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## Determinants of Health Promoting Behaviors in Older Adults

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**DETERMINANTS OF HEALTH PROMOTING BEHAVIORS  
IN OLDER ADULTS**

**By**

**Kay Wallace**

**A THESIS**

**Submitted to  
Grand Valley State University  
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**Kay Wallace**

**October 2000**

**ABSTRACT**  
**DETERMINANTS OF HEALTH PROMOTING BEHAVIORS**  
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The purpose of this study was to examine relationships between Health Locus of Control, selected demographic variables, and the Health Promoting Behaviors of Physical Activity and Nutrition in older persons. Pender's (1996) Health Promotion Model (HPM) was used as the conceptual framework to guide this study.

The sample consisted of 48 subjects, aged 65 years and older, who resided in senior living centers. The subjects were predominantly Caucasian (94%) and female (81%). Research instruments were self-administered questionnaires that consisted of demographic data, the Health Promoting Lifestyle Profile II, and the Multidimensional Health Locus of Control Scale.

No significant relationships between Internal or Powerful Others Health Locus of Control and the engagement of the health promoting behaviors of Physical Activity and Nutrition were discovered. (A significant difference between Chance Health Locus of Control and the practice of Nutrition was revealed). Subjects with higher educational levels tended to engage more frequently in Physical Activity. Age did not relate significantly to performance of health promoting activities of Nutrition or Physical Activity.

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## DEDICATION

To Dr. J. R. Wallace and F. Roberta Wallace,

My Beloved Parents

who have instilled in me the strength, faith, and inspiration

to persevere and accomplish my dreams.

I am also blessed with unprecedented love, support, and encouragement

from my children, Christopher and Karyn,

who have been my perpetuating energy to complete this work.

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## CHAPTER ONE

### INTRODUCTION

America is becoming an aging society, as older adults are the fastest growing age group in the United States. Persons aged 65 years or older numbered 34.4 million in 1998, nearly one in every eight Americans. Since 1900, the percentage of Americans sixty-five and older has more than tripled (4.1% in 1900 to 12.7% in 1998), while the actual number has increased nearly eleven times. Moreover, the older population is getting older itself as the group over 85 years old was 33 times larger in 1998 than in 1900. By the year 2030, the percentage of the population over the age of 65 will be 20% (A Profile of Older Americans).

Life expectancy data vary among specific segments of the population. Starr (1999) cited it is actually 79.9 years for white females, 74.3 years for white males, and 67.2 years for black males. The greatest increase in life expectancy, that being 1.1 years, between 1996 and 1997, was in black males. By 2040 there will be 68 million persons in the United States over 65 years of age, with women and men averaging life expectancies of 83.1 and 75.0 years, respectively.

As a result of higher numbers of older persons and increased longevity, these changing demographics impact healthcare services, economics, public policy, and quality of life (Fowles, 1990). Older adults have the propensity to utilize health care services. Although currently, older adults represent only one-eighth of the population, they account for more than one-third of the total health care expenditures. Older adults account for nearly 36% of total health care costs (Centers for Disease Control and Prevention [CDCP], 1999). They accounted for 36% of all hospital stays and 49% of all days of

care in hospitals in 1997 (A Profile of Older Americans, 1999). On the average it costs nearly four times as much to treat an adult over 65 as it does to treat someone younger. For individuals over 75 years of age, the cost is even higher (Department of Health and Human Services [DHHS], 1990).

As individuals grow older, chronic conditions become more prevalent. Burns, Pahor and Shorr (1997) state that adults in the 65 to 80-year range suffer the disability of chronic diseases such as cardiovascular disease, osteoarthritis, and osteoporosis. Limitations on activities of daily living increase with age because of chronic conditions. Eighty percent of the senior population have one or more chronic diseases, 50% have two or more chronic conditions, and 24% have severe chronic conditions that limit their ability to perform one or more activities of daily living (DHHS, 1998).

There are indications in the health care literature that chronic disease and functional disability can be measurably reduced or postponed through lifestyle changes and that healthy behaviors in particular can benefit the elderly. Exercise, diet, smoking cessation, clinical preventive services, and meaningful socialization can improve functioning and reduce disease and disability in old age (DHHS, 1998). The major and most frequent occurring chronic conditions in the elderly in 1995 were arthritis, hypertension, and heart disease (A Profile of Older Americans, 1999). The leading cause of death for persons 65 and over is heart disease. Situations involving chronic health problems impose on caregivers and impact society in general as these problems adversely affect both society's views of the elderly, and the elderly individual's own sense of worth and well-being. Evidence-based research pertaining to physical activity and nutrition practices and how they may derive health benefits for older persons, that may minimize

and reduce chronicity, disease, and disability were investigated (Kennie, Dian, & Young, 1998).

Pender (1996) posits that by engaging in health-promoting lifestyles, individuals can maintain and enhance their well-being and prevent the early onset of disabling health conditions. Adoption of healthy lifestyles can slow physical decline from a chronic health problem and even improve general physical and mental well being in older persons (Speake, Cowart, & Pellet, 1989). Presently, there is heightened awareness of the need for preventive health services and health promotion for the elderly. The benefits of health promoting activities cannot be ignored. In order to enhance the health of older persons, it is paramount to understand factors that may contribute to the elderly's decision to implement healthy lifestyle practices. Walker, Sechrist, and Pender (1987) described a health-promoting lifestyle as "a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization and fulfillment of the individual" (p. 77).

Health-promoting behaviors are usually recognized as positive lifestyle practices within society. Some investigators have examined the lifestyle practices of the elderly from a health-practices-mortality model. In this model, the consequences of poor health practices are emphasized rather than the healthy lifestyle practices, particularly physical activity. Shepard (1990) cites several reasons for exercising, particularly in the elderly. Older adults, both male and female, can benefit from regular physical activity. The body responds to physical activity in ways that have significant positive effects on the musculoskeletal, cardiovascular, respiratory, and endocrine systems. These changes are consistent with several health benefits, including a reduced risk of premature mortality

and reduced risks of coronary heart disease, hypertension, colon cancer, and diabetes. Routine participation in physical activity also appears to reduce depression and anxiety, improve mood, and enhance ability to perform daily tasks throughout the life span (CDCP, 1999).

Kaplan, Seeman, Cohen, Knudsen, and Guralnik (1987) conducted a longitudinal study over a 17-year period involving 6,928 adults in Alameda County, California. By 1992, 1,219 (29 %) had died. The researchers reported the risk of death was increased in males, those who smoked, who had little leisure activity, incurred weight fluctuations, and did not eat breakfast. Branch and Jette (1984) also conducted a longitudinal study with 1,235 elderly women and men over the age of 65 and found that age, income, and health status had significant associations with subsequent mortality among older women. Risk factors related to diseases such as coronary heart disease, cancer, and stroke are linked with behaviors such as excessive calorie intake, inadequate exercise, cigarette smoking, and excessive alcohol consumption (Woolf, Kamerow, Lawrence, Medalie, & Estes, 1990).

In sum, research supports that lack of physical activity and failure of good nutrition practices can increase risks of heart disease, hypertension, colon cancer, and diabetes mellitus among older adults. It is believed that participation in routine health promoting behaviors of physical activity and nutrition can minimize poor health risks for older persons, while proclaiming to enhance abilities to be more active and lead an independent lifestyle.

Health promotion is a concept involving practices of an individual that promotes a healthy lifestyle. According to Pender (1996), health promotion is defined as those

activities directed toward developing resources that maintain or enhance an individual's well being. Relative to the incidence of chronic health problems and how this relates to our aging society, it is important to understand facts that may contribute to the elderly's decision to implement healthy lifestyle practices. Future research must emphasize individual acceptance of responsibility for maintaining a healthy lifestyle.

There has been an increase in public awareness of lifestyles and the results of health behaviors for wellness enhancements. These behaviors may be dependent upon voluntary self-directed actions. Identification of how certain factors relate to participation in health promoting activities in older persons is discussed in the literature. It has not been clearly identified what motivates older persons to practice healthy behaviors. Therefore it would appear prudent to explore various influencing factors, one of which may be health locus of control, which has been studied minimally in older persons. The purpose of this study was to examine how certain demographic factors and health locus of control influence health promoting behaviors of physical activity and nutrition.



## CHAPTER TWO

### LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

#### Concepts of Health and Perceived Health Status

There are numerous and evolving definitions of the term “health” printed in literature. The World Health Organization (WHO, 1946) established a definition of health as a condition of complete physical, mental, and social well being, and not merely the absence of disease or infirmity. Today, health is viewed in a broader sense than simply the absence of disease. Rather, health is perceived as the ability to function fully and independently in society. With a broader concept of health comes a growing social commitment to health (Mason & McGinnis, 1990).

In response to the fact that society is aging in the United States, it is important to learn how elderly individuals view their own health. Their personal definitions of health are a significant link to effective health promotion. A recent qualitative study revealed that older persons define personal health in relation to activity levels and attitude. Kaufman (1996), examined health definitions of 67 participants ranging from 67 to 91 years of age, recruited through senior centers and a veterans administration hospital. Participants were assigned to one of eight focus groups, with 5 to 10 persons in each group. Trained facilitators conducted discussions with open ended questions that included, “What does healthy mean to you?” and “Why do you consider yourselves to be healthy?” Statements of the participants were grouped into five general categories of definitions (a) activity, (b) attitude, (c) basic functions, (d) absence of medical attention, and (e) medicine. Group answers involving activity definitions as being healthy, included such statements as being able to “get up and out” and the ability to walk.

Attitudinal indicators of health included statements as “We don’t give up” and “I’m doing fine because I’m so happy”.

Furthermore, speculation is that older persons will tend to listen to health advice that correlates with their definitions of health (Kaufman, 1996). Hickey (1988) also posits that the effectiveness of health promotion strategies is related to one’s definition of health. Personal definitions of health and beliefs about health practices are central to individuals’ decisions regarding their own health care.

### Health Promotion and Health Promoting Lifestyles

The concept of health promotion has always been a significant component in nursing care. Health promotion is also a challenging term to define, as various interpretations range from broad to explicit. Brubaker (1983) clarified that health promotion was health care directed toward high-level wellness through processes that encourage alteration of individuals’ personal habits or the environment in which they live. It occurs when health stability is present and assumes disease prevention and health maintenance as pre-requisites or by-products. Extending from this orientation is notation of the overlap or utilization of the two concepts, health promotion and disease prevention. Kennie, Dinan, and Young (1998) declare the two concepts are not synonymous. Health promotion and disease prevention have different goals and utilize different strategies to improve health. Traditional preventive care generally is concentrated on primary and secondary prevention of disease. Health promotion, however, is directed to the development of persons toward a better understanding and control of their own health and positive well being.

Health promotion is described in the *Health Objectives for the Nation*, as “any combination of health education and related organization, environmental and economic interventions designed to promote health” (USDHHS, 1990). The document continued to outline a subset of five objectives concerning national goals for reducing many causes of premature death and disability in this country. Influencing factors of health that were identified included: smoking and health, misuse of alcohol and drugs, nutrition, physical fitness and exercise, and control of stress and violent behavior.

Yet another viewpoint of Pender (1996) contends that health promotion is concerned with preventing illness and includes environmental protective measures and health service initiatives. Prevention is described as ‘health protecting behavior’. She asserts that different motivational forces affect health protecting behavior and health promoting behavior. The definition of health promotion posited by Pender (1996), is further defined as activities that are “motivated by the desire to increase well-being and actualize human health potential” (p. 7).

#### Perceived Health and Health Promoting Behaviors Research

Pender and Pender (1986) studied 377 adults aged 18 to 66 years and found a strong correlation between individuals’ perceived health status and the engagement of the health-promoting behavior of eating a diet conducive to attaining and maintaining a desirable weight. Perceptions of health status were identified through survey questions from participants regarding attitudes and beliefs about personal health. It was discovered that persons, who perceived their health status as ‘good’ or ‘excellent’, reported increased intentions to eat a diet consistent with weight control compared to individuals who perceived their health as ‘poor’. The measurements of attitude (personal belief) and

subjective norm (social pressure) equated with internal locus of control and powerful others locus of control. Persons with internal control were likely to have intentions to eat a diet conducive to attain/maintain recommended weight. Persons intending to exercise regularly had significantly more positive attitudes (internal control) towards exercise. Subjects with stronger beliefs in subjective norms or powerful others, also intended regular exercise compared to nonintenders. Generalizability of this study is limited, as the study participants were primarily white, with a mean age of 38 years and standard deviation of 12. Exercise and diet behaviors were examined regarding self-reported, intention to participate rather than actual participation or performance, which could bias the health-promoting behavior reporting results.

Speake, Cowart, and Pellet (1989) proclaim that perceived health status is an integrative concept reflecting the assessment and evaluation of an individual's general health. These researchers examined perceived health status and health locus of control, with other selected variables in older persons. Study participants (n = 297) were recruited at health fairs, senior centers, and retirement groups. The subjects were aged 55 to 93 years with a mean age of 79.1. Seventy-one percent of the subjects were Caucasian, while 29% were Black. No additional ethnic group was represented in the study. Nearly 53% reported more than a high school education. Perceived health status was measured, in part, by asking subjects to describe their current health as excellent (4), Good (3), Fair (2), or Poor (1). Subjects most often indicated positive perceptions of health with 30% rating their health as Excellent, 40% as Good, 20% as Fair, and 10% as Poor. The researchers also found that older subjects, with an internal locus of control, participated regularly in exercise and nutrition, while those with a powerful others locus of control

practiced regular exercise behaviors, but not nutrition. Additionally, being older was associated with lower scores on nutrition, while more education and positive perceptions of current health were associated with better scores on the nutrition subscales. The survey included subjects' self-report data, and the sample represented primarily Caucasian ethnicity, which could limit generalizability of the findings.

Additionally, Viverais-Dresler and Richardson (1991) investigated how the well elderly perceived their health status. The subjects resided in a Northwestern Ontario community. The subjects were English speaking females and males, 65 years of age and older, who resided in their own homes or apartment buildings (n = 28). The researchers asked the participants to answer, how they would describe their present health: Excellent (1), Good (2), Fair (3), or Poor (4). A frequency count determined that the majority of subjects rated their health as 'Excellent' or 'Good', despite the presence of one or two chronic illnesses.

Similarly, Ruigomez, Alonso, and Anto (1995) conducted a study that entailed self-reported health status from research subjects. The study was conducted in Barcelona, with elderly of Mediterranean ancestry, 65 years and older (n = 1219). Sixty-one percent of the individuals in the cohort were women with 62 % being between the ages of 65 and 74 years of age. Six percent were 85 years or older. Study participants indicated their perception of personal overall health on questionnaires as: very good, good, fair, poor, or very poor. Fifty-nine percent of the subjects reported 'very good' or 'good' general health. The study respondents answered open-ended and semistructured questions. The general findings concluded that the most frequently reported perceived health status was 'good' to 'very', regardless of the age groups. Health-promoting

behaviors of regular physical activity and non-smoking were found to be related to a positive perceived health status.

In regard to answers about physical activity, many participants stated they exercised on a daily basis, identifying walking as the most common form of exercise. Other physical activities indicated were swimming, bowling, and curling (68 %). More than half of the subjects reported participation in volunteer work (61 %). In comparison, leisure activities frequently mentioned were reading, knitting, and gardening (79 %). Responses to nutritional health-promoting practices reflected an informed nutritional knowledge base. Many planned nutritional meals with high fiber (71 %) and low fat and cholesterol (57 %) (Ruigomez et al., 1995).

#### Health-Promoting Behaviors and Lifestyles

Health promoting behaviors are directed toward attaining positive outcomes and when integrated with a healthy lifestyle, result in a positive health experience throughout the life span. Examples of these behaviors are routine exercise, leisure activities, rest, optimal nutrition, and stress-reduction. Pender (1989) asserts that health-promoting behavior is an expression of the human actualizing tendency that is directed toward optimal well-being, personal fulfillment, and productive living. This is consistent with Pender (1989) further posited that health-promoting behaviors are directed toward maximizing positive arousal such as increased self-awareness, self-satisfaction, enjoyment, and pleasure. Research supports the practice of health promoting behaviors is perceived as effective to increase longevity and improve quality of lives.

Walker, Sechrist, and Pender (1987) established that health-promoting lifestyles are a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization, and fulfillment of the individual. Healthy lifestyles coincide with the term healthy behaviors and are measured by the Health Promotion Lifestyle Profile (HPLP). Hence, Walker et al. developed the instrument, Health-Promoting Lifestyle Profile, to test the concepts of health promotion and healthy behaviors. Pender (1987) described the Health Promotion Lifestyle Profile (HPLP) as a 48-item instrument designed to measure a constellation of health-promoting behaviors that are considered to be dimensions of a health-promoting lifestyle. The HPLP includes six sections: exercise (5 items), nutrition (6 items), health responsibility (10 items), stress management (7 items), interpersonal support (7 items), and self-actualization (13 items). The instrument is a summated rating scale utilizing a 4-point Likert format to denote the frequency of participation in health promoting behaviors that include 1 = never, 2 = sometimes, 3 = often, and 4 = routinely. Research literature reviewed is limited to the HPLP since there has been none published, that had implemented the revised version, HPLP II.

Walker et al. (1987) tested the HPLP with 952 adults, aged 18 to 88, living in midwestern communities. Data were collected from a convenience sample of volunteers recruited from corporate and industrial work sites, colleges, and adult service, social, and recreational organizations. The subjects volunteered from programs associated with the YMCA, corporate fitness centers, aerobic dance classes, and senior olympics. The sample majority was middle class with educational levels ranging from eighth grade to a

professional degree. Consent to participate was indicated by completion and return of the HPLP instrument and demographic data sheet.

Although additional studies were recommended by the authors to further establish construct validity, they concluded that the resulting instrument has:

sufficient validity and reliability for use by researchers who wish to describe the health-promoting component of lifestyle in various populations and to explore correlates or determinants of health-promoting lifestyle, or to measure changes in health-promoting lifestyle as a result of interventions (Walker et al. 1987, p. 80).

Walker, Volkan, Sechrist and Pender (1988) compared the health-promoting behaviors of older adults with those of young and middle-aged adults. The subjects were aged 18 to 88 (n = 452). Six dimensions of lifestyle were measured with the HPLP (Walker et al. 1987), and revealed that older adults had higher scores on the HPLP in the dimensions of health responsibility, nutrition, and stress management, than both the young and middle-aged adults. Additionally, scores were lowest in all three age groups in the dimension of the exercise health-promoting lifestyle.

Huck and Armer (1996) surveyed 50 elderly retired nuns, utilizing the HPLP (Walker et al. 1987), to determine the most frequently named health promotion and health maintenance behaviors. It was found that nutrition practices were most highly ranked, followed by self-actualization, stress management, health responsibility, interpersonal relationships, and lastly, exercise. The sample size was small, exclusively female, and all retired Catholic nuns, representing a non-mainstream population. The generalizability of the study is limited. However, frequent or routine exercise behaviors



were the least reported on the HPLP subscales, as similar to other research findings (giving merit to further investigation what influences this crucial lifestyle behavior).

Physical activity. Physical activity has been determined to be important in maintaining and promoting health. Butler (1998) asserts that exercise provides important benefits for older persons in the areas of cardiovascular function, strength and muscle mass, postural stability, and psychological function. These health benefits can be achieved by those who are healthy, as well as by those who are frail and very old. Exercise aids to prevent hip fractures from falls by increasing bone density, coordination, balance, and muscle strength. It is also an important treatment regimen for patients with arthritis, Parkinson's disease, stroke, and other chronic conditions of aging. Persons who exercise show improvements in depressive symptoms and sleep disorders.

Crespo, Keteyian, Heath, and Sempos (1996) explored the prevalence of leisure-time physical activity (LTPA) among U.S. adults. Data were taken from the results of the Third National Health and Nutrition Examinations Survey (NHANES III: 1988 through 1991). The NHANES III represents a 6-year study consisting of two 3-year phases: phase 1, (1988 through 1991); phase 2, (1991 through 1994). The entire 6-year survey constituted a national sample; the survey was designed to make each phase a nationally representative sample. Data were collected in the NHANES III (phase 1) during home interviews and clinical examination in a mobile examination center. Subjects consisted of a cross-sectional sample of non-institutionalized men and women, aged 20 to over 80 years, from 1988 through 1991 (n = 9488). Questions were asked about the type and frequency of physically active hobbies, sports, and exercises. Leisure-time physical activity (LTPA) consisted of a variety of physical activities including: jogging, running

or walking, calisthenics, floor or aerobic exercises, gardening or yard work, weight lifting, swimming, bicycling or other dancing. Also assessed were the frequencies of practiced physical activity. Overall findings from the study have shown that many Americans continue to be either inactive (22%) or irregularly active (34%) during their leisure time. Rates of inactivity are even greater for women, older persons, non-Hispanic Blacks, and Mexican-Americans. Among both men and women, the rate of no Leisure – time physical activity was higher in the older age group compared to the younger age group. The largest differences were noted between those aged 70 through 79 years and those aged 80 years and older. Data analysis revealed that the prevalence of no LTPA for U.S. adults aged 20 years or older from 1988 through 1991 was 22%. The rate was higher for women (27%) than in men (17%). Mexican-American men (33%) and women (46%), and non-Hispanic black women (40%) had the highest rates of no LTPA. Participation in moderate to vigorous LTPA five or more times per week decreased with age, with the largest decreases observed among non-Hispanic black women and men.

The Crespo et al. (1996) study sample was large, with comparative numbers of adult men and women from three ethnic groups, including non-Hispanic white, non-Hispanic black, and Mexican Americans. The age of subjects ranged from 20 to over 80 years, with an oversampling of Mexican Americans, non-Hispanic blacks and elderly to provide reliable estimates of these groups. These procedures strengthen transferability and generalizability as the findings reflect the U.S. population. These findings have implications for assisting health care providers in providing population-specific physical activities that can be maintained throughout the life cycle.

Another study performed by Rutherford and Jones (1992) examined the relationship of muscle and bone loss and activity levels with age in women. The sample consisted of 216 healthy British women aged 21 to 82 years of age. All participants were mobile and living independently. The subjects completed a questionnaire on medical history, menstrual history, and levels of activity for the previous year. Quadriceps strength and cross-sectional area (CSA) bone mass in the mid- and distal femur, and spine bone mineral density (BMD) were measured and compared to subjects' physical activity levels and age. There was a significant negative correlation between quadriceps strength and age. There was a progressive decrease in strength from the third decade, in that women aged 70 to 80 were on the average 40% weaker than women between 20 and 30. Physical activity levels, expressed as the number of hours per week spent partaking in weight-bearing exercise, declined significantly with age and correlated positively with spine BMD and strength. However, with age kept constant, physical activity levels did not correlate with any of the muscle or bone indices. The study concluded through regression analysis including age, that muscle strength contributed significantly to the variance in bone mass of all three skeletal sites measured (spine, mid-femur and distal femur). Further research about maintaining or building muscle mass and strength may assist the understanding of how to significantly preserve bone density and bone mass. This in turn, could result in increased muscle strength, greater mobility, enhanced stability, and less fracture injuries and bone deterioration disease in aging persons.

Nutrition. Nutrition has been identified as important in maintaining and promoting health in older persons. Hiujbregts et al. (1997) examined dietary patterns and 20 year (1970-1990) mortality in elderly men in Finland, Italy, and Netherlands. The

population based, random sample of 3045 men, aged 50 to 70 years in 1970, was re-assessed after twenty years. The World Health Organization (WHO) guidelines for a healthy diet were utilized as a standard. From the total study population of 3045 men, 1796 men (59%) died during 20 years of follow up. Those subjects with the healthiest diet had a 13% lower mortality rate from all causes after 20 years than those with the least healthy dietary intake. The variance in the mortality of cardiovascular disease was even larger. After adjustment for confounding variables, the group with the highest healthy diet indicators had an 18% lower risk of death from cardiovascular disease than the group with lowest healthy diet indicators. The absolute mortality was highest in Finland and lowest in Italy. The study findings concluded that 20 year mortality was lowest in men with the healthiest diet according to the WHO recommendations. Studies have clearly identified the consequences for the elderly of not regularly practicing physical activity and nutrition behaviors.

### Health Locus of Control

Health locus of control is also a factor in understanding health-promoting behaviors. Health locus of control refers to one's perception of where the responsibility for one's health resides. Locus of control has its origins in Rotter's Social Learning Theory (1954), that states that individuals develop general expectancies concerning the effects of their behavior. When the potential for a behavior exists in any specific psychological situation, individuals function with the expectancy that the behavior will lead to a particular reinforcement in that situation and the value of that reinforcement. Furthermore, individuals who expect their own behavior to influence outcomes are

described as having a belief of internal control, while those who expect outside forces to have greater influence, have a belief of external control (Rotter, 1966).

Levenson (1974) convincingly identified the multidimensionality character of the locus of control construct. She revealed that external beliefs could be divided into two further beliefs: chance expectations such as fate or luck and control from powerful others such as physicians, nurses, or family. This in turn led to the development of the Multidimensional Health Locus of Control Scale (MHLC) with three subscales in internal, powerful others, and chance (Wallston, Wallston, & Devellis, 1978).

Individuals with a strong internal health locus of control believe that their efforts and abilities influence their health; therefore, health is largely within their control. These individuals are most likely to take responsibility for their health (Brown, Muhlenkamp, Fox, & Osborn, 1983). Furthermore, the multidimensionality of control beliefs has general acceptance in current research literature that commonly encompasses 'internal', 'chance', and 'powerful others'. Chance and powerful others are dimensions of external control, contrasting to whether fate or influential others are viewed as the locus of control (Allen-Burge, Willis, & Schaie, 1998).

#### Health Locus of Control and the Health Promoting Lifestyle Profile

Many studies have used both the MHLC and HPLP to determine relationships between health locus of control and health promoting behaviors. Gillis and Perry (1991) employed a longitudinal, pre and post-test experimental study to examine the relationships among participation in physical activity, health locus of control, and health promoting behaviors of middle-aged women. The subjects, aged 35 to 65 years (N = 92), resided in a Canadian province, and were randomly assigned to either an experimental

group (n = 52) or a control group (n = 40). Five self-reporting instruments were administered during data collection, two of which were an 11-item Health Locus of Control (HLC) by Wallston et al. (1978) and the 48-item HPLP by Walker et al. (1987). Data were collected at three distinct time periods from both groups: introductory session (time one), immediately following the completion of a 12-week exercise program (time two), and 6 months later (time three). Subjects in the experimental group participated in three 60-minute aerobic/dance exercise classes for 12 consecutive weeks (36 classes). The exercise program was made available to the control group following completion of data collection. The experimental group revealed a consistent and greater improvement in HPLP scores over time following the exercise classes, than the control group. However, the difference was not statistically significant. Participation in the exercise group made a difference in the subscale scores (higher) pertaining to exercise and stress management over time. A significant interaction effect of group and time on scores of the exercise subscale was indicated for time two [ $F(1,90) = 15.87; p < 0.000$ ] and time three [ $F(1,90) = 15.55; p < 0.000$ ]. A significant interaction effect of group and time was indicated for the stress management subscale for time two [ $F(1,90) = 4.29; p < 0.04$ ] but not at time three [ $F(1,90) = 0.68; p < 0.41$ ]. In other words, the experimental (exercise) group scored higher than the control group on the exercise subscale at times two and three, and also scored higher on the stress management subscale at time two, but not time three.

Perceived health locus of control in the experimental and control groups remained generally stable for times one, two, and three. Scores for each group revealed that subjects believe health outcomes are under their own control. The scores ranged from 11

to 66 with low scores indicating a high degree of internal locus of control: high scores indicating a high degree of external locus of control. The experimental group's mean scores over time ranged from 32.03 to 33.69 (SD 7.52 to 7.59). The control group's mean scores ranged from 33.83 to 34.85 (SD 9.38 to 8.87). These results indicated that the control (exercise) group maintained a higher internal health locus of control. However, the attendance of the exercise class had no statistically significant impact on subjects' scores on the health locus of control  $F(1,90) = 2.04; p = .157$  (Gillis & Perry, 1991).

In summary, results of the study (Gillis & Perry, 1991) revealed that the experimental group showed consistent and greater improvement in HPLP scores following the exercise classes than the control group, although not significantly. Perceptions of health locus of control in the experimental and control groups remained relatively stable for times one, two, and three. Similarities in the group outcomes may be explained by the presence of the Hawthorne effect. Subjects were told that they were to take part in an experimental study. It could have been that the knowledge of being in the study was sufficient to cause people to change their behavior, therefore obscuring the effect of the exercise classes. It did appear, however, in two of the subscales of the HPLP, the exercise and stress management subscales revealed significant differences.

Seemingly, these two health behaviors are directly affected by participation in a program of physical activity. Limitations of the study include the self-report method of a large number (5) of instruments utilized for data collection for each participant, and small sample sizes for the control and experimental groups of only women.

Holm, Frank, and Curtin (1999) explored the relationship between locus of control and women's mammography practice. The sample consisted of 97 women whose ages ranged from 35 to 84. The sample was divided into two groups: those who reported having had a mammogram (68.2%) and those who reported never having had a mammogram (32.3%). The age range for each group was 36 to 75 years and 35 to 84 years, respectively. The majority of the sample was married (72.6%), and white (74.2%). Nearly three-fourths were employed in managerial or technical jobs. The Health Locus of Control was measured by the MHLC (Wallston et al., 1978) scales. No significant difference was detected between the two mammogram groups on the MHLC scales. The study findings did not support a relationship between health locus of control and women's mammography behavior. This study has several limitations. One is using a convenience sample consisting of women who were primarily white, employed, with education exceeding high school (66%). This diminishes generalizability of the findings.

Eachus (1991) studied nurses in the United Kingdom (n = 88) using the MHLC to assess their health locus of control orientation. Subjects were working in the North West Regional Health Authority. There were 75 female and 13 male nurses with the age range of 19 to 60 years. The nurses scored higher than the mid-point of the scale (21) on internality and lower than the mid-point on powerful others and chance. Namely, the nurses believed their health was their own responsibility (internally controlled). The mean scores were 24.86, 13.57, and 16.07 respectively.

Differences on the MHLC scales between the nurses and UK norms were examined by using z-score technique. The nurses' findings (n = 88) on the MHLC were then compared to previously determined findings (MHLC) of the UK public (n = 1400).



The mean results for the UK public were as follows: Internal Health Locus of Control (24.40), Powerful Others Health Locus of Control (19.40), and Chance Health Locus of Control (17.70). Conclusively, this study found that the health locus typologies of nurses and the public were similar, although there were differences. The most striking difference was between the nurses and the public on the powerful others scale. While the general public had a moderately high belief in the power of others to control its health, the nurses revealed statistically significantly less belief in Powerful Others Health Locus of Control ( $p = < .01$ ) (Eachus, 1991). The nurse sample was moderately sized ( $N = 88$ ), primarily female, with a large variance in work experience ranging from one to thirty-five years. There was no reference to nurse specialists. Sample bias could limit the research findings regarding the generalizability of health locus of control as perceived by nurses.

Huck and Armer (1996) assessed health behaviors of elderly Roman Catholic nuns ( $N=50$ ) in the Midwest. Data were collected, utilizing the instruments MHLC (Wallston et al., 1987) and HPLP (Walker et al., 1987), to determine the primary health locus of control and the five most frequently named health promotion behaviors. Health Locus of Control scores indicated the tendency toward Internal Health Locus of Control compared to Powerful Others or Chance Health Locus of Control. Mean scores of the MHLC were 22.65, 20.45, and 16.10 respectively. Additionally, the HPLP provided information on the nuns' personal health behaviors. Mean scores within the six categories were used to determine the rank order of each category by the participants. Nutrition (3.17) practices were the most highly ranked, followed by self-actualization (3.15), stress management (2.88), health responsibility (2.69), interpersonal relationships (2.66), and exercise (2.29). The HPLP mean scores indicate the reported frequency of

respective health promoting behaviors. The Nutrition mean subscale score revealed participation as “often” compared to “sometimes” for Exercise (Physical Activity) participation. Low HPLP subscale scores of physical activity (exercise) is consistent with other research findings.

Duffy (1993) investigated the relationship between demographic variables, health promoting activities, and health locus of control, with a convenience sample of 383 persons 65 years and older who resided in seven Southeast Texas counties. Investigator contacts were made with retirement, senior citizen and nutrition centers, and senior housing units. The greater number of participants were female (57.4 %), white (60.4 %), widowed (50.3 %), with a high school or less education (62.1 %). Subjects ranged from 65 to 99 years of age, with a mean age of 75.1 years ( $SD=7.8$ ) and a median annual income of \$8,300. Health locus of control was measured by the (MHLC) Form A formulated by Wallston et al. (1978). Canonical correlation was chosen to analyze relationships among locus of control, demographic factors, individual perceptions of health, and the participation in health promoting behaviors (measured by HPLP). Canonical correlational analysis indicated that subjects who reported their current health as good, had high self esteem, and believed their health was under their own personal control rather than under powerful others, were more likely to report frequent or routine practices of Nutrition and Exercise. Additionally, interpersonal support, stress management, and self-actualization were reported as frequent or routine health promoting behaviors. A second variate (19.6 % variance) revealed that males with higher annual incomes as well as higher self-esteem but poorer current perception of health were less likely to report engaging in the frequent or routine practice of exercise and nutrition.

The third variate accounted for 7.8 % of variance and disclosed that older, old subjects who had higher annual incomes, were married, and not likely to leave control of their health to chance or fate, were more likely to engage in the regular health promoting practices of exercise, health responsibility, and stress management but not interpersonal support activities.

The findings in the study (Duffy, 1993) provided multivariate support for the additive nature of the relationships asserted in Pender's (1982) HPM between individual perceptions of internal control, self-esteem, health status and the regular practice of six health promotion behaviors in a sample of older persons. Study results partially supported the direction of relationships between the selected demographic modifying factors, individual perceptions, and health promoting behaviors. Further research is indicated to determine predictability of health-promoting behaviors, utilizing Pender's (1996) revised Health Promotion Model.

Pender (1990) tested the usefulness of the multivariate Health Promotion Model in explaining the occurrence of health promoting lifestyles among employees enrolled in a health-promoting lifestyle program (N = 589). Subjects were full-time employees from six companies in the Midwest, with a mean age of 38 years and standard deviation of 10.1. The majority (54%) was male; 83% were white, 50 % had completed college and 60% had participated in their respective workplace fitness program for more than 6 months (maintenance program). Cognitive/perceptual factors of perceived control of health was assessed by using Forms A and B of the Multidimensional Health Locus of Control Scales (Wallston et al., 1978). The likelihood of engaging in health-promoting behaviors was assessed by the HPLP (Walker et al., 1987). The HPLP was administered

a second time to the volunteer study participants, three months after the initial data were collected. Data from the six corporations were combined for purposes of analysis. Overall lifestyle scores increased significantly from the initial testing. The nutrition subscale scores showed a significant increase from the first testing, however, the exercise subscale scores showed a significant decrease from initial testing. Perception of health as internally controlled rather than controlled by luck or chance was associated with more health-promoting lifestyles. Additionally, the extent of health-promoting lifestyle practices was positively related to the belief that powerful others influenced or exerted external control on health. This may be attributed to the nature of the sample; employees with such beliefs may be more likely to enroll in structured workplace health-promotion programs where collegial support of co-workers and professionals are readily available. Those who were female, older, and in the maintenance phase (6 months or more of participation) of the company fitness program, had healthier lifestyle patterns.

Duffy (1997) examined health promoting lifestyle behaviors of 397 employed Mexican-American women. The participants were employed outside the home on a full-time (91%) or part-time basis. The mean age was 36 years ( $SD = 9.1$ ), with a range of 19 to 70 years. Eighty-five percent had a high school education or better, and the majority (54%) were employed in nonprofessional positions. The Multidimensional Health Locus of Control Scale (MHLC) measured the health locus of control construct, and the Health-Promoting Lifestyle Profile (HPLP) was utilized to measure the frequency of participation in health-promoting behaviors. Study results using canonical variate correlation indicated that women who believed they were personally in control of their health, were more likely to report frequent or regular practice of all six health promotion

activities of exercise, nutrition, self-actualization, interpersonal support, health responsibility, and stress management. Canonical correlational analysis demonstrated two significant variate pairs explaining 88% of variance in the dependent set, the subscale mean scores of the Health Promoting Lifestyle Profile. Age, education, internal and powerful others health locus of control, self-efficacy, and prior, current, and future health status made statistically significant contributions.

#### Review of Literature Summary

The research revealed various findings relating to the impact of certain factors, such as health locus of control and selected demographic factors on health-promoting behaviors. Speake et al. (1989) found that higher internal scores were associated with higher scores on the exercise, nutrition, stress management, health responsibility, and self-actualization subscales. Additionally, higher scores on the powerful others subscale were significantly related with higher scores on the exercise and stress management subscales. Being older was significantly related with lower nutrition scores, however, having more education was associated with better scores on the nutrition subscale. Duffy (1993) found that subjects who believed their health was under their own personal control rather than powerful others were more likely to report frequent or routine practice of nutrition and exercise health-promoting behaviors. Pender et al. (1990) found that subjects enrolled in a workplace wellness program, were more likely to report health behaviors if they believed they personally were influenced to some extent by powerful others and not by chance. Duffy (1997) found that age, education, internal and powerful others health locus of control made statistically significant contributions in predicting the

likelihood of practicing health promoting behaviors in a sample of employed Mexican-American women.

### Conceptual Framework

Nola Pender developed a health promotion model in 1982 and created revisions in 1987 and 1996 (Pender, 1996). Pender's Health Promotion Model (1996) was chosen as the framework to examine the relationships among specific determinants of health promoting behavior with older adults. Permission to utilize Pender's Health Promotion Model (HPM) is exhibited in Appendix A. The health promotion model was derived from social learning theory, which emphasizes the importance of cognitive mediating circumstances as the primary motivational inclination for acquisition and maintenance of health-promoting behaviors. The Health Promotion Model (Pender, 1996) proposes a framework that conceptualized interrelationships of individual characteristics and experiences, and behavior-specific cognitions and affect, that may influence or predict one's health-promoting behavioral outcome. This study examined selected components of the Health Promotion Model and how they influenced health behavior.

The following assumptions are identified, which are derived from the Health Promotion Model (Pender, 1996), and emphasize the active role of the individual in shaping and maintaining health behaviors. These assumptions reflect both nursing and behavioral science perspectives.

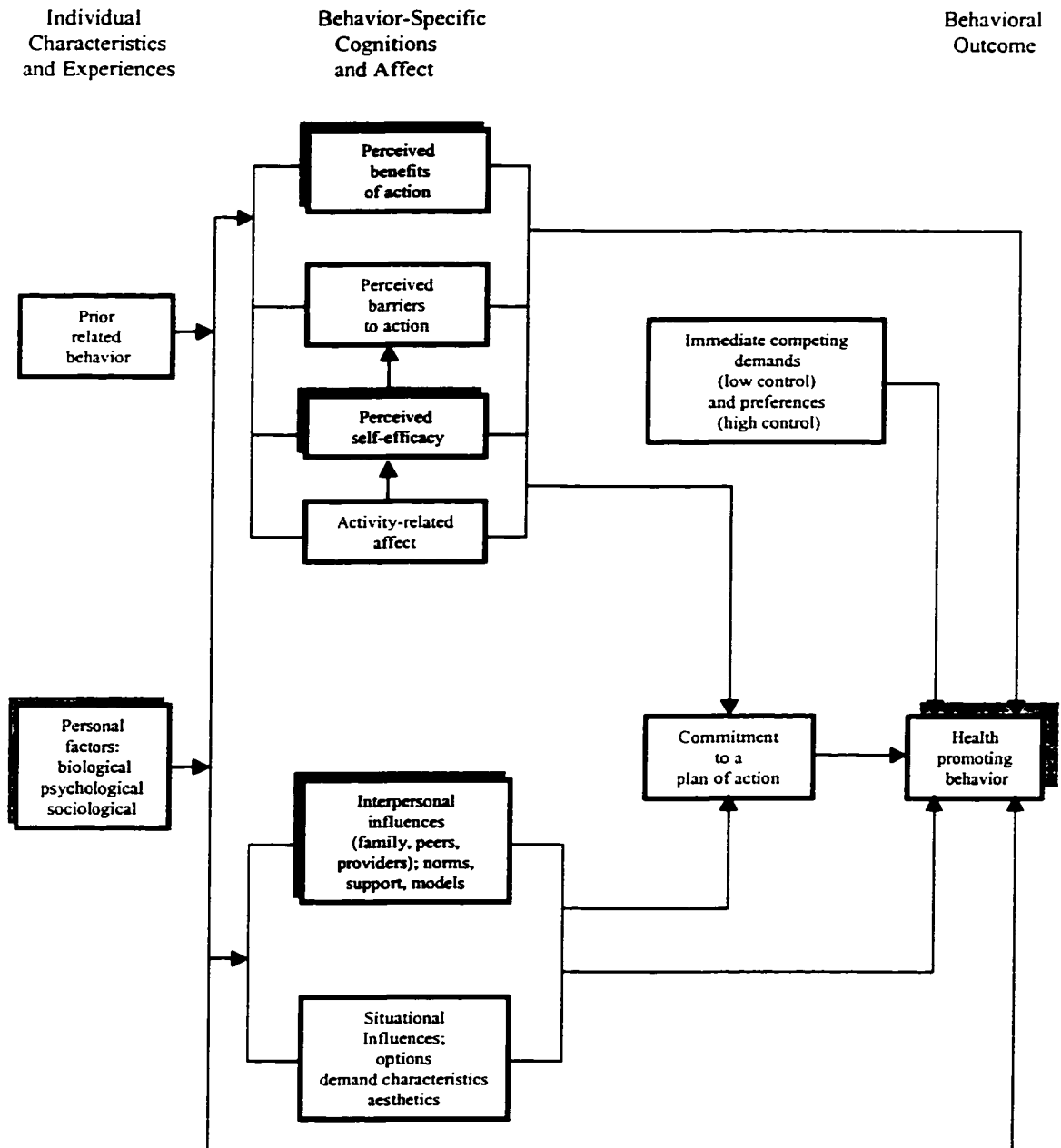
1. Persons seek to create conditions of living through which they can express their unique human health potential.
2. Persons have the capacity for reflective self-awareness, including assessment of their own competencies.

3. Persons value growth in directions viewed as positive and attempt to achieve a personally acceptable balance between change and stability.
4. Individuals seek to actively regulate their own behavior.
5. Individuals in all their biopsychosocial complexity interact with the environment, progressively transforming the environment and being transformed over time.
6. Health professionals constitute a part of the interpersonal environment, which exerts influence on persons throughout their life span.
7. Self-initiated reconfiguration of person-environment interactive patterns is essential to behavior change (pp. 54-55).

Pender's Health Promotion Model (HPM, 1996) is depicted in Figure 1. The model addresses three major concepts that include Individual Characteristics and Experiences, Behavior-Specific Cognitions and Affect, and Behavioral Outcome or Health promoting behavior. Individual Characteristics and Experiences include (a) *prior related behavior* and (b) *personal factors*: biological, psychological, and sociocultural. *Prior related behavior* is the frequency of the same or related behavior in the past, and has a causal impact on the Behavior-Specific Cognitions and Affect factors that in turn affect the likelihood of commitment to action and subsequent health promoting behavior.

Figure 1

Pender: Health Promotion Model



Pender, N. J. (1996). Health promotion in nursing practice, (3rd. Ed.) Stamford, CT: Appleton & Lange (Used with Permission).



Behavior-Specific Cognitions and Affect include factors such as (a) *perceived benefits of action*, (b) *perceived barriers to action*, and (c) *perceived self-efficacy*, (d) *activity-related affect*, (e) *interpersonal influences*, and (f) *situational influences*. *Perceived benefits of action* are the anticipated benefits of a behavior, and are proposed as directly motivating behavior as well as indirectly motivating behavior through determining the extent of commitment to a plan of action to engage in the behaviors from which the anticipated benefits will result. *Perceived barriers to action* consist of perceptions concerning the unavailability, inconvenience, expense, difficulty, or time-consuming nature of a particular action. Barriers are often discerned as blocks, hurdles, and personal costs of undertaking a behavior. *Perceived self-efficacy* describes a judgment on one's ability to accomplish a certain level of performance. Feeling efficacious and skilled in one's performance is likely to encourage engagement of a target behavior. *Activity-related affect* is defined as the subjective feeling states occurring prior to, during, and following a behavior, based on the stimulus properties of the behavior itself. *Interpersonal influences* are cognitions concerning the behaviors, beliefs, or attitudes of others. Major sources of interpersonal influence on health-promoting behaviors are families (parents or siblings), peers, and health care providers, such as nurses and physicians. *Situational influences* are the personal perceptions and cognitions in any situation or context, which can facilitate or impede behavior.

The Behavioral Outcome variable consists of *Commitment to a plan of action*, which pertains to (1) carrying out a specific action at a given time and place, and with specified persons or alone, irrespective of competing preferences, and (2) identification of definite strategies for eliciting, carrying out, and reinforcing the behavior. *Immediate*

*competing demands and preferences* refer to alternative behaviors that intrude into consciousness as possible courses of action immediately prior to the intended occurrence of a planned health-promoting behavior. Competing demands are viewed as those alternative behaviors over which individuals have a relatively low level of control because of environmental contingencies. Competing preferences are viewed as alternative behaviors with powerful reinforcing properties over which individuals exert a relatively high level of control. *Health promoting behavior* is the end point or action outcome in the Health Promotion Model. Health-promoting behavior is ultimately directed toward attaining positive health outcomes for the client. When health-promoting behaviors are integrated with a healthy lifestyle, the result of a positive health experience pervades throughout the life span. (Pender, 1996).

The Individual Characteristics and Experiences examined in this study were *Personal Factors* (demographic) including age, marital status, gender, ethnicity, health perception, living arrangements, and educational level. The Behavior-Specific Cognitions and Affect factors investigated were *Perceived benefits of action* and *Perceived self-efficacy*. They were considered as internally controlled behaviors (internal health locus of control) that directly influence participation in health-promoting behaviors. *Interpersonal influences* were considered as powerful others health locus of control that directly affect health-promoting behaviors. The end-point, *Health promoting behavior* was the Behavioral Outcome of current health practices that serve to maintain or increase levels of wellness, self-actualization, personal fulfillment, and productive living (Pender, 1996). The Behavioral outcomes examined in this study are

Physical activity and Nutrition. The shaded areas in Figure 1 Pender: Health Promotion Model, identify the variables of interest in this study.

### Research Question

The research question for this study was “what are the relationships between selected health-promoting behaviors and health locus of control in non-institutionalized, community-based seniors?”.

### Hypotheses

The following hypotheses were explored in this study. The variables considered were education and age (Individual Characteristics and Experiences), and effects on the selected health promoting behaviors of physical activity and nutrition (Behavioral Outcome).

1. Older adults, non-institutionalized and ambulatory, aged 65 years and older, whose scores are higher on internal locus of control engage more frequently in the health-promoting behaviors of physical activity and nutrition, than those who score lower on internal locus of control.
2. Age correlates negatively to health promoting behaviors of physical activity and nutrition among older adults.
3. Higher educational levels correlate positively to health promoting behaviors (physical activity and nutrition) among older adults.

### Definitions of Terms

1. Health Promoting Behavior– the end point or action outcome in the HPM, directed toward attaining a positive health outcome (Pender, 1996).  
Health promoting behaviors when integrated into a healthy lifestyle that

permeates all aspects of living result in a positive health experience throughout the life span. Health promoting behavior is measured by scores obtained on the Health Promoting Lifestyle Profile II, (HPLP II) (Walker et al., 1995).

A. Physical Activity / Exercise: Vigorous exercise (jogging, brisk walking, stair climber), and light to moderate exercise (sustained walking, bicycling, swimming, stretching, dancing, and gardening).

B. Nutrition: Diet patterns and choices which include eating breakfast; low intake of fat, cholesterol, sugar and sodium; high fiber; frequency and portions of fruits, vegetables, meat, fish, grains.

2. Health Locus of Control- measurement of beliefs about control of one's health as determined by one's own behavior and as dependent upon luck, chance, or powerful others. Health locus of control is measured by scores obtained on the Health Locus of Control Scale (Wallston, Wallston, & DeVilles, 1979).

A. Internal Health Locus of Control (IHLC) – belief that health is determined by one's own behavior and one is in control of that behavior.

B. Powerful Others Health Locus of Control (PHLC) – is associated with the tendency to perceive one's health as strongly influenced by powerful others such as physicians, nurses, or family members.

C. Chance Health Locus of Control (CLOC) - associated with the tendency to perceive one's health as strongly influenced by external factors such as fate, luck, or chance.

3. Demographic characteristics – age in years and highest educational level attained
4. Non-Institutionalized elderly – males or females, 65 years or older, who are independently residing in the community or in a senior/retirement center.
5. Ambulatory – individual's mobility allows independent performance of daily activities of living.

## CHAPTER THREE

### METHODS

#### Research Design

A descriptive, correlational survey design was selected to examine relationships among health locus of control, health-promoting behaviors, and selected demographic variables. Respondents over 65 years of age selected answers pertaining to health locus of control and health promoting behaviors from the Multidimensional Health Locus of Control Scale (Wallston et al., 1978) and the Health Promoting Lifestyle Profile II (Walker et al., 1995). Demographic variables examined in relation to the dependent variables (health promoting behaviors of physical activity and nutrition) were age and educational preparation. Demographic data of ethnicity, gender, living arrangements, marital status, and self-reported perception of current health status were collected for sample description purposes.

#### Setting

The sample consisted of individuals, 65 years and older, who were ambulatory and living independently in senior citizen apartment complexes in a county of a mid-western state (N = 48). The nonprobability, convenience sample selection criteria included all individuals who were alert and oriented and had the ability to read and write English. Inasmuch as the study asked questions about exercise and physical activity, non-ambulatory older adults were not included. The study participants, who were residents of the senior living centers, were not accustomed to attending a regularly scheduled exercise program, as the living centers did not offer this activity. Furthermore,

meals were not prepared and served on a regular basis for the senior residents, as each apartment included a kitchen to facilitate residents' independent meal preparation.

### Instruments

Three instruments were utilized to measure the variables in the study. The Health-Promoting Lifestyle Profile (HPLP-II) developed by Walker et al. (1995) was used to measure the health-promoting behaviors of physical activity and nutrition (Appendix B). The questions applicable to physical activity and nutrition health promoting behaviors were used to collect data to learn to what degree the study subjects engaged in the selected health promoting behaviors. The Multidimensional Health Locus of Control Scale: Form A (MHLC) developed by Wallston et al. (1978) was utilized to measure health locus of control (Appendix C). These instruments were modified by the researcher by enlarging the print, to better accommodate the ease of reading for the study participants. A demographic questionnaire was developed by the researcher (Appendix D).

Health-Promoting Lifestyle Profile (HPLP II). The Health-Promoting Lifestyle Profile II developed by Walker et al. (1995) was used to measure subjects' health promoting behavior. The HPLP II is intended to measure health-promoting behaviors, conceptualized as a multidimensional pattern of self-initiated actions and perceptions, that serve to maintain or enhance the level of wellness, self-actualization and fulfillment of the individual. As a result of further development on evaluating components of a healthy lifestyle, the original instrument, HPLP devised in 1987, was revised with the development of the 52-item, HPLP-II. The current HPLP-II consists of six subscales, which are intended to measure healthy lifestyle domains related to: physical activity (8

items), nutrition (9 items), health responsibility (9 items), stress management (8 items), interpersonal relations (9 items), and spiritual growth (9 items). The Health-Promoting Lifestyle Profile II is a summated behavior rating scale (range 52-208) that employs a 4-point response design (1 = never, 2 = sometimes, 3 = often, and 4 = routinely) to measure the frequency in the practice of health-promoting behaviors. This study utilized two subscales of the HPLP II, Physical Activity and Nutrition. The Physical Activity subscale included 8 items, while Nutrition subscale encompassed 9 items. Physical Activity on the HPLP II includes items concerned with regular exercise, physical activity and recreational activity patterns and frequency of participation. Nutrition includes items concerned with meal patterns and food choices related to regular servings of certain food groups.

The total instrument was found to have high internal consistency, with an alpha coefficient of .94. Reliability for all six subscales was found to have had the following alpha coefficients: Physical Activity (.85), Nutrition (.80), Health Responsibility (.86), Interpersonal Relations (.87), Stress Management (.79), and Spiritual Growth (.86) (Walker et al.,1995). In this study, the eight questions related to Physical Activity and nine questions related to Nutrition were used to measure the frequency of self-reported behaviors in each of these domains. The mean scores were utilized to determine the frequency of reported behaviors for the study participants. Mean scores of 2.5 to 4 indicated frequent or regular engagement of the health-promoting behavior (Appendix B).



Multidimensional Health Locus of Control (MHLC). The Multidimensional Health Locus of Control Scale: Form A (MHLC-A) is an 18-item instrument with three subscales: Internal Health Locus of Control (IHLC), Powerful Others Health Locus of Control (PHLC), and Chance Health Locus of Control (CHLC). A self-report, 6-point Likert format (within each subscale) included responses ranging from: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = slightly agree, 5 = moderately agree, and 6 = strongly agree (Wallston et al., 1978). The three subscales on the MHLC allowed subjects to be indexed according to their primary perception of health control to lie with themselves (Internal Locus of Control), Powerful Others, or Chance. The possible score range was 6 to 36 on each subscale. Subjects were classified as Internal Health Locus of Control, Powerful Others or Chance Locus of Control, depending upon which locus of control score was the highest. The developers of the MHLC report reliability estimates as measured by coefficient alpha ranges from .673 to .767 among the subscales. Alpha reliability coefficients in the study conducted by Speake, Cowart, and Pellet (1989) were .75 for the Internal subscale, .76 for the Powerful Others subscale, and .81 for the Chance subscale. The alpha coefficients for respondents' health locus of control in the current study in comparison were Internal subscale ( $\alpha = .56$ ), Powerful Others subscale ( $\alpha = .66$ ), and Chance ( $\alpha = .60$ ).

Demographic data were collected by means of a self-report questionnaire as represented in Appendix D. Demographic factors included gender, age, ethnic origin, living arrangements, education level, marital status, and self-reported current health status of excellent, good, fair, or poor. Self-reported current health status data was used to yield descriptive statistics of the study sample. The factor of age could influence the

participation in physical activities or nutrition by older persons. Also educational levels, those being higher or lower, could affect the frequency of participation in health promoting activities. Additionally, age and educational levels may influence an older individual's health locus of control orientation.

### Procedure

Prior to proceeding with this study, approval was obtained from the Grand Valley State University Human Research Review Committee (Appendix E). Agency approval was obtained from each of the senior living centers in order to approach participants and or residents for participating in the study (Appendices F & G). Consent was obtained from each participant by means of the subject volunteering to complete the questionnaire packet, with assurance that all data from the questionnaire would be confidential, and anonymity would be maintained. Subjects were informed that participation could be discontinued at any time with no prejudice to their relationships with the living center or investigator. The introduction and verbal script were reviewed and explained to all subjects before participating in the completion of the questionnaire (Appendix H). The completed questionnaires were returned in separate envelopes, which were provided.

All interested participants were given a packet containing the following: (a) an introductory letter describing the purpose of the study, (b) questionnaire material with questions from two instruments and one demographic information form. Orientation of mental capabilities was established by assuring the proper completion of the current date (month, day, and year). The subjects were asked to complete the questionnaire during a pre-determined morning session or afternoon coffee time at their respective living center. Care was taken to schedule dates during a favorable time of day that best accommodated

the participants' personal schedules. Allowing each participant to proceed at his or her own pace minimized fatigue. Stress was decreased by expressing there were no 'right' or 'wrong' answers, and responses were strictly confidential. Potential risks to subjects were few. The meetings were held in a quiet, comfortable, well-illuminated, dining/multi-purpose room that was adequately equipped with tables and chairs. Questionnaires were neat and legible, and the subjects were assured they could discontinue their participation at any time. The investigator remained in the room at each living center to accommodate any questions and concerns during the questionnaire completion. Respondents were offered a summary report of the final results of the study. A separate short form requesting name and address was made available to complete and drop in a designated box for those requesting a summary of the study findings.

## CHAPTER FOUR

### RESULTS

The purpose of this study was to explore relationships between selected health promoting behaviors of older, non-institutionalized adults and health locus of control, and selected demographic data. One research question and three hypotheses were identified and addressed through data analysis by using the Statistical Package for Social Sciences (SPSS). Data were analyzed using descriptive and inferential statistics. A significance level of  $p = < .05$  was set. Data obtained from the subjects were summarized and characterized by the use of descriptive statistics. The mean scores of the Health Promotion Lifestyle Profile II and the Multidimensional Health Locus of Control Scales and associations between the two are presented. Demographic factors and how they relate to health promoting behaviors are also discussed.

#### Description of Sample

Fifty-one subjects volunteered to participate in the study, however data from three were not included for the following reasons: two did not meet the age requirement, and one did not complete the questionnaire. The sample consisted of 48 older adults, residing in senior living centers who were primarily female ( $n = 39, 81\%$ ). The ages of the participants ranged from 66 to 96 years. The mean age was 82.8 years with a standard deviation of 7.43. Nearly one-half of the population ranged from 81 to 89 years of age or 46%.

The predominant ethnic background reported was Caucasian ( $n = 45, 94\%$ ); two reported more than one ethnic background, while one responded as Asian. The majority of subjects reported being widowed ( $n = 36, 75\%$ ), and 10% reported being married,

Table 1

Distribution of Sample by Age, Gender, Ethnic Origin, Marital Status, Living Arrangement, and Education (N = 48)

Variable	Frequency	Percentage
<u>Age (M = 82.8, SD = 7.4)</u>		
66-74	8	16.7
75-80	8	16.7
81-89	22	45.8
90-96	10	20.8
<u>Gender</u>		
Female	39	81.3
Male	9	18.8
<u>Ethnic Origin</u>		
Caucasian	45	93.8
Asian	1	2.1
More than one	2	4.2
<u>Marital Status</u>		
Widowed	36	75.0
Married	5	10.4
Divorced	4	8.3
Never Married	3	6.3
<u>Living Arrangement</u>		
Alone	43	89.6
With Spouse	4	8.3
With Other Family	1	2.1
<u>Educational Level</u>		
Less than high school	6	12.5
Completed high school	31	64.6
Varying college education	11	22.9

8.3% divorced, and 6.3% never married. A greater number reported living alone (n = 43, 90%), compared to 8% who lived with a spouse and 2% who lived with a family member (see Table 1). The mean educational level was 11.75 years with a standard deviation of 2.02. Subjects with less than a high school education were 13%, with 65% having completed high school, and 23% reported varying levels of college education. (Table 1).

Subjects' self-reported health status was most often reported as 'Good' (65%), with 11 reported as 'Fair', 5 'Excellent', and 1 'Poor'. In summary, the typical participant in this study was a Caucasian, 83 year old, widowed female, who had completed high school, and reported her current health status as 'good'.

### Findings

Research question. What are the relationships between selected health-promoting behaviors and health locus of control in non-institutionalized, community-based seniors? A significant and inverse relationship ( $r = -.32$ ,  $p = .04$ ) was found between the health promoting behavior of Nutrition and Chance Health Locus of Control. Those not holding a high orientation in the belief of Chance Health Locus of Control, practiced regular Nutrition behaviors. No significant relationships were found between Physical Activity and either health locus of control (see Table 2).

Table 2

### Pearson Correlations of Health Locus of Control, Age, and Education to Health

#### Promoting Behaviors: Physical Activity and Nutrition

<u>Health Locus of Control</u>	<u>Physical Activity</u>	<u>Nutrition</u>
Internal	0.25	0.05
Powerful Others	0.15	0.10
Chance	0.02	-0.32 *
<u>Demographic Data</u>		
Age	-0.17	0.12
Education	0.36 **	0.07

\*  $p = < .05$

\*\*  $p = < .01$

## Hypotheses

Hypothesis 1. It was hypothesized that older adults, non-institutionalized and ambulatory, aged 65 years and older, whose scores are higher on internal locus of control, engage more frequently in the health-promoting behaviors of Physical Activity and Nutrition, than those who scored lower on internal locus of control. Study participants were grouped according to high (27 to 35), and low (16 to 26) score results. Results revealed no significant difference between those scoring low and high on the internal locus of control and the health-promoting behavior subscales of Physical Activity and Nutrition ( $t = 1.39$ ;  $df = 44$ ;  $p = .17$ ;  $t = .31$ ;  $df = 44$ ;  $p = .94$ ), respectively. Therefore, the hypothesis was rejected. Those who scored high on the internal health locus of control did not engage in health behaviors of physical activity and nutrition more frequently than those whose internal scores were low (See Table 3).

Table 3

### Internal Health Locus of Control and Health Promoting Behaviors

<u>Health Promoting Behavior</u>	<u>Internal Control Scores</u>					
	<u>Low (n = 21) &lt; 27</u>		<u>High (n = 25) 27 and higher</u>		<u>t</u>	<u>df</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>		
Physical Activity	1.9	.54	2.1	.59	1.39	44
Nutrition	2.7	.56	2.7	.47	0.31	44

1 = Never, 2 = Sometimes, 3 = Often, 4 = Routinely

Hypothesis 2. It was hypothesized that age correlates negatively to health promoting behaviors of physical activity and nutrition among older adults. Age was not significantly related to health promoting behaviors of Physical Activity or Nutrition ( $r = -.17, p = .24; r = .12, p = .42$ ) respectively.

Hypothesis 3. It was further hypothesized that higher educational levels correlate positively to health promoting behaviors (physical activity and nutrition) among older adults. There was a correlation between education and physical activity ( $r = .36, p < .01$ ), however, there was no significant correlation between education and nutrition as illustrated in Table 2.

#### Findings on Instruments

The Multidimensional Health Locus of Control (MHLC) (Wallston et al., 1978) was utilized to measure the participants' beliefs related to health locus of control. Participants reported belief of Internal Health Locus of Control ( $M = 26.1, SD = 4.6$ ), then Powerful Others ( $M = 23.6, SD = 5.8$ ), followed by Chance ( $M = 19.4, SD = 5.7$ ). Study subjects' scores ranged from 16 to 35, 12 to 34, and 7 to 31, respectively for each dimension (See Table 4).

The Health-Promoting Lifestyle Profile II (Walker et al., 1995) was used to measure the participation in health promoting activities. Physical Activity mean scores represented engagement by subjects only "sometimes" ( $M = 2.0, SD = .61$ ). Nutrition mean scores also indicated participation as "sometimes", however, with the tendency toward practicing "often", with a mean of 2.7 and standard deviation of .51. The higher the participants' mean scores, the more frequent the selected health-promoting behaviors



were performed. The Health Promoting Lifestyle Profile II (HPLP II) mean scores of Physical Activity and Nutrition are displayed in Table 4.

Table 4

Subjects' Scores on MHLC and HPLP II

Scale	Score Range	Mean	Std. Deviation
Internal LOC	16 – 35	26.1	4.6
Powerful Others	12 – 14	23.6	5.8
Chance	7 – 31	19.4	5.8
Physical Activity	1.13 – 3.50	2.0	0.6
Nutrition	1.44 – 3.67	2.7	0.5

Additional Findings

A comparison chart was utilized to display the findings of this study and others related to sample size, mean age, and mean scores on Nutrition and Physical Activity (Table 7). Findings in this study were relatively consistent with the research reported by Duffy (1997), Huck and Armer (1996), and Pender (1990). It is interesting to note that in general, Exercise (Physical Activity), was reported as the least practiced as indicated by the lowest subscale score on the HPLP and HPLP II. The findings indicated the majority of Physical Activity (exercise) mean scores were lower than the mean scores of Nutrition. In each of the aforementioned studies, with the exception of Pender et al. (1990), the Exercise mean score ranked lowest compared to the HPLP subscale scores of Nutrition, Self-actualization, Health Responsibility, Interpersonal Support, and Stress Management. Over time, with varying sample sizes, and diverse age groups, the findings differ minimally in that Exercise or Physical Activity mean scores are generally low, compared to other subscale scores on the HPLP and HPLP II.

Table 5

Comparison of HPLP and HPLP II Mean Scores Across Studies

<u>Group</u>	<u>N</u>	<u>Mean Age</u>	<u>Nutrition</u>	<u>Physical Activity</u>
Duffy (1997) Mexican American employed women	397	36	2.5	1.9
Huck & Armer (1996) Roman Catholic Nuns	50	73	3.2	2.3
Pender et al., (1990) Work site health-promotion participants	589	38	2.7	3.2
Wallace (2000) Older Adults	48	83	2.7	2.0

The HPLP II mean scores of the subjects on the Physical Activity subscale were rank ordered and examined. Higher mean scores represented the activities or behaviors that were most practiced by the older persons in this study. Scores indicated that engagement in stretching exercises, and following a planned exercise program were the most frequently performed physical activities. The least practiced activities were checking the pulse and reaching a target heart rate during exercise. Table 5 displays the mean scores of each physical activity item on the HPLP II. Additionally, 50% of the subjects performed stretching exercises 'often' or 'routinely', and 48% participated in a planned exercise program 'often or 'routinely'. Subjects, who reported 'sometimes' in response to performing stretching exercises and following some type of planned exercise regimen, were 31% and 40% respectively. Subjects reporting 'never' in regard to checking their pulse, and reaching a target heart rate during exercise was 77% and 65% respectively.

Table 6

Rank Order of Mean Scores for Physical Activity (N = 48)

<u>Physical Activity</u>	<u>Mean Score</u>	<u>Std. Deviation</u>
Do stretching exercises	2.6	1.1
Follow planned exercise program	2.6	1.0
Get exercise daily; i.e., walking	2.3	1.0
Light to moderate exercise daily, Sustained 30 min. – 5x weekly	2.2	1.0
Exercise vigorously, 20 min. – 3x weekly	2.0	1.1
Leisure/recreational physical activity	1.5	0.8
Reach target heart rate at exercise	1.5	0.7
Check pulse rate at exercise	1.4	0.8

The most frequently reported nutrition practices were eating breakfast and 2-4 servings of fruit each day. The least practiced was eating 6-11 servings of bread, cereal, pasta or rice daily. Many subjects reported they chose from this food group daily however did not consume the number of servings identified. Seventy-seven percent of the subjects reported eating breakfast ‘routinely’. No responses of ‘never’ eating breakfast were reported. Sixty-three percent of the subjects reported eating 2-4 servings of fruit ‘often’ or ‘routinely’ each day. Only 19% of the subjects reported eating 6-11 servings of bread, cereal, rice or pasta ‘often’ or ‘routinely each day, and 44% reported ‘never’ eating these amounts of servings from this group daily (See Table 6).

Table 7

Rank of Mean Scores for Nutrition (N = 48)


---

<u>Nutrition</u>	<u>Mean Score</u>	<u>Std. Deviation</u>
Eat breakfast	3.6	0.76
2-4 fruit servings daily	3.0	0.99
2-3 meat/poultry/egg/nut servings daily	2.9	0.97
Diet low in fat	2.8	0.94
2-3 milk/cheese group servings daily	2.7	1.10
Read labels, packaged foods	2.5	1.10
Limit sugars and sweets	2.5	1.00
3-5 vegetable servings daily	2.5	0.92
6-11 servings bread, cereal, pasta, rice daily	1.8	0.81

---

In summary, persons aged 65 years and older, who were ambulatory and lived independently in senior living centers, largely believed their health was in their own control. Those with higher educational levels tended to engage more frequently in physical activity. Age did not relate significantly to performance of health promoting activities of nutrition and physical activity.

Of the three hypotheses, the first was not supported. However a significant, inverse relationship was identified between Chance Health Locus of Control and Nutrition. There was no relationship between age and health promoting activities of Physical Activity and Nutrition to support hypothesis number 2. The third hypothesis

was partially supported, identifying that education was positively related to Physical Activity, but not to Nutrition.

## CHAPTER FIVE

### DISCUSSION AND IMPLICATIONS

The purpose of this study was to explore the relationships between health locus of control, selected demographics, and health promoting behaviors in older persons. A descriptive correlational design was employed to examine the relationships. The dependent variable, health promoting behaviors, was measured by the Health-Promoting Lifestyle Profile II. The independent variable of Health Locus of Control, including internal, powerful others, and chance, was ascertained by the Multidimensional Health Locus of Control Scale. Forty-eight individuals, aged 65 years and older, living independently in senior living centers, were selected by convenience method to participate in the study.

#### Results of the Study

The major hypothesis of this study was that non-institutionalized, older adults, 65 years and older, with high internal health locus of control scores would engage in health promoting behaviors more frequently than those exhibiting a low score. This hypothesis was not supported. Internal locus of control, therefore, was not a predictor of frequent or regular practice of healthy behaviors involving Physical Activity and Nutrition.

In contrast, Speake et al. (1989) found that Internal Health Locus of Control was a principal determinant in health promotion activity, therefore a significant predictor of healthy lifestyles. Higher internal scores were associated with higher scores on exercise and nutrition subscales, however, other significant relationships between Internal Health Locus of Control and health promoting behaviors were not found. Similar findings related to health locus of control and health-promoting behaviors were also reported in

other studies (Duffy, 1993, 1997). Duffy (1997) studied lifestyle behaviors of employed Mexican American women (N = 397) who ranged in ages from 19 to 70 years with a mean age of 36.9 years and standard deviation of 9.1. It was found that those with an Internal Health Locus of Control engaged in exercise frequently or regularly. Pender (1990), on the other hand, found no significant relationships between Internal Health Locus of Control and health promoting behaviors. Employees (N = 589) enrolled in a work-place wellness program were more likely to report healthy lifestyles if they believed they personally were influenced to some extent by Powerful Others (Pender, 1990).

The findings in this study did not support hypothesis 1, that Internal Health Locus of Control was a determinant of frequent or routine participation in Physical Activity and Nutrition behaviors. Previous research findings, indicating that Internal Locus of Control was a predictor for engagement of health promoting behaviors, were generally studies with a larger sample size and participants of a younger age. The findings in this study could be related to the convenience, small sample size or the older age of the participants in the sample. It was noted however, that Internal Locus of Control mean scores were higher than Powerful Others and Chance Health Locus of Control.

In the second hypothesis, age was hypothesized to relate negatively with health promoting behavior scores. However, age was not significantly related to either physical activity or nutrition behaviors. This finding differs from Speake et al. (1989) in which age significantly related negatively to nutrition scores ( $p = < .05$ ). Canonical Correlations indicated modest relationships of age and education to the performance of health-promoting behaviors in Duffy (1996). The nonprobability sample of the current

study included only participants living in senior centers (N = 48), who were generally female, and nearly half of the subjects were aged 81 to 89 years (M = 83). The age range was small with the majority of the subjects, resulting in less obvious change or differences of activities over a period of several years. Speake et al. included participants (N = 297), who were in general, female, but were aged 55 to 93 with a mean age of 72.

The third hypothesis was that higher education levels would correlate positively to selected health-promoting behaviors among older adults. The Pearson Product Moment Correlation Coefficient revealed a significant positive relationship between education and physical activity behaviors. However, there was no significant relationship between education and nutrition. The findings indicated that older persons, in this study, with a higher degree of education engaged more frequently in Physical Activity behaviors, but not Nutrition. Those participants who identified a higher education level may read more often about the benefits of physical activity and understand the implications of frequent or routine practice of the health-promoting behavior than those with less education.

Additional analysis with the Pearson Product Moment Correlation Coefficient revealed a moderate significant, inverse relationship between Chance Health Locus of Control and Nutrition. This would indicate that subjects, who scored low on Chance Health Locus of Control, indicated that they did not believe their health was controlled by luck or chance, and did engage in healthy Nutrition behaviors. Speake et al. (1989) found that study participants scoring higher on Powerful Others subscale, also scored higher on the Exercise subscale ( $p = < .05$ ), but not Nutrition.



The subjects' characteristics differed from this study as compared to the previous studies. Pender et al. (1990) recruited study participants entirely from a workplace wellness program. The nature of the sample suggests that employees, as well as other persons, with the belief of Powerful Others, may be likely to enroll in structured health promotion programs where peer support and professionals are readily available and present. This may be particularly applied to programs that include a physical activity agenda. Likewise, study participants (Speak et al., 1989) who indicated a belief in Powerful Others, also engaged in exercise (Physical Activity). The study volunteers were recruited from health fairs that could indicate they represent a behavior orientation of being influenced by others, such as health care professionals. Duffy (1990) also recruited study participants (N = 383) from a health related environment, that of nutrition centers. An internal belief was indicated to be a determinant of practicing health-promoting behaviors of Nutrition and Exercise. These findings could imply that persons, who are currently participating in a health promoting activity, will also hold or acquire a significant belief of Internal or Powerful Others Health Locus of Control.

This study's subjects consisted of retired, older adults, with unknown employment histories. Also, the participants were not recruited from a health-related environment or program, which differs from the aforementioned research studies, which could result in finding that these subjects' do not retain a significant belief of Internal Health Locus of Control or Powerful Others, influencing their health behaviors. The senior living centers did not offer regularly scheduled exercise programs or provide daily meals to the residents. The residents were not accustomed to access or participation in these activities within their respective living center.

### Relationship of Findings to Conceptual Framework

Behavior Specific Cognitions and Affect in Pender's (1996) Health Promotion Model (HPM) were marginally influential in predicting health-promoting behaviors in this study (See Figure 1). Internal Health Locus of Control could conceivably correspond with the Health Promotion Model (Pender, 1996) concepts of perceived benefits of action and perceived self-efficacy. Subjects who scored higher on Internal Locus of Control may perceive what they can control (self-efficacy) will make a difference with a positive or beneficial outcome (perceived benefits). Although the self-efficacy concept was not distinctly examined in this study, it may motivate older individuals directly or indirectly, as perceived personal internal control on health behavior. Powerful Others Health Locus of Control can be explained with interpersonal influences in the HPM, as those conditions related to the behaviors, beliefs and attitudes of others upon an individual's own health promoting behavior. Chance Health Locus of Control may be explained as the belief of low perceived self-efficacy. Individuals with Chance Health Locus of Control may conclude that engagement in health-promoting behaviors would not be efficacious or effective in improving or maintaining healthy lifestyles or that they don't have the ability to participate.

### Limitations of the Study

The study was limited by the small (N = 48) sample size, and selection by convenience method. All participants resided in senior living centers, were primarily Caucasian females, and from one geographical region that limited the generalizability of the results. The study participants were well elderly, and since the study included questions about walking, non-ambulatory older adults were not included. Effort was

made to utilize items from the HPLP II that were relevant to the Physical Activity and Nutrition domain. However, statements regarding Physical Activity in particular, were identified in terms of duration and intensity, and consequently, did not appear to concur with the routine exercise related behaviors commonly identified with the older persons in this study. Statements related to vigorous exercise, sustained for 20 or more minutes, such as aerobic dancing, using a stair climber, or bicycling might not be appropriate to effectively assess physical activity behaviors of the elderly. Therefore, comparisons of studies that utilize the same instrument, with younger aged subjects, must be done with caution, while considering particular sample characteristics. Development of additional instruments to better suit the elderly population, particularly with physical activities that are applicable to endurance, strength, and physical capabilities of person 65 years and older is warranted.

Maturation may have occurred during the course of the study, relating to mental fatigue during the completion of questionnaires, that may have resulted in inconsistent answers. However, this is not likely, as the average length of time corresponded with the anticipated time of approximately 15 minutes. Some participants stated they exerted more concentration than anticipated to answer the graduated scale (6 point-Likert type) for locus of control subscales. The study participants completed questionnaires during a customary social time of day, which could have interfered with many respondents' concentration.

Attempts were made by the investigator to control internal and external threats to validity. The survey was conducted in a quiet, well-illuminated multi-purpose room, with tables to accommodate writing and the completion of questionnaires. The instruments

were enlarged to accommodate easier reading of the printed questions. The subject's current health perceptions were evaluated to see if findings were consistent with the general population. The researcher remained in the room and accessible to all participants to answer questions and offer any needed assistance. Strict anonymity was maintained and participants were reminded they could discontinue the survey at any time with no consequences.

### Implications for Nursing Practice

The nation's older population is continually growing. The older populace will burgeon between the years 2010 and 2030 (Profile for Older Americans, 1999), bringing many challenges as well as opportunities for nurses and other health care providers. The findings in this study provide information about the health practices (physical activity and nutrition) of older persons and health locus of control of one group. Descriptive statistics revealed the subjects' preference for internal health locus of control over powerful others or chance health locus of control. The overall pattern of findings is consistent with previous studies (Huck & Armer, 1996, Pender et al., 1990). Thus these older persons, aged 65 years and older, have the desire to be responsible for their health. However, their belief of Powerful Others Health Locus of Control should not be discounted. Mean scores of Powerful Others Health Locus of Control, despite being lower, were similar to the mean scores of Internal Health Locus of Control.

Identification of these two dominant perceptions of Health Locus of Control may impact nursing care delivery. Nursing interventions must continue to emphasize the importance of health-promoting behaviors among older adults. Enhanced teaching and strengthening the delivery of health knowledge pertinent to health promoting behaviors

of Physical Activity and Nutrition could enrich the quality of life for older persons.

Nurses and other health care professionals can reinforce these known Health Locus of Control beliefs by encouraging and assisting older persons to practice healthy behaviors, giving emphasis of the impact and control they have upon their own health. The belief of the elderly, of Powerful Others Health Locus of Control, suggests nurses and other health care providers, as well as family members, peers and friends can influence positive health behavior. Those persons who are considered influential (Powerful Others) need teaching in reinforcement strategies, allowing them to provide support and encouragement to those (older adults) in need of commitment to the practice of health promoting behaviors.

This study identified Physical Activity was performed minimally by older adults 65 years and older. It is important to develop physical activity programs for seniors that are appropriate, accessible, and affordable. As discussed earlier in this paper, research findings have shown multiple benefits to older persons' health and daily living through physical activity or exercise. Physical activity helps the elderly maintain the ability to live independently and reduces the risk of falling injuries, coronary heart disease, hypertension and diabetes. Absence of or minimal physical activity by older persons was identified to be detrimental to overall health and independence. This study, as well as previous research, supports, in a consistent manner, that HPLP and HPLP II exercise (Physical Activity) scores are notoriously low when compared with other health-promoting behaviors. Programs for physical activity could be instituted in senior living centers where active participation by older persons may bolster independence and self control, while improving or maintaining physical strength, mobility, flexibility, and enhancing quality of life.

Findings in this study indicated that stretching exercises and following a planned exercise program were the most frequently performed physical activities. Senior living centers could provide a regularly scheduled physical activity program that emphasized various stretching exercises. More vigorous physical activities could also be included into a structured program for those who desired more activity. It is paramount that nurses keep in mind the importance of endorsing befitting types and levels of physical activity that reflect the interests and life stages of older persons.

Eating breakfast 'often' and 'routinely' was reported by the subjects. It could be most beneficial to offer a regularly scheduled breakfast at senior living centers, that provide healthy choices from the food pyramid. Thereafter, a nutrition class could follow, that was structured and delivered by nutrition and health care specialists. Nurses can actively and effectively intervene by counseling, teaching, and guiding older adults with regard to incorporating physical activity and good nutrition behaviors, regularly, into their lives.

#### Suggestions for Further Research

Further examination and testing of the variables in the model by Pender (1996) and relationships to health promoting behaviors is justified. Additional research testing Pender's model and the lifestyle practices and Behavior Specific Cognitions and Affect factors of older persons should continue. Additional testing to determine applicable approaches or methods to enhance older adults' participation in healthy behaviors is warranted. Further development and evaluation of the HPLP II is warranted to better address health-promoting behaviors likely practiced by older adults.

Questionnaires must not be too tedious or long for older persons to complete in a relatively short period of time. Simpler instruments for cognitive-perceptual and locus of control evaluation would be warranted to accommodate answers by older adults.

Comparable research is needed with larger, heterogeneous samples to explore further into the motivating factors related to the practice of health-promoting behaviors of older persons, as well as study variables that include barriers to health promoting practices.

### Summary and Conclusion

The purpose of this study was to analyze the relationships between age, education, and health locus of control to health promoting behaviors of physical activity and nutrition. Results did not indicate a significant relationship between age and regular participation of physical activity or nutrition. Higher education levels did reveal a positive correlation with physical activity. Further analysis suggested that Internal and Powerful Others Health Locus of Control were not associated with participation in health promoting behaviors of Physical Activity and Nutrition. This finding could be a result of older persons feeling that they have less control over their physical activity due to varying limiting factors regarding the level or duration of exercise possible for their age and ability. Special diets or change in eating habits and amounts consumed may have limited nutrition choices.

Several questions remain unanswered concerning motivating factors for older persons and the regular participation in various health-promoting behaviors. Nurses must continue to exert expertise in educating and encouraging the practice of health promotion behaviors in that our senior aged population may live healthy, functional, and independent lives.

## APPENDICES



## **APPENDIX A**

### **Consent to Use Health Promotion Model**

*Kay Wallace*  
6709 Beech Creek Drive  
Fruitport, Michigan 49415

March 14, 2000


Nola J. Pender, PhD, RN, FAAN  
Professor, Associate Dean for Research  
Director, Child/Adolescent Health Behavior Research Center  
University of Michigan School of Nursing  
400 North Ingalls Building  
Room 4236  
Ann Arbor, MI 48109-0482

Dear Dr. Pender,

I am writing to request permission to use your revised Health Promotion Model in my nursing thesis. I am studying factors related to the participation of health promoting activities in older persons. I am a Master of Science in Nursing candidate at Grand Valley State University in Allendale, Michigan. I expect to defend my Thesis, titled: "Determinants of Health Promoting Activities in Older Adults," in the early fall of 2000.

Thank you very much for your consideration of my request.

Sincerely,

  
Kay Wallace, RN, BSN  
Master of Science in Nursing Candidate

3/17/00

Dear Kay:

You have permission to use my revised Health Promotion Model in your thesis titled "Determinants of Health Promoting Activities in Older Adults."

Cordially,

  
Nola J. Pender, PhD, RN, FAAN  
Associate Dean for Research

## **APPENDIX B**

### **HPLP II and Instructions**

## APPENDIX B

### HPLP II

The questionnaire contains statements about your present way of life or personal habits. Please respond to each as accurately as possible, and try not to skip any items. Indicate the regularity with which you engage in each behavior by circling:

	NEVER	SOMETIMES	OFTEN	ROUTINELY
N = Never				
S = Sometimes				
O = Often				
R = Routinely				
1) Choose a diet low in fat, saturated	N	S	O	R
2) Follow a planned exercise program.	N	S	O	R
3) Limit use of sugars and food containing sugar (sweets).	N	S	O	R
4) Eat 6-11 servings of bread, cereal, rice and pasta each day.	N	S	O	R
5) Exercise vigorously for 20 or more minutes at least three times (such as brisk walking, bicycling, aerobic dancing, using a stair climber).	N	S	O	R
6) Eat 2-4 servings of fruit each day.	N	S	O	R
7) Take part in light to moderately physical activity (such as sustained walking 30-40-minutes 5 or more times a week).	N	S	O	R
8) Eat 3-5 servings of vegetables each day.	N	S	O	R
9) Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling).	N	S	O	R

	NEVER	SOMETIMES	OFTEN	ROUTINELY
10) Do stretching exercises at least 3 times per week.	N	S	O	R
11) Eat 2-3 servings of milk, yogurt or cheese each day.	N	S	O	R
12) Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking).	N	S	O	R
13) Eat only 2-3-servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.	N	S	O	R
14) Check my pulse rate when exercising.	N	S	O	R
15) Read labels to identify nutrients, fats, and sodium content in packaged food.	N	S	O	R
16) Reach my target heart rate when exercising.	N	S	O	R
17) Eat breakfast	N	S	O	R

This survey modified from the Life Style Profile II. (Walker, Sechrist, & Pender, 1995)

## APPENDIX C

### MHLC and Instructions

## APPENDIX C

### MHLC

Each item is a belief statement with which you may agree or disagree. Please circle the number that best represents the extent to which you agree or disagree. It is important that you respond according to your actual beliefs, and not according to how you feel you should believe.

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

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1) If I get sick it is my 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

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

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
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 of other people (for example, doctors, nurses, family, friends) that have been taking 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

This survey modified from the Multidimensional Health Locus of Control Scale: Form A (Wallston, Wallston, & Devellis, 1978).



**APPENDIX D**

**Demographic Data Sheet**

## DEMOGRAPHIC DATA SHEET

Please select one answer for each category below:

Today's Date: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Mo. Day Year

- A. 1 \_\_\_\_\_ Female  
2 \_\_\_\_\_ Male
- B. 1 \_\_\_\_\_ Asian  
2 \_\_\_\_\_ Black / African American  
3 \_\_\_\_\_ Hispanic  
4 \_\_\_\_\_ Native American / American Indian  
5 \_\_\_\_\_ White
- C. Living Arrangements: 1 \_\_\_\_\_ Alone  
2 \_\_\_\_\_ With Spouse  
3 \_\_\_\_\_ With family member  
other than spouse  
4 \_\_\_\_\_ With someone not related
- D. Year of Birth \_\_\_\_\_
- E. Education: What is the highest grade of school that you completed ? (circle one)

Grade School

High School

1 2 3 4 5 6 7 8

9 10 11 12

## DEMOGRAPHIC DATA SHEET

College

Graduate School

13 14 15 16

17 18 19 20 21 22

F. Marital Status: \_\_\_\_\_ Married    \_\_\_\_\_ Widowed  
                                         \_\_\_\_\_ Divorced    \_\_\_\_\_ Never Married

G. Generally speaking, how would you rate your current health?

4 \_\_\_\_\_ Excellent

3 \_\_\_\_\_ Good

2 \_\_\_\_\_ Fair

1 \_\_\_\_\_ Poor

**APPENDIX E**

**Human Subjects Review**



**GRAND VALLEY  
STATE UNIVERSITY**

1 CAMPUS DRIVE • ALLENDALE, MICHIGAN 49401-9403 • 616/895-6611

May 11, 2000

Kay Wallace  
67009 Beech Creek Drive  
Fruitport, Michigan 49415

RE: Proposal #00-221-H

Dear Kay:

Your proposed project entitled **Determinants of Health Promoting Behaviors in Older Adults** has been reviewed. It has been approved as a study which is exempt from the regulations by section 46.101 of the Federal Register 46(16):8336, January 26, 1981.

**Please forward a copy of the agency approval letters (reference on the letters proposal #00-221-H) to:**

**Paul Huizenga, Chair  
Human Research Review Committee  
C/O Grand Valley State University  
Department of Biology  
234 Padnos  
Allendale, MI 49401**

Sincerely,

  
Paul A. Huizenga, Chair  
Human Research Review Committee

**APPENDIX F**

**Permission for HPLP II**

**PERMISSION FORM**

I plan to use the *Health-Promoting Lifestyle Profile II* in a research or evaluation project entitled:  
Determinants Related to Participation of Health Promotion  
Activities in the Elderly.

I am enclosing a check for ten dollars (\$10.00) payable to the University of Nebraska Medical Center College of Nursing.

Kay Wallace  
Print Name

  
Signature

M.S.N. Candidate  
Position

1-16 846 5896  
Area Code Telephone #

Mailing Address

18765 North Fruitport Rd.  
Spring Lake, Michigan 49456

Permission is granted to the above investigator to copy and use the *Health-Promoting Lifestyle Profile II* for non-commercial data collection purposes such as research or evaluation projects provided that content is not altered in any way and the copyright/permission statement at the end is retained. The instrument may be reproduced in the appendix of a thesis, dissertation or research grant proposal without further permission. Reproduction for any other purpose, including the publication of study results, is prohibited without specific permission.

  
Susan Noble Walker

7/27/97  
Date

Please send two signed copies of this page to:

Susan Noble Walker, Ed.D., R.N., F.A.A.N.  
University of Nebraska Medical Center  
College of Nursing  
600 South 42nd Street  
Omaha, Nebraska 68198-5330

**APPENDIX G**

**Permission for MHLC**



Dear Colleague:

Thank you for your interest in the *Health-Promoting Lifestyle Profile II*. The original *Health-Promoting Lifestyle Profile* became available in 1987 and has been used extensively since that time. Based on our own experience and feedback from multiple users, it has been revised to more accurately reflect current literature and practice and to achieve balance among the subscales. The *Health-Promoting Lifestyle Profile II* continues to measure health-promoting behavior, conceptualized as a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization and fulfillment of the individual. The 52-item summated behavior rating scale employs a 4-point response format to measure the frequency of self-reported health-promoting behaviors in the domains of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations and stress management. It is appropriate for use in research within the framework of the Health Promotion Model (Pender, 1987), as well as for a variety of other purposes.

The development and psychometric evaluation of the English and Spanish language versions of the original instrument have been reported in:

- Walker, S. N., Sechnst, K. R., & Pender, N. J. (1987). The Health-Promoting Lifestyle Profile: Development and psychometric characteristics. *Nursing Research*, 36(2), 76-81.
- Walker, S. N., Volkan, K., Sechnst, K. R., & Pender, N. J. (1988). Health-promoting lifestyles of older adults: Comparisons with young and middle-aged adults, correlates and patterns. *Advances in Nursing Science*, 11(1), 76-90.
- Walker, S. N., Kerr, M. J., Pender, N. J., & Sechnst, K. R. (1990). A Spanish language version of the Health-Promoting Lifestyle Profile. *Nursing Research*, 39(5), 268-273.

A manuscript describing the reliability and validity of the revised instrument is in preparation. For *Health-Promoting Lifestyle Profile II*, the Cronbach's alphas are as follows: Health Responsibility (.861), Physical Activity (.850), Nutrition (.800), Spiritual Growth (.864), Interpersonal Relations (.872), Stress Management (.793), Total HPLPII (.943). A principal axis factor analysis supported the presence of the six factors used as subscales.

Copyright of all versions of the instrument is held by Susan Noble Walker, EdD, RN, FAAN, Karen R. Sechnst, PhD, RN, FAAN and Nola J. Pender, PhD, RN, FAAN. Permission no longer will be given to use the original *Health-Promoting Lifestyle Profile*. The extensive demand for use has been gratifying to us, but also costly. To offset the costs associated with revision, psychometric evaluation and distribution of the *Health-Promoting Lifestyle Profile II* at the University of Nebraska, there is now a small charge for use. If you wish to use the instrument, please complete and sign 2 copies of the enclosed permission form, along with a check for \$10.00 made payable to the University of Nebraska Medical Center College of Nursing and return to:

Susan Noble Walker, Ed.D., R.N., F.A.A.N.  
University of Nebraska Medical Center  
College of Nursing  
600 South 42nd Street  
Omaha, Nebraska 68198-5330

A copy of the instrument, scoring instructions, signed permission for use and a list of publications reporting research using all versions of the instrument will be forwarded to you.

Sincerely,  


Susan Noble Walker, EdD, RN, FAAN  
Professor and Chair, Department of Gerontological, Psychosocial and Community Health Nursing  
University of Nebraska—Lincoln University of Nebraska Medical Center University of Nebraska at Omaha University of Nebraska at Kearney

## APPENDIX H

### Introductory Letter

## APPENDIX H

### INTRODUCTORY LETTER

Dear Participant,

Nurses are continually studying ways to improve the delivery of effective health care and health practices. The purpose of this study is to learn how adults aged 65 and older feel about their health and how they practice healthy behaviors; particularly physical activity and nutrition.

This study will not benefit you personally, but it may assist nurses and other health care workers in understanding more about older persons' health and help them to stay as healthy as possible. It is unlikely that you will be harmed in any way by participating in the study. You are under no obligation to participate, and you are free to discontinue participation at any time without any consequence. Your information and answers will **NOT** be given to anyone other than the sole investigator. You may be assured of complete confidentiality. You may return the questionnaire in the provided envelope. All data will be destroyed at the conclusion of the research study. If you agree to participate, you will be asked to complete three (3) brief questionnaires. It will take approximately 10 to 15 minutes. There are no right or wrong answers. Your completing and returning the questionnaires will be considered your consent to participate.

## APPENDIX H

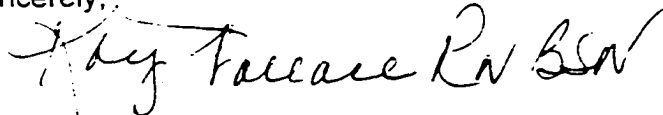
The study is being performed by Kay Wallace, a registered nurse who is completing the Master of Science Degree in Nursing from Grand Valley State University.

If you wish to receive a summary of the results of this research, please complete and sign the separate form that is provided for this purpose. I will be most happy to answer any questions that you may have.

If you should have any further questions concerning your rights as a research participant that have not been answered by the investigator, you may contact the Grand Valley State University Human Subjects Review Committee Chair, telephone (616) 895-2472.

Thank you for your assistance.

Sincerely,



Kay Wallace, RN, BSN

**APPENDIX I**  
**Agency Consent (1)**

AGENCY CONSENT

THE [REDACTED]  
GRANTS TO: ✓✓✓ Kay Wallace

a student at Grand Valley State University - Nursing Program, leading to Master in Science Degree, the privilege of interacting and requesting for volunteer study participants living at the Center and utilizing the facility in order to collect information concerning the following:

**"Determinants of Health Promoting Behaviors in Older Persons"**

[REDACTED]  
Signature of Agency Personnel

DATE: 5-22-00

[REDACTED]  
Signature of Student

DATE: 5-22-00

**APPENDIX J**  
**Agency Consent (2)**


AGENCY CONSENT

THE Pine Grove Manor


GRANTS TO: Kay Wallace

a student at Grand Valley State University - Nursing Program, leading to Master in Science Degree, the privilege of interacting and requesting for volunteer study participants living at the Center and utilizing the facility in order to collect information concerning the following:

**"Determinants of Health Promoting Behaviors in Older Persons"**

  
\_\_\_\_\_  
Signature of Agency Personnel

DATE: 5-23-00

  
\_\_\_\_\_  
Signature of Student

DATE: 5-23-00



## LIST OF REFERENCES

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