, in Pesznecker and McNeil's study (1975), only 14% of the variance in the dependent variable (alterations in health status) was accounted for by the combination of independent variables used. Wan (1976) conducted a multiple regression analysis of health status which used twelve predictor variables. The sample was first divided into five homogeneous subgroups on the basis of sociodemographic characteristics. Multiple coefficients of determination for the groups were low (from .16 to .53), indicating that considerable variance was unexplained for each group. In a study by Burchfield, Holmes, and Harrington (1981) comparing sick and rarely sick individuals, only 20% of the variance was accounted for.

Another problem has been inadequate instrumentation, particularly for assessment of general health. In numerous studies, single-item measures have been used for health ratings. Ware (1976) has

pointed out that single-item measures have poor reliability, particularly in studies involving disadvantaged respondents. Consequently, he proposed that the strength of most associations between general health perceptions and other variables, as reported in the literature, has probably been underestimated.

Statement of Problem

The purpose of this study is to examine the relationship between selected predictor variables and health status of Americans in middle adulthood. Psychological variables, including health locus of control and health value, will be examined. Additionally, environmental variables, including stressful life events and social support, will be scrutinized. Genetic predisposition and sociodemographic factors, while not of primary interest in this investigation, will be included because previous research has established that they do contribute to variance in health status. Finally, behavioral variables, including health habits and self-management effectiveness, will be examined.

The mid-life age group was selected for several reasons:

1. The cumulative effects of genetic predisposition, health attitudes and behaviors, and environmental variables are beginning to accrue for these individuals; profiles of subjects in various stages of the health-illness continuum in middle adulthood can be developed and analyzed.
2. Most individuals in this age group are not yet chronically ill; sufficient time remains for life-style changes and

environmental modifications which could prolong their lives and elevate the quality of their later years.

3. The mid-life crisis, a time of introspection and that of questioning the way the first half of life has been lived, offers nurses and other health professionals an opportunity to intervene effectively with promotion of a wellness life-style.

Nominal Definitions

Genetic predisposition. A hereditary tendency to develop certain diseases known to have a constitutional component.

Health habits. Stable behavior patterns that affect health status directly or indirectly.

Health locus of control. The belief that health is primarily controlled by one's own behavior (internal locus), by powerful others such as doctors and other health care providers, family, and friends, or by chance factors such as luck or fate.

Health status. The self-assessed state of general health of an individual.

Health value. The importance of health to an individual in relation to other terminal life values (preferable end states of existence).

Middle adulthood. The period of adult life from age 35 to age 55.

Self-management effectiveness. The extent to which an individual applies self-management strategies across a broad spectrum

of life activities, including work, social, health, and leisure areas.

Social support. The gratification of an individual's needs for approval, esteem, and nurturance by significant others, such as spouse, relatives, friends, and colleagues.

Stressful life events. Events that produce changes in the life patterns of individuals and concomitant stress.

Assumptions

1. The instruments used in the study were valid and reliable measures of the constructs.
2. Responses of the subjects were honest and accurate within the limits of their perceptions.

Limitations

1. Although a national sample participated in the study, certain ethnic minorities were underrepresented. Consequently, generalizability is largely limited to persons of the Caucasian race.
2. Health was possibly more important to individuals participating in the study than to some Americans in middle adulthood, due to the sites of data collection.
3. The usual cautions in regard to utilization of volunteers and self-report data are also applicable. Kirscht (1971) in particular has emphasized the possibility of inaccurate self-report in survey research on health. However, Hunt, McKenna, McEwen, Backett, Williams, and Papp (1980) found that perceived health status accorded

well with objective health status. Martini and McDowell (1976) also found that patient assessments of their own health status provided a viable alternative to judgements made by trained assessors.

4. Another limitation of the study is that subjects were assessed at one specific point in time. Only longitudinal research can adequately answer many questions about health, since health attitudes and behaviors, life stresses, and other factors change through the life course.

5. A final limitation of the study is its nonexperimental design; therefore, causes cannot be separated confidently from effects.

CHAPTER II

REVIEW OF LITERATURE

This chapter contains a comprehensive review of the literature on middle adulthood, as well as a more limited review of the theoretical and empirical literature on psychological, behavioral, socio-demographic, and environmental factors that affect health status. Because there is a substantial amount of material available on several of the variables (for example, stressful life events), only the most pertinent studies will be cited. Wherever possible, reviews of the literature will be cited rather than individual studies.

Middle Adulthood

Introduction

Middle adulthood had been neglected as an area of theoretical and empirical examination until the 1960's and 1970's, despite earlier recognition as a crucial period of development by such eminent figures as Jung and Erikson. Stevenson (1977) attributes this lack of interest in middle adulthood to the tendency of researchers to focus on groups defined as problematic to society, such as adolescents or the elderly. Further, members of the middle-aged establishment define the problem groups which need study.

Another cause of reluctance to examine middle age was identified by Levinson (1978): fear that careful scrutiny might reveal only decline and restriction. The negative imagery of aging in our

society is ubiquitous; middle age begins to activate deep anxieties about loss of youth, deterioration, and dying.

However, there is increasing acceptance of the premise that growth and development continue throughout adult life. As life expectancy has lengthened, there is a much expanded mid-life period. During this period, individuals hold key leadership positions in the major institutions of American society: industrial, educational, and governmental, and they enact significant roles in their families and their communities. Due to improved nutrition and health care, these individuals appear younger and more vigorous than their counterparts in the previous century. Consequently, many contemporary theorists and researchers are presenting a more positive picture of middle age, depicting its exciting possibilities as well as its negative aspects.

Chronological Boundaries of Middle Adulthood

There is little consensus on the age parameters of middle adulthood. Several writers have regarded age 35 as a rough indicator for the beginning of the period. Jung (1971) viewed middle adulthood as beginning between 35 and 40. Sheehy (1976) opened her discussion of "the midlife passage" by stating that the middle of the thirties is literally the midpoint of life. She referred to the period between 35 and 45 as the "deadline decade," culminating in either renewal of purpose or resignation. Kennedy (1978) also viewed 35 as the lower boundary, but set the upper boundary of the middle adult years at 50.

Some authorities have specified an earlier onset of middle adulthood, at age 30 rather than age 35. Havighurst (1972) defined middle age as the period from "about 30" to "about 60." Stevenson (1977) proposed two stages of middle adulthood; Middlescence I or "the core of the middle years" between 30 and 50 years of age; and Middlescence II or "the new middle years" from 50 to roughly 70-75 years.

A later onset of middle adulthood was proposed by Levinson (1978), who designated the period between age 40 and age 65, with the "mid-life transition" occurring between 40 and 45.

Since physiological and mental ages are seldom synchronous with chronological age, and there is such wide variation among individuals due to hereditary and life-style factors, all of the suggested age parameters must be construed as rough estimates.

Social/Psychological Aspects of Middle Adulthood

Carl Jung (1954) was the first to recognize mid-life as a time of psychological upheaval. Many of Jung's patients were materially successful but found their lives meaningless and empty once their initial goals had been achieved. Valuable aspects of their inner selves had been neglected or repressed. Jung wrote of the necessity for both men and women to incorporate the contrasexual aspects of themselves. For men, this involved owning their suppressed nurturant, tender, qualities; for women, allowing expression of their aggressive impulses.

Jung also viewed middle age as a time for redirection of psychic energy toward spiritual values. His therapeutic efforts with mid-life clients therefore promoted interior contemplation and meditation rather than activity (Hall and Nordby, 1973).

Erikson (1968) specifically defined the developmental task of mid-life, which he termed "generativity versus stagnation." Generativity, the nurturance and guidance of one's children (or appropriate mentoring and social contributions by childless individuals), was contrasted with regression to an obsessive need for pseudo-intimacy accompanied by a pervading sense of stagnation. The task for the ego was to arrive at a favorable balance of generativity over stagnation, accepting one's responsibilities and obligations toward society in general and the next generation in particular.

Recently Erikson's view has been challenged by Sheehy:

Generativity is a fine concept as far as it goes. All the male researchers into adult development agree with Erikson that the path to replenishment in mid-life is through nurturing, teaching, and serving others. Yet once again, the male life cycle is presented as the adult life cycle. Overlooked is the fact that serving others is what most women have been doing all along. . . . It is not through more care-giving that a woman looks for a replenishment of purpose in the second half of her life. It is through cultivating talents left half finished, permitting ambitions once piggybacked, becoming aggressive in the service of her own convictions rather than a passive-aggressive party to someone else's. . . . If the struggle of men in mid-life comes down to having to defeat stagnation through generativity, I submit that the comparable task for women is to transcend dependency through self-declaration (Sheehy, 1976, p. 345).

Gilligan (1979) has also pointed out that theories of the life cycle, by taking for their model the lives of men, have failed to properly account for the experience of women. She documented the

masculine bias in early work (e.g. Freud, Piaget, Erikson) as well as in contemporary work (e.g. Levinson) emphasizing separation, autonomy, and individual achievement, at the expense of attachment and intimacy. The discovery by men in mid-life of the importance of intimate relationships is viewed as a belated realization of something women have always known. Gilligan urged theorists and researchers to give greater attention to the female perspective of development in order to achieve a more balanced conceptualization.

Neugarten (1968) viewed middle age as a major turning point in the life cycle. Key issues of mid-life identified by her subjects (100 highly successful men and women aged 45 to 55) were:

1. Chronological age was no longer viewed as a positive marker, in contrast to earlier life when becoming older meant becoming bigger or more important.
2. Individuals in mid-life became increasingly aware of the emotional, social, and cultural distance between themselves and the younger generation.
3. Women defined their status in terms of events within the family cycle (launching of children), while men perceived the onset of middle age by cues from outside the family, such as deferential behavior toward them in the work setting.
4. Health changes were more of an age marker for men than for women. Fewer women in Neugarten's sample attached much significance to the menopause or reported escalated concern

for their own health; some women did report concern over the body-monitoring of their husbands. Men, however, reported bodily changes as the most salient characteristic of middle age, commenting on decreased efficiency of their bodies. A new sense of physical vulnerability was experienced on occasions such as defeat by a son at tennis or word of the sudden heart attack of a friend.

5. Most mid-life adults viewed themselves as being in the prime of life, possessing a substantial repertoire of competencies for manipulating and controlling the environment and a wide variety of cognitive strategies.
6. Both sexes reported an altered time perspective, perceiving life in terms of time-left-to-live rather than time-since-birth. The reality of death and the new awareness that time is finite were frequent themes.

When individuals become aware that time is limited, reactions may range from urgency to complete life's mission to despair that much time has already been wasted. Gould (1972) found that people in the early years of middle adulthood were more optimistic than those in the later years. His data were obtained by observational study of psychiatric outpatients and from a questionnaire administered to 524 non-patients. In the 35-43 age group he noted "an existential questioning of self, values, and life itself" and fantasies about "one last chance to make it big" in the work arena (Gould, 1972, p. 38). In the 43-50 age group, he found less optimism about the amount of time left to make dreams come true:

Finite time is resigned to as reality and as not so malleable by self-illusions. The "die is cast" feeling is present and is seen as a relief from the internal tearing apart of the immediately previous years even though it is a bitter pill to swallow (Gould, 1972, p. 38).

The relative prosperity of the middle-aged has been noted by Fogarty (1975), who pointed out that even those in lower income groups are likely to be doing well within their group and to be at one of the higher points of the poverty cycle. In the workplace they have accrued power and seniority. Most are established householders. Concomitant with their socioeconomic consolidation, however, the middle-aged also bear heavy responsibilities for both the younger generation (assisting them to achieve independence, serving as their career mentors) and for the older generation (caring for elderly parents, in-laws).

Stevenson (1977) proposed that mid-life adults often approach their dual responsibilities for the younger and older generations in a dysfunctional manner. She asserted that American parents like to give assistance to their grown offspring in return for the right to give advice and to control how those offspring make decisions. Similarly, they attempt to control the lives of their elders, viewing them as too old to make decisions for themselves. Such authoritarian tactics engender resentment and dependency. Assuming too much responsibility for managing other people's lives thus puts middle-aged adults in a double bind, and may also complicate their resolution of personal and/or marital problems during this period.

Levinson (1978) and his research associates conducted biographical interviews of forty men between the ages of 35 and 45

engaged in four occupations representing diverse sectors of society (hourly workers in industry, business executives, university biologists, and novelists). They found that the life structure evolved through a relatively orderly sequence during the adult years; this sequence consisted of alternating stable periods and transitional periods. The mid-life transition had its onset at age 40 or 41 and lasted about five years. Levinson listed three major tasks during this period:

1. Terminating the era of early adulthood, reviewing and reappraising life in that era.
2. Taking the first steps toward initiation of middle adulthood. Some men made drastic changes in the external aspects of the life structure (divorce, remarriage, major life-style or occupational shifts), while others made less visible external changes. The mid-life transition also involved significant internal changes, such as reformulation of values.
3. Dealing with the four polarities whose resolution is the primary task of mid-life individuation: (1) young/old; (2) destruction/creation; (3) masculine/feminine; and (4) attachment/separateness.

Levinson concluded that some men had suffered such irreparable defeats in earlier life that they lacked the resources to create an adequate life structure for middle adulthood, therefore facing a middle age of constriction and decline. Others formed a life

structure in which they performed their social roles but lacked inner excitement. However, those who successfully completed the tasks of the mid-life transition exhibited greater wisdom, judiciousness, compassion, and breadth of perspective. They experienced middle adulthood as "the most loving and creative season in the life cycle" (Levinson, 1978, p. 243).

Mid-Life Crisis

There is disagreement in the literature about the precise time of the greatest discomfort and turbulence of middle age, the notorious "mid-life crisis." The term mid-life crisis was introduced by Jaques (1965) to describe the creative crisis he had observed in his sample of 300 painters, writers, composers, and other artistic individuals. Three forms of creative crisis were reported. In the first type, an artistic career was initiated in mid-life by an individual who suddenly abandoned his/her previous occupation. The second type of crisis involved burnout or death of a creative person between the ages of 35 and 39. Tragic outcomes were more likely to occur in artists who had tried to maintain the feverish pace of young adulthood, rather than slowing to a more considered creativity in their mature years. The final manifestation of creative crisis was a decisive alteration in the artist's style during middle adulthood. After age 40, more profound works were produced. Jaques believed that the mid-life crisis was not confined to creative individuals, but occurred in the late thirties for virtually everyone.

Levinson (1978) preferred using the term "mid-life crisis" only for a crisis occurring within the mid-life transition (age 40-45), not for crises during other segments of middle adulthood. He found that 80% of his male subjects experienced a moderate or severe developmental crisis at this time.

Gould (1972) noted a period of instability and acute personal discomfort between the ages of 40 and 43 in his subjects. Patients and nonpatients were not discriminable.

Stevenson called the mid-life crisis "mid-40's inferno." As she described it, ". . . stability comes crashing down, and many people in their middle forties find themselves in a terrific struggle with themselves, their significant others, and the world at large" (Stevenson, 1977, p. 159). She further noted increased psychotropic drug dependence, alcohol abuse, depression, divorce, obesity, and other signals of inadequate coping with the problems of "middlescence."

Although the term mid-life crisis had not been coined when Jung began to write of the "important change in the human psyche" in middle age, Jung would have probably disagreed with the "crisis" aspect. Jung believed that the change which took place was not a conscious, striking change of perspective, but a matter of indirect signs initially. He also noted that the alteration in perspective began earlier for women than for men (Jung, 1971).

Preoccupation with the issue of death appears to be a significant component of the crisis of middle age for many individuals. Bengston, Cuellar, and Ragan (1977) surveyed 1269 individuals between

the ages of 45 and 74 and found that their middle-aged respondents (ages 45-54) expressed greatest fears of death, while the elderly subjects (ages 65-74) were least afraid. Apparent resolution of the middle-age crisis of finitude was exhibited by elderly respondents.

The popular press has also devoted considerable attention to the phenomenon of mid-life crisis in recent years, a representative work being the best-seller Passages. Sheehy (1976) related the details of her own crisis, which began when an Irish boy with whom she was talking was shot. The bullet which shattered his face also shattered her own comfortable existence and confronted her with her own mortality. She began a study of the crises of adult life, collecting data from 115 middle-class men and women. The crisis which occurs between 35 and 45 is called an "authenticity crisis" and is characterized by questioning all of life's roles and structures, discarding the "narrow self" of the twenties and early thirties, and finally accepting the inevitability of one's aloneness and eventual death.

The consensus emerging from this literature is that individuals who avoid or postpone dealing with the salient issues of mid-life crisis will either experience a later developmental crisis or a progressive constriction of the personality and life-style in the remaining years of adulthood.

Physiological Aspects of Middle Adulthood

There are readily observable changes in physical appearance due to aging, as the result of loss of elastic fibers of the skin

and thickening in the connective tissue fibers between the cells of the body. The skin becomes thinner and wrinkles accumulate; the hair thins and grays; the frame settles and becomes shorter. There is a loss of elasticity in particular joints. Muscle tone and strength peak by age 30 and then decline. Many individuals in the mid-forties and fifties begin to have difficulty seeing details at close distances, as the lens of the eye ages. Other physical capacities which may decrease are lung capacity, the senses of smell and taste, and hearing of high tones. The cardiovascular/renal systems become less efficient, especially in persons with atherosclerosis. Another age-related change is diminishing ability to respond to stress (Weg, 1975).

Bayer, Whissell-Buechy, and Honzik (1981) found that excessive weight develops by adulthood in both sexes and is progressive in men but recedes among older women. As a group, their middle-aged male subjects were overweight, with mean percent body fat exceeding the highest acceptable normal value. Although obesity has not been shown to be directly atherogenic, its association with hypertension and with early mortality has been well documented.

Considerable publicity has been given to two of the more dramatic events of mid-life: heart attacks for men and menopause for women. The Type A behavior pattern (competitiveness, excessive drive, time urgency) appears to increase the risk of coronary heart disease, a risk independent of, and of the same magnitude, as hypertension, elevated cholesterol, and smoking. Williams, Haney, Lee,

Kong, Blumenthal, and Whalen (1980) found that hostility is one of the primary components of the Type A pattern and is even more strongly related to atherosclerosis than the other Type A behaviors. In a subsequent study, Barefoot, Dahlstrom, and Williams (1983) examined the relationship between hostility and subsequent health status in a 25-year followup of physicians who had completed the MMPI while in medical school. High hostility scores were found to be predictive of coronary disease as well as total mortality.

When heart attacks occur in middle adulthood, the recovery period is often stormy. Rosen and Bibring (1968) proposed that heart attacks for this age group accentuate the conflict between the active role of a young man and the more passive-dependent role of an older one. Men who were hospitalized for heart attacks in mid-life were more depressed, hostile, agitated, and uncooperative in following physician's orders than men under 40 or men over 60.

Menopause confronts women with the passage from youth to middle age. Although there is great variability in individual experiences of the menopause, most women report at least one or more of the well-publicized symptoms (i.e., dizziness, hot flashes, tingling, insomnia, and lack of body tonus in skin and breasts). The male climacteric, less publicized until recently, involves circulatory symptoms (chills, sweats, palpitations, dizziness) as well as mood swings, fatigue, and decreased sexual potency. Because men have been unaware that there is a male climacteric, their symptoms have often been attributed to viral illnesses (Ruebsaat and Hull, 1975).

Stevenson (1977) emphasized the wide hormonal swings occurring in both men and women in their forties. These hormonal fluctuations begin some time before the classic symptoms of the climacteric appear. About 15% of men exhibit a rapid, sharp decline of testosterone associated with disruptive physical symptoms; for the other 85%, the change is more gradual (Sheehy, 1976). Similarly, only 10-15% of women are seriously inconvenienced by menopausal symptoms; many women instead report improved health and increased vigor (Neugarten, Wood, Kraines, and Loomis, 1968).

In summary, there are some undeniable physiological aspects of aging as individuals move from young adulthood into the middle years and on toward old age. However, the majority of persons in middle adulthood experience only moderate deterioration in physical abilities and performance. Fogarty pointed out that "crude indices can easily give an exaggerated impression of these declines, and in any case they occur less quickly and strongly in certain groups of people than in others. . . . They may be partly or more than fully offset by older people's discovery of new ways of doing things. . . ." (Fogarty, 1975, p. 67).

Bayer et al. (1981) found that more than 80% of the participants in their longitudinal study considered themselves in good-to-excellent health throughout the middle years. From late adolescence to age fifty, the most common source of complaints among men was the digestive system (e.g., stomach pain, ulcers), while for women it was the reproductive system (e.g., miscarriage, uterine fibroids,

ovarian cysts, menstrual problems). Stevenson (1977) noted that most ailments reported by mid-life adults were minor (colds, flu, muscle and joint aches and pains, gastrointestinal problems, headaches, injuries due to accidents) and emphasized that chronic conditions were relatively rare.

DeVries (1975) proposed that the physiological changes which accompany the aging process may not be due to aging, but due to the long-term deconditioning of an increasingly sedentary life. He noted that most of the changes attributed to aging can also be produced in healthy young men in only three weeks of bed rest. DeVries conducted experiments with older men and women who volunteered to participate in a vigorous exercise training program. There were significant improvements in cardiovascular and respiratory functioning, muscle strength, and body composition (lower percent body fat). He concluded that both middle-aged and older men and women were as trainable as younger people, and that trainability did not depend on a previous history of physical conditioning. He recommended activities which maximize the rhythmic activity of large muscle masses, such as walking, jogging, running, and swimming.

There is some evidence that individuals in middle and late adulthood are becoming more interested in physical fitness. The 1982 Psychology Today health survey (n=25,000) showed that older respondents felt healthier and took better care of themselves than young people. Interestingly, people in their 30s felt about five years younger; people in their 40s about 10 years younger; and those

in their 50s about 13 years younger than they actually were (Rubenstein, 1982). Sheehy (1976) asserted that the new middle-aged no longer "think sick," no longer settle for a sedentary, indoor middle age. She concluded that "More than anything else, it is our own view of ourselves that determines the richness or paucity of the middle years" (Sheehy, 1976, p. 406).

Synthesis

The literature has depicted middle adulthood as a time of crisis, reassessment, and change for both men and women, a time for coming to terms with the future as well as the past. It is also a time with abundant potential for health preservation and enhancement, self-actualization, and significant social contributions.

Psychological Variables Related to Health

Locus of Control

Locus of control is a construct from Rotter's (1954) social learning theory. According to Rotter, the reinforcement patterns to which individuals are exposed eventually produce either a general expectancy that reinforcements are contingent upon one's own behavior (internal locus of control) or a general expectancy that reinforcements are received on a purely random basis or dispensed by powerful others (external locus of control). It logically follows that individuals with an internal locus of control are more likely to engage in positive health behaviors; they believe that the reinforcement

(good health) is directly the result of their own behavior, not controlled by powerful others (doctors) or randomly determined by luck or chance.

There have been over 1,000 published papers dealing with locus of control beliefs, generally indicating that internals are more competent, effective individuals who take responsibility for their actions and take steps to change aversive situations. Recently, a number of investigators have examined the relationship of locus of control and health behaviors such as weight reduction, smoking cessation, health information-seeking, and preventive health practices (e.g., exercise, sensible dietary habits). Research in this area has accelerated even more rapidly following the development of locus of control measures specific to the domain of health, and a substantial body of literature has now accumulated. This literature has been reviewed by Strickland (1978) and by Wallston and Wallston (1978). Internality has been positively correlated both with precautionary health practices and with health information-seeking in the majority of studies reviewed.

Health Value

Locus of control is only one of a number of variables that may affect health status, however. The reinforcement value of health to an individual, in comparison with other terminal life values such as pleasure, prosperity, or social recognition, must be assessed. Lowery (1981) pointed out: "Although it might be assumed that the state of health is always valued, in many health-related situations

the reinforcement value of the outcome for the patient must be considered" (p. 295). Wallston, Maides, and Wallston (1976) found that health-related information-seeking was a joint function of locus of control and the value placed on health.

Life-Style Variables Related to Health

Health Habits

Perhaps even more significant than locus of control and health value are life-style factors such as health habits. Hunt, Matarazzo, Weiss, and Gentry (1979) defined habit as "a stable pattern of behavior marked by automaticity and unawareness and influenced by associative learning as well as reinforcement" (p. 112). A habit is considered healthful if it contributes directly or indirectly to the health status of the individual; an unhealthful habit directly or indirectly interferes with health or contributes to the development of disease. The Alameda County study, a large longitudinal study that examined health habits in relation to health status, is frequently cited in the literature. The first reports were made by Belloc and Breslow in 1972. At that time, they reported that seven practices were associated with health: never smoking cigarettes, regular physical activity, moderate or no use of alcohol, 7-8 hours of sleep nightly, maintaining proper weight, eating breakfast, and not eating between meals. The Belloc and Breslow (1972) index of health practices was computed by dichotomizing each of the seven practices into a positive and negative half; the score was a sum of the positive health practices.

In 1980 Breslow and Enstrom reported on the relationship of these practices and subsequent mortality. Men following the seven key practices had a mortality rate only 28% that of men following zero to three health practices; the comparable figure for women was 43%. As the longitudinal study continued, two of the seven practices cited by Belloc and Breslow (eating breakfast, eating between meals) were found to have no relationship to health status. The researchers also modified their view of drinking when they found that nondrinkers had poorer health at nine-year followup than light drinkers. As a result of these findings, a new index of health practices was calculated for use in the Alameda County study (Wiley and Camacho, 1980). An individual received one point for each of the following characteristics: (1) currently a nonsmoker; (2) consumption of 1-45 drinks per month; (3) moderate or strenuous physical activity during leisure time several times a week or more; (4) sleeping 7-8 hours per day; and (5) being within -10% and +29% of ideal weight for height.

Rand Corporation researchers developed comparable definitions of positive health practices for use in their health insurance study and found that physical activity and weight were the most important factors in relationship to health. Interestingly, physical activity during leisure time appeared to have different associations with health than physical activity during work. People who were active during leisure hours not only had better general health and better functioning, but also reported a sense of positive well-being, less anxiety, and less depression. People who were physically active in

their work were less depressed and had better personal functioning than individuals who were less active, but none of the other associations occurred (Stewart, 1981).

Self-Management Effectiveness

The ability to acquire and maintain a preponderance of healthful habits suggests effective application of behavior management strategies by individuals in their lives. The concept of self-management was derived from the general area of applied behavior analysis. Williams and Long (1983) viewed self-modification as the ultimate application of behavior management concepts. Thomas, Williams, and Olsen (1982) have focused their research efforts for several years on assessment of self-management effectiveness across broad areas of life, including physical health, interpersonal relationships, professional productivity, and leisure. The relationship between self-management effectiveness and health status has not been explored, however.

Environmental Variables Related to Health

Stressful Life Events

In addition to psychological and behavioral variables, environmental variables must be considered in a comprehensive model for predicting health status. Holmes and Rahe (1967) pioneered research efforts on stressful life events and illness, conducting both retrospective and prospective studies with large samples of naval personnel. They found modest but statistically significant relationships

between escalating life change and the onset of illness, as Selye's stress theory (1956) would predict. However, such research has been criticized by Rabkin and Struening (1976) and Miller (1981) due to methodological flaws and lack of consideration of intervening variables. Some recent studies have failed to support the research of Holmes and Rahe. For example, Schless, Teichman, Mendels, Weinstein, and Weller (1977) reported that in their three-year prospective study there was little relationship between life events and illness.

Kobasa (1979) pointed out that Holmes and others had failed to take into account what Selye said about individual differences, such as personality factors. Her study compared two groups of middle and upper level executives with equally high stress levels for the previous three years. One group had experienced high stress without becoming ill, while the other group reported becoming sick. The personality factor which differentiated these groups was termed "hardiness." Kobasa defined hardiness as having a strong commitment to self, an attitude of vigorousness toward the environment, a sense of meaningfulness, and an internal locus of control.

Social Support

Some researchers (Kaplan, Cassel, and Gore, 1977) have proposed that adequate social support from friends, family, and neighbors somewhat buffers or ameliorates stress for the individual. Nuckolls, Cassel, and Kaplan (1972) examined the relationship between stress, psychosocial assets, and outcome of pregnancy (normal or complicated). Neither multiple life changes nor variations in social

assets, if considered separately, were related to complications of pregnancy; when considered together, however, in situations of high life change the women with favorable social assets had only one-third the complication rate of women with low assets. Kaplan et al. (1977) therefore proposed that the joint effects of stressor factors and protective factors (such as social support) determine susceptibility to illness. Blake, Roberts, Mackey, and Hosokawa (1980) found a higher utilization rate of professional services in a primary care clinic by clients with low social support.

Conceptual, methodological, and theoretical problems in studies of the buffering role of social support have been enumerated by Thoits (1982). She pointed out that the direct and interactive effects of life change and social support may have been confounded inadvertently in cross-sectional studies. Stressful life events may alter the support available to individuals, and adequate support may decrease the likelihood of stressful events. Thoits also proposed that support may be an etiological factor in its own right.

Genetic Predisposition

Research on genetic predisposition has involved examination of family histories, longitudinal studies, and twin studies. A recent review of this research noted that constitutional predisposition is known to play a role in peptic ulcer, essential hypertension, allergic reactions, heart disease, cancer, and many other disorders. Illness is thought to occur in the constitutionally weakest organs

or systems of the predisposed individual when stress is too intense or the individual's adaptation to stress is inadequate (Kobasa, Maddi, and Courington, 1981).

Sociodemographic Factors Related to Health

Gender

Virtually all studies show that women, despite their greater longevity, report more health problems than men. In a large longitudinal study in California, women reported more illness than men in all categories (Bayer et al., 1981). "Rarely sick" individuals in a study by Burchfield et al. (1981) were significantly more likely to be male (83% males, 17% females), while "sick" individuals were more likely to be female (59% females, 41% males). In the Psychology Today sample, women characterized themselves as more illness-prone, more sensitive to changes in their bodies, and more worried about eating habits and diet. These women also reported experiencing a greater number of stressful events (Rubenstein, 1982).

Researchers have speculated that the reason women report more symptoms than men is that they are more somatically aware. Further, they are less reluctant to admit illness and seek treatment (Bayer et al., 1981).

Two stereotypes about the health-related consequences of women's social roles are prevalent: the "neurotic housewife" who develops hypochondriacal complaints and the "career woman" who succumbs to the stressors of the work world. Depner (1981), reporting

initial results of the "Social Roles and Health of American Women" project, found that role status usually has no significant effect when variables such as age, education, and income are entered first into the regression equation. Of course, age, education, and income select individuals into roles and further affect health-related needs and resources.

Level of Education

Franks and Boisseau (1980) have provided a comprehensive review of the literature on educational level and health. A strong positive relationship between years of schooling and health was found. Franks and Boisseau suggested that formal education facilitates responsiveness to health education efforts which encourage appropriate health behavior. The recent Psychology Today health survey also found that the more education men and women have, the healthier they feel (Rubenstein, 1982).

There is some evidence, however, that the poorly educated are not automatically disadvantaged with regard to health status. Wiley and Camacho (1980) found that when they divided their sample into three educational levels (0-11 years, 12 years, 13 or more years), those individuals with high health practice scores had good health outcomes regardless of their educational level.

Leigh (1982) found that education had only indirect effects and no direct effects on ill health. He proposed that education affects health only by allowing individuals access to higher status jobs.

Income

Higher income has been correlated with good health in numerous studies. Both physical and mental illnesses tend to be more prevalent among those of lower socioeconomic status. Individuals with lower incomes are more concerned about the possibility of contracting debilitating diseases and view themselves as more susceptible to illness in general (Johnston and Ware, 1976).

Additionally, the poor are less likely to have the benefits of adequate nutrition, preventive health measures such as flu shots, or proper medical care when they are ill. Their financial status constrains residential opportunities; they are more likely to live in overcrowded, noisy abodes with improper sanitation than in quiet, clean suburbs.

However, several researchers have found that even within the lower socioeconomic groups adherence to positive health practices makes a difference. Pratt (1971) found that low-income women with good health habits were not disadvantaged in health status as compared to women of higher socioeconomic status. Wiley and Camacho (1980) reported that even in families with inadequate or marginal incomes, the same relationship between health practices and good health was observed as that in high-income families.

CHAPTER III

METHOD

This chapter consists of six sections. In the first section, the hypotheses of the study are presented. Subsequent sections discuss the design, subjects, instruments, data collection procedures, and analyses chosen for the study.

Hypotheses

The hypotheses tested in this study were:

1. Subjects who hold internal locus of control beliefs will have better health status than persons with a chance locus of control or powerful others locus of control orientation.
2. Effective self-managers will have better health status than ineffective self-managers.
3. Subjects with a preponderance of healthful habits will have better health status than persons with poor health habits, regardless of the level of stressful life events reported.
4. Subjects with adequate social support will have better health status than persons who do not have adequate social support, regardless of the level of stressful life events reported.
5. Subjects with a preponderance of healthful habits will have better health status than persons with poor health habits, regardless of genetic predisposition.

In addition to testing these hypotheses, measures of central tendency and frequency distributions were generated in order to provide a descriptive overview of the sample as a whole and of various subgroups of particular interest. Correlation and regression analyses were performed to examine relationships among the dependent and independent variables of the study.

Design

This was an ex post facto study of the survey research type. The independent variables were health locus of control, health value, health habits, self-management effectiveness, stressful life events, social support, genetic predisposition, gender, level of education, and income. The dependent variable was current health status.

Subjects

Participants in the study were 251 individuals in middle adulthood (age 35-55) from thirty-two states in the United States of America. Northern, eastern, and southern regions of the country were well represented. Although there were fewer respondents from the western region of the nation, residents of Arizona, Kansas, Nebraska, Utah, New Mexico, North Dakota, Oklahoma, California, and Alaska were included in the sample. Subjects resided in communities of all sizes, ranging from large cities to tiny rural hamlets. There was considerable diversity within the sample in terms of education, occupations, income, genetic predisposition, health

status, and other variables of interest. A sample of this size provided a 15:1 subjects-to-variables ratio, which was adequate for the statistical analyses selected. Details of data collection are provided in a subsequent section of this chapter.

Characteristics of the Sample

Sociodemographic characteristics of the respondents are presented in Table 1. There were 153 females and 98 males. Mean age was 44 years. The majority of subjects (83.6%) were married. Only 8% of the sample had less than a high school education. Forty percent were high school graduates, while another 12.6% had completed technical/vocational programs or some college work. The remaining 39% were college-educated, with 15% of these holding graduate degrees. The greatest percentage of subjects were employed full-time (66%), with 12.8% working on a part-time basis and 21.2% unemployed.

There was considerable variation in financial status of the respondents. Thirteen percent of the respondents reported incomes in the less than \$7,000 range; another 16% were in the \$7,000-12,999 range, while 17.6% were in the \$13,000-18,999 range. Those reporting incomes between \$19,000 and 30,999 totalled 30%. Incomes greater than \$30,999 were reported by 23% of the sample, with 4% of these being in the \$55,000+ category. Mean income for the sample was \$22,167.

The majority of the respondents were Caucasian, and nearly half reported regular church attendance. An additional 27% reported

TABLE 1. Percentage Distribution of Sociodemographic Variables
Mid-life Health Study

Variable	N	%
Gender		
Male	98	39.0
Female	153	61.0
Marital Status		
Never Married	15	6.0
Married	209	83.6
Divorced/separated	22	8.8
Widowed	4	1.6
Educational Level		
Less than high school	20	8.1
High school	99	40.1
Technical/vocational	31	12.6
BS/BA degree	58	23.5
MS/MA degree	29	11.7
EdD, PhD, MD, JD degree	10	4.0
Employment Status		
Not Employed	53	21.2
Employed full-time	165	66.0
Employed part-time	32	12.8
Income ^a		
\$3500	30	12.9
\$10000	38	16.3
\$16000	41	17.6
\$22000	39	16.7
\$28000	31	13.3
\$34000	19	8.2
\$40000	13	5.6
\$46000	11	4.7
\$52000	2	0.9
\$58000	9	3.9

TABLE 1. (Continued)

Variable	<u>N</u>	<u>%</u>
Race		
White	242	96.8
Black	4	1.6
American Indian	1	0.4
Spanish Surnamed American	1	0.4
Oriental American	1	0.4
Other	1	0.4
Level of Religious Involvement		
None, no belief in higher power	8	3.2
Belief in higher power, no church involvement	50	20.0
Belief in higher power, some church involvement	68	27.2
Belief in higher power, regular church involvement	123	49.2

^aIncome figures are interval midpoints (e.g., 3500 represents the 0-7000 range, 10000 represents the 7000-12999 range, etc.)

some church involvement, while 20% reported belief in a higher power but no church involvement. Only 3.2% reported no belief in a higher power.

Occupations of respondents are presented in Table 2. While a variety of occupations was represented, the most common areas were homemaking, human services, sales, teaching, government service, professional practice, and independent business ownership.

Diagnostic classifications of ill subjects are presented in Table 3. Subjects with multiple diagnoses were listed in each applicable category. The most prevalent disorders in this mid-life sample were nutritional/metabolic (primary obesity); cardiovascular (angina, heart block, myocardial infarction, pericarditis, hypertensive cardiovascular disease and other diagnoses); musculoskeletal/collagen (neck pain, back pain, arthritis, ruptured discs); endocrine (diabetes, hypoglycemia, pancreatitis); psychiatric (depression, anxiety disorders, substance abuse); and gastrointestinal (diverticulitis, colitis, ulcers, and other disorders).

Instruments

Health Perceptions Questionnaire (Form II)

Ware's (1976) Health Perceptions Questionnaire (Form II), hereafter called the HPQ, is a 32-item instrument with scales measuring perception of prior health, current health, health outlook, resistance/susceptibility to illness, health worry/concern, sickness orientation, rejection of sick role, and attitude toward going to

TABLE 2. Occupations of Respondents, Mid-life Health Study

	<u>N</u>	<u>%</u>
Professional Practice	13	5.2
Owner of Business	18	7.2
Clerical	10	4.0
Academic Position, College	3	1.2
Academic Position, K-12	19	7.6
Human Service	19	7.6
Sales	19	7.6
Technical/Engineering	10	4.0
Art/Music/Dance	2	0.8
Management, Planning	12	4.8
Finance, Banking	8	3.2
Government Service	17	6.8
Research	1	0.4
Homemaking	41	16.5
Construction	12	4.8
Equipment Repair, Servicing	4	1.6
Transportation (bus, cab, etc.)	7	2.8
Food Services	3	1.2
Factory, Production	7	2.8
Clergy	3	1.2
Labor	1	0.4
Retired	3	1.2

TABLE 2. (Continued)

	<u>N</u>	<u>%</u>
Disabled	3	1.2
Other	14	5.6

TABLE 3. Diagnostic Classifications of Ill Subjects, Mid-life Health Study

Category	<u>N</u>	<u>%</u>
Cancer	5	3.0
Cardiovascular	27	16.4
Dermatologic	2	1.0
Endocrine	15	9.0
Gastrointestinal	14	8.5
Hematologic	2	1.0
Hepatic, biliary	6	3.6
Infections	3	2.0
Musculoskeletal/collagen	23	14.0
Neurologic	3	2.0
Nutritional, metabolic	31	19.0
Otorhinolaryngology	1	0.6
Psychiatric	15	9.0
Pulmonary	10	6.0
Renal, urologic	7	4.0
Trauma	1	0.6

^aDisorders were classified according to Merck disease classifications.

^bSubjects with multiple diagnoses were listed in each applicable category.

the physician. After field testing the HPQ on approximately 2,000 adults, Ware (1976) reported that the scales were valid, reliable, and stable over time for diverse populations. The HPQ was included in the health status measures fielded in Rand's Health Insurance Study, a project involving 8,000 people in 2,750 families who were assigned to groups with different health care financing arrangements. The HPQ items are the first 32 items of the Rand Scales in Appendix I.

Health Habits, Social Stress, and Social Health Scales

Three subscales of the Medical History Questionnaire, Form A, developed for the Rand study (Brook, Ware, Davies-Avery, Stewart, Donald, Rogers, Williams, and Johnston, 1979) were used: the Health Habits scale, consisting of 30 items on diet, exercise, sleep, smoking, drinking, safety, and dental practices; the Social Stress scale, consisting of 20 items on stressful life events; and the Social Health scale, consisting of nine items on availability of support from relatives, neighbors, and community groups. These scales, as well as others used in the Health Insurance Study, were constructed after empirical scaling analyses successfully tested hypothesized item groupings. Both reliability and validity of these measures have been satisfactorily established (Brook et al., 1979). These scales appear in Appendix I.

Multidimensional Health Locus of Control Scale

The Multidimensional Health Locus of Control Scale (MHLC), modeled after Levenson's (1974) Locus of Control Scale, was developed by Wallston, Wallston, and DeVellis (1978) to provide an improved

health-specific assessment of locus of control. Wallston and Wallston recommend use of the 18-item MHLC as opposed to their earlier (1976) unidimensional 11-item Health Locus of Control (HLC) Scale. The MHLC measures three distinct dimensions: Internality (IHLC), Chance Externality (CHLC), and Powerful Others Externality (PHLC). Wallston and Wallston (1981) reported that alpha reliabilities for the MHLC scales ranged from .67 to .77. The concurrent and discriminant validity of the MHLC were ascertained by correlating the scales with Levenson's (1974) scales. Fairly good stability was suggested by test-retest data. Normative data obtained from the testing of several thousand subjects is now available (Wallston and Wallston, 1981). A copy of the MHLC appears in Appendix G.

Value Survey

The Value Survey, developed by Wallston, Maides, and Wallston (1976), was an adaptation of Rokeach's (1973) Value Survey, listing nine of Rokeach's terminal values and adding a tenth value, health, to determine its rank in relation to other important outcomes. A copy of this instrument may be found in Appendix E.

Self-Description Form

The Self-Description Form, a 56-item instrument with structured format, was developed by Thomas, Williams, and Olsen (1982) to assess self-management effectiveness in four areas of life: work, social, health, and leisure. Each of the areas is assessed by a 10-item subscale; the remaining items are social desirability and filler items. The items were selected from an initial pool of 163 items submitted

to mental health professionals for placement in categories; the average agreement on placement of items in subscales was .89. All subscales consist of an equal number of positive and negative items (positive items indicating effective self-management and negative items ineffective self-management), with the exception of the leisure subscale, which has only positive items. At least 70% of the mental health professionals had to agree that regular participation in an activity indicated either effective or ineffective living for the item to be designated as positive or negative. The average agreement regarding valence of the items was .87. Test-retest reliability coefficients ranged from .61 to .86 for the subscales, and the correlation for total self-management was .82. The compilation of normative data and statistics on validity and internal consistency reliability is in progress at the present time. This instrument may be found in Appendix H.

Demographic Survey

An 11-item demographic survey was developed by the researcher to obtain standard demographic information such as gender, age, marital status, height, weight, educational level, income, occupation, race, and religion. A copy of the survey appears in Appendix D.

Family Background Survey

A 10-item family background survey was developed by the researcher to obtain information on the number of close relatives of the subjects who have (or had) heart attacks, high blood

pressure, diabetes, and cancer. A copy of this survey appears in Appendix F.

Operational Definitions

Current health status was operationalized as the subject's score on the current health subscale of Ware's Health Perceptions Questionnaire (Form II), developed in 1976.

Genetic predisposition was operationalized as the subject's scores on the Family Background Survey (i.e., the number of close relatives--parents, brothers, sisters and the number of other relatives--grandparents, uncles, aunts who have, or had, diseases with a hereditary/constitutional component: heart attacks, high blood pressure, diabetes, cancer).

Health habits was operationalized by computing an index of health practices in the manner of Wiley and Camacho (1980). The score was calculated by dichotomizing each of the five key health practice items (smoking, drinking, leisure-time physical activity, sleep, weight) and assigning one point for each on which the subject fell in the positive half of the dichotomy. Wiley and Camacho have demonstrated that equal weighting of these items is empirically tenable and that each characteristic makes a significant contribution to the prediction of health scores. The necessary information to calculate the health habits score was obtained from items in the Health Habits subscale of the Medical History Questionnaire, Form A,

used in Rand's Health Insurance Study (Brook et al., 1979) and from the demographic survey prepared by the researcher.

Health locus of control was operationalized as the subject's scores on each of the three dimensions of Wallston and Wallston's Multidimensional Health Locus of Control Scale (1978).

Health value was operationalized as the subject's ranking of health on the Value Survey developed by Wallston et al. (1976). The procedure was modified slightly for this study. Subjects, instead of ranking all 10 values, were simply asked to indicate the four values most salient to them. If health was among the four selected, subjects were classified as high health value; otherwise they were designated as low health value.

Self-management effectiveness was operationalized as the subject's Total Self-Management score and his/her scores on the four subscales of the Self-Description Form developed by Thomas, Williams, and Olsen (1982).

Social support was operationalized as the subject's score on the Social Health subscale of the Medical History Questionnaire, Form A, of Rand's Health Insurance Study (Brook et al., 1979).

Stressful life events was operationalized as the subject's score on the Social Stress subscale of the Medical History Questionnaire, Form A, of Rand's Health Insurance Study (Brook et al., 1979).

Data Collection

The first phase of data collection took place during the summer of 1982 at the World's Fair in Knoxville, Tennessee. The investigator had received permission from the College of Nursing at The University of Tennessee to collect data at their Wellness Station located in the City of Knoxville Health Pavilion. Because the exhibit presented a variety of eye-catching displays, equipment, and demonstrations (e.g., cardiopulmonary resuscitation, Heimlich maneuver), there was a continual stream of passersby. A poster soliciting volunteers for the study directed individuals to the researcher's data collection area. Potential participants were given both verbal and written explanations of the study and an opportunity to ask questions about the project. As an incentive for participation, feedback by mail from the researcher on personal questionnaire results and/or the results of the study was guaranteed. The General Information Sheet and Consent Form used by the investigator can be found in Appendices B and C. Persons who agreed to participate then completed their questionnaires on-site. A small number of participants requested additional forms to give to friends or relatives in their home communities, to be returned by mail to the researcher. This phase of data collection produced 159 usable sets of questionnaires. Despite the clearly specified age parameters of the study, some persons under 35 or over 55 completed the forms. These persons were provided feedback on their results but their questionnaires were not tabulated in the study.

The second phase of data collection took place during the winter of 1982-83 at St. Mary's Medical Center, a 525-bed general hospital in Knoxville, Tennessee. Because the investigator sought a sample representative of all stages in the health-illness continuum and a variety of medical, surgical, and psychiatric disorders, all nursing units except the Obstetric Unit and the Acute Care units were visited regularly. After a review of the Kardex of the nursing unit, noting persons in the 35-55 age group, consultation with nursing staff of the unit insured that the potential participant was in appropriate condition to be approached. Persons who were incoherent, sedated, or in acute distress (e.g., pain, vomiting) were, for obvious reasons, excluded. Individuals deemed appropriate were visited by the researcher and provided with the same explanation of the study and incentive for participation as previously described. Forms were left with subjects for completion at their convenience over the course of the day, and collected by the researcher later in the same day or the next day. The researcher completed questionnaires for a small number of persons who could not mark their own responses due to visual impairment or due to limitations of mobility (e.g. due to recent surgery, intravenous infusions in the arm, arthritis, etc.). This phase of data collection produced 71 usable sets of questionnaires.

Because self-management effectiveness was a variable of great interest in the present study, the investigator sought to obtain participants who might be presumed to represent extremes of the

self-management continuum. Therefore, women who belong to the Knoxville Association of Women Executives and their husbands were invited to participate. Twelve usable sets of data were obtained from this source. Additionally, inpatients on the Alcoholism Treatment Unit at St. Mary's Medical Center and substance abusers on other nursing units of the hospital were asked to participate. Nine usable sets of questionnaires resulted from this effort. All persons who requested feedback on their personal results and/or the results of the study were provided with this information.

Because several of the instruments included no social desirability measure, the Social Desirability scale of the self-management instrument was used to screen for the tendency of persons to present themselves in an unduly favorable light. A score of 18 on this scale had been established by Thomas, Williams, and Olsen (1982) as the cutoff point for eliminating subjects from their initial subject pool. Using this criterion, only one subject, with social desirability score of 20, was excluded from the study.

Analysis

Initial Examination of Data

Univariate descriptive statistics for all independent variables and the dependent variable were examined for skewness and the presence of outliers. The most severely skewed distribution was noted for the dichotomous independent variable health value; 88% of the subjects in this midlife sample valued health highly. Since the

88-12 split between response categories closely approximated the 90-10 split generally recommended as the criterion for variable deletion (Tabachnick and Fidell, 1983), health value was deleted.

The dependent variable, current health status, was negatively skewed (mean 31.5, median 34, mode 40), because there were more persons in the sample in good health than in poor health. Skewed distributions of physical health measures are frequently reported in the literature; for example, Brook et al. (1979) reported that score distributions on all health status measures used in the Rand Health Insurance Study were skewed. When testing general populations, it appears that there are always more individuals in good health than there are persons with functional limitations or physical disabilities.

A second phase of initial data evaluation involved inspection for nonlinear relationships. Plots of each independent variable with the dependent variable were examined to detect departures from linearity. All relationships met the assumption of linearity.

The final step in preliminary data examination was scrutiny of the correlation matrix for multicollinearity. Although some multicollinearity was present, none of the independent variables were seriously redundant. The highest intercorrelation was between health habits and health self-management (.44).

Statistical Procedures

Statistical analysis of the data was performed using a variety of Statistical Analysis System (SAS) computer programs. Several

procedures were used to generate descriptive statistics. To test the five hypotheses, analysis of variance and t tests for independent samples were used. To examine relationships among the dependent and independent variables, Pearson product-moment correlation was used. Multiple regression analysis was used to ascertain the relative contribution of each of the independent variables toward prediction of health in middle adulthood.

Kerlinger and Pedhazur (1973) have asserted that multiple regression is often the best method of analysis of nonexperimental data. They listed several strengths of this method: "Perhaps the most important strength of the multiple regression approach is that it is closely related to the basic purpose of science, the explanation of natural phenomena. . . . Another strength of multiple regression is its ability to handle any number and kind of independent variables. . . . No elaboration is needed, either, or another strength: multiple regression analysis can do everything that analysis of variance can do--and more" (Kerlinger and Pedhazur, p. 444).

The backward elimination type of stagewise variable selection procedure was selected because this procedure allows all variables to interact together. Younger (1979) has pointed out that both forward selection and stepwise procedures can miss a key set of variables; for this reason, many statisticians prefer the backward elimination procedure. The procedure begins with all variables in the model, removing them one at a time according to which one gives the smallest

partial F value. The procedure concludes when all partial F's are significant at the specified significance level.

An alpha level of .05 was selected as the criterion of significance for all procedures except the stagewise regression. For the backward elimination procedure a .10 alpha level was used to determine significance. A more liberal level was chosen due to the exploratory nature of this procedure. Also, significance levels reported by the computer are valid only at the step in which a reasonable model has been found. In other steps, inclusion of redundant and/or ineffective predictors results in the error mean squares being inflated, and thus the F statistic being smaller than it should be.

CHAPTER IV

RESULTS AND DISCUSSION

Study findings are presented in four sections. The first section presents descriptive data for the sample as a whole and for individuals in various stages of the health-illness continuum in middle adulthood. The second section contains results of the tests of hypotheses. The third section presents the results of the correlation and regression analyses. A final section summarizes the major findings of the study.

Descriptive Statistics

Table 4 presents means, standard deviations, and minimum and maximum scores for all variables of the study except the demographic variables. The number of respondents varied due to missing data. All variables were roughly normally distributed with the exception of current health, stress, and genetic predisposition/grandparents, uncles, aunts. As previously discussed, current health was skewed because there were more persons in good health in the sample than in poor health. Stress was skewed because 32% of the sample had stress scores of 0, and another 22% had scores equal to or less than 38, the sample median. The low stress scores indicated that many subjects were not experiencing the kind of stressful life changes listed in the instrument. This was somewhat surprising, in view of the literature suggesting radical changes which often take place

TABLE 4. N, Means, Standard Deviations, and Minimum and Maximum Scores for Dependent and Independent Variables, Mid-life Subjects

Variable	<u>N</u>	<u>$\bar{X}$</u>	<u>SD</u>	<u>Min.</u>	<u>Max.</u>
Current Health Status	251	31.53	10.09	9	45
Total Self-management	244	21.10	9.12	-6.5	50
Work Self-management	244	3.41	3.75	-6.0	14
Social Self-management	244	7.07	3.40	-5.0	16
Health Self-management	244	3.65	4.58	-7.0	18
Leisure Self-management	244	7.04	2.62	0	16
Health Habits	251	3.16	1.12	0	5
Internal Locus of Control	240	25.69	5.04	6	36
Chance Locus of Control	240	16.59	5.65	6	31
Powerful Others Locus of Control	240	17.68	5.98	5	32
Stressful Life Events	247	52.45	52.06	0	237
Social Support	248	53.57	15.93	5.26	92.11
Genetic Predisposition, Parents, brothers, sisters	248	1.99	1.62	0	8

TABLE 4. (Continued)

Variable	<u>N</u>	<u>$\bar{X}$</u>	<u>SD</u>	<u>Min.</u>	<u>Max.</u>
Genetic Predisposition, Grandparents, uncles, aunts	248	2.96	2.93	0	20

during mid-life. The distribution of the genetic predisposition/grandparents, uncles, aunts variable was skewed because 91% of the subjects had only six, or fewer than six, grandparents, uncles, and aunts with diseases with a hereditary component, while a few subjects reported much higher numbers (e.g., 12, 16, 20).

Since most of the instruments had been used by other researchers, scores for this mid-life sample were compared to those obtained previously. Wallston and Wallston (1981) have reported means of 25.55 on internal locus, 16.21 on chance locus, and 19.16 on powerful others locus of control for 1287 healthy adults; comparable figures for this sample are 25.69 on internal locus, 16.59 on chance locus, and 17.68 on powerful others locus. Only the lower figure for powerful others locus differentiates the mid-life sample.

The Self-Description Form was initially normed on college students; mean scores obtained by Thomas, Williams, and Olsen (1982) were 22.9 for total self-management, 4.2 for work, 6.4 for social, 3.8 for health, and 8.4 for leisure self-management. The mid-life sample scored slightly lower on total self-management (21.1), on work (3.4), on health (3.7), and on leisure (7.0), but slightly higher on social self-management (7.1).

Rand Corporation researchers have obtained mean current health scores ranging from 27.6 to 32.9 in field tests involving several thousand adults (Ware, 1976); the mean for this sample (31.53) was comparable. The social support scores for mid-life adults were also comparable: Rand study mean: 51.59, mid-life sample mean: 53.57.

The Rand stress scores ranged from 0-379, in contrast to the 0-237 range for this sample, and their mean was 46.05. Since stress was skewed in the present sample, the Rand study mean might be more appropriately compared to the median (38) for mid-life subjects, rather than to the mean (52.45).

Descriptive Data for Individuals in Various Stages of the Health-Illness Continuum

Profiles of subjects in various stages of the health-illness continuum in middle adulthood are presented in this section. First, individuals scoring at the extremes of the distribution on current health status are compared. Percentage distributions of socio-demographic variables for subjects in optimum health (the upper 25% of the sample) and subjects in poor health (the lower 25% of the sample) appear in Table 5. The most striking differences between the healthiest subjects and the sickest subjects were observed in educational level, employment status, and income.

The majority (61.6%) of subjects in the healthiest group were college-educated, with 28.7% holding graduate degrees. There were no subjects in this group who had failed to complete high school. In contrast, 26% of subjects in the poor health group had not completed high school, and the majority of the remaining subjects had not gone beyond high school or technical/vocational school.

Although the number of persons employed full-time did not differ greatly between the two groups, the number of unemployed persons was much higher in the poor health group, and the number

TABLE 5. Percentage Distribution of Sociodemographic Variables for Mid-life Subjects in Best and Worst Health

Variable	Best Health ^a %	Worst Health ^b %
Gender		
Males	36.48	34.92
Females	63.51	65.08
Marital Status		
Never married	8.11	6.45
Married	79.73	82.23
Divorced/separated	8.11	9.68
Widowed	4.05	1.61
Educational Level		
Less than high school	0	26.23
High school	27.39	55.74
Technical/vocational school	10.95	11.48
BS/BA degree	32.87	4.92
MS/MA degree	19.18	1.64
EdD, PhD, MD, JD degree	9.59	0
Employment Status		
Not employed	13.51	31.75
Employed full-time	64.87	61.91
Employed part-time	21.62	6.35
Income ^c		
\$3500	7.04	25.00
\$10000	14.09	30.36
\$16000	16.90	17.86
\$22000	16.90	8.93
\$28000	15.49	8.93
\$34000	9.86	5.36
\$40000	8.45	1.79
\$46000	5.63	0
\$52000	1.41	1.79
\$58000	4.23	0

TABLE 5. (Continued)

Variable	Best Health ^a	Worst Health ^b
	%	%
Religion		
None	4.05	3.23
Belief, no church	21.62	20.97
Belief, some church	25.68	30.65
Belief, regular church	48.65	43.55
Occupation ^d		
Human service	12.33	4.76
Professional practice	10.96	0
Homemaking	10.96	23.81
Sales	8.22	9.52
Owner of business	8.22	4.76
Equipment repair	0	6.35
Clerical	4.11	6.35
Construction	1.37	4.76
Transportation	0	4.76
Management	5.48	4.76
Factory work	1.37	4.76

^aSubjects in "Best Health" were those whose current health scores were greater than or equal to 39, the upper 25% of the sample.

^bSubjects in "Worst Health" were those whose current health scores were less than or equal to 25, the lower 25% of the sample.

^cIncome figures are interval midpoints (e.g. represents the 0-7000 income range, 10000 represents the 7000-12999 range, etc.).

^dOnly the occupational categories indicated by the greatest percentages of respondents have been included in this table.

employed part-time was lower. It is probable that in some cases unemployment contributed to poor health, and it is likely that in other cases poor health resulted in departure from the work force.

There were higher percentages for the lower income categories in the poor health group, and higher percentages for the middle and upper income levels in the best health group. The greatest percentage of healthy subjects were engaged in professional practice, human service occupations, or homemaking. Other occupations of the healthy group included business ownership, teaching, sales, government service, and management. The greatest percentage of ill subjects were engaged in homemaking, sales, equipment repair, and clerical work. Other occupations of this group included construction, transportation (driving trucks, buses, taxis), factory work, and human services. No subjects in the "Worst Health" group were engaged in professional practice. Thus, it appeared that the healthiest subjects were more likely to be engaged in white-collar occupations, while the ill subjects were more likely to have blue-collar jobs. This finding is consistent with other studies.

Previous researchers have proposed a causal relation between occupational status and illness. Leigh (1982) has summarized the reasons for this relationship: (1) There is less exposure to toxic chemicals, drastic temperature changes, high levels of noise, heat, dust, fumes, and physical strain in higher status jobs; (2) The job satisfaction and self-esteem enjoyed by individuals in higher status positions contribute to their health; (3) The psychosocial

stress which results from low job satisfaction exacerbates the effects of toxic chemicals, physical strain, and other physical influences (in other words, there is an interaction between the first two factors).

Means and standard deviations for the independent variables of the study for subjects in optimum health and subjects in poor health appear in Table 6. Subjects in the healthy group had higher mean scores on total self-management and on all of the self-management subscales except social self-management. The difference of greatest magnitude was in health self-management mean score.

Subjects in the healthy group also had higher mean scores on health habits, internal locus of control, and social support, while scoring lower on chance locus, powerful others locus, stress, and genetic predisposition. All of these findings were in the predicted direction except the social self-management scores, and all will be discussed more thoroughly in subsequent sections of this chapter.

Comparisons by Severity of Illness

In order to examine the pattern of scores for subjects with different levels of morbidity, three groups were created by the researcher, and descriptive statistics were generated. Persons designated as "acutely ill" (n=22) had been hospitalized for surgery, infections, or other conditions of acute onset and relatively short duration. Persons designated as "chronically ill" (n=42) had conditions such as arthritis, hypertension, or diabetes, which were chronic

TABLE 6. N, Means, and Standard Deviations for Independent Variables for Mid-life Subjects in Best and Worst Health

Variable	Best Health ^a			Worst Health ^b		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD
Total Self-management	74	24.9	8.2	60	17.8	10
Work Self-management	74	4.1	3.7	60	2.5	3.8
Social Self-management	74	6.8	2.6	60	8.4	4.3
Health Self-management	74	6.1	3.9	60	0.8	4.3
Leisure Self-management	74	7.9	2.5	60	6.3	2.8
Health Habits	74	3.7	0.8	63	2.3	1.1
Internal Locus of Control	69	27.2	4.1	59	23.4	6.2
Chance Locus of Control	69	15.9	5.3	59	17.6	6.0
Powerful Others Locus of Control	69	14.9	5.6	59	20.6	5.8
Stressful Life Events	74	32.9	41.8	60	81.2	50.2
Social Support	74	55.0	16.3	60	49.3	16.5

TABLE 6. (Continued)

Variable	Best Health ^a			Worst Health ^b		
	<u>N</u>	<u>$\bar{X}$</u>	<u>SD</u>	<u>N</u>	<u>$\bar{X}$</u>	<u>SD</u>
Genetic Predisposition/parents, sibs.	72	1.4	1.2	63	2.9	1.9
Genetic Predisposition/grandparents, uncles, aunts	72	2.2	2.1	63	4.0	4.1

^aSubjects in "Best Health" were those whose current health scores were greater than or equal to 39.

^bSubjects in "Worst Health" were those whose current health scores were less than or equal to 25.

but not life-threatening. Persons designated as "severely ill" (n=26) were critically or terminally ill or quite severely impaired; illustrative diagnoses were leukemia, cancer, nephritis, Crohn's disease, pneumonia superimposed on chronic obstructive pulmonary disease, and serious cardiovascular conditions. Psychiatric patients were not included in this phase of data analysis. Table 7 presents the means and standard deviations for selected independent variables and the dependent variable current health status.

Although there was little difference in mean scores on internal locus or chance locus, there was a noticeable difference in powerful others locus of control scores across the three groups, with the severely ill group having the highest mean. This finding suggests that persons who are more seriously ill are more likely to view their health as controlled by doctors and other health professionals. However, they do not simultaneously abandon all belief in personal control.

A higher number of stressful life events was reported by chronically ill and severely ill subjects than by those who were acutely ill. Health self-management scores decreased with severity of illness, as did health habits and income. Whether these changes were precursors or byproducts of illness cannot be determined. Interestingly, social support scores were lower for the acutely ill and severely ill groups. Subjects in these groups were more likely to be hospitalized, while individuals with chronic conditions were not all hospitalized. (Some persons with chronic illnesses were,

TABLE 7. N, Means, and Standard Deviations for Dependent and Selected Independent Variables for Acutely Ill, Chronically Ill, and Severely Ill Mid-life Subjects

Variable	Acutely Ill			Chronically Ill			Severely Ill		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD
Current Health Status	22	28.3	7.1	42	23.3	9.1	25	16.6	8.0
Internal Locus of Control	18	23.9	5.8	41	24.7	4.1	24	24.4	7.3
Chance Locus of Control	18	18.3	6.9	41	17.1	6.7	24	18.3	6.1
Powerful Others Locus	18	18.1	6.8	41	19.7	4.9	24	22.2	5.6
Stressful Life Events	21	68.6	54.7	41	71.3	60.4	24	80.7	46.2
Health Self-Management	20	2.2	3.8	39	1.7	3.9	24	1.6	4.7
Health Habits	22	2.9	1.1	42	2.5	1.1	25	2.4	0.9
Social Support	21	49.9	18.4	41	53.0	15.8	24	48.7	17.9

in fact, ambulating around the World's Fair site and became part of the subsample which completed their questionnaires at the fair.)

The decreased social support scores for acutely ill and severely ill subjects can perhaps be partially explained by the reluctance of many persons to visit friends and relatives who are hospitalized. Since individuals in middle adulthood have more fear of death than any other age group, it is possible that they may avoid visiting their contemporaries who are ill because illness confronts them with their own mortality.

Comparisons of Good and Poor Self-Managers

An earlier investigation (Thomas, Williams, and Olsen, 1982) has shown that effective self-managers achieve a more nearly optimum balance across the four major aspects of life (physical health, interpersonal relationships, professional productivity, and leisure) than ineffective self-managers. Participants in the earlier study were all college students, and the majority were young adults (only 5% were 35 or over). In order to see if the same pattern of subscale scores would occur in this mid-life sample, groups scoring high and low on self-management were compared. High scorers were those subjects whose total self-management scores were equal to or greater than one standard deviation above the mean (scores ≥ 30.22 , $n=27$) and low scorers were those whose scores were equal to or less than one standard deviation below the mean (scores ≤ 11.98 , $n=41$). The pattern of scores for the two groups is presented in Figure 1.

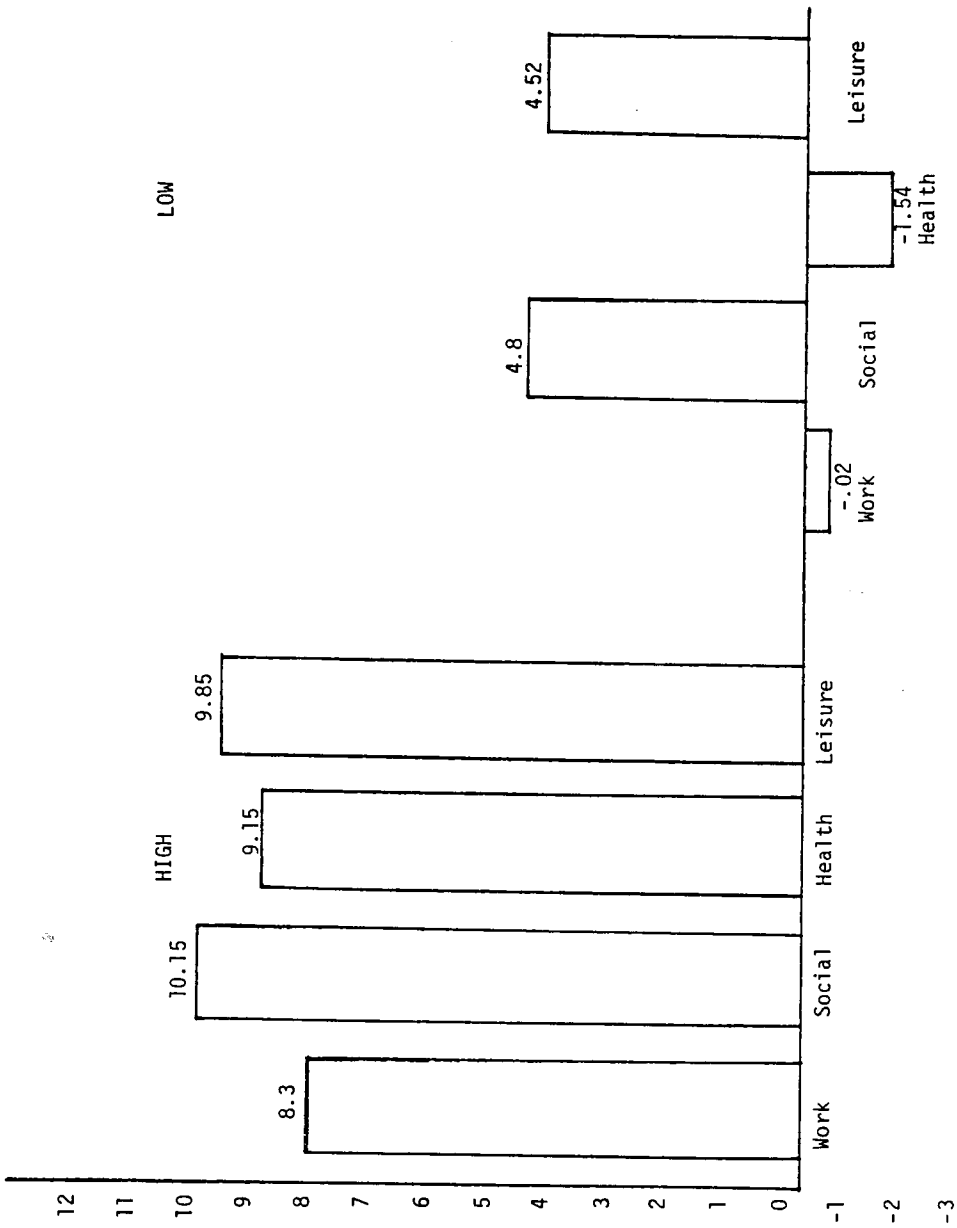


Figure 1. Patterns of Mean Scores for High and Low Self-Managers

NOTE: Possible range for Work, Social, and Health subscales: -20 to +20.
Possible range for Leisure subscale: 0 to 20.

The pattern of scores for the mid-life sample not only corroborated the findings of the previous study, but provided even more convincing evidence that good self-managers achieve a healthier balance across life activities. Consistent with the college student study, work and health scores were quite low for poor self-managers.

Differentiation of Work Self-Management and Type A Behavior

Because some items from the work subscale of the self-management instrument emphasize goal setting, goal attainment, and meeting deadlines, it is important to differentiate the concept of self-management from the hard-driving, clock-watching style of the Type A personality. Although further research is needed, two preliminary steps were taken by this investigator.

First, a subsample of 26 cardiac patients (i.e., individuals with hypertension, angina, supraventricular tachycardia, myocardial infarction, and other diagnoses) was identified, and descriptive statistics were generated. If the self-management instrument were tapping Type A personality, the cardiacs would presumably score high, particularly on the work self-management subscale. However, the cardiacs scored below the sample mean on total self-management ($\bar{x}=18.2$) and on work self-management ($\bar{x}=2.6$). Of course, this finding must be viewed with caution since illness may have altered behavioral patterns. Longitudinal study would be necessary to adequately address this kind of research question.

Next, a set of descriptive statistics was generated for individuals who were high scorers (in the top 25%) on work self-management. If the self-management instrument were tapping Type A, those who scored in the upper quartile on work self-management would be expected to have low scores on health, social, and leisure subscales, because "workaholics" neglect other life activities. Instead, high scorers on work were found to score high on all other aspects of self-management. They scored above the sample mean on health, social, and leisure self-management, and above the mean on current health status. Interestingly, they scored below the sample mean on stress.

These findings suggest that individuals who successfully manage their work-related activities also manage other aspects of their lives in a health-promoting fashion rather than in a manner deleterious to health. Responses to individual items of the work subscale indicate that good self-managers avoid over-extending themselves and avoid jumping from one task to another. Responses also indicate that they are less likely to procrastinate about unpleasant but necessary tasks, and less likely to lose work-related materials. Because their work is finished on time, they have more hours available for satisfying leisure activities.

Tests of Hypotheses

Analysis of variance was used to test the first hypothesis. The remaining hypotheses were tested with t tests for independent samples. These results are presented in Table 8. Because in several

TABLE 8. Means, Standard Deviations, and Results of t Tests of Hypotheses Concerning Current Health Status

	Group	Mean	SD	t	df	p
Hypothesis 2	Good Self-managers	36.3	9.9	4.15	73	.0001
	Poor Self-managers	26.9	9.1			
Hypothesis 3	Good Health Habits	36.5	6.1	4.21	28	.0002
	Poor Health Habits	27.3	9.2			
Low Stress, Good Health Habits		38.0	6.1	2.56	24	.0171
	Low Stress, Poor Health Habits	31.6	10.1			
High Stress, Good Health Habits		35.0	5.7	5.43	38	.0001
	High Stress, Poor Health Habits	21.1	8.6			
Hypothesis 4	Minimal Social Support	29.2	11.1	-1.23	67	.2212
	Optimal Social Support	32.4	9.5			
Low Stress, Minimal Social Support		35.6	8.5	-0.17	34	.8686
	Low Stress, Optimal Social Support	36.1	8.9			
High Stress, Minimal Social Support		23.0	9.8	-1.91	34	.0643
	High Stress, Optimal Social Support	29.7	10.5			
Hypothesis 5	Low Genetic Predisp., Good Habits	38.7	6.0	3.85	22	.0009
	Low Genetic Predisp., Poor Habits	28.2	10.4			
High Genetic Predisp., Good Habits		33.4	6.4	4.87	39	.0001
	High Genetic Predisp., Poor Habits	22.0	8.3			

instances the two groups being compared were not of equal size, the F' (folded F statistic) was inspected to ascertain equality of the two variances. In some cases where the variances of the groups were unequal, the t test under the assumption of unequal variances was computed.

Hypothesis One

The first hypothesis predicted that subjects who held internal locus of control beliefs would have better health status than persons with a chance locus of control or powerful others locus of control orientation. A one-way analysis of variance was used to compare high scorers (those whose scores were equal to or greater than one standard deviation above the mean) on internal locus, chance locus, and powerful others locus. The difference between groups on health status was significant ($F = 7.42$, $df = 2/69$, $p < .0012$). Duncan's New Multiple Range test was used for post hoc comparison of means and revealed that high scorers on internal locus had significantly better health status (current health mean score 36.0) than high scorers on chance locus (current health mean score 30.5) or high scorers on powerful others locus (current health mean 26.1). Thus, hypothesis one was supported.

Hypothesis Two

The second hypothesis predicted that effective self-managers would have better health status than ineffective self-managers. High scorers on total self-management (those whose scores were equal to or greater than one standard deviation above the mean: scores ≥ 30.22 ,

n=27) and low scorers on total self-management (those whose scores were equal to or less than one standard deviation below the mean: scores ≤ 11.98 , n=48) were selected for comparison.

The current health mean was 36.3 for high scorers on total self-management and 26.9 for low scorers. Comparison of the two means resulted in a statistically significant difference ($t = 4.15$, $p < .0001$). Therefore, hypothesis two was supported.

Hypothesis Three

The third hypothesis predicted that subjects with a preponderance of healthful habits would have better health status than persons with poor health habits, regardless of the level of stressful life events reported. Persons reporting regular adherence to four or five of the key health habits identified by Wiley and Camacho (1980) were compared with persons reporting two or fewer than two of these habits. The current health mean score for subjects with good habits (n=47) was 36.5, while the mean for subjects with poor habits (n=21) was 27.3. The difference between groups was significant ($t = 4.21$, $p < .0002$).

Next, level of stress was considered. Because stress was a skewed variable, it was inappropriate to create high and low stress groups by using the mean plus or minus one standard deviation. Instead, the upper 25% and the lower 25% of scorers on stressful life events were selected. Individuals with good health habits had better health than those with poor habits whether in a low stress condition ($t = 2.56$, $p < .0171$) or in a high stress condition

($t = 5.43$, $p < .0001$). The difference in mean health scores was greatest in the high stress group; the mean for subjects with good habits was 35, while the mean for subjects with poor habits was only 21.1. Thus, hypothesis three was supported.

Hypothesis Four

The fourth hypothesis predicted that subjects with adequate social support would have better health status than persons who did not have adequate social support, regardless of the level of stressful life events reported. Subjects with social support scores greater than or equal to 65.13 (the upper 25% of the sample) were compared to persons with social support scores less than or equal to 44.74 (the lower 25% of the sample). The current health mean scores for these two groups did not differ significantly, although the mean for the well-supported subjects was slightly higher. Under the low stress condition, the t test was also non-significant. Under the high stress condition, social support appeared more salient, as there was a greater difference in mean health scores in the predicted direction, but the t test was not significant at the .05 alpha level selected for this study. Therefore, hypothesis four was not supported.

Hypothesis Five

The final hypothesis predicted that subjects with a preponderance of healthful habits (as defined previously) would have better health status than persons with poor health habits, regardless of genetic predisposition. Persons reporting seven or more relatives

with diseases with a constitutional or hereditary component were compared with persons reporting two or fewer than two relatives with such diseases. These groups represented the upper 25% and the lower 25% of the sample.

Subjects with good health habits had better health than those with poor habits whether in the low genetic predisposition group ($t = 3.85, p < .0009$) or in the high genetic predisposition group ($t = 4.87, p < .0001$). Therefore, hypothesis five was supported.

Correlational and Regression Analyses

Pearson product-moment correlations were computed to examine relationships among the independent variables health locus of control, health habits, self-management effectiveness, stressful life events, social support, gender, level of education, income, genetic predisposition, and the dependent variable current health status. Dummy variables were created for gender and level of education. Gender was coded as 0 for males and 1 for females; three dummy variables were used for levels of education (less than high school, high school/vocational school, college degree, graduate degrees), with the advanced degree group being the criterion to which the other groups were compared. Total self-management scores plus scores on each of the self-management subscales (work, social, health, leisure) were used. The genetic predisposition score was a combination of genetic predisposition/parents, brothers, sisters and genetic predisposition/grandparents, uncles, aunts. The intercorrelation matrix appears in Appendix A.

Correlations of Independent Variables with Current Health Status

Correlations of independent variables with the dependent variable current health status are presented in descending order of magnitude in Table 9. The variables with the largest positive correlations were health habits and health self-management. Internal locus of control, income, total self-management, leisure self-management, and college education were also positively related to health status, although these relationships were moderate. Additionally, work self-management and social support were weakly correlated with the dependent variable.

Variables negatively related to health included less-than-high school education, powerful others locus, stressful life events, genetic predisposition, and social self-management. Weak inverse relationships were also noted between two other independent variables (high school/vocational education and chance locus of control) and current health status.

All of these relationships were consistent with a rational model of health except the negative correlation between social self-management and health status, which was contrary to prediction. There are several possible explanations for this phenomenon. Persons who were seriously ill tended to score high on this subscale, indicating that they frequently showed affection to others and seldom or never interrupted others, criticized others, reprimanded others, or dominated conversations. Since they are somewhat dependent upon

TABLE 9. Zero-order Correlations of Variables with Current Health Status

Variable	<u>r</u>	<u>p</u>
Health habits	.48	.0001
Health self-management	.43	.0001
Less-than-high school educ.	-.41	.0001
Powerful others locus	-.36	.0001
Stressful life events	-.36	.0001
Genetic predisposition	-.34	.0001
Internal locus	.32	.0001
Income	.31	.0001
Total self-management	.29	.0001
Leisure self-management	.27	.0001
College education	.25	.0001
Social self-management	-.22	.0004
High school/vocational educ.	-.21	.0010
Chance locus of control	-.19	.0039
Work self-management	.18	.0042
Social support	.15	.0216
Gender	-.02	.7937

significant others for either physical care or emotional support or both, it is logical to assume that they are fearful of alienating these helpers. Therefore, they exhibit a higher number of pleasing social behaviors than persons in better health.

Another possible explanation for the inverse relationship of social self-management and health status is that over-emphasis on social camaraderie may lead to neglect of health. Specifically, excessive alcohol intake, unwise eating, and inadequate rest could be attributed to such over-emphasis on the social sphere of life.

Correlations of Psychological and Behavioral Variables

Correlations of psychological variables with behavioral variables are presented in Table 10.

Table 10. Zero-Order Correlations of Psychological and Behavioral Variables

Variables	Internal Locus	Chance Locus	Powerful Locus
Total Self-management	.19 .0031	-.14 .0263	-.13 .0416
Health Self-management	.24 .0002	-.18 .0064	-.13 .0552
Health Habits	.17 .0097	-.09 .1807	-.14 .0302

Note: The first number in each entry is r and the second is p .

The pattern of relationships depicted in Table 10 suggests that the beliefs held by individuals regarding health locus of control are significantly related to their enactment of health-promoting behaviors. Internal locus was positively related to total self-management, health self-management, and health habits. In contrast, chance locus and powerful others locus, which are both external orientations, were negatively related to the behavioral variables. Review of the complete intercorrelation matrix (see Appendix) additionally revealed that chance locus and powerful others locus were correlated with each other ($r = .31$, $p < .0001$). Interestingly, both chance locus and powerful others locus were positively correlated with the less-than-high school education variable. Perhaps individuals who did not have the opportunity to complete high school developed a fatalistic belief system fairly early in life, perceiving that they had little control over what happened to them.

Correlations of Self-Management and Other Variables

Correlations of self-management variables with other independent variables of the study are presented in Table 11.

Total self-management scores were positively correlated with health habits, internal locus, social support, and income, and negatively correlated with chance locus, powerful others locus, stress, and the two variables indicating less than college education. Relationships between the health self-management subscale and these variables followed the same pattern, and most of these correlations were even stronger.

TABLE 11. Correlations of Self-management Variables with Other Independent Variables^a

Variables	Total Self-Mgmt.	Work Self-Mgmt.	Social Self-Mgmt.	Health Self-Mgmt.	Leisure Self-Mgmt.
Health Habits	.31 .0001	.18 .0054	-.11 .0890	.44 .0001	.21 .0008
Internal Locus	.19 .0031	.12 .0627	.01 .8315	.24 .0002	.08 .2068
Chance Locus	-.14 .0263	-.08 .2495	.02 .8124	-.18 .0064	-.08 .2462
Powerful Locus	-.13 .0416	-.03 .6955	-.03 .6793	-.13 .0552	-.14 .0342
Stress	-.16 .0121	-.21 .0011	.17 .0093	-.22 .0008	-.09 .1887
Social Support	-.22 .0007	.12 .0529	-.02 .7831	.17 .0076	.29 .0001
Income	.13 .0474	.10 .1396	-.13 .0525	.18 .0053	.20 .0028
Less-than-high school educ.	-.27 .0001	-.20 .0018	.10 .1291	-.33 .0001	-.22 .0005
High school/ vocational educ.	-.15 .0163	-.13 .0425	.07 .2670	-.16 .0125	-.14 .0359

^aGender, College Education, and Genetic Predisposition were omitted because most correlations with self-management variables were nonsignificant.

Note: The first number in each entry is *r* and the second is *p*.

Work self-management scores were positively correlated with health habits, internal locus, and social support, and negatively correlated with stress and the two variables representing less than college education. Positive relationships were noted between leisure self-management scores and health habits, social support, and income. Inverse relationships were observed between leisure self-management scores and powerful others locus, as well as the two variables for lower levels of education.

As previously noted, social self-management was negatively related to health and presents a strange pattern in Table 11. The only statistically significant positive relationship is noted between social self-management and stress, and may indicate that as level of stress increases individuals exhibit more pleasing social behaviors in an attempt to mobilize support. The relationship between social self-management and social support was nonsignificant, however.

Social self-management was negatively correlated with income and health habits. Interestingly, there were no significant relationships between social self-management and any of the locus of control variables.

Other relationships among variables of the study are evident from inspection of the intercorrelation matrix in the Appendix and will not be elaborated upon individually.

Regression Analyses

Next, the backward elimination type of stagewise variable selection procedure was performed between current health as the

dependent variable and habits, stressful life events, social support, gender, level of education, income, genetic predisposition, the four self-management subscales, and the three locus of control subscales as independent variables. In step 0, in which all variables were included in the model, the variable work self-management had the smallest partial F value and was therefore dropped in step 1. In subsequent steps leisure self-management, college education, chance locus, and social support were eliminated, in the order specified. The final model is presented in Table 12.

The strongest predictors positively related to health were internal locus of control and health habits. Additional predictors with positive coefficients were income, gender, and health self-management. The strongest predictors inversely related to health were powerful others locus of control, genetic predisposition, and less-than-high school education. Other predictors with negative coefficients were stress, social self-management, and high school/vocational education. All predictors retained in the model were significant at the .10 level.

R for regression was significantly different from zero: $F(11,203) = 24.67$, $p < .0001$. R^2 was .57, indicating that 57% of the variability in current health status could be predicted by the combination of independent variables which remained in the equation. Because there was some multicollinearity present in the data, the sizes of the standard errors of the regression coefficients were examined closely. None was too large relative to the size of the

TABLE 12. Regression Model for Dependent Variable Current Health
Obtained by Backward Elimination Procedure

Variable	b	β	F	Prob. F
Internal locus of control	0.4370	0.2181	21.84	.0001
Powerful others locus	-0.3652	-0.2166	19.99	.0001
Genetic predisposition	-0.4996	-0.1875	14.89	.0002
Health habits	1.8388	0.2047	13.69	.0003
Less-than-H. S. education	-7.9574	-0.2105	11.89	.0007
Income	0.0001	0.1381	9.56	.0023
Gender	3.4642	0.1678	9.24	.0027
Social self-management	-0.3272	-0.1102	5.29	.0225
Stressful life events	-0.0222	-0.1145	4.62	.0328
H. S./vocational education	-2.1221	-0.1052	3.81	.0524
Health self-management	0.2089	0.0947	2.75	.0990

$R = .75$

$R^2 = .57$

NOTE: b = unstandardized regression coefficients.

β = standardized regression coefficients.

coefficients. The largest standard error was 2.307 for the dummy variable less-than-high school education.

The final regression model thus met the criteria specified by Younger (1979): (1) all predictors significant; (2) small standard errors of the regression coefficients; (3) a large multiple coefficient of determination (R^2); (4) and theoretically or practically appealing variables. However, it was necessary to perform an analysis of residuals to ascertain that the model met the assumptions of multiple regression analysis, (i.e., the errors should be independent, normally distributed random variables with mean zero and common variance).

The SAS General Linear Model procedure was performed using the set of predictors selected by the stagewise procedure in order to obtain a printout of the observed and predicted y-values and residuals, and to obtain a residual plot. Visual inspection of the plot of residuals versus $\hat{y}$ revealed no unusual pattern or apparent violation of uniform scatter. The standard deviation of the residuals was 6.47, and 67.44% of the residuals were between ± 6.47 (thus within one standard deviation above or below the mean of zero); an additional 30.23% of the residuals were greater than ± 6.47 but not more than ± 12.94 (thus within two standard deviations above or below the mean); and a final 2.33% were greater than ± 12.94 but not more than ± 19.41 (thus within 3 SD's above or below the mean). These figures closely approximate a normal distribution. Therefore, the model met the assumptions for multiple regression analysis.

Summary of Findings

In this section, the findings regarding each independent variable are briefly summarized. Results of the present investigation are related to the findings of other researchers where possible.

Locus of Control

Internal locus of control proved to be the strongest predictor of good health in the regression analysis. Powerful others locus of control was almost as strong a predictor, but was inversely related to health. The chance orientation did not prove to be significant in the regression analysis because, as noted previously, this variable was correlated with powerful others locus of control.

Internal locus of control was positively related to behavioral variables such as health habits and health self-management, whereas both chance locus and powerful others locus were negatively related to health maintenance activities.

Related findings were recently reported by Rubenstein (1982), although she used different terminology for the three orientations. "Health vigilants" believed their own efforts were most critical to health maintenance (analagous to internal locus); "true believers" relied on prayer, faith in a higher power, and friendship (analagous to powerful others locus); and "fatalists" believed that their health was in the hands of fate and seemed passively resigned to suffering (chance locus). Of the three groups, vigilants were least likely to have a chronic illness, took fewest sick days, and

reported fewest physical and psychological symptoms. True believers took the most sick days and had more chronic illnesses. Fatalists were termed the most neurotic (moody, easily hurt, high-strung, and self-critical).

Health Habits

Consistent with the research of Belloc and Breslow (1972), Breslow and Enstrom (1980), and Wiley and Camacho (1980), individuals who had a preponderance of healthful habits had significantly better health status. Further, this study demonstrated that the relationship remained significant, even when there was high genetic predisposition or when subjects were experiencing high levels of stressful life events.

Self-Management Effectiveness

Self-management effectiveness proved to be a useful predictor of health, with the health self-management subscale appearing most important. Good self-managers had achieved a more nearly optimum balance across the four major aspects of life than poor self-managers. These findings provide support for the contention that a self-management approach can result in a higher degree of control over all components of one's life-style (Williams and Long, 1983).

There are similarities between Williams and Long's conceptualization of the self-managed individual and the self-controlled personality type described by Bayer et al. (1981). They reported that one of the most provocative findings of their longitudinal study

was that a calm, self-controlled, and responsible personality is conducive to health. They further noted that these personality traits, which were predictive of health in middle age, could be observed as early as 11-13 years of age. Parallels with Kobasa's (1979) concept of hardiness are also evident.

Stressful Life Events

Consistent with previous studies, stressful life events were inversely related to health status. However, stress was not as strong a predictor as the attitudinal and behavioral variables. Many earlier investigations have failed to give adequate consideration to the more enduring aspects of personality. Regardless of the stressful nature of life changes such as moving to a new residence, being involved in an accident, or changing jobs, it is reasonable to predict that their effects on health should be somewhat time-limited. In contrast, locus of control beliefs and health habits are more stable over time and therefore should account for more of the variance in health status.

The present study contradicted the research of Pesznecker and McNeil (1975), who found that the single best predictor of alterations in health status was the magnitude of life change. Conceptual and methodological flaws limit generalizability of their results, however.

Social Support

Social support was not a strong predictor variable in the present investigation. The surprisingly poor performance of this

predictor may be partially attributed to the nature of the instrument used. Since the Social Health scale developed by Brook et al., (1979) emphasized quantitative rather than qualitative aspects of interpersonal relationships (e.g., the number of close friends, how often the subject visited with friends/relatives, frequency of church attendance, etc.), perhaps the deeper, more important, elements of the construct were not adequately assessed. Pearlin, Menaghan, Lieberman, and Mullen (1981) have pointed out that the degree to which people can draw on their social networks for support depends on more than the extensiveness of the relationships or the frequency of interaction. The relationship qualities they found especially important were the exchange of intimate communications and the presence of solidarity and trust.

Another aspect of social support has been discussed previously: the decreased support reported by hospitalized individuals. Further research is needed to clarify the temporal dimension of this phenomenon (i.e., whether support decreased prior to the onset of symptoms and was perhaps an etiological factor in the illness, or whether support decreased due to hospital phobia on the part of friends and relatives of the ill persons). Another intriguing possibility is that hospitalized individuals, due to loneliness and physical discomforts, simply perceived decreased support when in reality there was no significant alteration.

Genetic Predisposition

Results of this investigation indicate that genetic predisposition should not be omitted from a multivariate model of health. The negative relationship between genetic predisposition and health status conformed to prediction and is consistent with other research. Kobasa et al., (1981) found that constitutional predisposition increased the likelihood of illness for persons experiencing stressful events.

However, inherited vulnerabilities should not be construed in a fatalistic manner. Kobasa et al., (1981) also reported that personality-based hardiness decreased the effects of constitutional predisposition and stressful events. In the present study good health habits mediated the effects of constitutional predisposition and stressful life events.

Gender

When descriptive data were examined, there was little difference between men and women in mean scores for the variables of the study. Gender did emerge as a significant predictor in the regression analyses, however. The regression coefficient for gender indicated that if everything else were held constant (that is, if mid-life males and females scored the same on habits and other variables), the females would score on the average three points higher on the current health scale. This finding is consistent with the greater potential of women for good health and longevity, despite

their well-known tendencies to report more symptoms and to visit doctors more frequently.

Level of Education

The findings of this study regarding educational level and health were consistent with previous research. The advanced degree group was the criterion to which other groups were compared. Persons with less than high school education were more likely to have poor health in comparison to better-educated subjects. Persons with only high school/vocational education also appeared disadvantaged but not as severely as the less educated group.

There are many possible explanations for the relationship between advanced education and good health. Perhaps educated individuals are more knowledgeable regarding risk factors and consequently become more involved in health maintenance activities. However, there are unanswered questions. Leigh (1982) has pointed out that the average level of education in the United States has risen sharply over the past several decades. However, there have been no dramatic declines in morbidity and mortality concomitant with the increased years of schooling.

Income

Income was a significant predictor in the expected direction in this study. Higher income was positively correlated with current health, health self-management, leisure self-management, health habits, social support, and college education, and negatively

correlated with less-than-high school education, high school/vocational education, and gender (i.e., women have lower incomes).

Interestingly, there were no significant relationships between income and any of the locus of control subscales or between income and stressful life events.

Health Value

Health value was not a useful predictor of health status in this investigation. This variable was badly skewed, having been overwhelmingly endorsed by the majority of the sample, and was therefore dropped after initial data inspection.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

This study has examined the relative importance of a variety of predictors of health status for Americans in middle adulthood. It is evident that the prediction of health is an extremely complex matter, involving psychological, environmental, genetic, behavioral, and sociodemographic factors.

Consistent with previous studies, genetic predisposition, stressful life events, education, and income contributed to the variance in health status in this investigation. These factors are not readily modifiable for individuals in middle adulthood. However, the results of this study lend credence to the growing body of evidence that the modifiable attitudinal and behavioral variables are indeed as salient, and perhaps more salient, to health than noxious environmental factors or organismic factors which are uncontrollable. Particularly important to individuals in middle adulthood is the finding that even in cases with high genetic predisposition to disease, good health habits appear to make a significant difference.

Among the strengths of the present study were: (1) the diversity of the sample obtained by collecting data at the 1982 World's Fair; (2) use of state-of-the-art instrumentation; and (3) selection of relevant variables which together accounted for 57% of the variance in health status.

The findings of this study have implications for future research as well as for health teaching and counseling. These issues will now be addressed.

Implications for Future Research

It is evident from the correlational nature of this study that causality cannot be inferred; however, these results provide impetus for further investigations of an experimental nature to discover whether or not the variables are causally linked.

The combination of independent variables selected for this study accounted for a respectable amount of the variance in health; in fact, the R^2 obtained was of greater magnitude than those reported for similar studies. However, there was still a significant amount of unexplained variation. Further research is needed to discover other important variables affecting health status.

Many questions regarding health require longitudinal study. Some aspects of personality and life-style are fairly stable over time during adulthood, but assessments at various points in the life cycle are needed to clarify the effects of periodic fluctuations in stress level, social support, changes in attitudes and habits, and other pertinent alterations in status.

Although some of the findings of this study might be presumed to have generalizability beyond the mid-life age group, future research with adults of other ages is necessary to confirm such an assumption. An adolescent version of the self-management instrument

(Dukes, 1983) is now being developed, and replication of the present investigation with an adolescent sample would also provide much useful data.

Implications for Health Teaching and Counseling

It is the assumption of this investigator that health attitudes and behaviors are learned and are amenable to change if appropriate external and/or self-reinforcers are applied.

Two appropriate intervention programs suggested by this study are internalization training and promotion of a self-managed life-style. Such programs can be implemented by nurses who practice in a variety of inpatient and outpatient settings, including health clinics, hospitals, mental health centers, and public health departments. In these settings, clients in distress present their symptoms. Because they are in distress, there is usually some degree of willingness to try to make changes in their lives. Within the context of a therapeutic relationship, health-enhancing changes can be facilitated.

Janis (1983) has conducted a program of research at Yale University designed to explain when, how, and why people succeed in adhering to difficult decisions such as giving up smoking or going on a diet, as a result of their verbal exchanges with a counselor. He views the referent power of the counselor as a key variable in the counseling process. He proposes three critical phases in almost every helping relationship, which involve acquiring, using, and retaining referent power. During the first phase, the counselor must

dissipate the client's initial reticence or mistrust, convey positive regard and understanding, and respond to the client's disclosures with acceptance statements. In the second phase the counselor can use his or her motivating power to encourage the client to carry out a stressful course of action, such as staying on a diet. Eliciting commitment from the client is helpful. Often, formal written contracts are developed. In the third phase, as termination approaches, the counselor must assist the client to internalize the norms which have been sponsored by the counselor.

Janis emphasizes that behavior change is more likely to be maintained when clients attribute the cause of the change to themselves rather than to an outside agent. Therefore he recommends that the counselor make a frank statement about the problem of dependency in the initial session and set up the ultimate goal of self-reliance. Then step-by-step guidance in self-talk about personal responsibility can be given.

In addition to these recommendations regarding the counselor-client relationship, Janis and his associates report success with creating client partnerships for weight reduction and smoking cessation. The partnerships are created by meeting weekly with the partners and instructing them to telephone each other daily for five weeks. Long-term followup interviews at one year and 10 years post-treatment showed that clients in such partnerships continued over a long period of time to be significantly more successful in abstaining from smoking.

Training for Internality

Wallston and Wallston (1978), on the basis of their research on locus of control, recommended that health educators involve themselves in training patients to adopt more internal beliefs. Reports of successful internality training programs have begun to appear in the literature recently.

Arakelian (1980) asserted that the potential for changing an individual's locus orientation always exists because new experiences can be introduced that alter previous patterns of success/failure. She reviewed three modalities for promoting internality which are currently advocated: (1) reconstrual of stimuli (e.g., assisting clients to view a health problem as a challenge rather than as a burden, punishment, or stigma); (2) an action-oriented approach (e.g., teaching a client how to formulate goals and develop behavioral strategies, with the end result being enhanced belief in internal locus); and (3) a counseling approach (e.g., challenging externally oriented verbalizations and rewarding internally oriented ones).

Promotion of a Self-Managed Life-Style

Williams and Long (1983) have pointed out that most people do not reach their true potential for personal change for several reasons: (1) belief that changing themselves would not improve the circumstances of their lives; (2) belief that they lack the ability to change; (3) insufficient knowledge about how to change. These

factors can be addressed by internalization training and by teaching individuals skills of self-management which they can apply to specific target behaviors.

Toward a Self-Managed Life Style (Williams and Long, 1983) presents a systematic approach to the acquisition of self-management skills. Key elements are assessment of priorities, development of measurable daily goals and daily action plans, recording of behavior, and provision of appropriate rewards for performance of target behaviors. Nurses could teach the basic principles of the process to their clients, and/or assign specific sections of the book for clients to read for homework between clinic appointments or counseling sessions.

Since the present study provided additional validation of the importance of the health habits identified in the Alameda County Study (Wiley and Camacho, 1980), clients could be directed toward the segments of the Williams and Long text dealing with weight loss, exercise programs, smoking cessation, and controlled drinking.

Hunt et al. (1979) suggest that persons attempting to develop and maintain new health habits should: (1) keep the new behaviors simple; (2) use cues for the new habits which are compatible with one's daily routine; (3) have cues for compliance in close contiguity with the habit that is to be developed; and (4) practice the new behaviors frequently. Suggestions are also offered for discouraging unhealthful habits.

Prevention Programs

Up to this point, discussion has focused on persons who are experiencing some unpleasant symptoms and who have voluntarily sought assistance. However, a wellness philosophy mandates prevention programs for the general population.

Nurses and other health professionals embarking on preventive health endeavors must be aware that individuals who have no health problems at the moment are often hard to motivate toward life-style changes; they are receiving considerable immediate reinforcement from their habitual behaviors (e.g., overeating, smoking), and the consequences seem remote to them. Simply imparting factual knowledge to such individuals about the consequences of their behavior is rarely sufficient.

Haggerty (1977) cited the disappointing results of health education efforts such as media campaigns about smoking or wearing seat belts. He recommended a variety of alternatives to traditional health education, including: (1) working more closely with self-help and other social groups; (2) integrating media efforts with personal followup or call-in questions to local panels of experts; and (3) establishment of human resource centers where people could receive a variety of services including health, recreation, education, child care, and other needed services. He further asserted that for some problems behavior change requires authoritative means, such as speed limits, air bags, and taxes on tobacco and alcohol.

One promising modality presently used in some wellness centers involves health risk appraisal combined with supportive education.

Such appraisals provide clients with an estimate of health age relative to chronological age, an assessment of risk factors that may lead to health problems, and specific recommendations for behavioral changes. Doerr and Hutchins (1981) reviewed the literature regarding health risk appraisals and concluded that:

1. Health risk appraisal appears to be more effective in motivating change with older rather than younger persons.
2. Individuals given a health risk assessment with a supportive educational process do better than persons who simply receive the results of the risk appraisal.
3. Individuals who receive only the appraisal and results without supportive education do better than persons who receive no health risk appraisal.
4. Participants in health risk appraisals are self-selected, healthier than the general population, and possibly more motivated to make recommended changes.

Summary

A variety of approaches for facilitating attitudinal and behavioral changes have been suggested. It is vitally important that health professionals maintain a sense of optimism regarding their clients' change potential. The recent research report by Schachter (1982) provides cynical professionals with food for thought. A large body of clinical literature showing treatment failure and recidivism had led professionals to view smoking and obesity as markedly

resistant to long-term modification. However, Schachter found that many laypersons successfully cured themselves without the benefit of professional help. It appears that motivated individuals are indeed capable of making quite radical changes in their habitual behaviors. The mid-life crisis of finitude may provide the necessary impetus for some individuals to embark on a program of life-style modification which will enhance the quality of their remaining years.

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LIST OF REFERENCES

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APPENDICES

APPENDIX A

TABLE 13. Intercorrelation Matrix for Dependent and Independent Variables Mid-Life Health Study (N=251)

Variables	CURRHEAL	TOTSM	WORKSM	SOCISM	HEALSM	LEISSM	HABITS	IHL	CHLC	PHLC	STRESS	SOCSUPP	GENDER	INCOME	EDUCLHS	EDUHSVO	EDUCOLL	GENETPRE
CURRHEAL																		
TOTSM	.29 .0001																	
WORKSM	.18 .0001	.67 .0001																
SOCISM	.22 .0001	.48 .0001	.75 .0001															
HEALSM	.43 .0001	.27 .0001	.54 .0001	.75 .0001														
LEISSM	.27 .0001	.43 .0001	.27 .0001	.54 .0001	.75 .0001													
HABITS	.48 .0001	.27 .0001	.54 .0001	.75 .0001	.54 .0001	.75 .0001												
IHL	.17 .0076	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001											
CHLC	.10 .0001	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001										
PHLC	.10 .0001	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001	.18 .0001									
STRESS	.17 .0076	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001	.18 .0001	.17 .0076								
SOCSUPP	.17 .0076	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001	.18 .0001	.17 .0076	.05 .0001							
GENDER	.17 .0076	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001	.18 .0001	.17 .0076	.05 .0001	.17 .0076						
INCOME	.17 .0076	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001	.18 .0001	.17 .0076	.05 .0001	.17 .0076	.05 .0001					
EDUCLHS	.17 .0076	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001	.18 .0001	.17 .0076	.05 .0001	.17 .0076	.05 .0001	.17 .0076				
EDUHSVO	.17 .0076	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001	.18 .0001	.17 .0076	.05 .0001	.17 .0076	.05 .0001	.17 .0076	.05 .0001			
EDUCOLL	.17 .0076	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001	.18 .0001	.17 .0076	.05 .0001	.17 .0076	.05 .0001	.17 .0076	.05 .0001	.17 .0076		
GENETPRE	.17 .0076	.28 .0001	.18 .0001	.11 .0001	.054 .0001	.009 .0001	.0009 .0001	.35 .0001	.18 .0001	.17 .0076	.05 .0001	.17 .0076	.05 .0001	.17 .0076	.05 .0001	.17 .0076	.05 .0001	

NOTE: The first number in each entry is r and the second is p .
Abbreviations for variables are as follows:
CURRHEAL = Current health
TOTSM = Total self-management
WORKSM = Work self-management
SOCISM = Social self-management
HEALSM = Health self-management
LEISSM = Leisure self-management
HABITS = Health habits
IHL = Internal locus of control
CHLC = Chance locus of control
PHLC = Powerful others locus of control
STRESS = Stressful life events
SOCSUPP = Social support
GENDER = Gender
INCOME = Income
EDUCLHS = Less-than-high school education
EDUHSVO = High School/vocational education
EDUCOLL = College education
GENETPRE = Genetic predisposition

APPENDIX B

GENERAL INFORMATION

The purpose of this research project is assessment of health and lifestyle factors of American adults. You will be asked questions about health attitudes and behaviors. Following completion of the questionnaire packet, there is no further involvement required. All responses will be held in confidence by the researcher. A code number will be assigned to your questionnaires, and records of names and numbers will be kept in a file separate from the questionnaires. Only statistical summaries of the data will be used. As an incentive for participation in this project, feedback from the researcher on your personal questionnaire results and/or the results of the study will be guaranteed. You may stop your participation in this project at any time and/or refuse to answer any specific question, without incurring any penalty. You may not benefit directly from the project, beyond receiving the feedback on your results. Further, your participation does not involve any risk. The researcher will respond to any questions regarding this project or your participation in it. Questions may be addressed to:

Sandra P. Thomas, Doctoral Student
Department of Educational and
Counseling Psychology
The University of Tennessee
Knoxville, Tennessee 37916
Telephone: 615/974-5131
or 615/690-8216

APPENDIX C

PARTICIPANT CONSENT FORM

I understand that the purpose of this study is to learn more about health and lifestyle factors of American adults, and that my participation involves completion of a packet of questionnaires.

I understand that all responses will be held in confidence by the researchers, with code numbers instead of names identifying the completed questionnaires.

I understand that feedback on my personal questionnaire results and/or the results of the study will be available from the researcher if desired.

I understand that I may withdraw from participation in this project at any time and/or refuse to answer specific questions, without incurring any penalty.

I understand that I may contact the researcher at any time if I have further questions about the project or about my participation in it.

Signature_____

Date_____

APPENDIX D

The following questions are designed to give us some basic information on persons taking our survey. Please circle the number corresponding to the answer most descriptive of you, or fill in the blank. Please answer all questions. Thank you.

A. What is your sex?

1. Female
2. Male

B. What is your age? _____

C. What is your height? _____

D. What is your weight? _____

E. What is your marital status?

1. never married
2. married
3. divorced/separated
4. widowed

F. What is your educational level?

1. less than high school
2. high school graduate or GED
3. technical/vocational school certificate or equivalent
4. BS/BA degree
5. MS/MA degree
6. EdD/PhD/MD/JD degree

G. What is your employment status?

1. not presently employed
2. employed full-time
3. employed part-time (10 hours per week or less)
4. employed part-time (11-20 hours per week)
5. employed part-time (21-30 hours per week)
6. employed part-time (over 30 hours but less than 40 hours per week)

H. What is your annual income?

1. below \$7,000
2. \$7,000-12,999
3. \$13,000-18,999
4. \$19,000-24,999
5. \$25,000-30,999
6. \$31,000-36,999
7. \$37,000-42,999
8. \$43,000-48,999
9. \$49,000-54,999
10. \$55,000+

I. What is your occupation?

1. professional practice (law, medicine, therapy)
2. owner of business firm
3. clerical (secretarial, etc.)
4. academic position, college
5. academic position, K-12
6. human service (nursing, social work, etc.)
7. sales, sales promotion
8. technical/engineering
9. outdoor (farming, forestry)
10. art/music/dance
11. management, planning
12. finance, banking
13. government service
14. media career (radio, TV, etc.)
15. research
16. homemaking
17. construction
18. equipment repair, servicing
19. transportation (bus, cab, etc.)
20. other (please specify): _____

J. What is your race?

1. White American, Caucasian
2. Black American, Negro
3. Native American, Indian
4. Spanish Surnamed American, Chicano, Puerto Rican
5. Oriental American, Asian
6. Other

K. What is your level of religious involvement?

1. none, no belief in a higher power
2. belief in higher power but no church involvement
3. belief in higher power, some church involvement
4. belief in higher power, regular church involvement

APPENDIX E

ID No. _____

VALUE SURVEY

Below you will find a list of ten values, listed in alphabetical order. We would like for you to consider them in terms of their importance to YOU, as guiding principles in YOUR life.

Study the list carefully and pick out the four values which are the most important for you. Then place a check mark (✓) in the space to the left of each of these four values. Please do not select more than four.

- _____ A COMFORTABLE LIFE (a prosperous life)
- _____ AN EXCITING LIFE (a stimulating, active life)
- _____ FREEDOM (independence, free choice)
- _____ HAPPINESS (contentedness)
- _____ HEALTH (physical and mental well-being)
- _____ INNER HARMONY (freedom from inner conflict)
- _____ PLEASURE (an enjoyable, leisurely life)
- _____ SELF-RESPECT (self-esteem)
- _____ A SENSE OF ACCOMPLISHMENT (lasting contribution)
- _____ SOCIAL RECOGNITION (respect, admiration)

APPENDIX F

ID No. _____

FAMILY BACKGROUND INFORMATION

Answer each question by listing the correct number in the blank:

1. How many of your parents, brothers, or sisters had a heart attack before age 40? _____
2. How many of your grandparents, uncles or aunts had a heart attack before age 40? _____
3. How many of your parents, brothers, or sisters have (or had) high blood pressure? _____
4. How many of your grandparents, uncles or aunts have (or had) high blood pressure? _____
5. How many of your parents, brothers or sisters got diabetes before age 25? _____
6. How many of your grandparents, uncles or aunts got diabetes before age 25? _____
7. How many of your parents, brothers or sisters got diabetes after age 25? _____
8. How many of your grandparents, uncles or aunts got diabetes after age 25? _____
9. How many of your parents, brothers, or sisters have (or had) cancer? _____
10. How many of your grandparents, uncles or aunts have (or had) cancer? _____

APPENDIX G

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. When 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	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. If I get sick, it is my own behavior which determines how soon I get well again.	1	2	3	4	5	6
2. No matter what I do, if I am going to get sick, I will get sick.	1	2	3	4	5	6
3. Having regular contact with my physician is the best way for me to avoid illness.	1	2	3	4	5	6
4. Most things that affect my health happen to me by accident.	1	2	3	4	5	6
5. Whenever I don't feel well, I should consult a medically trained professional.	1	2	3	4	5	6
6. I am in control of my health.	1	2	3	4	5	6
7. My family has a lot to do with my becoming sick or staying healthy.	1	2	3	4	5	6
8. When I get sick I am to blame.	1	2	3	4	5	6
9. Luck plays a big part in determining how soon I will recover from an illness.	1	2	3	4	5	6
10. Health professionals control my health.	1	2	3	4	5	6
11. My good health is largely a matter of good fortune.	1	2	3	4	5	6
12. The main thing which affects my health is what I myself do.	1	2	3	4	5	6
13. If I take care of myself, I can avoid illness.	1	2	3	4	5	6
14. When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.	1	2	3	4	5	6
15. No matter what I do, I'm likely to get sick.	1	2	3	4	5	6
16. If it's meant to be, I will stay healthy.	1	2	3	4	5	6
17. If I take the right actions, I can stay healthy.	1	2	3	4	5	6
18. Regarding my health, I can only do what my doctor tells me to do.	1	2	3	4	5	6

APPENDIX H

In the course of your personal and professional activities each week, you probably engage in many different behaviors. We want you to indicate how frequently you engage in each of the behaviors listed below by using the following distinctions:

- Never--Under no circumstances do you ever engage in the behavior.
- Rarely--You engage in the behavior a few times a year.
- Periodically--You engage in the behavior a few times a month.
- Regularly--You engage in the behavior several times a week.
- Always--You engage in the behavior every time an opportunity presents itself.

CIRCLE the number in the column that BEST corresponds to your level of participation in each behavior.

We would also like for you to indicate how your level of participation, or nonparticipation, in each behavior (ranging from never to always) makes you feel about yourself. If your level of participation contributes to good feelings about yourself, circle the + in the column labeled "Value"; if your level of participation contributes to bad feelings, circle the - in the "Value" column; and if your level of participation has no effect on the way you feel about yourself, circle the 0 in the "Value" column. For example, if your "regularly" drinking coffee yourself, circle the 0 in the "Value" column. For example, if you're "regularly" drinking coffee

- (a) contributes to good feelings about yourself, put this: - 0 +
- (b) contributes to bad feelings about yourself, put this: - 0 +
- (c) has no effect on the way you feel about yourself, put this: - 0 +

BEHAVIOR	LEVEL OF PARTICIPATION					VALUE
	Never	Rarely	Period- ically	Regu- larly	Always	
1. Drinking coffee	0	1	2	3	4	- 0 +
2. Filing work materials	0	1	2	3	4	- 0 +
3. Rambling in conversation	0	1	2	3	4	- 0 +
4. Flossing my teeth	0	1	2	3	4	- 0 +
5. Creating art objects	0	1	2	3	4	- 0 +
6. Speaking softly	0	1	2	3	4	- 0 +
7. Over-extending myself in work commitments	0	1	2	3	4	- 0 +
8. Keeping my word	0	1	2	3	4	- 0 +
9. Using hard drugs	0	1	2	3	4	- 0 +
10. Attending art and cultural exhibits	0	1	2	3	4	- 0 +
11. Donating to all good causes	0	1	2	3	4	- 0 +
12. Going to bed early	0	1	2	3	4	- 0 +
13. Attaining work goals	0	1	2	3	4	- 0 +
14. Criticizing others behind their back	0	1	2	3	4	- 0 +
15. Getting adequate rest at night	0	1	2	3	4	- 0 +
16. Playing a musical instrument	0	1	2	3	4	- 0 +
17. Aiding stranded motorists on the interstate	0	1	2	3	4	- 0 +
18. Whistling	0	1	2	3	4	- 0 +
19. Jumping from one task to another	0	1	2	3	4	- 0 +
20. Initiating conversation	0	1	2	3	4	- 0 +

BEHAVIOR	LEVEL OF PARTICIPATION					VALUE
	Never	Rarely	Period- ically	Regu- larly	Always	
21. Eating excessively	0	1	2	3	4	- 0 +
22. Attending concerts	0	1	2	3	4	- 0 +
23. Yawning	0	1	2	3	4	- 0 +
24. Completing work assignments on time	0	1	2	3	4	- 0 +
25. Interrupting others during conversation	0	1	2	3	4	- 0 +
26. Participating in vigorous physical activity	0	1	2	3	4	- 0 +
27. Writing creatively (e.g., poetry, short stories)	0	1	2	3	4	- 0 +
28. Eating only nutritious food	0	1	2	3	4	- 0 +
29. Drinking tea	0	1	2	3	4	- 0 +
30. Putting off unpleasant, but necessary, tasks	0	1	2	3	4	- 0 +
31. Listening closely to others' comments	0	1	2	3	4	- 0 +
32. Smoking cigarettes	0	1	2	3	4	- 0 +
33. Reading leisurely (e.g., poetry, fiction, magazines)	0	1	2	3	4	- 0 +
34. Helping anyone needing help	0	1	2	3	4	- 0 +
35. Crossing legs	0	1	2	3	4	- 0 +
36. Setting work goals	0	1	2	3	4	- 0 +
37. Dominating conversation	0	1	2	3	4	- 0 +
38. Drinking water	0	1	2	3	4	- 0 +
39. Gardening/working in the yard	0	1	2	3	4	- 0 +
40. Doodling on paper	0	1	2	3	4	- 0 +
41. Losing work related materials	0	1	2	3	4	- 0 +
42. Encouraging others	0	1	2	3	4	- 0 +
43. Eating junk food	0	1	2	3	4	- 0 +
44. Engaging in outdoor nature activities	0	1	2	3	4	- 0 +
45. Exercising more than twice a day	0	1	2	3	4	- 0 +
46. Shifting feet	0	1	2	3	4	- 0 +
47. Reading course/professionally related materials	0	1	2	3	4	- 0 +
48. Reprimanding others	0	1	2	3	4	- 0 +
49. Doing stretching exercises	0	1	2	3	4	- 0 +
50. Engaging in a hobby not otherwise listed in questionnaire	0	1	2	3	4	- 0 +
51. Stopping a mugging	0	1	2	3	4	- 0 +
52. Watching movies on TV	0	1	2	3	4	- 0 +

BEHAVIOR	LEVEL OF PARTICIPATION					VALUE
	Never	Rarely	Period- ically	Regu- larly	Always	
53. Failing to meet deadlines	0	1	2	3	4	- 0 +
54. Showing affection toward others	0	1	2	3	4	- 0 +
55. Gulping meals	0	1	2	3	4	- 0 +
56. Dancing	0	1	2	3	4	- 0 +

APPENDIX I

ID No. _____

RAND SCALES

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

There 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.

SOME OF THE STATEMENTS MAY LOOK OR SEEM LIKE OTHERS, BUT EACH STATEMENT IS DIFFERENT, AND SHOULD BE RATED BY ITSELF.

	Defi- nitely <u>True</u>	Mostly <u>True</u>	Don't <u>Know</u>	Mostly <u>False</u>	Defi- nitely <u>False</u>
A. According to the doctors I've seen, my health is now excellent	5	4	3	2	1
B. I try to avoid letting ill- ness interfere with my life	5	4	3	2	1
C. I seem to get sick a little easier than other people	5	4	3	2	1
D. I feel better now than I ever have before	5	4	3	2	1
E. I will probably be sick a lot in the future	5	4	3	2	1
F. I never worry about my health	5	4	3	2	1
G. Most people get sick a little easier than I do	5	4	3	2	1
H. I don't like to go to the doctor	5	4	3	2	1
I. I am somewhat ill	5	4	3	2	1
J. In the future, I expect to have better health than other people I know	5	4	3	2	1

	<u>Defi- nitely True</u>	<u>Mostly True</u>	<u>Don't Know</u>	<u>Mostly False</u>	<u>Defi- nitely False</u>
K. I was so sick once I thought I might die	5	4	3	2	1
L. I'm not as healthy now as I used to be	5	4	3	2	1
M. I worry about my health more than other people worry about their health	5	4	3	2	1
N. When I'm sick, I try to just keep going as usual	5	4	3	2	1
O. My body seems to resist illness very well	5	4	3	2	1
P. Getting sick once in a while is a part of my life	5	4	3	2	1
Q. I'm as healthy as anybody I know	5	4	3	2	1
R. I think my health will be worse in the future than it is now	5	4	3	2	1
S. I've never had an illness that lasted a long period of time	5	4	3	2	1
T. Others seem more concerned about their health than I am about mine	5	4	3	2	1
U. When I'm sick, I try to keep it to myself	5	4	3	2	1
V. My health is excellent	5	4	3	2	1
W. I expect to have a very healthy life	5	4	3	2	1
X. My health is a concern in my life	5	4	3	2	1
Y. I accept that sometimes I'm just going to be sick	5	4	3	2	1

	<u>Defi-</u> <u>nately</u> <u>True</u>	<u>Mostly</u> <u>True</u>	<u>Don't</u> <u>Know</u>	<u>Mostly</u> <u>False</u>	<u>Defi-</u> <u>nately</u> <u>False</u>
Z. I have been feeling bad lately	5	4	3	2	1
AA. It doesn't bother me to go to a doctor	5	4	3	2	1
BB. I have never been seriously ill	5	4	3	2	1
CC. When there is something going around, I usually catch it	5	4	3	2	1
DD. Doctors say that I am now in poor health	5	4	3	2	1
EE. When I think I am getting sick, I fight it	5	4	3	2	1
FF. I feel about as good now as I ever have	5	4	3	2	1

In the next section, read each question carefully and circle one answer.

1. How often do you eat breakfast? (Circle one)

Almost every day.	1
Sometimes	2
Rarely or never	3

2. How often do you eat something in between your regular meals?

About 3 times a day or more	1
About twice a day	2
Maybe once a day.	3
Occasionally, not every day	4
Rarely or never eat between meals	5

3. During the past 24 hours, did you eat any of the foods listed below? Circle one number on each line. If you ate even a little, circle "1" for "Yes." If you did not eat it at all, circle "2" for "No."

	<u>Yes</u>	<u>No</u>
A. Sugar-coated cereal	1	2
B. Cookies, cake, pie, doughnuts	1	2
C. Soda pop, cola drink	1	2
D. Peanut butter	1	2

	<u>Yes</u>	<u>No</u>
E. Jelly or honey	1	2
F. Raisins, figs, prunes	1	2
G. Chewing gum	1	2
H. Candy	1	2
I. Sugar (table sugar)	1	2

4. If you ate any of the foods listed in question 3 in the past 24 hours, did you eat them only during your regular meals, or did you eat them only between your regular meals, or did you eat them both during and between meals?

(Circle one)

Regular meals only.	1
Between meals only.	2
Both during meals and between meals	3
Did not eat any of these foods.	4

5. Are you on any kind of special diet--either to lose weight, or for reasons of health?

Yes 1--Now answer A,B,C,D,E

No. 2--Go to question 6

- A. Why are you on a special diet? (Circle one number on each line)

	<u>Yes</u>	<u>No</u>
To lose weight	1	2
Diabetes	1	2
Kidney failure	1	2
Ulcers	1	2
High cholesterol	1	2
Heart trouble or high blood pressure	1	2
Pregnancy.	1	2
Some other reason		
What? _____		

- B. What kind of diet is it? (Circle one number on each line)

	<u>Yes</u>	<u>No</u>
Low calorie.	1	2
Low fat or cholesterol	1	2
Low protein.	1	2
Low salt	1	2
Low carbohydrate	1	2
Bland diet	1	2
Some other		
What? _____		

C. Was this diet ordered by a doctor, nurse, clinic, or dietitian?

Yes. 1
No 2

D. How carefully do you follow your diet? Do you follow it . . .
(Circle one)

All of the time. 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

E. How much bother is this diet? Does it bother you . . .
(Circle one)

A great deal 1
Somewhat 2
A little 3
Not at all 4

6. In an average 24 hour period, about how many hours do you sleep?
(Circle one)

6 hours or less. 1
7 hours. 2
8 hours. 3
9 hours or more. 4

7. Has any doctor recently suggested that you get more exercise or practice certain exercises?

Yes. 1--Answer A,B
No 2--Go to next question

A. What is the reason for this exercise? (Circle one number on each line)

	<u>Yes</u>	<u>No</u>
To improve your general health	1	2
To improve your athletic ability	1	2
To prevent heart disease	1	2
To lose weight	1	2
Treatment for sprain, sore muscle.	1	2
Treatment for arthritis.	1	2
Some other reason		
What? _____		

B. How often do you do the exercise the doctor suggested?
(Circle one)

Always, never miss 1
Most of the time 2
About half the time. 3
Less than half the time. 4
Never, don't do it at all. 5

8. Some people, in their jobs or in their work around the house, have to spend a great deal of time doing heavy or strenuous work--like lifting or carrying heavy loads, pushing or scrubbing things, or handling heavy machinery. In your job, or in your work around the house, about how many hours do you spend doing heavy or strenuous work in an average week?

(Circle one)

None, don't do any heavy work.	1
1 hour or less	2
2 to 3 hours a week.	3
4 to 5 hours a week.	4
6 to 10 hours a week	5
More than 10 hours a week.	6

9. Then there are jobs or household tasks that require a medium amount of physical activity--like being on your feet quite a bit, stooping, bending, lifting or carrying lighter loads, handling lighter tools or machinery, or ironing clothes. In your job, or in your work around the house, about how many hours do you spend doing things that take a medium amount of physical activity in an average week?

(Circle one)

None, don't do any medium work	1
2 hours or less.	2
3 to 5 hours a week.	3
6 to 10 hours a week	4
11 to 15 hours a week.	5
More than 15 hours a week.	6

10. In their recreation or leisure activities, some people spend a lot of time in strenuous activity--like jogging or running, playing handball or tennis, vigorous swimming, climbing, hiking, or doing heavy work around the house. About how many hours do you spend, in an average week, in strenuous leisure time activities like these?

(Circle one)

None, don't do strenuous activity.	1
1 hour or less	2
2 to 3 hours a week.	3
4 to 5 hours a week.	4
6 to 10 hours a week	5
More than 10 hours a week.	6

11. Then there are leisure activities that require a medium or moderate amount of physical activity--like dancing, playing golf, gardening, or working with home tools. About how many hours do you spend, in an average week, in medium or moderate leisure time activities like these?

(Circle one)

None, don't do medium activity	1
2 hours or less.	2
3 to 5 hours a week.	3
6 to 10 hours a week	4
11 to 15 hours a week.	5
More than 15 hours a week.	6

12. Which of these statements best describes your physical activity, in general?

(Circle one)

Not very active physically, usually just sitting and walking.	1
Fairly active physically, moderate or strenuous activity several times a week.	2
Quite active physically, at least moderate activity every day.	3
Extremely active physically, strenuous activity most days.	4

13. During the past 12 months, about how many miles did you drive or ride in a car or truck?

(Circle one)

None	1
2,000 miles or less.	2
More than 2,000 to 5,000	3
More than 5,000 to 10,000.	4
More than 10,000 to 15,000	5
More than 15,000 to 20,000	6
More than 20,000 miles	7

14. When you ride in a car or truck, how much of the time do you use a seat belt?

(Circle one)

All of the time.	1
Most of the time	2
Some of the time	3
A little of the time	4
None of the time	5
Never ride in car or truck	6

15. Do you smoke cigars or a pipe now? Yes. 1
No 2

16. Do you smoke cigarettes now? Yes. 1
No 2
(If no, go to next question)

A. During how many years have you smoked cigarettes regularly?

Less than 2 years.	1
2-5 years.	2
6-10 years	3
11-15 years.	4
16-20 years.	5
21-25 years.	6
26-30 years.	7
31-35 years.	8
36-40 years.	9
More than 40 years	0

B. On the average, about how many packs of cigarettes a day do you smoke now?

(Circle one)

Less than 1 pack a day	1
About 1 pack a day	2
About 2 packs a day.	3
More than 2 packs a day.	4

C. Has a doctor ever told you to stop or cut down on your smoking?

Yes.	1
No	2

GO TO QUESTION 18.

17. Have you ever smoked cigarettes fairly regularly?

Yes.	1--Answer A,B,C,D below
No	2--Go to Question 18

A. During how many years did you smoke cigarettes regularly?

Less than 2 years.	1
2-5 years.	2
6-10 years	3
11-15 years.	4
16-20 years.	5
21-25 years.	6
26-30 years.	7
31-35 years.	8
36-40 years.	9
More than 40 years	0

B. On the average, about how many packs a day did you smoke?

Less than 1 pack a day	1
About 1 pack a day	2
About 2 packs a day.	3
More than 2 packs a day.	4

C. How long has it been since you smoked regularly?

6 months or less	1
7 months to 1 year	2
More than 1 year to 2 years.	3
More than 2 years to 5 years	4
More than 5 years.	5

D. Did a doctor ever tell you to stop or cut down on your smoking?

Yes.	1
No	2

18. Have you ever had a drink of beer, wine, or liquor?

Yes.	1--Answer A
No	2--Go to Question 31.

A. During the 12 months of your life when you drank the most, about how often did you drink beer, wine, or liquor?

(Circle One)

Every day.	1	} Go to Question 19
Almost every day	2	
3 or 4 days a week	3	
1 or 2 days a week	4	
1, 2, or 3 days a month.	5	
Less than once a month, but more than 3 times a year.	6	} Go to Question 31
3 times a year or less	7--Go to Question 31	

19. During the past 12 months, about how often did you drink beer, wine, or liquor?

Every day.	1	} Go to Question 20
Almost every day	2	
3 or 4 days a week	3	
1 or 2 days a week	4	
1, 2, or 3 days a month.	5	
Less than once a month, but more than 3 times a year	6	} Go to Question 27
1, 2, or 3 times a year.	7	
Haven't had a drink in past 12 months. . .	8	

20. About how often do you currently drink beer?

- | | | |
|---|-------------------|------------|
| Every day. | 1 | } Answer A |
| Almost every day | 2 | |
| 3 or 4 days a week | 3 | |
| 1 or 2 days a week | 4 | |
| 1, 2, or 3 days a month. | 5 | |
| Less than once a month, but more than 3 times a year. | 6 | |
| 3 times a year or less | 7 | |
| Don't drink beer at all. | 8--to Question 21 | |

A. When you drink beer, about how much do you usually drink in a day?

- | | |
|--|---|
| 5 quarts or more (18 glasses, bottles, or cans). | 1 |
| 4-5 quarts (12-15 glasses, bottles, or cans) | 2 |
| 2-3 quarts (6-9 glasses, bottles, or cans) | 3 |
| 1 quart (about 3 glasses, bottles, or cans). | 4 |
| 2 glasses, bottles, or cans. | 5 |
| 1 glass, bottle, or can (or less). | 6 |

21. About how often do you currently drink wine?

(Circle one)

- | | | |
|--|----------------------|------------|
| Every day. | 1 | } Answer A |
| Almost every day | 2 | |
| 3 or 4 days a week | 3 | |
| 1 or 2 days a week | 4 | |
| 1, 2, or 3 days a month. | 5 | |
| Less than once a month, but more than 3 times a year | 6 | |
| 3 times a year or less | 7 | |
| Don't drink wine at all. | 8--Go to Question 22 | |

A. When you drink wine, about how much do you usually drink in a day?

- | | |
|--|---|
| 3 or more bottles. | 1 |
| 2 bottles. | 2 |
| About 1 bottle (6-7 wine glasses). | 3 |
| 5-6 wine glasses (3 water glasses) | 4 |
| 3-4 wine glasses (2 water glasses) | 5 |
| 1-2 wine glasses (1 water glass) | 6 |

22. About how often do you currently drink hard liquor (whiskey, vodka, or gin, etc.)?

Every day.	1	} Answer A
Almost every day	2	
3 or 4 days a week	3	
1 or 2 days a week	4	
1, 2, or 3 days a month.	5	
Less than once a month, but more than 3 times a year	6	
3 times a year or less	7	
Don't drink hard liquor at all	8--Go to 23	

- A. When you drink hard liquor, about how much do you drink in a day?

More than 1 quart or fifth	1
About 1 quart or fifth	2
More than 1 pint but less than 1 quart	3
About 1 pint	4
11-15 ounces or shots.	5
7-10 ounces or shots	6
4-6 ounces or shots.	7
1-3 ounces or shots.	8

23. During the past 3 months, how much has your drinking worried or concerned you?

A great deal	1
Somewhat	2
A little	3
Not at all	4

24. During the past 3 months, how much of the time has your drinking kept you from doing the kinds of things other people your age do?

All of the time.	1
Most of the time	2
Some of the time	3
A little of the time	4
None of the time	5

25. During the past 30 days, how many days has your drinking kept you in bed all day or most of the day? (If none, write in "0")

_____ days in bed last month

26. Are you currently doing anything to cut down or to stop your drinking?

Yes.	1
No	2

27. Has a doctor ever told you to stop or cut down on your drinking?

Yes. 1
No 2

Has a doctor ever said you had cirrhosis of the liver or "fatty liver"?

Yes. 1
No 2

Have you ever had D. T.'s (delirium tremens)?

Yes. 1
No 2

28. Have you ever had an accident which required medical attention, while under the influence of liquor, like falling down stairs or being hit by a car?

Yes. 1
No 2

29. Have you ever had a traffic accident, or been stopped by police, while driving under the influence of liquor?

Yes. 1
No 2

30. Have you ever stopped drinking completely?

Yes. 1--Answer A
No 2--Go to 31

A. How long did you stop completely, the last time you stopped?

Less than 2 weeks. 1
2 weeks but less than 1 month. . . 2
1 month but less than 3 months . . 3
3 months but less than 6 months. . 4
6 months but less than 1 year. . . 5

31. About how many families in your neighborhood are you well enough acquainted with that you visit each other in your homes?

_____ families

32. About how many close friends do you have--people you feel at ease with and can talk with about what is on your mind? (You may include relatives.)

_____ close friends

33. Over a year's time, about how often do you get together with friends or relatives, like going out together or visiting in each other's homes?

(Circle one)

Every day.	1
Several days a week.	2
About once a week.	3
2 or 3 times a month	4
About once a month	5
5 to 10 times a year	6
Less than 5 times a year	7

34. During the past month, about how often have you had friends over to your home? (Do not count relatives.)

Every day.	1
Several days a week.	2
About once a week.	3
2 or 3 times in past month	4
Once in past month	5
Not at all in past month	6

35. About how often have you visited with friends at their homes during the past month? (Do not count relatives.)

Every day.	1
Several days a week.	2
About once a week.	3
2 or 3 times in past month	4
Once in past month	5
Not at all in past month	6

36. About how often were you on the telephone with close friends or relatives during the past month?

Every day.	1
Several times a week	2
About once a week.	3
2 or 3 times	4
Once	5
Not at all	6

37. About how often did you write a letter to a friend or relative during the past month?

Every day.	1
Several times a week	2
About once a week.	3
2 or 3 times in past month	4
Once in past month	5
Not at all in past month	6

38. In general, how well are you getting along with other people these days--would you say better than usual, about the same, or not as well as usual?

Better than usual. 1
 About the same 2
 Not as well as usual 3

39. How often have you attended a religious service during the past month?

Every day. 1
 More than once a week. 2
 Once a week. 3
 2 or 3 times in past month 4
 Once in past month 5
 Not at all in past month 6

40. About how many voluntary groups or organizations do you belong to--like church groups, clubs, or lodges, parent groups, etc.?

_____ groups or organizations (if none, enter "0")

41. How active are you in the affairs of these groups or clubs?

(If you belong to a great many, just count those you feel closest to. If you don't belong to any, circle 4.)

Very active, attend most meetings. 1
 Fairly active, attend fairly often 2
 Not active, belong but hardly ever go. 3
 Do not belong to any clubs or groups 4

42. During the past 5 years, have you worked at any job for pay, full-time or part-time?

Yes. 1--Answer A
 No 2--Go to Question 44

- A. During the past 5 years, how many different jobs have you had (jobs with different employers)?

One. 1
 Two. 2
 Three. 3
 Four 4
 Five 5

43. During the past 6 months, have you worked at any job for pay, either full-time or part-time?

Yes. 1--Answer A,B
 No 2--Go to Question 44

- A. During the past 6 months, have you been fired, or laid off, from any job?

Yes, fired 1
 Yes, laid off. 2
 No 3

- B. During the past 6 months, has there been any major change in your responsibilities at work?

Yes, a lot more responsibility 1
 Yes, a little more responsibility. 2
 No, about the same 3
 Yes, a little less responsibility. 4
 Yes, a lot less responsibility 5

44. During the past 6 months, has there been any major change in your responsibilities at home?

Yes, a lot more responsibility 1
 Yes, a little more responsibility. 2
 No, about the same 3
 Yes, a little less responsibility. 4
 Yes, a lot less responsibility 5

45. Have you ever been married? If yes, how many times?

Never married. 1--Go to Question 47
 1 marriage 2
 2 marriages. 3 } Answer 46
 3 marriages or more. 4 }

46. Are you currently married?

Yes. 1--Answer A, B
 No 2--Go to Question 47

- A. During the past 6 months, would you say that you and your spouse have been arguing with each other more than usual or less than usual?

Much more than usual 1
 A little more than usual 2
 About the same 3
 A little less than usual 4
 Much less than usual 5
 Never argue. 6

- B. How about your in-laws--during the past 6 months, would you say you have been arguing with your in-laws more than usual or less than usual?

Much more than usual 1
 A little more than usual 2
 About the same 3
 A little less than usual 4
 Much less than usual 5
 Don't have any in-laws 6
 Never argue. 7

47. Answer only if you are not currently married:

During the past 6 months, have you had any special girlfriend or boyfriend?

Yes. 1--Answer A,B
 No 2--Go to 48

- A. During the past 6 months, would you say that you and your girlfriend/boyfriend have been arguing with each other more than usual or less than usual?

Much more than usual 1
 A little more than usual 2
 About the same 3
 A little less than usual 4
 Much less than usual 5
 Never argue. 6

- B. At any time in the past 6 months, did you split up with your girlfriend/boyfriend?

Yes, but got together again. 1
 Yes, still separated 2
 No, did not split up 3

48. During the past 6 months, have you been arguing with your parents more than usual or less than usual?

Much more than usual 1
 A little more than usual 2
 About the same 3
 A little less than usual 4
 Much less than usual 5
 Don't have any living parents. 6
 Never argue. 7

49. During the past 6 months, have there been any major changes in your personal habits--that is, the way you talk, dress, eat, or spend your time?

(Circle one)

Yes, changes for the better. 1
 Yes, changes for the worse 2
 No, no major changes 3

50. Within the past 6 months, did any close family member die?

Yes. 1
 No 2

Within the past 6 months, did any close friend of yours die?

Yes. 1
 No 2

51. During the past 6 months, have there been any major changes in your living conditions--like moving to a new place, or the neighborhood getting better or worse, or your house or apartment in better or worse shape?

Yes, much better now 1
 Yes, a little better now 2
 No, no major changes 3
 Yes, a little worse now. 4
 Yes, much worse now. 5

52. During the past 5 years, how many homes (houses, apartments, trailers, etc.) have you lived in, including the one you live in now?

_____ homes in past 5 years

53. During the past 6 months, were you physically attacked or assaulted in any way by another person--like in a fist fight, or being beaten up or mugged?

Yes. 1
 No 2

54. During the past 6 months, did anyone rob or steal something from you--that is, rob you on the street or take money or property from your home or car?
- Yes. 1
No 2
55. During the past 6 months, were you in any kind of accident which involved property damage, but no personal injuries?
- Yes. 1
No 2
56. During the past 6 months, did you have any legal problems?
(Circle one)
- Yes, very serious. 1
Yes, fairly serious. 2
Yes, but not serious 3
No legal problems. 4
57. At any time in the past 6 months, were you attending school as a full-time student?
- Yes. 1--Answer A, B
No 2--Go to Question 58
- A. Did you change to a new school during the past 6 months?
- Yes. 1
No 2
- B. Did you have to leave school during the past 6 months?
- Yes, because of academic failure 1
Yes, because of suspension 2
Yes, for personal or financial reasons 3
Yes, because of graduation 4
No, did not have to leave school 5
58. During the next 6 months, do you expect to have any problems making payments on any debts or financial obligations you have--like taxes, mortgage payments, consumer loans, or installment debt?
- Yes, definitely expect problems. 1
Yes, might have problems 2
No, not very likely. 3
No, definitely no problems 4

VITA

Sandra Paul Thomas was born in Moline, Illinois, and received her early education in public schools in Illinois and Memphis, Tennessee. She is a graduate of St. Mary's Memorial Hospital School of Nursing and received the Bachelor's and Master's degrees in Education from The University of Tennessee, Knoxville.

She has over twelve years of experience in clinical nursing and taught Psychiatric/Mental Health Nursing at East Tennessee Baptist Hospital School of Nursing for six years. Additionally, she has taught Mental Health for The University of Tennessee and has been a Graduate Teaching Assistant in the Department of Educational and Counseling Psychology.

She has authored nine publications and made numerous presentations at local, regional, and national conventions, including the American Psychological Association, the American Educational Research Association, and Sigma Theta Tau. She is a member of the American Nurses Association and District Two, Tennessee Nurses Association, and has served as District Two President as well as serving in other elected offices and committee chairmanships. Other professional memberships include American Psychological Association, Society of Behavioral Medicine, American Association of University Women, American Educational Research Association, and Sigma Theta Tau.

Sandra has served on the Board of Directors of the East Tennessee League for Nursing and on the Governing Board of the East

Tennessee Health Improvement Council. She served on the Grant Planning Committee for a series of continuing education programs on aging and mental health funded by the National Institute of Mental Health. She currently serves on the Board of the Greater Knoxville Epilepsy Foundation.

Honors and awards include third place, Beta Sigma Phi International Short Story Contest; first place winner, American Hospital Association Assembly of Hospital Schools of Nursing Writing Contest; Nurse of the Year, District Two, Tennessee Nurses Association; and being named to Outstanding Young Women of America. Additionally, Sandra was selected as Outstanding Doctoral Student, Department of Educational and Counseling Psychology, in 1983. Honorary societies include Alpha Lambda Delta, Phi Kappa Phi, Kappa Delta Pi, Pi Lambda Theta, and Sigma Theta Tau. Sandra was the recipient of a National Institute of Education Fellowship and a Hilton Smith Fellowship during her doctoral study.