# THE RELATIONSHIPS AMONG SOCIAL SUPPORT, SPIRITUAL WELL-BEING, COMMITMENT AND HEALTH-PROMOTING BEHAVIORS IN OLDER ADULTS

A Dissertation

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Doctor of Philosophy Degree

The University of Tennessee, Knoxville

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To the Graduate Council:

I am submitting herewith a dissertation written by Clara S. Boland entitled "The Relationships Among Social Support, Spiritual Well-Being, Commitment and Health-Promoting Behaviors in Older Adults". I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Nursing.

[redacted]

Debra C. Wallace, Major Professor

We have read this dissertation
and recommend its acceptance:

[redacted]

Accepted for the Council:

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Associate Vice Chancellor and
Dean of the Graduate School

## DEDICATION

This dissertation is dedicated to my mother whose own health needs and struggles were a major factor in setting the course for this study. Even though she never did understand exactly what kind of "doctor" I would eventually be, she was proud of my efforts and encouraged me every step of the way. Mother did not get to see me graduate. She died this year, one month to the day before her 88th birthday. I miss you, Mom!

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## ABSTRACT

The purpose of this study was to examine relationships among personal factors, social support, spiritual well-being, commitment and health-promoting behaviors in three age groups of older adults. The elderly are a vulnerable, high-risk group and elder care accounts for a large portion of the national health budget. The challenges issued by Healthy People 2000, while addressing health promotion, protection, and preventive needs for all ages, contain numerous objectives specific to the older adult. Prominent objectives are those to increase functional independence, reduce risk through promotion of healthy behaviors, and increase accessibility and services, such as health promotion programs. At a midpoint review those goals had not been met. To successfully meet these challenges and mandates, it is important to understand factors that enhance commitment by older adults to practice healthy behaviors.

Pender's revised Health Promotion Model (Pender, 1996) guided development of a theoretical model for this correlational study using a non-probability sampling method. Criteria for inclusion were (a) adults aged 65 and older who are (b) self-caring, (c) community dwellers, (d) English speaking, and (e) without known cognitive impairment. The sample of 595 seniors was divided into three age groups: 65-74, 75-84, and 85 and older. Data collection sites included senior centers, senior residences, social and civic groups and religious congregations in communities of four geographic areas: Southeast Missouri, East Tennessee, East Texas and Southwest West Virginia.

For data collection, a demographic data form and four self-report scaled

questionnaires were used: the Physical Activity, Nutrition, Stress Management, and Health Responsibility Subscales of the Health-Promoting Lifestyle Profile II; the Commitment Subscale of the Health-Related Hardiness Scale; the Personal Resource Questionnaire 85, Part 2; and the JAREL Spiritual Well-Being Scale. Data analysis, using SPSS-PC, included measures of central tendency, Pearson correlation, analysis of variance (ANOVA), post hoc Scheffe' tests and Levene Tests for Homogeneity of Variance. Structural equation modeling with Amos software was conducted. Cronbach's Alpha coefficient analysis was employed to establish reliability of instruments used in this sample.

Findings supported the relationships hypothesized by Pender's Health Promotion Model and that older adults are not a homogeneous group. ANOVA analysis revealed differences among the age groups in levels of commitment and physical activity. SEM analysis supported the theoretical model in each age group. An interaction effect between Social Support (SS) and Spiritual Well-Being (SWB) was supported, with each concept having both direct and indirect effects on Commitment and indirect effects on Health-Promoting Behaviors (HPB). A surprising and new finding was that SS and SWB only influenced HPB through Commitment and not directly. The relationship between Commitment and HPB was significant ($p \leq .0000$) in age groups I and II, but not significant in age group III. A Personal Factors concept was not supported. Rather, individual personal factors had direct, as well as indirect, effects on specific health-promoting behaviors in all age groups, suggesting that specific personal factors are more relevant to performance of one behavior than to

that of another. These findings suggest that Health-Promoting Behaviors may be important as a conceptual category, but not as a latent concept in older adults, and that Commitment to healthy behaviors may no longer be an important issue for those aged 85 and older. The importance of Source of Spirituality and SWB to Commitment and individual outcome behaviors is especially noteworthy, supporting the addition of each concept to Pender's Health Promotion Model.

Implications were primarily for the efficacy of the Health Promotion Model for planning, providing and evaluating health promotion programs for older adults. Further investigation among elders is warranted.

# TABLE OF CONTENTS

Page

Page

# LIST OF TABLES

# LIST OF FIGURES

# CHAPTER I

## INTRODUCTION

The elderly are a vulnerable high-risk group and elder care accounts for a large portion of the national health budget (U.S. Department of Health and Human Services [USDHHS], 1996). Many conditions and diseases once accepted as normal products of the aging process are now known to be the results of often treatable or preventable circumstances. In combination with the dramatic overall increase in the older population (especially the percentage of those surviving past age 85), this knowledge has prompted national concern for health promotion and disease prevention for elders. The challenge issued by Healthy People 2000 (USDHHS, 1991) contains numerous objectives for older adults. Specific targets are in three prominent areas: increase functional independence, reduce risk through promotion of healthy behaviors, and increase accessibility and services such as health promotion programs. A midpoint review (USDHHS, 1996) revealed most targets for elders had not been met. In fact, statistics indicated a "decline in health-related quality of life despite increases in life expectancy" (USDHHS, 1996, p. 6). Agencies, such as the National Institute of Nursing Research (1999), list health promotion as a top priority, with older adults an important target group. Managed care mandates to reduce health care use and costs provide added imperative for improving health promotion, especially for older adults.

A review of nursing and health-related research literature over the past fifteen years yielded numerous studies of potential predictors of health-promoting behaviors for older adults (e.g., Bowsher & Keep, 1995; Duffy, 1993; Harrison, 1993; Jones &

Nies, 1996; Zauszniewske & Harman, 1996). Comparisons of study results revealed little consistency. However, a commonality noted among findings was the importance of social support, as well as spiritual well-being and practices, in empowering older persons to practice health-promoting activities. Spirituality and connectedness have been identified as essential elements in older adults' experiences of feeling healthy. Secondary research findings have led to conclusions that spirituality and relationships with others are elements that must be assessed and addressed.

## Study Purpose

In order to successfully meet the challenges and mandates indicated above, it is important to understand factors that may enhance commitment by older adults to the practice of healthy behaviors. This study examined the relationships among personal factors, social support, spiritual well-being, commitment and health-promoting behaviors in three age groups of older adults.

## Theoretical Perspective

Pender's revised Health-Promotion Model (1996), as depicted in Figure 1, served as the theoretical perspective to guide this study. The model was developed in 1982 as an alternative to theories, such as the Health Belief Model (Becker et al., 1977) or Protection Motivation Theory (Rogers, 1975), which focused on health protection or behaviors aimed at avoiding insults to health and well-being. While research has demonstrated that potential insults or immediate threats to health serve as motivators of healthy behaviors, these insults have not been found to provide sufficient motivation for sustained behaviors or overall healthy lifestyles. Health promotion is

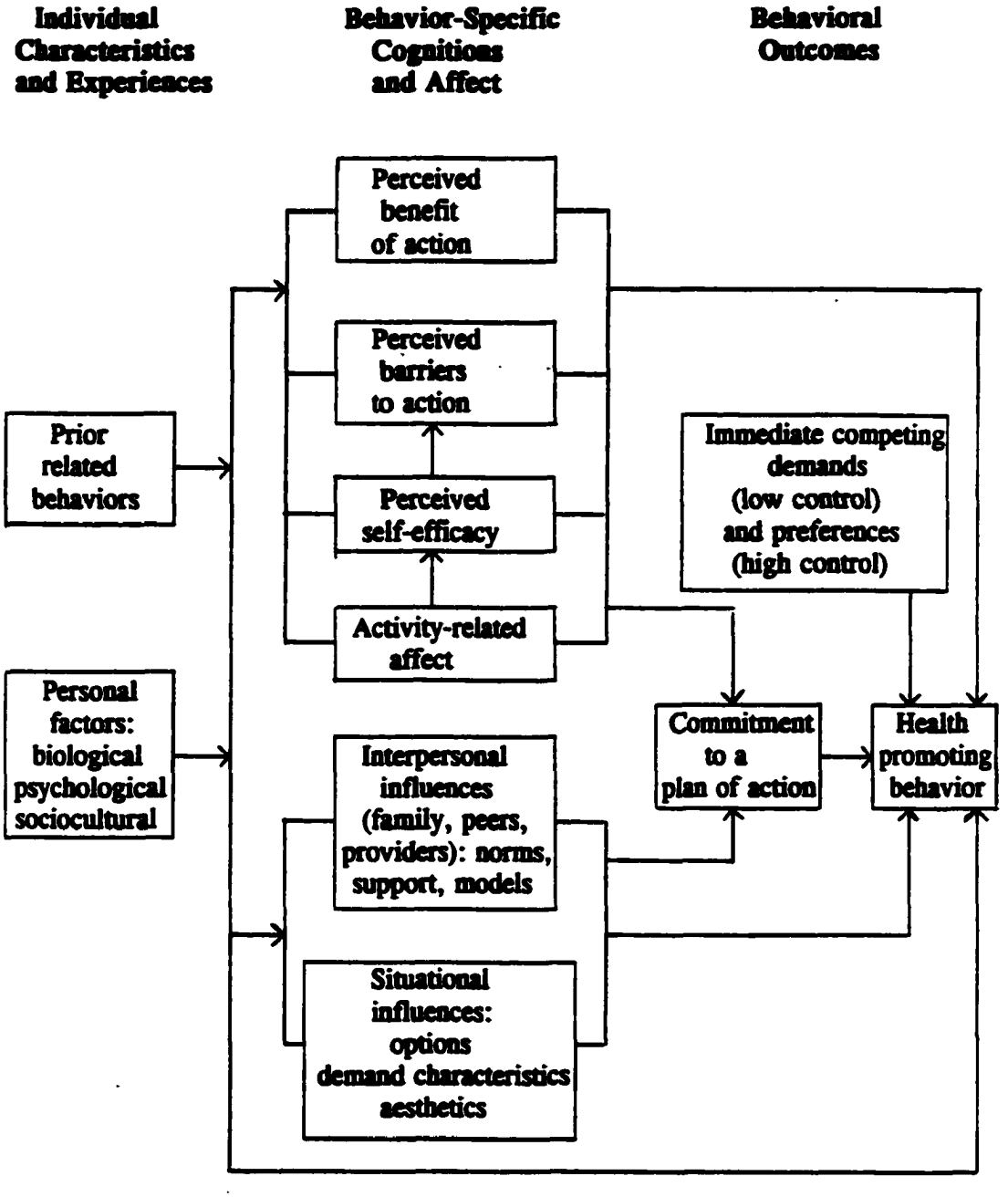


Figure 1. Revised Health Promotion Model (Pender, 1996, p. 67).

differentiated from health protection/prevention as being goal-directed action that enhances quality of life (Pender, 1996). The actions are motivated by a desire for growth and increased well-being and are "ultimately directed toward attaining positive health outcomes" (Pender, 1996, p. 73).

Derived from expectancy-value and social cognitive theories and nursing experiences, the Health Promotion Model (HPM) (Pender, 1996) is an approach-oriented model set within a holistic nursing framework. Since its inception in 1982, the HPM has undergone two research-based revisions (Pender, 1987, 1996). Although the 1996 version has not yet been validated through extensive published research, it is the result of a synthesis of 14 years of expert critique and research (Pender, 1996).

The revised HPM (Pender, 1996) consists of three interrelating categories of determinants considered relevant influences either directly or indirectly on health-promoting behavior: (a) Individual Characteristics and Experiences, (b) Behavior-Specific Cognitions and Affect and (c) Behavioral Outcome. There are ten determinants within the model, however this discussion will include only those pertinent to the current study. A basic tenet of the HPM is that behavior is influenced more by individual perceptions about an occurrence than by the occurrence itself. An overriding assumption is that individuals take an active role in shaping and maintaining health behaviors, based on attitudes and emotions developed from prior experiences and personal characteristics. Within the first category, Individual Characteristics and Experiences, personal factors includes the unique characteristics that define an individual or group. Classified as biologic, psychologic, and

sociocultural factors, these characteristics are considered to have a direct impact on health-promoting behaviors, and an indirect impact through their influence on behavior-specific cognitions and affect. The behavioral relevance of specific characteristics will vary according to the behavior and target population being studied. In the present study, personal factors included race, gender, education level and income level. Source of spirituality was also investigated as a personal factor for its influence and for consideration as an expansion of Pender's model.

The primary motivational factors of the HPM are incorporated under the category of Behavior-Specific Cognitions and Affect as perceptions, interpersonal and situational influences and are considered amenable to nursing intervention. Interpersonal influences are cognitions about behaviors, beliefs and/or attitudes of others. They affect health-promoting behaviors directly and indirectly through commitment to action from social pressures or attitudes that either encourage or discourage healthy behaviors. Expectations of significant others, physical and emotional encouragement through social support and observation of others are avenues of interpersonal influences. Principle sources include interactions with spouses, family members, friends and organized support systems. This study will investigate perception of emotional social support. Pender (1996) states that "social support for a behavior taps the sustaining resources offered by others" (p. 71), thus providing the perspective for understanding the impact of social support on commitment and health-promoting behaviors through interpersonal influences.

Behavioral Outcome, the third category of the model, includes both

commitment to a plan of action and health-promoting behavior(s), connoting both attitude and action. Drawing from Ajzen's and Fishbein's 1980 work (cited in Pender, 1996) on attitudes and prediction of behavior, Pender states that "intentionality is a major determinant of volitional behavior" (1996, p. 72). However, commitment to a plan of action goes beyond intention and includes "identification of definitive strategies for eliciting, carrying out, and reinforcing the behavior" (p. 72). The attitude of commitment without definitive plans may result in "good intentions" but the intended behavior is never carried out. The model also provides direction for understanding the rationale or motivation for commitment as it is influenced by the sustaining resource of social support and, in turn, impacts behaviors. Thus, commitment to a plan of action is considered to be both a process outcome and cognitive determinant which initiates a behavior or action outcome in this study.

Health-promoting behavior, the action outcome and goal of the model, is a direct result of commitment to an activity. Health-promoting behaviors are considered by Pender (1996) to be activities that increase the level of well-being and self-actualization of the individual. This investigator examined behavioral activities of physical activity, nutrition, stress management and health responsibility. The model provided guidance for understanding the impact of commitment on healthy behaviors through attitude and identification of strategies to engage and reinforce those behaviors.

Spiritual well-being was examined for its influence on commitment and health-promoting behaviors and for inclusion in the HPM. Although not addressed in the

model, spirituality and spiritual well-being are implicit in the holistic framework through sociocultural ties and impact on perception of life events. Assessment of spiritual well-being (i.e., status of spiritual health) is considered by Pender (1996) to be an integral component of overall health assessment. Spiritual health is identified through connectedness with one's inner self, others in meaningful relationships and a larger purpose in life.

Pender indicates that assessment of a client's spiritual well-being should consider not just the source of one's spirituality (e.g., religion), but also specific spiritual beliefs and feelings, values and attitudes about meaning of life, self-acceptance, love, hope, forgiveness, and life after death or continued spiritual existence. Larger purpose in life may be identified through assessment of relationship with God, other higher being/force or the universe. Spiritual beliefs, values and attitudes and sense of purpose affect interpretation of life events and are basic to putting life in perspective, providing a reason for living and, in conjunction with social support, fostering successful coping. The HPM, as a proactive theory of health promotion, relies on strengths of the individual to provide commitment to action(s). Desired outcomes of health assessment are to identify assets, lifestyle strengths and beliefs that impact health and quality of life. Assessment of spiritual well-being provides an important resource for nurses to draw upon in assisting clients to commit to health-promoting practices. Pender suggested to this researcher that, if aspects of spirituality were to be incorporated within the model, the most likely placement(s) would be as one of the personal sociocultural factors and/or as a component of the

interpersonal influences (Dr. Nola Pender, personal communication, March, 1998).

Expansion of the HPM was explored by incorporating source of spirituality within the Individual Characteristics category as a personal factor and spiritual well-being as a Behavior-Specific influencing factor (Figure 2). Pender further recommends that "relationships among variables be tested in predictive studies" (1996, p. 73). Therefore, spiritual well-being was studied both as an individual determinant and for its combined influence with social support, each perceived as contributing to commitment to a plan of action and health promoting behaviors among older adults. Inclusion of source of spirituality and spiritual well-being expand the model by providing (a) a means of identifying specific beliefs as resources that enhance and encourage commitment to the practice of healthy behaviors; (b) knowledge to facilitate design of interventions that are culture-specific to individual beliefs (c) additional avenues to identify and target at-risk populations; and (d) more powerful strategies to facilitate commitment to healthy behaviors through the combined influence of social support and spiritual well-being than through either determinant separately.

Pender's HPM (1996) supplies a lens for viewing the multidimensional nature of individuals in making choices and a framework for predicting specific health behaviors in the elderly. In addition to providing a method for understanding motivating factors of commitment to healthy behaviors, the HPM facilitates identification of strategies to facilitate and reinforce the behavior. The model's perspective directed selection of social support, spiritual well-being, commitment and specific health-promoting behaviors, as well as personal factors, for investigation in

this study. Figure 2 depicts the derived model tested in this study.

## Research Questions

1. What are the differences in social support, spiritual well-being, commitment and health-promoting behaviors among three age groups of older adults?
2. What are the relationships among personal factors, social support, spiritual well-being, commitment and health-promoting behaviors in each of three age groups of older adults?

## Definitions

Older adults - persons aged 65 years and older and who fall into one of three age

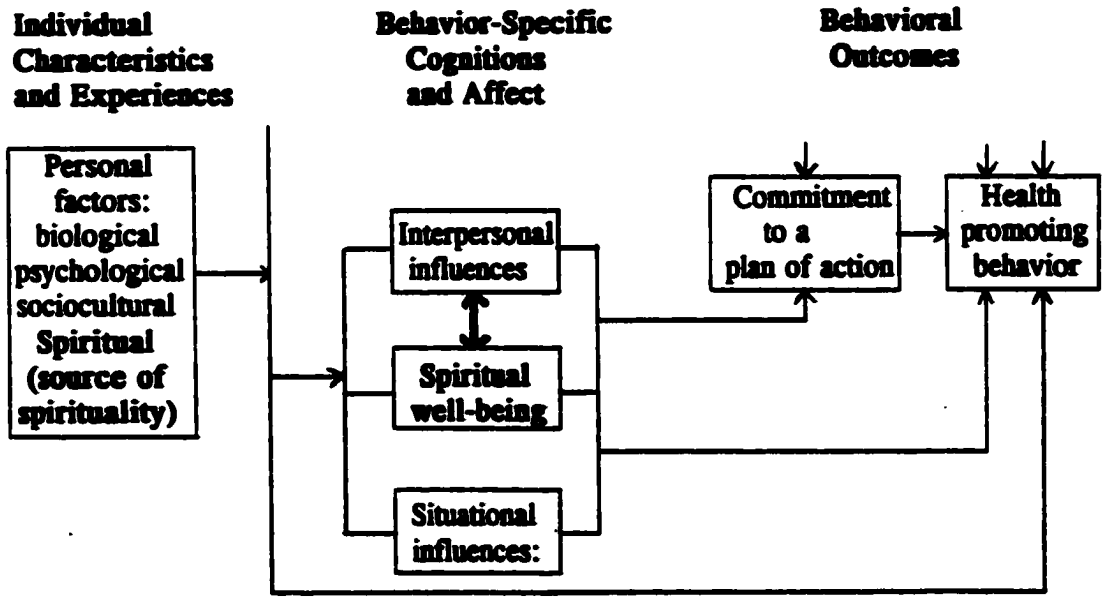


Figure 2. Proposed expansion of Pender's Health Promotion Model.

groups:

young old (65-74), middle old (75-84), and old old (85 and older).

Social support - refers to perceptions of supportive interpersonal interactions with spouses, family members, friends, and organized support systems (religious, health care, and mutual help groups). It is a "reciprocal process and an interactive resource that provides comfort, assistance, encouragement, and information...[and] fosters successful coping and promotes satisfying and effective living" (Pender, 1996, p. 255). Social Support is operationalized in this study by the Personal Resource Questionnaire 85, Part 2 (Weinert, 1987) which measures perceived level of social support in relation to intimacy and assistance, reciprocity, and integration/affirmation.

Spiritual well-being - state of spiritual health in which one's spiritual nature is developed to its fullest potential through realization of and ability to express: basic purpose in life; experiences of love, joy, peace and fulfillment; and connectedness with one's inner self, others in meaningful relationships, and with a larger purpose in life (Pender, 1996). Spiritual well-being has been operationalized with the JAREL Spiritual Well-Being Scale (Hungelmann, Kenkel-Rossi, Klassen, & Stollenwerk, 1989), developed to assess spiritual well-being in older adults.

Commitment - cognitive processes that carry a person through actual engagement and sustained involvement in any health-promoting behavior or practice (Pender, 1996). The Commitment Subscale of the Health-Related Hardiness

Scale was employed to measure this variable. As one of two components of the Hardiness concept, the Commitment Subscale focuses on perceptions, attitudes and beliefs about health motivation and involvement (Pollock & Duffy, 1990).

Health-promoting behaviors - considered to be a manifestation of an individual's attempt(s) to maintain a healthy lifestyle, are those practices initiated to sustain or optimize well-being, self-nourishment and personal growth/fulfillment, and attain, maintain or enhance positive health outcomes (Pender, 1996). For this study, physical activity, nutrition, stress management and health responsibility behaviors were measured utilizing corresponding subscales from the Health-Promoting Lifestyle Profile II (Walker, Sechrist, & Pender, 1995). The instrument was developed in the perspective of the HPM (Pender, 1996).

## Assumptions

It is assumed that:

1. each person partakes in the shaping and maintenance of healthy behaviors and, if necessary, modifies the environmental context to enable those health behaviors.
2. each person maintains some form of spiritual relationship, either within or outside themselves, as a way of providing meaning to life.

## Delimitations

1. This study is limited in scope to elderly individuals aged 65 and older who are self-caring community dwellers, English speaking, and without known cognitive impairment.

2. The sampling was voluntary participation.
3. Recent revision of the HPLP II, is a limiting factor. Few studies utilizing this instrument have been published to-date (Fowler, 1997; Larouche, 1998; Stuifbergen & Roberts, 1997). However, the tool was developed from extensive research on the original tool and substantiated reliability and validity were reported by authors of developmental studies (Dr. S.N. Walker, personal communication, October, 1997).
4. The self-reporting component of the research instruments may reflect participant bias.
5. The researcher's personal beliefs and convictions were considered as a potential source of bias.

## Limitations

1. The sample for this investigation, while geographically widespread, was primarily southern and in what is considered the "Bible Belt". This may have impacted perceptions of spiritual well-being and high percentage of those reporting personal relationship with God.
2. Participants in this study were already in contact with lay, professional and/or community support resources.

## Significance

### Demographic, Socioeconomic and Health Concerns

Research is just beginning to focus on issues pertaining to health promotion for older adults. Such research is of import because adults aged 65 and older currently

represent approximately 13% of the American population and are projected to increase to over 20% within the next three decades (Administration on Aging [AoA], 1998). Within this increase, the oldest old (those over 85) are growing more than twice as fast as those aged 75 to 84, three times as fast as the 65 to 74 year age group and will become the largest elderly segment by 2010. At the same time, the 75-84 age group is increasing in size twice as fast as the 65-74 year olds (AoA, 1998). The impact of this growth trend on health care expenditures, both public and private, as well as efforts to maintain quality of life for the oldest old is a concern.

Only recently have health-promotion studies considered possible differences among the three elderly subgroups as defined by the U.S. Bureau of Census (1993): ages 65-74, 75-84, and 85 plus. Investigations indicate that the elderly are not a homogenous group (AoA, 1998), but recent research about elder health behaviors still addresses people aged 65 or older as one group (e.g., Conn, 1998). Studies adding to knowledge of differences in health-promoting behaviors across elderly age groups and factors associated with those behaviors will be of benefit in planning for health care needs and intervention services.

The elderly population is becoming more racially, ethnically and culturally diverse. Minorities are projected to represent 25% of the elderly population by 2030 (U.S. Bureau of Census, 1996). These changes in the non-white population of older adults are likely to be accompanied by critical socioeconomic shifts, especially if current racial and gender differences in socioeconomic status (SES) do not change. Although the SES of older adults has improved, racial and gender disparities continue

to exist (Smith, J. P., 1994). These are addressed in the new national health objectives, Healthy People 2010, (USDHHS, 1999).

In addition to inadequate income, most older adults, white and nonwhite, face multiple problems from health concerns associated with aging and reduced access to care (AoA, 1998). Of an anticipated additional 20 plus years of life (AoA, 1998), it is likely that at least five of those years will not be healthy or independent. Incidence of chronic conditions increases with age and can significantly affect physical functioning and activities of daily living. Aging is associated with increased risks for illness and disability, longer hospitalization, greater home health care and significantly greater per capita health care expenditures (National Center for Health Statistics, 1992). Benefits from government programs (Medicare, Medicaid) currently cover over two-thirds of elder health expenditures (AoA, 1998). Projected increases in the size of the older population, life expectancy and years of chronic illness and disability, as well as the impact of SES characteristics, have significant implications for the U.S. health care system and economy.

Healthy People 2000 (USDHHS, 1991) addressed the health of older Americans and formulated a national health goal to increase the span of healthy life. The most important aspect of the health promotion objectives for older adults is to maintain health and functional independence. A significant number of health problems of the elderly are either preventable or can be controlled by health-promoting activities to change certain risk behaviors, thus improving health and functional status and reducing the likelihood of disability (USDHHS, 1991). Unfortunately, many elders do

not adequately participate in health maintenance activities, especially exercise, nutrition, immunizations and health care visits (USDHHS, 1991). Efforts to promote healthy behaviors in older adults "carry the promise of...[an] old age with the greatest possible degree of personal independence and with minimum days of disability" (Rubel, Reinsch, Tobis, & Hurrell, 1994, p. 6). Improving function and limiting effects of chronic conditions are vital parts of health promotion for older adults.

The HPM (Pender, 1996) was selected to guide this study because it focuses on actions that move the individual to the fullest health potential. Issues important to health promotion in relation to policy development, intervention strategies and risk reduction are addressed by the model. The perspective of the HPM gives direction for planning programs and developing resources to meet Healthy People 2000 objectives (USDHHS, 1991) that are specifically targeted to the elderly, such as those related to exercise and nutrition. The model can be employed to investigate aggregates or individuals. This investigator examined health behaviors in individuals.

Research

Much of past research about predictors of health-promoting behaviors in the elderly is concerned with ways older adults perceive, interpret, or act upon symptoms of illness; how specific attitudes and behaviors interact with aging processes to influence levels of health and functioning; and how socioeconomic and cultural conditions affect development, maintenance, and possible modification of these attitudes and behaviors (e.g., Creagan, 1997; Grant, 1996; Laffrey, 1990; Lubben, Weiler, & Chi, 1989). Comparisons of study findings revealed inconsistencies.

Variables were not the same across studies, and differences were noted among findings from like or similar variables. Variables related to health promotion identified by previous research are not necessarily consistent with any one conceptual model. Many times the variables are categorical or descriptive in nature and do not provide information useful for intervention strategies. A meta-analysis (Gillis, 1993) of published research from 1983 to 1991 about determinants of health-promoting behaviors exposed many inconsistencies, including ethnic differences, among study findings. Findings also revealed that those factors studied most frequently (locus of control, perceptions of health status and importance of health) were the least consequential of the determinants. Additionally, many studies indicated small samples as well as inconsistent age parameters, all of which make it possible to draw limited conclusions about motivation for health-promoting behaviors in elders.

Kathryn Dean (1988) addressed this reductionist research approach, stating that individual factors do not always lead to healthy practices or lifestyles. Rather, healthy practices, viewed as part of a lifestyle that is culturally and socially determined, are "inter-related with other habits and are involved in constant processes of interactions among influences which either reinforce or alter them" (p. 84). Dean posits that research should focus on the interactions of healthy behaviors with other influencing elements that may shape, determine, or alter the behaviors.

While many studies of health-promoting behaviors indicate a concern with sustained practice of healthy behaviors, rarely is the concept of commitment studied separately. Typically conceptualized as an attitude and/or process of involvement,

commitment is usually studied as a component of the hardiness concept (Ganellen & Blaney, 1984; Kobasa, Maddi, & Kahn, 1982; Pollock, 1989a), or implied as an element of other concepts (e.g., Baumann & Keller, 1991; Fleury, 1996; Frenn, 1996; Jeffery et al., 1993). Many writings about commitment are conceptual or theoretical in nature (i.e., Lachman, 1996; Madden, Ellen, & Ajzen, 1992). Frequently the term is employed with an assumed meaning or definition (i.e., Neeman, 1995). It was not until 1987 that researchers recommended studying commitment as a discrete variable in relation to health (Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987). Although other researchers (e.g. Lachman, 1996) advocated studying commitment separately, only one study investigating commitment as a discrete variable in health-promoting behaviors has been located (Beyea, 1991). Nursing theorist Nola Pender incorporated commitment to a plan of action as a construct in her revised Health Promotion Model (1996), used to guide this study.

Social support has been studied in adults of all ages and shown to be positively related to health-promoting behaviors (Fleury, 1991; Hagerty, Lynch-Sauer, Patusky, & Bouwsema, 1993; Watkins & Kligman, 1993; Weinert & Burman, 1994). Lack of social support is equated with an increase in illness and a decrease in participation in healthy activities (Rowe & Kahn, 1987; Svanborg, 1990). A support system is vital to surviving elders whose social resources are shrinking, because well-being is often related to quality rather than quantity of relationships (Beckerman & Northrop, 1996; Rubel, Reinsch, Tobis, & Hurrell, 1994). Dean (1992) suggested that age, rather than having direct influence, is significantly related to social and psychosocial variables that

directly impact behavior and health.

There is considerable evidence in nursing and health-related literature that the spiritual dimension has a profound influence on health at any age. Over 200 studies have been identified indicating that practices and beliefs associated with spiritual well-being are correlated with better physical health, mental well-being, and prolonged life (e.g., Dorsey & Dorsey, 1998; Kennison, 1987; Lovallo, 1997; Seidl, 1993; Walton, 1996; Zhan, Cloutterbuck, Keshian, & Lombardi, 1998). Relationships between participation in religious activities and health-related behaviors have been investigated (e.g., Davis et al., 1994; Fleury, 1996; Huck & Armer, 1996). Locating health-promoting programs in religious communities, specifically with respect to the elderly, has been advocated by the U.S. government and public health community (Lasater, Wells, Carleton, & Elder, 1986; USDHHS, 1991). Research findings indicate this practice is efficacious because most congregations have a higher percentage of elderly than programs in broader community settings (e.g. Falck, 1994). Religious organizations often serve as extended family, offer social support, and can readily identify changing health and social needs of older members. Other findings specific to elders and religious organizations include accessibility, increased participation in programs, enhanced support networks, and openness for providing educational programs (Hatch & Derthick, 1992; LeSage & Ellor, 1990; Rowles, 1986).

The impact of specific beliefs or spiritual well-being on commitment and health-promoting behaviors has received scant acknowledgement in health promotion research or programs, especially in relation to older adults (Wylie, 1996). Researchers

generally incorporate the broader concept of spirituality or spiritual well-being as an element of other variables, such as source of hope and predictor of hardiness. For example, spirituality and spiritual well-being have been associated with hope and hardiness and shown to contribute to enhanced immune response (Carson & Green, 1992; Gaskins & Forté, 1995). One study examined the role of prayer by older adults in health and illness (Bearon & Koenig, 1990). Results indicated that religious beliefs played a role in health perceptions. The authors recommended further studies to identify expressions of spiritual well-being that could be employed to strengthen individual commitment to health promotion programs and practices.

## Summary

This study is of significance for nursing in that it provides further testing of Nola Pender's Health Promotion Model. As we approach the next millennium, it is imperative that models accurately explain and predict an individual's involvement in positive health habits. Added knowledge through the exploration of influencing elements that may shape, determine or alter behaviors will increase the efficacy of the HPM in explaining and predicting an individual's decision to initiate and maintain a healthy lifestyle. This researcher also explored expansion of the HPM through the addition of sources of spirituality as a personal factor and spiritual well-being within the category of Behavior-Specific Cognitions and Affect.

Health-promoting behaviors have been identified as a national concern and are essential for maintaining independent functioning in the elderly. Experts estimate that 80% of elders experience at least one chronic disease requiring medical care (National

Center for Health Statistics, 1992). Demands on the health care system, as well as needs to reduce health care expenditures, make it vitally important to reduce the incidence of illness and promote healthier lifestyles. Findings of this study add to the body of knowledge about factors that enable individuals to choose and maintain healthier lifestyles and assist health care providers to tailor interventions and strategies for health promotion programs to be more congruent with attitudes, interests and values of older adults.

# CHAPTER II

## REVIEW OF RELATED LITERATURE

Most older adults desire to remain active and independently functioning and are likely to benefit from health-promoting behaviors and programs (Young, 1996). For health care professionals, this creates a challenge to promote commitment to a lifestyle of health-promoting behaviors that may help to differentiate between a life of quality and a life of poor health and dependence. The concept of health-promoting behaviors is presented in this chapter followed by a review of research on four behaviors selected for study: physical activity, nutritional behaviors, stress management and health responsibility. Age-related research about health-promoting behaviors among the elderly is discussed. The concepts of commitment, social support, and spiritual well-being are examined, followed by a discussion of the relationship between social support and spiritual well-being as they relate to commitment and health-promoting behaviors. A review of Pender science and utility of the Health Promotion Model is followed by a chapter summary.

### Health-Promoting Behaviors

Healthy lifestyle practices by older adults not only influence mortality risks, but also promote health, postpone illness and disability, facilitate sustained functional ability and enhance quality of life (Berg & Cassells, 1990; Palmer & Taylor, 1994; Svanborg, 1990; USDHHS, 1991). When disease prevention is not possible, healthy lifestyle and behavioral changes along with treatment may slow both the progression of chronic disease and the associated rate of disability (Davies, 1990). Initially, most

research on elderly health behavior focused on a limited number of behaviors identified by Belloc and Breslow (1972) using data from the 1964 Almeda County morbidity study (N = 7000 adults) to investigate relationships between health status and health behaviors. Seven specific lifestyle practices were connected with good health: adequate sleep, eating breakfast, no in-between-meal snacking, maintaining a desirable body weight, physical activity, moderation in alcohol consumption, and not smoking. Results from a sixteen year longitudinal study of the Almeda County Study subsample, who were at least age 60 (n = approximately 2500), indicated that not participating in those practices and being male increased risk of death (Kaplan, Seeman, Cohen, Knudsen, & Guralnik, 1987). Risks were independent of age, race, socioeconomic status (SES) and physical health status. Additional follow-up established that health behaviors and social conditions were not fixed over an individual's life course. Changes could be effected and influence subsequent mortality risks, even for those aged 70 and older (Kaplan & Haan, 1989).

During the late 1970's, with the health care focus shifting from communicable and acute diseases to chronic health problems (Green & Kreuter, 1991), the Surgeon General's Report on Health Promotion and Disease Prevention (Public Health Service [PHS], 1979) directed attention to the relevance of routine and unpremeditated health-related behaviors. Prime behavioral and lifestyle risk factors (e.g., substance abuses/addiction, poor diet, sedentary work/leisure, stressful situations) were believed to account for 40 to 70% of premature deaths and two-thirds of chronic disability (PHS, 1979). The PHS (1980) differentiated a trio of strategies to address national

health concerns: preventive health services, health protection and health promotion. Concurrently, initiatives by the World Health Organization (WHO) (1985) proposed lifestyle as a core concept of health promotion, perceived as a resource for everyday life. Adoption of a healthy lifestyle would enable individuals to increase control over and improve their health. This approach also focused on modification of behavior and encouraging individuals to assume health responsibility by avoiding risk factors, adopting more positive health behaviors and self-monitoring (WHO, 1985).

Most health behavior research, however, was based on medically defined and prescribed actions and measurement of an individual's level of compliance with the action(s) (e.g., Buchner & Pearson, 1989; Cummings, Becker, & Maile, 1980; Guralnik & Kaplan, 1989). Few researchers investigated health practices in relation to older adults. It was not until the Healthy People 2000 (USDHHS, 1991) initiatives were published that health promotion and individual responsibility were given primary emphasis (Kulbok & Baldwin, 1992). Goals for national health promotion behaviors identified for adults over age 60 encouraged avoidance of sedentary work, high fat/low fiber diets, extremely high stress lifestyle levels, smoking and excessive alcohol intake. Recommendations were for seniors to participate in planned, regular exercise; consume high fiber/complex carbohydrate/low fat diets; and use effective stress reduction and management techniques (USDHHS, 1991).

Studies of older adults have reported exercise, rest, relaxation, nutrition, safety, involvement in activities and intergenerational contacts as frequently reported behaviors to maintain or improve health status (e.g., Laffrey, 1990; Miller, 1991; van

Mannen, 1988). Researchers also indicate that older adults engage in health-related activities not related to their actual health status. Studying health behaviors of 386 older adults, Brown and McGreedy (1986) found an average of 17 healthy behaviors not connected to a specific illness condition. The degree to which an older adult assumes responsibility for behavioral change and participation in positive health behaviors has been reported as having a strong impact on their health practices. An examination of the importance of health and health promotion to the elderly by Young (1996), with adults 75-96 years of age (N = 178), revealed that most respondents (84%) believed that current behaviors helped to "keep or improve their health" (p. 245) and mental functioning. Activities ranged from dietary adjustments to gardening, walking, or bowling and specific mental activities.

Findings like those cited above are consistent with current thought across disciplines that health-promoting behaviors differ from behaviors or actions aimed at illness protection or disease prevention. Kathryn Dean (1988) identifies life-style as the core concept of health promotion, differentiating lifestyle patterns of health-related behaviors that interact with other influences to shape and maintain health from those behaviors measured discretely with mortality and morbidity and focusing attention on a limited number of practices (i.e., alcohol consumption, smoking, dietary patterns). Green and Kreuter (1991) perceive health promotion as targeted toward facilitation of individual lifestyle patterns pursued for nonhealth purposes, but with health consequences or risks. Fundamental to the Health Promotion Model (HPM), used as theoretical guide for this study, Pender (1996) differentiates between health-promoting

and health protection (or illness prevention) behaviors on the basis of motivation. Motivation for health promotion is identified as desire to increase well-being and actualize human potential (approach-oriented). Motivation for health protective actions may be avoidance or early detection of illness or to maintain function within illness confines (avoidance-oriented). Older adults may practice healthy behaviors for both reasons, according to Pender (1996).

Research is also beginning to point to the possibility of differences in behavioral patterns for health promotion among different populations (e.g., adolescents, women, older adults) determined by how important a particular behavior is to an individual's lifestyle, based on social and cultural influences (e.g., Dean, 1992; McAuley & Jacobson, 1991; Riccio-Howe, 1991; Walker, Volkran, Sechrist, & Pender, 1988). While there is no empirical evidence of any one pattern of specific behaviors that could be generalized to different age groups or populations (Anderson, 1988; Weinert & Burman, 1994), there is evidence of clusters of behaviors that have the potential for use in identifying overall healthy lifestyles. Early attempts at measuring a broad sampling of health-promoting activities were through the work of Brown et al. (1983) who identified six categories of behaviors: nutrition, exercise, relaxation, safety, substance use and prevention.

To examine older adults efforts to improve their health, Allen (1986) surveyed 198 adults aged 65 and older from a rural community. Identified wellness initiatives included regular exercise, stress control, improved nutritional behaviors, improved interpersonal relations, adequate rest, relaxation techniques, leisure-time physical

activities, smoking cessation and cutting (or moderation in) alcohol use. Viverais-Dresler and Richardson (1991), employing both quantitative and qualitative data gathering techniques with a snowball sample of twenty-eight older adults, provided findings that health promotion behaviors were practiced in the categories of exercise, nutrition, relationships, stress tolerance and beliefs. Respondent comments indicated that participants assumed responsibility for their own health and health behaviors.

To determine components of a health-promoting lifestyle, Walker, Sechrist and Pender (1987) employed factor analysis with an extensive list of variables, isolating six broad factors that accounted for 41% of the variance in healthy behavior among individuals: self-actualization, health responsibility, exercise, nutrition, interpersonal support and stress management. These factors became the basis for the Health Promotion Lifestyle Profile [HPLP] (Walker et al., 1987). Healthstyle: A self-test was developed by the PHS (1990) to be distributed to the public. The brief test promotes individual health responsibility through common-sense changes in lifestyle and identifies six categories of behaviors: cigarette smoking, alcohol and drugs, eating habits, exercise/fitness, stress control and safety.

Health-promoting behaviors, as defined by Pender (1996) include behaviors initiated by any person, in any age group, to sustain or optimize well-being, self-actualization and personal growth/fulfillment and to attain, maintain or enhance positive health outcomes. Primary behaviors include routine exercise, leisure activities, optimal nutrition, rest and stress-reduction, and development of social support systems. For this study, based on research and guided by Pender's definition

of health promotion and health-promoting behaviors, four categories of activities were examined as indicators of health-promoting behaviors: physical activity, nutritional behaviors, stress management, and health responsibility.

Physical Activity

Evidence supports that older adults receive similar benefits from exercise as do younger people (Carethers, 1992). Positive associations have been established between physical activity and longevity, weight control, reduction of blood pressure, improved strength and mobility, better sleep and bowel activity, less anxiety, retarded rate of age-related bone loss and increased cardiac fitness (Kutner et al., 1992; McAuley, Courneya, & Lettunich, 1991; Schafer, 1989). Elders who practiced regular exercise for more than six months scored better on measures of nutrition, self-acceptance, and health responsibility than those who did not exercise (Volden, Langemo, Adamson, & Oechsle, 1990). Exercise has been posited as an effective mental health intervention and coping mechanism for dealing with depression (Allen, 1986; Travis, Duncan, & McAuley, 1996). Activity is a personal indicator of health for the elderly, especially among the oldest-old (Beard, 1991; Laferriere & Hamel-Bissel, 1994; Poon et al., 1992). A phenomenological study of twelve centenarians (aged 100-109) indicated that activity (especially walking) was equated with health even for participants who did not maintain a structured health routine (Pascucci & Loving, 1997). However, general population estimates are that 30-60% of retired adults engaged in no leisure-time physical activity and only 10% engaged in regular, vigorous activity (Dishman, 1990).

Searching for a theoretical basis to explain inactivity in retired adults, Schuster,

Petosa, and Petosa (1995) employed Social Cognitive Theory to predict intentional exercise with a survey study of 108 adults aged 60 and older. Forty-eight percent of respondents reported intentional exercise three or more times per week for the preceding six months. The study model accounted for 52% of the variance in exercise behavior and included, in order of importance established by hierarchical regression, perceived barriers, social support, self-efficacy, and benefits and enjoyment of exercise. Although not retained in the model, a significant but low correlation was found between knowledge of exercise benefits and intentional exercise. The findings suggest that promotion of exercise behavior for the older adult should incorporate multidimensional interventions that address a variety of factors (Schuster et al., 1995).

Comparing health-promoting behaviors and demographic characteristics of seniors who did or did not exercise, Lookinland and Harms (1996) utilized Pender's HPM and administered the HPLP (Walker et al., 1987) to a convenience sample ($N$ = 155, ages 64-96) in senior living and service centers. Increased exercise was related to being female, higher education and income levels and was consistent with other research reports (Duffy, 1993; Riffle et al., 1989; Volden et al., 1990; Walker et al., 1988). The finding that self-efficacy from exercise behaviors when young does not indicate continued exercise when older, is not supported by previous or more recent research (Conn, 1998; Gillis, 1993; McAuley et al., 1991; Schuster et al, 1995). However, upon questioning participants, Lookinland and Harms (1996) realized that researcher and participant interpretations of "exercise" differed. Participant perceptions were based on hard physical labor when younger, both in

terms of answering the exercise questions on the survey and their perception of the continued need for "exercise" when older. The authors suggested that activities such as walking tours, dancing and yard work might be as beneficial for elder health promotion programs as formal exercise activities.

In a more recent examination, self-efficacy had a significant positive effect on elderly exercise practice (Conn, 1998). However, a possible confounding influence from age differences was noted in that age had significant effects on both self-efficacy and exercise. These results are congruent with earlier findings of Prohaska et al. (1985) that performing aerobic or strenuous physical exercise decreases significantly with age. Awareness of changes in levels of activity, possibly related to physical decline, cultural expectations, or lack of exercise, is important because research has demonstrated that reductions in regular exercise are related to negative health consequences for older adults (Rakowski & Mor, 1992).

Specific to exercise in the elderly, researchers have reported predictors of participation (Duffy, 1993; Howze, Smith, & DiGilio, 1989; Padula, 1997a), benefits and barriers (O'Neill & Reid, 1991; Rakowski & Mor, 1992; Whetstone & Reid, 1991), perceptions of exercise (Melillo et al., 1996), and specific types of exercise and programs (Buchner & Pearson, 1989; Tedesco, 1997; White & Nezey, 1996). While most studies are cross-sectional, there are longitudinal investigations. The HEALTH WATCH (Schmidt, 1993) longitudinal prospective study of healthy aging ($N = 2200$) found physical activity to be among the major health determinants. However, the prevalence of physical activity not usually assessed as "exercise" (i.e.,

yardwork, gardening, housework, etc.), resulted in modification of the study to evaluate forms of "exercise" other than aerobic, including activities incorporating flexibility, strength and balance.

Further substantiation of the HEALTH WATCH findings were provided by Melillo et al. (1996), using a qualitative design to examine senior's perceptions of physical fitness, barriers or motivators to exercise, types of exercise activities and impact of physical fitness on health and lifestyle. Systematic sampling from a senior social club yielded 23 persons willing to participate in tape recorded interviews. Over 50% of the sample reported being very active through walking, swimming, dancing, gardening, housework or chores, skiing, golf, aerobic exercises, tapes (exercises, stretching), shoveling snow, and/or mowing. Using content analysis, three major physical fitness themes emerged: (a) functional independence (ability to do); (b) holism (mind-body interconnection); and (c) age reference (comparing with same age groups). Although the sample was small, amount of reported exercise contrasted to data cited earlier that few elderly exercise regularly. Part of this discrepancy may be due to differences in perception of what constitutes exercise. Age reference has not been studied extensively and may indicate expectations that activity level should decline with older age (O'Neil & Reid, 1991). Melillo et al. (1996) suggest that older adults lifestyles will not change until people are convinced that physical activity is important for all ages and exercise programs incorporate age-group specific needs.

Nutritional Behaviors

It is well established that older adults benefit from good nutritional practices.

Reducing intake of sugars, fats, sodium and cholesterol lowers the risk of developing certain diseases, as well as slowing the progression of chronic problems such as arteriosclerosis, osteoporosis, hypertension, and diabetes (Aronow, 1990; Posner, Fanelli, Krackenfels, & Saffel-Shrier, 1987). According to Hickey and Stilwell (1991), the success of health promotion efforts for older adults and good nutritional practices depends upon assisting them to interpret and integrate scientific findings with general recommendations about diet and healthy eating behaviors. However, there is confusion, as evidenced by unclear and conflicting information in the media (e.g., Shapiro et al., 1991), among elders about the implications of various nutritional practices on health. Older adults are believed to not participate in, or resist changing to, potentially helpful dietary activities because of confusion about the relationship of food intake and health status (Hickey & Stilwell, 1991). Contrasting research indicates that the elderly are willing to and attempt to make lifestyle changes, including healthier eating habits (Allen, 1986); that healthy nutritional behaviors are the most important of the health-promoting behaviors reported by older adults (Lookinland & Harms, 1996; Prohaska et al., 1985); and that older people tend to have better nutritional habits than younger individuals (Bausell, 1986; Houston, Johnson, Poon, & Clayton, 1994; Quinn, Johnson, & Martin, 1996; Walker et al., 1988).

Nutritional behavior has probably been one of the most frequently studied healthy behaviors of older adults. Identified studies were primarily concerned with specific dietary control practices, such as cholesterol or salt control, as a health-promoting behavior (Dellasega, Brown, & White, 1995; Thomas, Hathaway, &

Arheart, 1990). The majority of reports were incorporated either within studies of predictors of health-promoting practices of older adults (e.g., Houston et al., 1994; Quinn et al., 1996) or reports of health promotion programs that included nutritional education (e.g., White & Nezey, 1996). Using data from the Georgia Centenarian Study (Poon et al., 1992) of 260 community dwelling seniors aged 60 and older, food patterns indicated that adults in their 80s were twice as likely as those in their 60s to consume fruit, bran cereal and milk and less likely to drink colas.

The HEALTH WATCH study (Schmidt, 1993) assessed characteristics of the oldest old in five ethnic groups (Caucasian, Japanese, Chinese, Hawaiian and Filipino). The author concluded that good nutrition (consisting primarily of fresh fruits and vegetables, rice and a low-fat diet) was most significant of the top four health determinants in this cohort. Employing grounded theory, Frenn (1996) identified three major patterns of health promotion during five months of participant observation and 31 semistructured interviews with eighty adults aged 62-88: maintaining relationships, attending to health behaviors and staying active. Nutritional concerns were the primary health behavior. Nutritional practices reported by older adults in other studies included eating breakfast; including fiber in the diet; weight control; watching amount of sodium, sugar, fat, or cholesterol in diet; drinking plenty of water; avoiding or limiting meats; eating more fish or chicken; taking vitamins; including dairy products for calcium; eating balanced meals (fruits, vegetables, and grains); limiting caffeine; and cooking one's own food (Huck & Armer, 1996; Lubben et al., 1989; Punamaki & Aschan, 1994; Schafer, 1989; Uriri & Thatcher-Winger, 1995).

Nutritional practices by the elderly have been positively related to regular exercise (Harms, 1995; Volden et al., 1990), health responsibility (O'Quinn, 1995) and perceptions of health (Speake, Cowart, & Pellet, 1989). Laffrey (1990) used a two-group comparative design (N = 85) for participants with and without known chronic or acute diseases to explore adult health behavior patterns. Findings were that age was unrelated to type of behavior, but was correlated with reasons for practice of a specific behavior. Exercise and relaxation behaviors were performed to promote higher health levels. Nutritional behaviors were more for illness prevention.

Inconsistencies were noted in comparisons of demographic factors and nutrition behaviors. Women were found to have better nutritional practices (Duffy, 1993; Harms, 1995; Walker et al., 1988), used less salt and had greater consumption of bran than men (Prohaska et al., 1985). Norton and Wozny (1984) found education levels, income, race and gender to be significantly related to dietary adequacy among elders. Elderly blacks and women had lower intake of appropriate nutrients. Persons with higher income and more education had significantly higher intake levels of calories, protein, calcium, iron, and Vitamins A and C. The authors attributed differences between blacks and whites to education and income levels. However, Speake et al. (1989), using regression analysis (N = 297, ages 55-93) found only race (being white) and higher education level to be significant demographic predictors of nutritional behaviors. Duffy (1993) employed canonical correlation analysis to explore the degree to which selected components from Pender's HPM (1982) explained health-promoting practices of the elderly (N = 477, ages 65 and older). Only gender (being

female) and higher education level were associated with better nutritional practices. Higher income had a significant positive association with exercise, suggesting that increasing options for behavior were associated with increasing socioeconomic status.

Stress Management

Perceptions of health by older adults have been described as multidimensional and holistic involving functional independence, good nutrition, exercise, sense of well-being and stress management (Davis et al., 1991; Maynard, 1990). Activities to manage stress have consistently been in the top three or four categories of health-promoting behaviors (Duffy, 1993; Harms, 1995; Harris & Guten, 1979; Laffrey, 1990). Stress management is often addressed as coping or adaptive behaviors and may be classed as problem-, perception-, or emotion-focused (Pearlin & Schooler, 1978) or behavioral, affective or cognitive (Thoits, 1986). Prohaska et al. (1985) identified cognitive-emotional behaviors of avoiding anger, anxiety and depression; avoiding emotional distress; taking things as they come; and staying mentally alert and active as being positively associated with increased age.

Instruments to measure healthy behaviors or lifestyle usually incorporate an aspect of stress management as either a separate dimension or subscale. Stress management is measured as a self-care behavior by Miller's Health Behavior Scale (cited in Rodeman, Conn, & Rose, 1995). Laffrey's Health Conception Scale (1986) includes questions pertaining to ability to adjust to changes and cope with stressful events. A recently developed instrument targeted at measurement of health promotion activities of older adults includes Stress Reduction/Rest and Relaxation as one of five

subscales (Padula, 1997b). The PHS (1990) healthstyle self-test identifies both unhealthy responses to stress (i.e., driving too fast, excess drinking, prolonged anger or grief) and healthy responses (taking time to slow down and relax, talking over problems with trusted others, prioritizing problems and participation in pleasurable activities). Quayhagen and Bendik's Modified Stress Events Questionnaire (as cited in Gale, 1994) includes 17 events specifically identified as stressful to the elderly and measures degree of preoccupation with each event. The current study employed the Stress Management Subscale from the HPLP II (Berger & Walker, 1997) which focuses on ability to recognize sources of and control stress, relaxation, rest and sleep.

Few studies specified stress management as a health-promoting behavior in the elderly (e.g. Bower, 1989; Clark et al., 1996; Prerost, 1993). Investigating activities such as guided imagery and humor, Prerost (1993) determined humor to be one of the most beneficial strategies for management of stress by older adults. Utilizing a qualitative descriptive methodology with 29 residents of an elderly housing complex, Clark et al. (1996) identified adaptive strategies for ten life domains to attain positive outcomes in daily activities and goals. The broad areas included adaptation to environment, attendance to activities of daily living, leisure activities, spiritual coping, attending to health and mobility maintenance, personal finances, personal safety, psychological well-being and happiness and relationships with others. The authors stated that awareness of the importance of these categories to older adults would facilitate their incorporation into health promotion programs and education.

In a triangulated study, Viverais-Dresler and Richardson (1991) reported that

many of their elderly sample (N = 28) identified strong religious beliefs, diversions (e.g., walking, reading and gardening), sharing concerns with others and humor as helping to cope with problems and stress. Although not directed toward health promotion, Gale (1994) employed a stress-coping framework to test predictors of functional health in a sample of 110 community-dwelling older women aged 70 and over. Relationships between hardiness, stress, self-esteem, social support, coping and service utilization and their impact on the three dimensions of functional health (physical, independent and psychosocial) were examined using a causal model. Findings were that stress had a negative impact on self-esteem, positive impact on service utilization and negative impact on all three functional health dimensions. Many health promotion programs incorporate aspects of stress management (e.g., Watkins & Kligman, 1993). Measures for stress management and to maintain or improve self-esteem would be of value for health promotion in older adults.

Health Responsibility

Health responsibility has been discussed extensively as important to a health-promoting lifestyle; yet, there are few empirical studies addressing its role in elderly healthy behaviors. In his theory of planned change, Ajzen (1985) identified acceptance of responsibility and commitment as essential indicators for behavioral change. While developing a measure of readiness to initiate health behavior change, Fleury (1994) identified one dimension as individual acceptance of responsibility for health behavior. In order to operationalize a health responsibility concept, Walker et al. (1987) created a Health Responsibility Subscale (HRS) for the HPLP. Scale items pertained to

accepting responsibility for one's own health, being educated about health, and seeking professional assistance.

Research has supported the relationship among acceptance of responsibility for health, desire for good health and independent functioning, and positive health behaviors by older adults (e.g., Maloney, Fallon, & Whittenberg, 1984; Young, 1996). This relationship was the premise upon which Schafer (1989) undertook her study to determine who older adults believed most responsible for their health and to describe their lifestyle practices. Responses from a structured, interview/questionnaire format indicated that 65% of 244 community-dwelling participants aged 60-88 viewed themselves as being primarily responsible for their own health. Only 14% identified the physician as responsible, and the remainder (21%) identified "others", such as spouse, children, or God. Each participant reported at least one health-promoting activity. Most reported several, including physical activity, nutritional behaviors, adequate rest, relaxation, not smoking and regular check-ups. Forty-eight percent indicated planned changes in health habits, especially in relation to diet and exercise.

Studies of self-care indicate that health outcomes are better when people actively take responsibility for their health, have the power of decision and a sense of control over their lives (Kobasa, 1979; Spitzer, Bar-Tal, & Ziv, 1996; Tuohig, 1991). It has been posited that, with decreasing physical ability to sustain health and care for one's self, age may have a moderating effect on health responsibility (Prohaska et al., 1985). Riffle, Yoho, & Sams (1989) associated increased age with fewer health responsibility and exercise behaviors. Further evidence was noted in a more recent

study examining the moderating effect of age (N = 288) on relations between self-care, care by others and care outcomes (Spitzer et al., 1996). Regardless of age, higher self-care was associated with higher perception of health control. However, a negative correlation between self-care and age indicated increased difficulty for the elderly to maintain responsibility for their own health needs. The researchers also reported that the younger sample component sought maximum symptom relief with the least effort, while the elderly attempted to maximize control.

While Prohaska et al. (1985) noted that performing aerobic or strenuous exercise decreased significantly with age, 15 of 21 identified health practices were positively associated with increased age. The oldest segment reported higher frequency of ten behaviors: balanced diet, drinking pure water, regular check-ups, controlling salt intake, adequate sleep, avoiding physical exertion, avoid harmful practices, learning what others do to stay healthy, and gathering information about diseases. Dean (1992) found an indirect negative relationship between routine exercise and age, arising from age differences in income. Duffy (1993) reported association of higher income with increased health responsibility, exercise and stress management by elders.

Findings, such as those cited above, further substantiate that seniors have definite perceptions about lifestyle needs to stay healthy and active, take active responsibility in meeting those needs, and adapt behaviors according to circumstances. Older adults exhibiting patterns of healthy lifestyle activities have also been determined to assume more responsibility for their health. Walker et al. (1988) found older adults had better total health-promoting scores, as well as higher scores for

health responsibility, nutrition and stress management, than either middle-aged or younger adults. Using grounded theory, Ruffing-Rahal (1989) examined the well-being of 27 community-dwelling seniors participating in nurse-managed health promotion programs. Content analysis produced three core themes of activity, affirmation and synthesis. Findings also indicated that self-care activities, especially walking and nutritional management, were considered of primary importance in maintaining or facilitating autonomy. In a similarly designed study, Frenn (1996) formulated a theory of Going About Health for older adults with major patterns of maintaining relationships, attending to health behaviors and staying active.

Health responsibility has been related to elderly demographic characteristics of higher education level (Riffle et al., 1989; Speake et al., 1989), being white (Speake et al., 1989), increased social support and interpersonal reciprocity (Buenting, 1990; Lookinland & Harms, 1996). Speake et al. (1989) found no significant association with health responsibility and gender, marital status or income, while Walker et al. (1988) reported being female was related to increased health responsibility. Duffy (1993) reported a positive relationship between health responsibility and income.

While there is little doubt that health responsibility is of importance in elderly health promotion, there is confusion in relation to influencing and predicting factors which may be due partly to inconsistency in defined age segments, as well as factors studied. As noted by Fleury (1992) "the effectiveness of many health programs has become increasingly dependent upon the willingness of individuals to accept responsibility for initiating and sustaining health behaviors" (p. 229). Consequently, it

is important for health care providers to continue research to better understand relationships among factors that influence health-promoting behaviors in older adults.

Age-Related Health Behavior

Evidence is accumulating that the elderly are a heterogenous population demographically (AoA, 1998) and in perceptions of health needs and health-promoting behaviors. Research indicates that prevalence of certain health behaviors increases with age (e.g., Houston et al., 1994; McAuley et al., 1991; Quinn et al., 1996), while practice of other behaviors decreases with age (e.g., Dishman, 1990; Prohaska et al., 1985). There is also much conflict about various motivating factors for health-promoting behaviors among research findings.

From an investigation of aging and health-seeking behavior, Bausell (1986) suggested that older adults practice better health habits than younger adults. Brown and McCreedy (1986) found age to have no significant effect on health behavior. Studying health locus of control and self efficacy in healthy elders, Waller and Bates (1992) reported little evidence of change in health practices with aging. In a later correlational study of adults aged 85 and older ($N = 179$), health-promoting behaviors declined with advancing age (Piano, 1997). Higher total frequency of health-promoting behaviors were noted in older adults than in younger by Walker et al. 1988). Implications were that types of behaviors differed as well as underlying motivation for the behavior. Similarly, an exploration of adult health behaviors (Laffrey, 1990) indicated that presence or absence of particular health practices was related to motivation, and not age. Laffrey and Isenberg (1983) suggest that older

adults may participate in healthy behaviors for social and self-fulfillment reasons, as well as health promotion or protection and illness prevention.

Many elderly, including the oldest old, equate activity with health (Beard, 1991; Laferriere & Hamel-Bissel, 1994; Pascucci & Loving, 1997, Poon et al., 1992). Using canonical correlation and stepwise discriminant function to investigate relationships among demographics, health locus of control, self-esteem, perceived health, health-promoting behaviors and functional health status, Duffy and MacDonald (1990) determined that functional health is essential for older adults in maintaining independence and that health-promoting behaviors are critical in maintenance of functional status. Even so, differences in reported outcomes from programs to promote healthy behaviors by senior adults has resulted in substantial disparity regarding efficacy of the programs (Davies, 1990; Dellasega et al., 1995; Hickey & Stilwell, 1991; Watkins & Kligman, 1993; Williams, Drew, Wright, Seidman, McGann, & Boulin, 1998).

Inconsistencies exist within studied age parameters. Bausell (1986) compared behaviors of younger (ages 16 to 64) and older adults (64 and over). Other authors have studied differences across younger, middle-aged, and older adults, such as Walker et al. (1988), comparing ages 18-34, 35-54, and 55 plus and Prohaska et al. (1985) who compared ages 20-39, 40-59, and 60 plus. Studies specifying an older population may designate the older adult age parameter as 50 plus (e.g., Whetstone & Reid, 1991); 55 plus (e.g. Riffle et al., 1989; Speake et al., 1989); 60 plus (e.g., Schafer, 1989; Tuohig, 1991; Zhan et al., 1998); 65 plus (e.g., Allen, 1986; Conn,

1998; Duffy, 1993); 70 plus (e.g., Gale, 1994; Kaplan & Haan, 1989); or 75 plus (e.g., Young, 1996). A few have studied centenarians (100 years and older) (e.g., Beard, 1991; Pascucci & Loving, 1997). Gender specific studies have identified different age parameters. Gale (1994) studied health habits of women aged 70 plus and Lacey (1988) investigated men aged 60 plus. One study of older black Americans (Gibson, 1986) identified age groups only as mid-life and late-life.

Few studies have considered subgroups within the elderly population, and there is little congruency of designated age groups. Poon et al. (1992) and Quinn et al. (1996) used age designations of those in their 60s, 70s, and 80s. Age groups of 65-74, 75-84, and 85 plus were incorporated in studies by Hemstrom (1993) and Zorn (1997). Hemstrom (1993), employing the HPM and the HPLP to study relationships and differences in health lifestyles of the three designated age groups, found differences existed among the prevalence and degree of healthy practices as well as predictors for the type and amount of behaviors. For example, overall health explained the variance for exercise in the youngest cohort, but not the other two groups. Conceptualization of health explained part of the variance in exercise for the oldest cohort, but not the two younger cohorts.

As noted in previous discussions, there is a lack of consensus about the impact or predictability of various demographic factors in relation to elderly health practices. Much of the discrepancy in findings may be due to inconsistency in age parameters investigated and comparisons based on those findings. Conn (1998), investigating exercise behavior in adults 65 and older, noted documented age differences may have

influenced the results. She stated that a common problem in research is potential confounding between age and health. Lack of discrimination among elderly age groups and inconsistency in specified ages studied have contributed to inconsistency in findings as well as incongruence of outcomes across health promotion programming. The current study, utilizing elderly age groups as defined by the U.S. Bureau of Census (1993), will add to knowledge about senior adults and help to establish a consistent research basis for comparison of findings of healthy behaviors.

## Commitment

There is a paucity of research focusing on commitment and health-promoting behaviors. Commitment was initially identified by Kobasa (1979) as a personality characteristic, one of three components of hardiness. The committed person was characterized as having a sense of purpose, ability and willingness to exercise influence or control, while finding meaning, in social situations, objects and others in the environment (Kobasa, 1982). Although measured in relation to control, challenge and commitment, Kobasa considered hardiness to be a single phenomenon. Other researchers questioned this singularity. Based on an analysis of Kobasa's Hardiness Scale (1979) and related study findings, Hull et al. (1987) identified commitment as an independent predictor of behavior. Following an attempt to replicate hardiness main effects, Funk and Houston (1987) also recommended that commitment be studied separately rather than as a subcomponent of hardiness.

In response to these findings and recommendations, as well as to address the lack of support for the effect of hardiness on adjustment to health problems, Pollock

(1989a), a nurse researcher, formulated a health-related hardiness construct consisting of two dimensions, commitment and control. Committed persons were perceived as establishing health as a priority, actively pursuing methods of improving their health and finding meaning in their efforts. Measurement of commitment as a separate indicator of healthy behaviors was facilitated by an instrument developed in conjunction with this construct (Pollock & Duffy, 1990). In the Health Promotion Model, Pender (1996) further conceptualized commitment as becoming involved and maintaining constancy in performance of a behavior, providing an extension of the above concepts with the addition of the implied cognitive process of identifying definitive strategies.

Searches of the literature revealed that, while many studies of health-promoting behaviors discuss commitment, most often the meaning or definition of the term is implied (Cookingham, 1995; Neeman, 1995). Authors have reported commitment as one of several factors influencing health practices, as a component of other concepts, or as an attitude about health behavior (e.g. Baumann & Keller, 1991; Jeffery et al., 1993, Pender & Pender, 1986). Notably absent is the use of commitment as a discrete predictor of healthy behaviors. In a qualitative study to determine factors influencing weight control behavior, commitment was one of six factors identified from participant comments: emotions/feelings, beliefs, life-events, self-control, commitment and discipline (Walcott-McQuigg, Sullivan, Dan, & Logan, 1995). Only one study has been located with commitment as a specified predictor of health-promoting behaviors. To explore the relationships among self-coherence, self-efficacy, commitment and

hope in empowerment of adults to participate in healthy lifestyles (N =234), Beyea (1991) developed a causal model and employed path analysis and multiple regression analysis. Self-coherence and commitment were reported as the most important direct determinants of healthy lifestyle.

Most research about commitment is based on one of three conceptualizations: (a) ability to initiate change, (b) adherence to healthy practices or (c) as a component of hardiness. In a quasiexperimental study of ability to initiate change in health-promoting behaviors (N = 68, ages 65-98), Uriri and Thatcher-Winger (1995) monitored nine items that measured healthy behaviors (rectal/prostate examination, last mammogram, breast self-exam, professional breast exam, high fiber diet, dietary fat, exercise, seat belt use, and perceived physical health) for one year. Comparisons showed no significant changes in frequency of behaviors at Test 1 from the baseline and significant changes in frequency for six of the nine behaviors from baseline to Test 2. Measures were taken at 6 months and 12 months with the greatest changes occurring over the 12 month time span, suggesting that the elderly will make lifestyle changes (albeit slowly) and indicating a need for better understanding of motivators for commitment to health behaviors.

Many researchers expressed concerns about sustained practice of health-promoting behaviors, yet few studies actually addressed frequency or length of behaviors. Adherence to health-promoting practices by older adults was found by Allen (1986) to decline within the first five months of initiation. Using a daily self-report format, Quinn et al. (1996) studied adherence behaviors in eight older women

over a 100 day period. P-technique factor analysis and analysis of variance on factors with identical structures showed health behaviors to be stable over time, particularly dietary factors. The sample was small and time frame less than the recommended six months. However, participants identified their behaviors as ongoing, suggesting findings of stability may have been due to lifelong habits. Recommendations were for further research of underlying motivation to help health care providers develop interventions that would encourage sustained practice of health-promoting behaviors.

Although Kobasa's hardiness construct has been used as a predicting variable in numerous studies of illness, health, and health-promoting behavior (e.g. McCranie, Lambert, & Lambert, 1987; Nicholas, 1993; Nowack, 1985; Topf, 1989), there has been an ongoing controversy as to validity and utility of the original construct. Instruments employed by Kobasa to determine hardiness all utilize negative indicators, measuring absence, rather than presence of hardiness (Kobasa, Maddi, & Courington, 1981). While studies show that hardiness has a main effect on illness, researchers suggest that the dimension of commitment may be a critical and independent predictor of behavior (Hull *et al.*, 1987) and should be studied as a separate variable.

The present study addresses recommendations and issues, such as those above, by adding to the knowledge base about motivation for commitment in relation to older adult health-promoting behaviors and by investigating the roles of social support and spiritual well-being as they pertain to commitment. Commitment was also examined as a discrete variable in relation to specific health practices. The instrument selected to measure commitment assesses its presence rather than absence.

## Social Support

Social support has been found to be positively related, directly and indirectly, to health and health-promoting behaviors (Stewart, 1993). Definitions of health are relationship-based with a common theme of activity and interaction with others (Frenn, 1996; Kaufman, 1996). Programs, such as in community health agencies, have recognized and incorporated social support as a component of health-promoting activities (Dungan, Brown, & Ramsey, 1996; Jones & Nies, 1996). Evaluations of health promotion programs indicated that persons more likely to become involved in the programs are less likely to live alone (Watkins & Kligman, 1993). From a study describing outcomes of a health maintenance program for independent frail elderly, Duncan et al. (1996) suggested that emotional impact of group support fostered overall outcomes for the program. Employing a qualitative design with 25 women ages 70-90 years, both active and frail, Mitchell (1996) found social contact to increase in value in older age. In an integrative review of health-promoting behaviors, Gillis (1993) used the Pandora System to conduct a meta-analysis of published research from 1983 to 1991 obtained through on-line medical, nursing, and psychological literature data bases. Social support was reported to be second only to self-efficacy in predictive value of healthy lifestyles determinants based on pooled *r* correlation values.

Results of three studies examining health care practices and social support related social satisfaction to more physical activity and better sleep patterns (Elward, Wagner, & Larson, 1992; Hawkins, Duncan, & McDermott, 1989; Hubbard, Muhlenkamp, & Brown, 1984). Findings from an investigation of established health

practice and subsequent hospitalization of 931 elderly poor indicated that limited social network was predictive of future hospitalizations and extended stays (Lubben et al., 1989). Using causal modeling and path analytic techniques, Muhlenkamp and Sayles (1986) demonstrated a positive association between social support and better health practices among independently functioning adults. Social support not only influenced lifestyle but also exerted an indirect influence through a direct effect on self-esteem. Other investigations have found positive associations between higher family support, more family cohesiveness, family encouragement, spousal influence and sustained health behaviors (Fleury, 1991, Padula, 1997a; Primomo, Yates, & Woods, 1990).

The hypotheses that health-promoting behaviors were related to perceived social support and self-reported health were supported in a descriptive correlation study of 113 elderly Appalachian community residents (Riffle et al., 1989). Results were that social support encouraged one to take better care of one's self and that taking better care of oneself was more likely to attract supportive relationships. A third hypothesis, that social support was positively related to self-reported health was not supported. It is possible that waning health in the elderly may bring even closer social support from friends and family. The current study addressed this possibility, the position that social support increases in importance with aging, and the influence of social support on commitment by examining for differences in the relationship between social support and health-promoting practices across three elderly age groups.

## Spiritual Well-being

Aspects of the spiritual dimension have been studied in relation to health. Four

dimensions of spiritual well-being have been identified in the literature: (a) meaning in life; (b) intrinsic values, described as personal belief systems or principles to live by; (c) transcendence; and (d) a spiritual community of shared values and support (Chandler, Holden, & Kolander, 1992; Ingersol, 1994; Maslow, 1971; Westgate, 1996). While many research findings give evidence that these dimensions of spiritual well-being are important to a healthy lifestyle, there is a dearth of research focusing on spiritual well-being, individual spiritual beliefs and health-promoting behaviors.

It is interesting that, in spite of obvious emphasis placed on spiritual beliefs or practices by respondents in studies of healthy behaviors, most often they were incorporated as ingredients of other variables considered to impact behaviors (e.g., coping, hope, control or social support) and addressed broadly as spirituality or spiritual well-being. For example, using a qualitative design and photographic phenomenological approach, Gaskins and Forté (1995) studied the meaning and sources of hope in twelve older adults. Spirituality was the overriding theme. Prayer, as an expression of control, has been studied as a form of coping with both psychological and somatic adaptive potential, especially in stress situations (Folkman & Lazarus, 1988; Holahan & Moos, 1987). Spiritual well-being has been identified as a predictor of hardiness and, thus, commitment (Carson & Green, 1992).

Writers have discussed the negative impact of specific religious practices or spiritual beliefs in relation to illness, e.g. the reluctance of some religions or practices to accept blood transfusions or refusal to comply with dietary regimes because of religious restrictions (e.g., Fieldhouse, 1986). Results from studies of control and

health behaviors have indicated that persons who believe their health is due to chance or powerful other (i.e., in the hands of God) may not be motivated to participate in healthy practices. Conversely, some religious theologies place high value on physical health, wholesome food, and abstinence from alcohol, stimulant beverages, and tobacco (McIntosh & Spika, 1990)

HEALTH WATCH (Schmidt, 1993) provided evidence that nutrition, physical activity, extended family and spirituality were the four most significant healthy behavior determinants among the 2200 elderly participants. An unanticipated finding was participant's differentiation of spirituality from religiosity as a major health determinant. The author viewed these findings as relevant for health promotion and primary care interventions across the age span, regardless of baseline health status.

Perhaps the most dramatic and recent finding was from a two year investigation of an adult weight management program (Mellin, Croughan-Minihane, & Dickey, 1997). Data collected included physical and psychosocial responses at 3, 6, 12, and 24 months from 22 subjects. During the 12 month combined structured/open-ended interview many of the subjects "volunteered that they observed spiritual changes and a growing awareness of a potential relationship between spirituality and obesity" (p.1135). This was surprising in that there was no spiritual content in the program. On the basis of these responses, spirituality assessment was incorporated into the 24 month questionnaire. Not only were there reports of overall enhanced spirituality at the end of the two years, but physical findings were that mean weight loss was seven times greater in those reporting enhanced spirituality than in those who reported no

change or a decrease in sense of spirituality.

Based on their studies of spirituality, Burkhardt (1989, 1993) and Burkhardt and Nagai-Jacobson (1985) stressed the need for health care providers to discover and support strengths people use to help themselves stay healthy. Pulliam, Plowfield, and Fuess (1996) offered additional support for identification of strengths through a model of developmental care for older women. Empowering older women to participate in healthy behaviors requires employment of internal resources and strengths to facilitate developmental lifestyle changes. Faith has been addressed in theoretical literature as a motivating factor in adopting healthy lifestyles (Richards, 1982; Schaffner, 1981) and as an alternative therapy in health promotion (Kennison, 1987). Researchers and theorists from the counseling discipline advocate that spirituality should no longer be considered primarily the domain of religion. Spirituality occurs outside the context of religious settings and spiritual beliefs should be incorporated into each dimension of wellness: physical, emotional, and social (Chandler et al., 1992). Identification of internal strengths or risks through source of spirituality, plus assessment of spiritual well-being as a facilitator of healthy behaviors, was addressed by this study through examination of relationships among spiritual well-being, source of spirituality, social support, commitment and health-promoting behaviors.

### The Relationship Between Spiritual Well-being and Social Support

An important concept of spiritual life is that we learn to be and remain functioning individuals only in relation to others (Groeschel, 1984). Previous research has suggested that there is considerable interdependence among predictors of health-

promoting behavior. Significant positive relationships between hope and the variables of social support, health and religious well-being have been demonstrated in longitudinal (Farran & McCann, 1989) and cross-sectional (Zorn, 1997) investigations of community-based elderly. During development of a holistic model for wellness and health promotion, Witmer and Sweeney (1992) gleaned five tasks relevant over the life span, including the development of spirituality and friendship. Study findings indicated strong positive associations between hope (considered an indicator of spirituality) and health-promoting behaviors. Zorn (1997) recommended that all of these factors, although not causal, form a basis for a practice with "a caring philosophy that includes health promotion activities" (p. 98) for the elderly. The present study addressed this recommendation by investigating the influence of an interrelationship between social support and spiritual well-being on commitment and health-promoting behaviors.

A high value placed on activities involving social contact was reported by Mitchell (1996) in a qualitative study with 25 older women to examine expectancies for control in relation to perceived influences on health and health behaviors. Each participant indicated that social support was a strong impetus for involvement in healthy behaviors. Cognitive coping strategies were also important for this group of community dwelling women 75 and older. However, identified coping strategies were of a fatalistic nature in the sense of acceptance because "there's nothing you can do about it" (p. 272). This finding adds weight to the importance of identifying internal strengths or risk factors, such as specific religious/spiritual beliefs, which may

facilitate or hinder coping strategies.

Spiritual beliefs and social support tend to become more pervasive and vital components of life as a person ages. Examining perceptions of twelve 100 to 109 year old centenarians, Pascucci and Loving (1997) used a phenomenological approach to elicit factors attributed to health and functioning. Six themes were derived: (a) meaning of long life, (b) views of health, (c) relationships with others, (d) affirmation of worth, (e) reasons for longevity and (f) God. The most prevalent themes were relationships with others and belief in God. Rather than maintaining any structured health regimens, participants perceived healthy practices as being indigenous to their life tasks. Activity was equated with health, whether it was walking as a form of exercise or being active in church or community. Socialization was viewed as necessary to prevent isolation, particularly as family was lost. Belief in God, worship and serving the church were prevailing themes that played a vital part in daily life, service and coping. These findings support results from earlier studies demonstrating that strong relationships among spiritual beliefs, religious practices and coping to maintain healthy lifestyles are prevalent in the oldest old population (Beard, 1991; Young, 1993). Mitchell (1996) also found from her qualitative study that perceptions of social support and coping strategies (which included spiritual beliefs), as well as perceptions of control, health and aging grew in importance in old age.

In a Mayo Oncology Clinic analysis of biological and psychosocial research on predictors of cancer survival, social connectedness and components of spirituality and religion were noted to be the "most consistent predictors of quality of life and possibly

survival" (Creagan, 1997, p. 160). Additionally, commitment was identified by D. W. Smith (1994) as a component of one of four dimensions of spirituality in "having a commitment to the actualization of positive potential in all aspects of life, which includes realizing that spiritual values offer more satisfaction than material ones and that spirituality is integral with one's relationship with self and all else" (p. 37). These findings add weight to the need for better understanding of the interrelationship of motivators for commitment to health-promoting behaviors by the elderly.

## Pender Science

Pender's Revised Health Promotion Model (HPM) (1996) provided the theoretical perspective for this study. Well over seventy studies have been identified utilizing the HPM (Pender, 1987, 1996) in various populations and settings to include health-promoting lifestyles of children, adolescents, working adults, middle-aged and older adults. The framework has been employed to predict such behaviors as smoking cessation, exercise, use of hearing protection and helmets, seatbelt use, healthy diet, contraceptive use, body mechanics in relation to back injury and participation in diverse health-promotion programs (e.g., Coppens & McCabe, 1995; Duffy, 1997; Felton, 1996; Lusk, Ronis, Kerr, & Atwood, 1994; O'Quinn, 1995; Stegbauer, 1995; Walker et al., 1988; Wollenberg, 1989). At least two studies examined relationships among race, gender and healthy lifestyles (Buenting, 1990; Volden et al., 1990). Studies have investigated predictors and strategies for promotion of healthy behaviors, such as stress control, definitions and/or meaning of health, locus of control and social support (e.g., Gillis, 1994; Viverais-Dresler & Richardson, 1991). Barriers to healthy

behaviors have been addressed using the model, and one study investigated the utility of LISREL to support the theory (Becker, Stuifbergen, & Sand, 1991; Johnson, Ratner, Bottorff, & Hayduk, 1993; Moore, 1992).

Clinical populations examined with the HPM have included patients with coronary artery disease, cardiac rehabilitation clients, males with HIV, clients with dietary needs, and various types of disabilities (e.g., Harrison, 1993; Hoff & Lowenstein, 1994; Moylan & Joyce, 1993; Stuifbergen & Becker, 1994; Warren, 1993). The model has also been used in varied studies of elderly populations. At least nineteen studies employing the HPM as guiding framework addressed health promotion in the elderly as a group. Studies with different age groups, black elderly, elderly couples, elderly with arthritis, rural/urban elderly, exercise versus non exercise in the elderly and health promotion program success with the elderly have been conducted (e.g., Ballard-Ferguson, 1991; Foster, 1992; Jones, 1991; Lookinland & Harms, 1996; Moore, 1992; Speake, Cowart, & Stephens, 1991).

Significant positive relationships among health-promoting behaviors, perceived social support and self-reported health were found by Riffle et al., (1989), employing the HPM to study health lifestyle of older adults. An investigation of relationships among health locus of control, perceived health status and physical activity (Speake, 1987) utilized the HPM to organize variables and compare beliefs of young and elderly age groups. Findings indicated that seniors who are unmarried, less educated, live alone or live in retirement complexes believed that health was determined by chance more so than their younger, educated, married counterparts. However, Walker

et al. (1988) reported a greater frequency of health-promoting behaviors reported by older adults than by young or middle aged adults.

Pender's model has been used in combination with other frameworks to investigate health behaviors. In one example, Davidson (1988) combined aspects of Orem's self-care deficit theory (Orem, 1985 as cited in Davidson, 1988) and the HPM to analyze the relationship of health-promotion behaviors to self-care agency in an elderly Mennonite population. Significant relationships were found between health-promoting behaviors and self-care agency. Content analysis indicated hard work, nutrition and a Christian lifestyle to have the greatest effects on health. The researcher suggested that a Christian lifestyle may be conceptually related to self-actualization. Past use and reported findings, support Pender's model and substantiate utility of the framework to investigate elders' health behaviors. Nurses are in a significant position to facilitate and optimize the health status of the elderly and can play a critical role in reducing the strain on health care resources. The HPM provides nurses and other health providers with a lens to understand the interrelating nature of social situation variables and the spiritual context and consequential influence on a healthy lifestyle.

The Health-Promoting Lifestyle Profile (HPLP) (Walker et al., 1987), an instrument to measure dimensions of a health-promoting lifestyle, was developed in the perceptual lens of the HPM and has been used extensively either in its entire form or as a subscale instrument to measure a specific component. As a result of research on the tool and user comments, the instrument has undergone a recent revision (HPLP II) as reported by Pender (1996). Numerous studies have employed the HPLP (Walker

et al., 1987) to study variables of health-promoting behaviors.

## Chapter Summary

This chapter has included a review of literature in relation to health-promoting behaviors and the four behaviors employed as indicators for this study (physical activity, nutritional behaviors, stress management and health responsibility), age-related health behaviors, commitment, social support, spiritual well-being and the interrelationship of social support and spiritual well-being with commitment to health-promoting behaviors. Most elderly retain positive perceptions of their own health, desiring to participate in health-promoting activities to remain well and active. Research has begun to discuss the possibility of differences in behavioral patterns for health promotion in various age groups. While there has been no empirical evidence of any one pattern of behaviors that could be generalized to different age groups or population, there has been evidence of broad clusters of behaviors that have the potential for use in identifying healthy lifestyles.

Accumulating evidence supported that older adults receive similar benefits from exercise as younger people and that patterns and types of exercise behavior tended to change with age. Much research indicates that healthy nutritional behaviors were the most important of the health-promoting behaviors reported by older adults and that older people tended to have better nutritional habits than younger adults. Other reports state that confusion about the relationship of food intake and health status has kept many seniors from participating in potentially helpful dietary activities. Little research was available specific to stress management as a health-promoting behavior in the

elderly, yet stress management was consistently in the top three or four categories of health-promoting behaviors identified by the elderly. Empirical findings supported the relationship between health responsibility and positive health behaviors by older adults. The elderly have become a heterogenous population, but little research has investigated elderly age groups. Neither identified age group studies, nor single group studies have used consistent age parameter designations, leading to much of the conflicting evidence in relation to the impact or predictive value of identified determinants of elderly health-promoting behaviors.

Motives for healthy practices were found to vary among the elderly indicating a need for better understanding of motivating factors for commitment to healthy behaviors. Few studies investigated commitment as an independent variable impacting health-promoting behaviors. Primarily it has been investigated as a component of another concept, such as hardiness. More recent findings suggested that commitment was an independent predictor of behavior and that it was strongly influenced by social support. Social support had been identified as positively related to health-promoting behaviors. Healthy behaviors, such as exercise and better sleep patterns, improved in the presence of satisfying social support, while frequency of hospitalizations increased in the absence of adequate social support. Discrepancies in reports of relationships between social support and self-reported health have implications for increasing importance of social support as one ages.

Spiritual well-being has been determined to be important to a healthy lifestyle. Authors found it efficacious to locate health promotion programs within religious

communities, yet few studies addressed the importance of spiritual beliefs in relation to health-promoting behaviors. The relationship of spiritual well-being with commitment to health-promoting behaviors has not been investigated. Most often the influence of spiritual beliefs or spiritual well-being was addressed in discussions of supplementary findings or incorporated as an element of other variables, such as hope.

Significant interrelationships were noted among many of the concepts, however, few studies were found investigating interacting effects. No studies were found addressing the interacting influence of social support and spiritual well-being on commitment or health-promoting behaviors. Much of the health promotion research still focused on individual factors as determinants. However, spiritual well-being and connectedness were identified as essential elements in older adults' experiences of feeling healthy. Secondary findings from studies led to conclusions that spiritual well-being and relationships with others were elements that must be assessed and addressed by health-care providers in relation to older adults' experiences of health and health-promoting activities. There was evidence that spiritual beliefs and needs for social support grew in importance with age. The spiritual dimension and social interactions were determined to play vital and powerful roles in relation to healthy lifestyle for the new generation as well as younger elderly and should be viewed as strengths to be identified and drawn upon to facilitate commitment and healthy behaviors.

The utility of Pender's HPM (1996) was reviewed. The model served as theoretical framework for this study to explain the relationships among selected personal factors, spiritual well-being, social support, commitment and health-

promoting behaviors. The model provided a method for understanding the individual motivating factors leading to commitment to a healthy lifestyle as well as identification of "strategies for eliciting, carrying out, and reinforcing the behavior" (p. 72). This study addressed deficits in the research literature including: (a) examination of health-promoting behaviors in three age groups of older adults; (b) investigation of commitment as a discrete predictor of health-promoting behaviors; (c) inclusion of spiritual well-being and the relationship between spiritual well-being and social support as they impact health-promoting behaviors; (d) investigation of the relationship of spiritual well-being and social support to commitment; and (e) additional knowledge about, and suggested expansion of, Pender's Health Promotion Model.

# CHAPTER III

# METHODOLOGY

This study was designed to examine relationships among social support, spiritual well-being, commitment and health-promoting behaviors of older adults. Methodology and procedures utilized are described in the design and research questions, sample and setting, data collection, measurement and data analysis sections of this chapter. Discussion of protection for human subjects is incorporated within the data collection section.

## Design and Research Questions

A theoretical model was derived from the HPM, clinical experience and review of literature research for this correlational study. The following research questions were addressed:

1. What are the differences in social support, spiritual well-being, commitment and health-promoting behaviors among three age groups of older adults?

2. What are the relationships among personal factors, social support, spiritual well-being, commitment and health-promoting behaviors in each of three age groups of older adults?

Research has established positive relationships between social support and health-promoting behaviors and between spiritual well-being and health; but few studies have investigated the relationship of spiritual well-being to health-promoting behaviors of older adults. No studies were found specifically investigating a link between social support, spiritual well-being, commitment and health-promoting

behaviors. However, the framework and frequency of secondary findings about the prevailing importance of social support and spiritual well-being to health of the elderly is determined to provide an adequate knowledge base for the correlational design.

## Sample and Setting

A non-probability, voluntary sample was sought from a target population of adults aged 65 and older. The accessible population included seniors from selected communities in four geographic areas: Southeast Missouri, East Tennessee, East Texas, and Southwest West Virginia. Separate geographic areas were selected to enhance population representation and provide resources for obtaining a sufficiently large sample as necessitated by the design. Criteria for inclusion were adults (a) aged 65 and older, who are (b) self-caring, (c) community dwellers, (d) English speaking and (e) without known cognitive impairment. Identification of participants with impaired cognition was by feedback from agency leaders. Participant questionnaires were also examined for indication of inability to follow directions, response set or failure to complete the task. In those instances, questionnaires were discarded.

Efforts were made to achieve equality across the sample and variables by collecting data from a variety of senior agencies (8), nutrition centers (2), social and civic groups (7), retirement communities (2), low income housing (6) and religious communities (2). Religious congregations were utilized because of large numbers of elderly members, the importance established in the literature for location of health promotion programs in religious communities, and the inclusion of spiritual well-being in this study. The sample was divided into three age groups: young old (65-74),

middle old (75-84), and old old (85 and older). Recruitment efforts were made to achieve equal distribution across the four geographic areas and adequate gender and minority (white/nonwhite) representation in each age group. Population of the selected communities varied from a rural area of less than 1,450 to a metropolitan area of more than 165,000. Sample size from each area approximated the percentage of older adults in the particular states as reported by the U.S. Bureau of Census (1996). Texas had less than 11% of adults 65 and older; West Virginia and Missouri were listed in the two categories with the greatest percent of people 65 and older.

From a total of 652 participants, responses from 595 were determined complete and usable for this study. Included in the sample were 22 participants from the pilot study. No major changes were required either administratively or in the questionnaire following the pilot. The pilot sample was comparable to that of the primary study sample in relation to age, race, gender, and education levels with at least 86% of both pilot and primary respondents reporting incomes of less than $40,000 per year. T-tests for equality of means and variances between the two groups indicated no significant differences at .05. Representation by age group and percent of participation by geographic area are summarized in Table 1.

Thirty three questionnaires (3 pilot; 30 primary) were rejected initially because they were grossly incomplete. Two were rejected from the primary study due to obvious response set (all answers the same). The remaining set of 617 included 522 Whites, 83 Blacks, 2 Hispanics, 9 Native Americans, and 1 Greek. Comments by several respondents raised concerns about those identified as Native American.

Table 1. Sample distribution by age group and geographic area (N=595).

| | TX | | WV | | MO | | TN | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % |
| Age group | | | | | | | | | | |
| 65-74 | 37 | 37.0 | 82 | 50.3 | 79 | 37.4 | 66 | 54.6 | 264 | 44.4 |
| 75-84 | 45 | 45.0 | 62 | 38.0 | 89 | 42.2 | 41 | 33.9 | 237 | 39.8 |
| 85 + | 18 | 18.1 | 19 | 11.7 | 43 | 20.4 | 14 | 11.6 | 94 | 15.8 |
| Total | 100 | 16.8 | 163 | 27.4 | 211 | 35.5 | 121 | 20.3 | 595 | 100.0 |

Respondents may have thought the reference was to native country instead of race. The Use of "Indian" (instead of "Native") American may have been more familiar to respondents. Because of small numbers and possible confusion about "Native American", the 12 Hispanic, Native American, and Greek responses were eliminated, confining the study to a comparison of Black and White races.

An analysis of means and standard deviations of scale scores resulted in individual scale scores being dropped from a case if the total score was outside 3 SD of the mean. This involved five cases from which PRQ85 scores were dropped with Commitment and JAREL scores dropped from one case each. An SPSS Missing Values Analysis (MVA) was then run as an additional check for patterns of missing items. Ten cases were noted to have a distinct pattern of missing data among the variables to be used in the model and were deleted. The remaining 595 cases were analyzed by the MVA program and remaining missing values in the model variables replaced by an Expectation Maximization (EM) algorithm. EM estimates means and generates correlation and covariance matrices of variables with missing values. The

program analyzes values for both missing and non-missing groups, and iterations are run of selected values to determine which will make the smallest changes in the matrices (Bob Muenchen, Research Consultant, personal communication, November 4, 1999).

Of the 57 unused participant questionnaires, 12 were from Texas (TX), 16 from West Virginia (WV), 19 from Missouri (MO) and 10 from Tennessee (TN). Over 50% had completed only the first page of a questionnaire or a portion of that page. Demographic data for unused participant responses are summarized in Table 2. Several persons from each collection site refused to participate, giving no reason; making statements such as "Not interested", "Not enough time", "Those things make me nervous"; or expressing suspicion, such as, "The last time I filled out a form, they tried to take away my money." or "I don't do those things. I don't trust them.".

Design and analysis techniques directly impacted sample size necessary for this study. No statistical program for determining required sample size was available for structural equation modeling (SEM). A power analysis computed for multiple regression analysis with the Statistical Package for the Social Sciences (SPSS) Sample Power computer program indicated that, for 27 anticipated parameter estimates and allowing for 10% ineligibility from incomplete forms, 150 subjects per age group should give a power of .80 with effect size .30 at an alpha of .05. Boomsma (1987) and Hayduk (1987) suggest that estimation of SEM by maximum likelihood methods is most accurate when sample sizes are at least 200. From a total sample of 595 for this study, age groups I and II had 264 and 237 participants respectively. Age group

Table 2. Demographic data for unused participant responses (n=57)

| Area: | TX (n=12) | WV (n=16) | MO (n=19) | TN (n=10) | Total (n=57) |
|---|---|---|---|---|---|
| Age group: | | | | | |
| 65-74 | 4 | 3 | 3 | 7 | 17 |
| 75-84 | 5 | 10 | 10 | 2 | 27 |
| 85 + | * | 2 | 3 | * | 5 |
| Subtotal | 9 | 15 | 16 | 9 | 49 |
| Gender: | | | | | |
| Male | 5 | 2 | 9 | 3 | 19 |
| Female | 6 | 14 | 10 | 7 | 37 |
| Subtotal | 11 | 16 | 19 | 10 | 56 |
| Race: | | | | | |
| White | 8 | 9 | 14 | 2 | 33 |
| Black | * | 2 | 1 | 4 | 7 |
| Other | 2 | 5 | 2 | 3 | 12 |
| Subtotal | 10 | 16 | 17 | 9 | 52 |
| Marital Status: | | | | | |
| Married | 2 | 4 | 5 | 1 | 12 |
| Widowed | 1 | 5 | 9 | 2 | 17 |
| Separated/Divorced | 1 | 3 | 1 | 3 | 8 |
| Single | * | * | 2 | 2 | 4 |
| Subtotal | 4 | 12 | 17 | 8 | 41 |
| Income: | | | | | |
| < $20,000/yr | * | 4 | 1 | * | 5 |
| $20,000-50,000/yr | 1 | * | 2 | 1 | 4 |
| >70,000/yr | 1 | * | * | * | 1 |
| Subtotal | 2 | 4 | 3 | 1 | 10 |
| Education level: | | | | | |
| < HS graduation | 3 | 2 | 10 | 4 | 19 |
| HS graduate | 3 | 7 | 3 | 4 | 17 |
| Some college | 1 | 5 | 2 | 1 | 9 |
| College graduate | 1 | * | 1 | 1 | 3 |
| Graduate School | * | 2 | 1 | * | 3 |
| Subtotal | 8 | 16 | 17 | 10 | 51 |

Note. Numbers do not total 57 due to missing data. TX = Texas; WV = West Virginia; MO = Missouri; TN = Tennessee; HS = high school.
*indicates either no respondents in that category or missing data.

III had 94 participants. This smaller number was of concern. However, maximum likelihood estimation has been shown to perform reasonably well for samples of approximately 100, giving adequate power to reject a poor fitting model when there are larger numbers of degrees of freedom (Loehlin, 1998). The sample size of age groups I and II exceed this number, and age group III approximates this requirement. In SEM true power analysis can only be run after the model is identified, tested and goodness of fit indices computed. Following model identification and testing procedures, a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was computed (Norusis, 1994). A KMO measure of .80 provided a reasonable level of adequacy for the total sample of 595 subjects. Measures by age group were .76, .77 and .65 respectively. Norusis (1994) considers KMO measures in the 0.60s to be weak, but acceptable if results are interpreted with caution.

## Measurement

A demographic data form (Appendix A) and four self-report, scaled questionnaires were used for the study (see Appendix B for author contact information). To operationalize health-promoting behaviors, four subscales of the Health-Promoting Lifestyle Profile II (Pender, 1996) were employed: the Physical Activity, Nutrition, Stress Management, and Health Responsibility Subscales. Commitment was operationally defined with the Commitment Subscale of the Health Related Hardiness Survey (Pollock & Duffy, 1990). The Personal Resource Questionnaire 85, Part 2 (Weinert, 1987, 1988) was employed to measure social support. Spiritual well-being in older adults was assessed with the JAREL Spiritual

Well-Being Scale (Hungelmann et al., 1989). Each instrument is Likert scaled and was analyzed as interval level data. Table 3 provides a summary of instrument descriptions. That these are all self-report instruments is recognized as a limiting factor for the study; however, self-report has been documented as a valid and reliable data collection method (Berdie, Anderson, & Niebuhr, 1986; Polit & Hungler, 1995), and is consistent with clinical health assessments in older adults (Graney & Zimmerman, 1980). A Cronbach's alpha was computed to establish reliability of each instrument for this study. Reliability findings are reported in Chapter IV.

Health Promotion Lifestyle Profile II (HPLP II)

The HPLP II (Walker et al., 1995), addresses specific health-promoting behaviors. The tool was developed in the perspective of the Health Promotion Model (Pender, 1996) and from an earlier version of the HPLP (Walker et al., 1987). A 52-item summated rating scale, the instrument uses a 4-point Likert response format to measure frequency of self-reported health-promoting behaviors in the domains of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations and stress management.

Released in 1995, the HPLP II is a revised and updated version of the HPLP (Walker et al., 1987). Items for development of the original instrument were obtained from the Lifestyle and Health Habits Assessment (LHHA), a checklist of positive health behaviors designed as a clinical nursing tool (Pender 1982). A forced-choice, response set range from one to four, includes (1) never, (2) sometimes, (3) often, and (4) routinely. The instrument provides a possible total score range of 52 to 208 and

Table 3. Concept measurement.

| Concept | Tool | # Items | Response Set | Scoring Range (Total Scores) |
|---|---|---|---|---|
| Health-Promoting Behaviors | HPLP II | | | |
| Exercise | PAS | 8 | 1 = Never to 4 = Routinely | 8-32 |
| Nutrition | NUTR | 9 | 1 = Never to 4 = Routinely | 9-36 |
| Stress Mgmt | SMS | 8 | 1 = Never to 4 = Routinely | 8-32 |
| Health Responsibility | HRS | 9 | 1 = Never to 4 = Routinely | 9-36 |
| Commitment | CS | 20 | 1 = Strongly Disagree to 6 = Strongly Agree | 20-120 |
| Social Support | PRQ85, Part 2 | 25 | 1 = Strongly Disagree to 7 = Strongly Agree | 25-175 |
| Spiritual Well-being | JAREL | 21 | 1 = Strongly Disagree to 6 = Strongly Agree | 21-126 |
| Personal Factors | | | | |
| Age | Demo. Form | 1 | Age | Age |
| Race | Demo. Form | 6 | 1 = White<br>2 = African-American<br>3 = Asian<br>4 = Hispanic<br>5 = Native American<br>6 = Other | 1-6 |

(table continues)

Table 3. (continued)

| Concept | Tool | # Items | Response Set | Scoring Range (Total Scores) |
|---|---|---|---|---|
| Personal Factors | | | | |
| Gender | Demo. Form | 2 | 0 = male<br>1 = Female | 0-1 |
| Income level | Demo. Form | 8 | 1 = ≥ $9.999<br>2 = $10,000-$19,000<br>3 = $20,000-$29,999<br>4 = $30,000-$39,999<br>5 = $40,000-$49,999<br>6 = $50,000-$59,999<br>7 = $60,000-$69,999<br>8 = ≥ $70,000 | 1-8 |
| Education level | Demo. Form | 7 | 1 = ≤ 8th grade<br>2 = Some HS<br>3 = HS graduate<br>4 = Some College<br>5 = College graduate<br>6 = Graduate school<br>7 = Post graduate | 1-7 |
| Belief | Demo. Form | 10 | 1 = Catholic<br>2 = Protestant<br>3 = Jewish<br>4 = Other Christian<br>5 = Islam<br>6 = Hinduism<br>7 = Buddhism<br>8 = Agnostic/Skeptic<br>9 = Atheist<br>10 = Other | 1-10 |

Note. HPLP II = Health Promoting Lifestyles Profile II; PAS = Physical Activity Subscale; NUTR = Nutrition Subscale; SMS = Stress Management Subscale; HRS = Health Responsibility Subscale; CS = Commitment Subscale; PRQ85 = Personal Resource Questionnaire 85; HS = high school; Belief indicates Source of Spirituality.

six subscale scores with eight to nine items each. Higher scores indicate more health-promoting behaviors in general or for a specific subscale. Items for the subscales are evenly distributed throughout the HPLP II to control for response set bias (Berger & Walker, 1997). The entire tool requires approximately 15 minutes to complete. For this study the items for the two subscales not used were deleted. Distribution of the remaining subscale items remained unchanged. The altered tool required approximately 8 to 12 minutes to complete.

Two subscales were determined to address similar issues as those in measures of other variables selected for the current study: Interpersonal Relations Subscale, and Spiritual Growth Subscale. The Interpersonal Relations Subscale focuses on individual sense of intimacy and closeness. Pender's HPM explicates the importance of social support as arising from perception of behaviors, beliefs, attitudes and expectations of, as well as encouragement from, others. Although there are similarities between this subscale and the Personal Resource Questionnaire 85, there is concern that the subscale does not adequately address perceptions, especially those of expectations and feedback. The subscale also does not address relationship reciprocity which Pender (1996) suggests may be of importance in different cultures for predicting behavior.

The Spiritual Growth Subscale was derived from what was initially a self-actualization subscale. Limited to assessment of self-actualization, personal contentment, and perception of personal growth, the subscale does not adequately address the broader definition of spiritual well-being provided by Pender and employed by this study. This subscale has also undergone the most extensive

modification of the revised HPLP II and has not been adequately tested. For these reasons and to avoid inflation in scoring, those two subscales were not used in this study (Tabachnick, & Fidell, 1989). Written permission to use the instrument was received from Dr. Susan Noble Walker (Appendix C).

The HPLP has been used extensively either in its entire form or by subscale for measure of a specific component. An item comparison between the 1987 and 1995 versions by this researcher disclosed eight reworded items, fifteen deleted items, nineteen new items and an increase from 48 to 52 items. Items are now more evenly divided among the subscales. Selected items were changed to reflect updated health information (e.g., incorporating the food pyramid instead of basic four food groups; variation in levels of physical activity). The subscale of "Exercise" was renamed "Physical Activity". The original "Self-actualization" subscale underwent the most changes and is retitled, with items more reflective of a "Spiritual Growth" concept. The revisions are a culmination of 12 years of use, research, and feedback from users about the HPLP (Walker et al., 1987). According to Dr. Walker (personal communication, October, 1997) the instrument was revised to "more accurately reflect current literature and practice and to achieve balance among the subscales".

Essentially the same process for psychometric evaluation was utilized for the HPLP II as for the HPLP (Dr. S. N. Walker, personal communication, October, 1997; Walker & Hill-Polerecky, 1999). A published summary of a paper describing the revisions presented at a 1995 meeting of the American Public Health Association (cited in Berger & Walker, 1997) reported psychometric evaluation of the revised

instrument in a community sample of 712 adults. To determine convergent validity, the HPLP II was compared to the Personal Lifestyle Questionnaire (Muhlenkamp & Brown, 1983) in a subset of 80 adults. Correlation was 0.68. Within the same sample subset, social desirability explained only 1.4% of response variances (Berger & Walker, 1997). Criterion validity was addressed by determining correlations with concurrent measures of perceived health status and quality of life (r's = .269 to .491). Total scale internal consistency was high ($\alpha$ = .94), with satisfactory subscale alpha coefficients ranging from .79 to .87 (Walker & Hill-Polerecky, 1999). Correlation with the Medical Outcomes Study Short-Form General Health Survey was 0.27 and 0.46 with the Quality of Life Index (Berger & Walker, 1997).

To date only three published studies have been located employing the HPLP II, although they each derived conceptual perspectives from an earlier version of Pender's Health Promotion Model (1987). To determine relationships between hope and health-promoting lifestyles in adults with Parkinson's disease, Fowler (1997) used a descriptive, correlational design with a sample of 42 males, ages 44 to 86 years. Seventy-eight percent were over age 65. A Cronbach's alpha coefficient to determine reliability was .94 for the HPLP II with a range of .80 to .92 reported for the subscales. Stuifbergen and Roberts (1997) also employed a descriptive, correlational design to explore health promotion behaviors of 629 women (ages 18-70) with multiple sclerosis. Study reliability of the HPLP II total score was reported as .92, with subscale reliabilities .74 to .86. A descriptive investigation of college students' health-promoting lifestyles used the HPLP II, but did not report reliability findings for

that study. According to Nunnally and Bernstein (1994) a reliability of .70 or higher is acceptable in early instrument development and .80 acceptable for instruments used in basic research. Construct validity of the HPLP II was determined using factor analysis with principle axis extraction and oblique rotation. Confirmatory factor analysis using LISREL indicated that the six-dimensional model fit the data well (Berger & Walker, 1997). These are encouraging initial validity and reliability findings, indicating smaller measurement error with the revised instrument.

The HPLP (Walker et al., 1987) has also been normed in black, Hispanic and Chinese populations with Spanish and Chinese Language versions available (Chen, Liao, Liao, & Chou, 1994; Dr. S.N. Walker, personal communication, October, 1997). Expressed concerns about middle-class instrument bias have been addressed in both the HPLP and HPLP II (Dr. S. N. Walker, personal communication, October, 1997). Lookinland and Harms (1996) reported high internal consistency for the HPLP in a sample of seniors in which 18% of respondents had income levels below $12,000 and 28% had levels between $12,000 and $25,000 per year. In an investigation of perceived benefits and barriers to exercise in older African American Women using the exercise subscale of the HPLP (Jones & Nies, 1996), all reported incomes were $\leq$ $10,000. Findings from one study using the HPLP II (Fowler, 1997) reported 37% of respondents had income levels less than $20,000.

Physical Activity Subscale (PAS)

Originally referred to as the exercise subscale, the PAS includes eight items concerned with regular exercise patterns originally derived from the broad category of

Physical/Recreational Activity on the LHHA (Walker et al., 1987). A forced choice response set is from one (never) to four (routinely). Possible scores range from 8 to 32, with higher scores indicating increased frequency of participation in regular physical activities. Other available psychometric information for development of the PAS includes an inclusive alpha coefficient range of 0.79 to 0.87 for all of the subscales from a sample ($N$ = 712) of community dwelling adults. Ranges of .80 to .92 for the HPLP II subscales were reported by Fowler (1997), whose study also included a sample consisting primarily (78%) of older adults, and .74 to .86 by Stuifbergen and Roberts (1997).

The HPLP exercise subscale has been employed in studies with various age groups and settings. Many researchers have reported only reliability ranges of subscale alpha coefficients. A study of healthy behaviors of people with disabilities (Stuifbergen & Becker, 1994) yielded a .76 to .90 alpha coefficient subscale range. A study of worksite wellness behaviors (O'Quinn, 1995) provided a coefficient subscale range of .70 to .92.

An alpha coefficient of .81 was reported for the HPLP exercise subscale in an investigation of perceived benefits and barriers to exercise in older African American Women (Jones & Nies, 1996). Other investigators of healthy behaviors in older adults have reported reliability coefficients for the exercise subscale from .69 to .80 (Conn, 1998; Duffy, 1993; Duffy & McDonald, 1990; Jones, 1991; Padula, 1997a). To study relationships and differences in definition of health, perceived personal competence, perceived health status and health-promoting behaviors in three elderly cohorts

(N = 281), Hemstrom (1993) reported exercise subscale reliability coefficients for the total sample (.76) and for each cohort (ages 65+, .78; ages 75+, .77; and ages 85+, .70). Thus, initial results for the HPLP II subscales are consistent with and may be slightly higher than those of the HPLP, suggesting that the PAS is a reliable measure.

Nutrition Subscale (NUTR)

The NUTR consists of nine items concerned with meal patterns, food choices (based on the food pyramid) and identification of packaged food content. The forced choice response set is from one (never) to four (routinely). Possible score range is from 9 to 36, with higher scores indicating increased frequency of healthy nutritional behaviors. Reliability and validity evaluations and alpha coefficient ranges are the same as previously discussed for the HPLP II and subscales.

Utilization of the nutrition subscale for the HPLP has been similar to that of the exercise subscale. Reliability coefficients for the nutrition subscale in research of older adults healthy behaviors range from .64 to .77 (Conn, 1998; Duffy, 1993; Duffy & McDonald, 1990; Jones, 1991; Padula, 1997a). Hemstrom (1993) reported the nutrition scale reliability at .73 for the total sample and .77 for Cohort 1 (65 +); .71 for Cohort 2 (75 +); and .70 for Cohort 3 (85 +). No data is available for the NUTR other than subscale reliability ranges of .80 to .92 (Fowler, 1997) and .74 to .86 (Stuifbergen & Roberts, 1997).

Stress Management Subscale (SMS)

The SMS is comprised of eight items pertaining to recognition of sources of, and actions to control, stress and achieve relaxation, and to activities of sleep and rest

with higher scores indicating higher frequency of stress management practices. Response set is forced choice from one (never) to four (routinely). Possible scores range from 8 to 32, with higher scores indicating increased frequency of participation in stress management behaviors. No information other than that provided in previous sections about the HPLP II subscales in general is available about the SMS.

The stress management subscale of the original HPLP has been employed in studies of all age groups, parents, workers, people with disabilities, elderly and to predict health-promoting behaviors in older couples. In an investigation of worksite wellness programs and lifestyle behaviors, O'Quinn (1997) reported a reliability coefficient of .70 for stress management, and Padula (1997a) indicated a .74 alpha coefficient in a study of elderly couples. Other researchers have reported alpha coefficients from .65 to .84 for the subscale in studies of older adults (Duffy, 1993; Duffy & McDonald, 1990; Jones, 1991). Hemstrom (1993) reported alpha coefficients for the stress management subscale in her study of three elderly cohorts as .72 for the entire sample, and .77, .69, and .69 for the three age cohorts consecutively.

Health Responsibility Subscale (HRS)

As a nine-item scale, the HRS measures the behavioral or action component of attitudes toward health. The health responsibility dimension of a health-promoting lifestyle is identified as paying attention to and accepting responsibility for one's own health, being educated about health, and seeking professional assistance when needed (Walker et al., 1987). The forced choice response set selection is from one (never) to four (routinely). Higher scores, from a possible score range of 9 - 36, correspond

with increased incidence of assuming general health practices. Available psychometric information includes that the HRS attained alpha coefficients within the range of .79 to .87 for all subscales during development of the HPLP II (Berger & Walker, 1997), and within subscale ranges of .80 to .92 (Fowler, 1997) and .74 to .86 (Stuifbergen & Roberts, 1997).

The earlier version of the subscale has been employed in various populations and settings. Individual reports for the health responsibility subscale in studies of older adults using the HPLP indicate reliability coefficients of .81 (Jones, 1991), .77 (Duffy, 1993), .63 (Duffy & McDonald, 1990), and .84 (Padula, 1997a). Cronbach's alpha coefficients attained in Hemstrom's (1993) study of three elderly cohorts were .85 for the entire sample, .86 for Cohort 1, .86 for Cohort 2 and .83 for Cohort 3. One study was located employing only the health responsibility subscale of the HPLP to investigate early detection of cancer in a sample of Israeli women ($N$ = 253). The subscale was modified (4 items dropped) to incorporate only primary care behaviors. Cronbach's alpha of the altered scale was .79 (Kushnir, Rabinowitz, Melamed, Weisberg, & Ribak, 1995).

Commitment Subscale (CS) of the Health Related Hardiness Scale

Commitment was measured using the CS of the Health-Related Hardiness Scale (HRHS) (Pollock & Duffy, 1990). Measured with a 6-point Likert scale, higher scores indicate higher levels of commitment. Possible score range is 20 - 120. Response set is a forced-choice selection from 1 (strongly disagree) to 6 (strongly agree). Eleven negative items require reverse scoring. The questionnaire requires approximately 10-

12 minutes to complete. Written permission for instrument use was received from Dr. Susan Pollock (Appendix C).

Measuring the presence of factors found relevant to hardiness and health, the HRHS was developed as a counterpart to tools such as Kobasa's (1979) Hardiness Scale which measures the absence of hardiness in illness. Perceived as one of two components of hardiness, the Commitment Subscale employs items specific to health motivation and involvement (not other areas of life) to measure perceptions, attitudes and beliefs (Pollock & Duffy, 1990). This is congruent with the Health Promotion Model's basic tenet of the influence of perceptions on behavior and definition of commitment as the cognitive processes of attitude and planning which initiate and sustain a behavior or action. The instrument provides nursing with a separate indicator for measuring the presence of commitment to health-related behaviors.

To develop the instrument, 51 items comprising three subscales (Control, Commitment, and Challenge) were administered to 389 subjects, ages 21 to 78, who had identified health problems (diabetes, multiple sclerosis, hypertension or arthritis). Content validity had been established by a panel of judges, faculty and doctoral students in adult health care. Interrater reliability was .85 (Pollock, 1989a) with convergent validity established through correlation with Kobasa's (1979) Hardiness Scale. A moderate correlation (.54) indicated that the HRHS did measure hardiness, but was "sufficiently different from Kobasa's scale" (Pollock & Duffy, 1990, p. 220). Item-total correlations with a set level of .25 resulted in ten scale items being dropped. The remaining 41 items were subjected to principal components analysis

which detected ambiguity between the Challenge and Commitment items. A second analysis resulted in two factors with 34 items loading at a level of .35 or higher. Twenty items defined a subscale of combined commitment and challenge items with strong loadings (.41 to .67). Pollock and Duffy (1990) indicated that the loading of challenge and commitment items together suggests they are "closely related and not discrete dimensions in a health-specific context" (p. 221). Correlation between the two factors was significant at .36. Cronbach's alpha for the total HRHS was .91 and .87 for both of the subscales. Total scale test-retest reliability at six months was .76, and .74 and .78 for the Commitment and Control subscales respectively. In a study of 110 adult diabetics, the HRHS alpha coefficient was .86 with test-retest reliabilities of .90 at two weeks and .80 at three months (Pollock, 1989b).

Both the total HRHS and the CS have been utilized in studies of older adults. In a study of hardiness, self-care, and perceived health status by the elderly, Nicholas (1993) determined alpha reliability to be .82 for the CS. The tool was considered appropriate to help the elderly assess strengths for coping. The commitment component of the HRHS was found by Narsavage and Weaver (1994) to be significantly correlated with functional status in older adults. Cronbach's alpha for that study was .88. A study of health related hardiness and its relationship to participation in health-promoting behaviors by community-based older adults (Jones, 1991) yielded an alpha coefficient of .72 for the CS. One published study, using the Commitment Subscale only, investigated factors influencing adult participation in healthy behaviors. An alpha coefficient of .83 was reported (Beyea, 1991).

Personal Resource Questionnaire 85, Part 2 (PRQ85)

The PRQ85, Part 2 (Weinert, 1987, 1988) operationalized social support in this study. Originally developed in 1981 (Brandt & Weinert) as a multidimensional measure of social support, the PRQ85 was revised in 1982 and again in 1985. The latest version, requiring about 15 minutes to complete, is a self-report tool consisting of two parts. Part 1 contains ten life situations to determine available resources and satisfaction level. Part 2 is a global measure of perceived social support. Since the focus of this study is on perception of social support, only Part 2 will be utilized. Completion time for the section was 10-15 minutes. Part 2 is a 25 item, 7-point Likert scale with five negative items to be reversed scored. Possible score range is 25 - 175, with higher scores indicating higher perceptions of social support. Response set is from one (strongly disagree) to seven (strongly agree), with choice four as neutral.

The grounding definition of perceived social support for Part 2 of the PRQ85 includes, "being an integral part of a group; opportunity for nurturant behavior; reassurance of worth as an individual and in role accomplishments" (Weinert & Tilden, 1990). This is consistent with this study's definition of social support, derived from Pender (1996), as perceptions of supportive interpersonal interactions. These perceptions can derive from relationships with spouses, family members, friends and organized support systems.

Multiple psychometric evaluations were conducted with the PRQ82, from which the PRQ85 was derived (Muhlenkamp & Sayles, 1986; Weinert, 1987, 1988; Weinert & Brandt, 1987). Construct validity of the PRQ85 was established through

comparison with five other measures of social support (Interpersonal Support Evaluation List, Social Support Scales, Norbeck Social Support Questionnaire, Cost and Reciprocity Index and the Inventory of Socially Supportive Behaviors) to examine convergence across support measures. Discriminate validity between social support and individual affective states was examined by comparison with the Profile of Mood States. Gibson and Weinert's study (as cited in Weinert & Tilden, 1990) included 100 men and women ages 25 to 65 and found significant positive relationships between the PRQ85 and all five support measures and a significant negative relationship between the PRQ85 and the Profile of Mood States. Cronbach's alpha for the PRQ85 was .91.

Further evidence of PRQ85 construct validity was provided by Weinert and Tilden (1990) through convergent analysis with the Cost and Reciprocity Index. The PRQ85 has been used to measure social support in adolescents; young, middle and older adults; families with incidence of multiple sclerosis; nurses caring for AIDS patients; adults with ventricular arrhythmias; and elderly in rural populations. Coefficient alphas ranged from .88 to .91 (Firth & Dracup, 1992; Johnson, 1996; Mahon, Yarcheski, & Yarcheski, 1994; Sherman, 1996; Weinert & Tilden, 1990). These studies indicate that the instrument is applicable for all socioeconomic levels. Cultural appropriateness has been established with translations in Chinese, Spanish, Korean and Dutch (Dr. C. Weinert, personal communication, January, 1998). Written permission for instrument use was received from Dr. Clarann Weinert (Appendix C).

JAREL Spiritual Well-Being Scale (JAREL)

Spiritual well-being was operationalized by the JAREL Spiritual Well-Being

Scale developed specifically to assess spiritual well-being in older adults (Hungelmann et al., 1989). The scale contains 21 questions scored on a 6-point, forced-choice Likert scale. Higher scores, from a possible range of 21 - 126, reflect the presence of spiritual well-being. Response format is from one (strongly disagree) to six (strongly agree). Seven items are negatively worded to reflect lack of belief, difficulty in forgiving, and inability to accept change or make decisions and are reversed scored. The instrument required approximately 5 - 8 minutes to complete.

Spiritual well-being (SWB), as defined by Hungelman et al. (1989, 1996), is a "sense of harmonious interconnectedness between self, others, nature, and Ultimate Other, which...is achieved through a dynamic and integrative growth process that leads to a realization of the ultimate meaning and purpose of life" (p. 394). This definition is theoretically congruent with the conceptualization of spiritual well-being expressed by Pender (1996), who also posits that spiritual well-being is attained by drawing on internal strengths. Determination and assessment of those strengths may be accomplished though exploration of feelings and beliefs about meaning of life, self-acceptance, love, wholeness, connectedness, forgiveness, and life after death or continued spiritual existence. These concepts are the focus of the JAREL scale's assessment of SWB. Scale items also address behaviors such as prayer, decision making and setting goals. Thus, the instrument is considered appropriate to investigate the potential influence of spiritual well-being on commitment and health-promoting behaviors of older adults. Written permission for instrument use was obtained from Dr. Ruth Stollenwerk (Appendix C).

The tool was normed on healthy to terminally ill older adults representing Christians, non-Christians and atheists in a variety of community and institutional settings. Grounded theory was initially utilized to define the concept of spiritual well-being and its indicators (Hungelmann, Kenkel-Rossi, Kalssen, & Stollenwerk, 1985). Through a constant comparison method of data analysis from 31 interviews (ages 65 - 85) two final themes emerged, harmony and connectedness, leading to the definition as stated above. The items reflect the themes by determining satisfaction in relationships and mutuality of interactions. A pilot study determined clarity and established reliability with a .85 coefficient alpha. Test-retest correlation was $r = .88$ with Pearson Product Moment coefficient. A sample of 294 older adults ($m$ age = 73 years) completed the original 24 item questionnaire. Principle components factor analysis with orthogonal and oblique rotations for 3, 4, or 5 factor solutions were conducted. The three factor analysis was accepted. Each factor contains seven items and reflects the domains of Faith/Belief, Life/Self-Responsibility, and Life Satisfaction/Self-Actualization (Hungelmann et al., 1989, 1996).

Content validity was established through literature review, grounded theory and review by a panel of experts in spiritual well-being or gerontology (Hungelmann et al., 1989). A correlation of .82 ($p = .000$) between the JAREL scale and Paloutzian's and Ellison's Spiritual Well-Being scale established convergent validity (deCran, 1990). Discriminate validity was determined in a study of depression, spiritual well-being and residence among seniors (Brophy, Stollenwerk, Hungelmann, & Binder, 1992). To date, no significant differences have been reported between the

scores of Catholics, Protestants, other Christians, non-Christians or atheists. Measures of internal consistency using Cronbach's alpha range from .79 to .91 (deCran, 1990; Fulton, 1992; Hungelmann et al., 1987; Hungelmann & Stollenwerk, 1992).

Demographic Information Form

A demographic form (Appendix A), developed by the investigator, was used to elicit socioeconomic data from each participant for sample description and to obtain data for indicators of the Personal Factors (race, gender, SES, education level, source of spiritual beliefs). Some questions were specifically requested by the developers of the instruments used in the study. Any comments or questions for the investigator by the participants could be included on the blank page provided at the end of the packet. This data was also used to serve as resource for possible explanation of findings.

## Data Collection

Prior to data collection, measures were taken for human subjects protection. A pilot study was designed and Form A approval (Appendix D) obtained from both the College of Nursing and the Institutional Review Board (IRB) of the university. Approval was then received from the College of Nursing and IRB for the primary study (Appendix E).

Human Subjects Protection

Potential risks identified for participation in this study were minimal and included possible fatigue from time involved to complete the forms and/or concerns arising from possible perception of lack of healthy lifestyle or social support. The investigator identified a resource person from each agency for referral if participants

expressed concern. This researcher has over 20 years experience in clinical nursing practice, health teaching and identifying client needs for referral. Benefits included a sense of accomplishment or pride from participation in the study, increased self-awareness and insights pertaining to health promotion, and a potential for instituting healthy behaviors or changing less healthy behaviors.

To ensure confidentiality, no names or other identifying information (i.e., addresses, social security numbers) were required. Forms were coded according to site and date only. All information was further coded for computer entry (sample page, Appendix F) as received into a password protected, computer data base compatible with the SPSS program. Volunteer research assistants were utilized to assist in data collection. Training included explanation of, and familiarization with, forms and confidentiality issues. Assistants signed a confidentiality agreement statement (Appendix G).

Data and coding numbers are kept in a locked file at the primary researcher's home. Findings are reported as grouped data and without individual or agency identifiers. Forms will be maintained in a locked file by the investigator for a minimum of three years.

Pilot Study

The pilot study was conducted to determine readability, face validity, time required for completion of forms, clarity of directions and administrative procedure, and to establish procedures for coding and entering data. An introductory letter explaining the study and requesting permission to survey agency members was sent to

an East Texas community senior agency (sample introductory letter - Appendix H) and permission for access received. Instruments were typed consecutively, without titles, and separated only by instructions for completion as needed. To control for social desirability response set, typed order of questionnaires was: general demographic information (age, race, gender, educational level), PRQ85, Commitment, JAREL Spiritual Well-Being, HPLP II (four behavior subscales), and detailed demographic questions. Data was collected over two days.

The researcher met with the group initially, by suggestion of the group president, to gain permission and establish time for data collection. The group agreed to participate during their congregate meal time. Because not everyone could meet at one time the researcher agreed to meet with participants before and after the meal-time. Two consecutive days were selected because most members attended at least one of the two days. A cover letter (Appendix I) was reviewed with the participants by the researcher and explanation given that completion of the questionnaires constituted consent. Of 31 attendees, three were less than age 65. One female (> age 80) refused to participate and was also identified as being cognitively impaired by the group president. Twenty five completed forms were obtained from 27 eligible attendees. Two eligible males refused to participate. One gave no reason; the other stated, "last time I filled out a form they tried to take everything I had". Three forms were incomplete (two male; one female), all in the 75-84 age group. Of the 22 usable forms (82% participation rate), two were from Black and twenty from White participants. Nine were male (M) and 13 female (F). There were four 65-74 years of

age (M=2, F=2); nine 75-84 years of age (M=3, F=6); and nine 85 and older (M=4, F=5). Three participants required assistance (2 male; 1 female) with reading or marking responses. One male had macular degeneration and required both types of assistance; the others requested assistance because they were "too shaky and slow". The researcher provided the assistance to gain experience in reading the items and to check for any difficulty with vocabulary, item phrasing or lack of clarity.

The data were assessed for completeness, average scores and reliabilities of the instruments. For this pilot sample, instrument reliability coefficients were: PRQ85, Part 2, $\alpha$ = .89; CS, $\alpha$ = .88; JAREL $\alpha$ = .90; PAS, $\alpha$ = .83; NUTR, $\alpha$ = .70; SMS, $\alpha$ = .67; HRS, $\alpha$ = .77. The researcher learned that directions frequently were not read carefully. Several individuals started completing the forms before explanation. Other participants had to restart because they "assumed that one meant to agree and seven meant to disagree" instead of the reverse, based on their prior experiences. A few had difficulty understanding how to answer the negative statements, and one asked for clarification of the difference between "slightly disagree" and "moderately agree". There did not seem to be any difficulty with other words or phrases. Completion times varied from 25 to 50 minutes and appeared to be related to educational level. Those with less than an eighth grade education required more time and had the most difficulty. Of the three who did not finish, two had "some high school" and one "less than eighth grade". One participant (85 plus) added comments on the extra page provided.

Three verbal suggestions were made by participants for ease of reading the

instructions which were incorporated in the primary study instrument:

1. Remove the line separating the instructions and statements.
2. Shorten the general instructions.
3. Place descriptors at the head of each column of number/letters, rather than in a block at the beginning of each page.

A protocol was developed for anticipated questions, such as difference between "slightly disagree' and "moderately agree", in which the researcher would suggest that answers be determined according to whether participants initially felt a negative or positive response to the statement, i.e., "Yes, I do, think, or feel that" or "No, I do not do/think/feel that". Although there may have been less confusion and misunderstanding with a group presentation, several participants would have been lost due to questionnaire length and confusion caused by negative questions if an attempt had been made to provide explanation and gather data from the group as a whole.

Strategies for protection of human rights and data collection were followed to facilitate inclusion of pilot study data with primary study data. The only unexpected procedural deviation in the pilot study was in having to work with individuals or multiple small groups rather than a single group. Because of the length of the questionnaire (100 questions) and time constraints, participants wanted the option of working on the form before, during and/or after the meal, meeting or other site activity. Efforts were made for group presentation and administration in the primary study, with provisions also available for individual and small group presentations.

Administrative Procedures

Once identified, each agency or group was approached by the investigator, either in person or by phone to obtain permission for access to members, residents or clients. Purpose of the study and assurance of confidentiality for both the agency and participants was given. A follow-up letter (Appendix H) was sent with further information about the study, its usefulness and the importance of respondents participation. Confidentiality of responses was assured. Potential risks, benefits and anticipated time to complete the forms were stated. Assurance was given that there would be no repercussions if anyone chose not to participate. It was also explained that this study had been approved by both the review board of the College of Nursing and the IRB of the university. Opportunity to receive a copy of study results was offered, and the investigator's name, address and telephone number provided. The same information was provided in a study packet cover letter for each participant (Appendix J).

Upon receiving access permission from the agencies or groups, the investigator contacted agency leaders to answer further questions or concerns and arrange collection of data. Access to participants was by specified times arranged around group activities. It was anticipated that some of the participants would need assistance in filling out the forms due to visual problems, conditions such as arthritis, and reading levels or fatigue which may have implications for potential response bias. Approximately 25% of the participants required some assistance. In those instances either the investigator, a trained research assistant, or volunteer agency person who

had been instructed in the procedure provided assistance by reading questions aloud, marking responses, or both. Efforts were made to assure comfortable seating and privacy, adequate lighting, comfortable temperature and low noise levels.

Each participant was provided with a packet containing the cover letter, demographic form, research instruments and number two pencil with eraser. Once distributed, the cover letter was read aloud by the investigator or research assistant. Opportunity for questions was given. It was explained that participation in the project constituted consent and persons could keep the cover letter. If a participant believed assistance was needed to complete the forms, the investigator, research assistant or trained volunteer provided help by reading the forms aloud or helping with form completion in a private area. A protocol had been developed for answering questions or clarifying terms, phrases, or statements identified as problematic following the pilot study. The instrument took from 25 to 50 minutes to complete, depending on reading ability and amount of assistance needed. Poor eyesight or reading skills accounted for most of the assistance required. Once completed, participants were requested to return the forms to the envelope and place them in a designated collection container.

Instruments were typed consecutively, without titles, and separated only by instructions for completion as needed. To control for social desirability response set, typed order of questionnaires was: general demographic information (age, race, gender, educational level), PRQ85, Commitment, JAREL Spiritual Well-Being, HPLP II (four behavior subscales), and detailed demographic questions. The instruments were printed on non-glare, white paper with black ink, in large print and consistency

maintained in style of print, font size and spacing. After data was collected at each site, the investigator coded the forms to identify geographic location, agency or group and month. No other identifying marks were used.

Anecdotal notes were kept in relation to factors such as room arrangements, time of day/year, relevant media events and respondent comments in order to determine potential confounding elements. That much of the data was collected in social situations involving a meal may have influenced findings of consistent nutritional practices across the age groups. In relation to the stress management questions, many of the participants commented (both verbally and in writing) that they did not perceive themselves as having stress or that they simply avoided stressful situations. Stress management behaviors were also consistent across the age groups. Evidence that some participants misunderstood the question, "Do you have a disability?", thinking it referred to disability income, was noted in verbal and written comments that a participant only received "retirement", "social security" or some other income. Asking if they had a "physical disability" or if they had a chronic illness that interfered in any way with daily activities may make the item clearer.

## Data Analysis

Data were analyzed on a personal computer using SPSS. Descriptive statistics (percentages, frequencies, measures of central tendency and variance, scatterplots and graphs) were used to summarize characteristics of the sample and examine findings from the four geographic areas and age groups for similarities or differences. An SPSS Missing Values Analysis was run to check for patterns of missing data.

Reliability coefficient alphas were used to assess reliability of the instruments for this study sample. Pearson Correlation Matrices were constructed to assess for multicollinearity.

Research question one was answered using one-way analysis of variance (ANOVA) and post hoc Scheffe's test. The Levene Test for Homogeneity of Variance was used to assess for inequality in variance among the age groups; no differences were revealed among the three age groups for any concept scores.

Research question two was answered using structural equation modeling (SEM) with multiple linear regressions (MR) and testing of a proposed model (Figure 3). The SEM approach is model-based with two basic components: a theoretical or structural/path model and a measurement model. A theoretical model of hypothesized relationships between latent variables (not directly measured) consists of endogenous

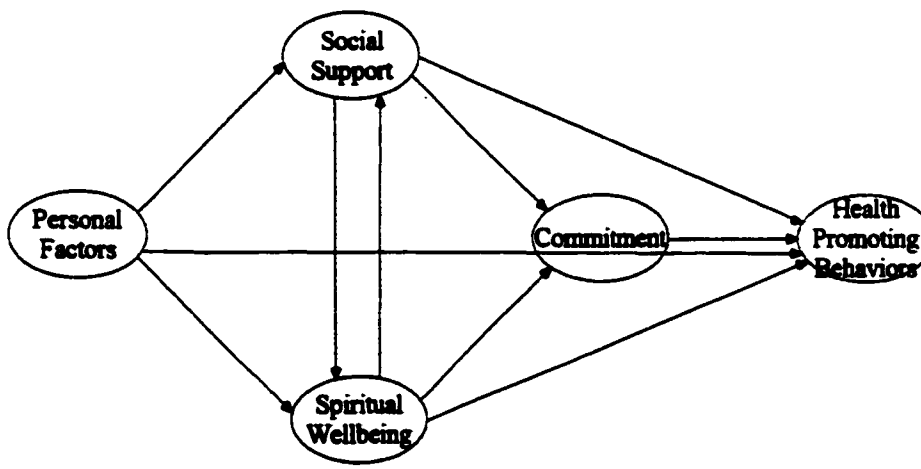


Figure 3. Theoretical model: Relationships among personal factors, social support, spiritual well-being, commitment and health-promoting behaviors

and exogenous variables. It is particularly useful when a dependent variable becomes an independent variable in subsequent dependence relationships (Pedhazur, 1982). Considered more powerful than Path Analysis (PA), SEM is based on less restrictive assumptions and subsumes PA and other approaches as special cases. The technique can analyze models that are nonrecursive, have multiple indicators of latent variables, reciprocal causation, interaction terms, measurement errors, correlation errors, correlation residuals, etc. Measurement error is estimated and removed from relationships between theoretical constructs, allowing a more precise test.

Amos is an acronym for "Analysis of moment structures" (Amos FAQ Home Page, 1998). Considered more "user friendly" than LISREL, the Amos program accepts a path diagram as a model specification, and displays parameter estimates graphically on the diagram. A maximum likelihood method provided estimates for SEM. Tests of univariate and multivariate normality are provided for each observed variable. Several statistics are provided for comparison of model fit (Arbuckle & Wothke, 1997).

Identified relationships were combined into a testing model for simultaneous examination using the Amos software in the total sample and each age group. The model was respecified and tested until the best fit for the data was obtained (Munro, 1997). Multiple fit indices were computed (Bollen & Long, 1993; Kaplan, 1990; Mueller, 1996). Statistical significance for the study was an alpha of .05. In studies of human characteristics and their impact on behavior, Type II errors in research may lead to clinical practices that mistakenly deprive clients of basic resources. Therefore,

associations attaining 15% significance ($p \leq .15$) were provided within tables of results for the reader's information.

Prior to analysis, Pearson Product Moment Correlation Matrixes were generated for the total sample and each age group to examine for multicollinearity among study variables (Appendixes K1, K2, K3, K4). Estimated means were used for missing data. Correlation coefficients greater than or equal to .85 are considered high and consistent with multicollinearity (Munro, 1997; Tabachnick & Fidell, 1989). No correlation coefficients for this data met the criteria, thus generalizability should not be limited by multicollinearity for any age group.

## Chapter Summary

A correlational study with nonprobability sampling was conducted to examine the relationships of personal factors, social support, spiritual beliefs, commitment and health-promoting behaviors in three older adult age groups. The sample consisted of adults age 65 and over in four geographic locations. The sample was drawn from adult members of selected senior centers, senior residences, social and civic groups and religious congregations. Minimum sample size for validity was established and met for age groups I and II. Sample size for age group III approximated the requirements for maximum likelihood estimation. A pilot study was conducted ($N = 22$) to assess data collection procedures.

Variables were measured by four HPLP II subscales (Physical Activity, Nutrition, Stress Management and Health Responsibility); the Commitment Subscale of the Health Related Hardiness Scale ; the Personal Resource Questionnaire 85, Part

2; and the JAREL Spiritual Well-Being Scale. A demographic information form was used to gather sample personal factors. Protection of rights and measures for confidentiality were provided for each participant.

Data were analyzed by measures of central tendency, correlational analysis, analysis of variance, post hoc Scheffe' tests and Levene Tests for Homogeneity of Variance. Structural equation modeling using the Amos software package on the SPSS computer program was conducted to test the proposed theoretical model. Computations of Cronbach alpha coefficients were used to examine reliability of instruments for this sample. Pearson's Correlation Matrices were generated to assess for multicollinearity.

# CHAPTER IV

## RESULTS

The purpose of this study was to examine for the relationships of personal factors, social support, spiritual well-being, commitment and health-promoting behaviors in, and differences among, three elderly age groups. Two research questions were identified and analyzed using the SPSS package (1995) for personal computers. The data were analyzed with one-way analysis of variance (ANOVA), post hoc Scheffe' tests, Levene Tests for Homogeneity of Variance, Pearson Product Moment Correlation and Structural Equation Modeling using the Amos package.

In this chapter, study findings will be presented, including characteristics of the sample and reliability of the instruments. The results of testing for age group differences among the major concepts (Social Support, Spiritual Well-Being, Commitment and Health-Promoting Behaviors) are explained. Findings from testing the model using structural equation modeling with the Amos software are discussed.

### Sample Characteristics

The sample consisted of 595 older adults aged 65 to 100 ($\underline{M}$ = 75.98, $\underline{SD}$ = 7.3) living independently and without obvious cognitive impairment in selected communities of four geographic areas. The oldest participant was a white male, wheelchair-bound, who lived alone in his own home. Distribution between the first two sample age groups was similar with 44% from those ages 65 to 74 and 40% from those 75 to 84. The 85 and older group had 16% representation (Table 4).

Table 4. Personal factors by age group (N=595)

| | 65-74 | | 75-84 | | 85+ | | Total Sample | |
|---|---|---|---|---|---|---|---|---|
| | n (264) | % (44.4) | n (237) | % (39.8) | n (94) | % (15.8) | N* (595) | %* (100) |
| **Gender** | | | | | | | | |
| Male | 85 | 32.2 | 88 | 37.1 | 23 | 24.5 | 196 | 32.9 |
| Female | 179 | 67.8 | 149 | 62.9 | 71 | 75.5 | 399 | 67.1 |
| **Race** | | | | | | | | |
| White | 223 | 84.5 | 207 | 87.3 | 85 | 90.4 | 515 | 86.6 |
| Black | 41 | 15.5 | 30 | 12.7 | 09 | 09.6 | 80 | 13.4 |
| **Income** | | | | | | | | |
| ≤ $9,999/year | 77 | 29.2 | 58 | 24.5 | 26 | 27.7 | 161 | 27.0 |
| $10,000-$19,999 | 59 | 22.5 | 69 | 29.1 | 29 | 30.9 | 147 | 24.7 |
| $20,000-$29,999 | 52 | 19.7 | 53 | 19.7 | 19 | 20.2 | 95 | 16.0 |
| $30,000-$39,999 | 36 | 13.6 | 29 | 13.6 | 10 | 10.6 | 63 | 10.6 |
| $40,000-$49,999 | 15 | 05.7 | 12 | 05.1 | 04 | 04.3 | 30 | 5.0 |
| ≥ $50,000 | 25 | 09.5 | 16 | 06.8 | 06 | 06.4 | 57 | 8.0 |
| **Education** | | | | | | | | |
| < HS graduation | 74 | 28.0 | 72 | 30.4 | 27 | 28.7 | 173 | 29.0 |
| ≥ HS graduate | 190 | 72.0 | 165 | 69.6 | 67 | 71.3 | 422 | 70.9 |
| **Source of Spirituality** | | | | | | | | |
| Other Belief | 41 | 15.5 | 51 | 21.5 | 18 | 19.2 | 110 | 18.5 |
| Protestant | 223 | 84.5 | 186 | 78.5 | 76 | 80.9 | 485 | 81.5 |

Note. HS = high school. Percents given for each subgroup are column percents. Total participants reflect row numbers and percents calculated for N = 595.
*Numbers not totaling 595 or 100% are due to missing data.

General demographic information

This study sample's representation of married participants was less than, and those widowed greater than, that of national older adult averages (US Bureau of Census, 1996). However, the sample was similar to national distributions in that more males than females were married, more females than males widowed, and the distribution for those separated/divorced or single was similar (Table 5). The majority of participants were retired or unemployed and over half reported living alone. More owned their own homes than reported living in apartments or other housing.

In relation to religious activities, attendance at services was stated as being very important or important by the majority, with over 67% attending religious services at least one time per week. Four-fifths of the participants declared having a personal relationship with God. These results are comparable to a recent Gallup survey finding (1996) that 96% of Americans believe in God or a universal spirit. The same survey reported that 8 in 10 Americans 65 years or older are members of a church or synagogue, 90% pray and 52% attend church weekly or more often.

Participants were asked to rate their health and if they had a disability. Two-fifths believed their health to be fair, poor or very poor (Table 5). National data indicated almost one-third of older adults assessed their health as fair or poor (Bureau of Census, 1996). Fewer persons from this sample indicated they had a disability than those from national data reports of 55% of the older population with at least one disability. Participants who indicated having a disability were also asked to specify the disability. Although only 41% indicated having, and listed, a disability, almost three-

Table 5. Marital status, employment status, living companions, housing, health rating, relationship with God, import of religious services and frequency of attendance by age group.

| | 65-74 | | 75-84 | | 85+ | | Total sample | |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | N | % |
| | (264) | (44.4) | (237) | (39.8) | (94) | (15.8) | (595) | (100) |
| **Marital Status** | | | | | | | | |
| Not Widowed | 84 | 31.8 | 108 | 45.6 | 74 | 78.7 | 266 | 44.7 |
| Widowed | 180 | 68.2 | 129 | 54.4 | 20 | 21.3 | 329 | 55.3 |
| **Employment** | | | | | | | | |
| Full-time | 10 | 3.9 | 1 | 0.4 | ---- | ---- | 11 | 1.9 |
| Part-time | 31 | 12.0 | 9 | 3.8 | 4 | 4.3 | 44 | 7.5 |
| Retired | 188 | 72.6 | 199 | 85.0 | 80 | 87.0 | 464 | 79.8 |
| Unemployed | 2 | 0.8 | 1 | 0.4 | ---- | ---- | 3 | 0 |
| Housewife/never worked | 28 | 10.8 | 24 | 10.1 | 8 | 8.7 | 60 | 5 |
| **Living Companions** | | | | | | | | |
| Alone | 138 | 53.5 | 130 | 56.0 | 72 | 78.3 | 340 | 57.1 |
| Spouse | 111 | 43.0 | 88 | 37.9 | 12 | 13.0 | 211 | 35.5 |
| Children | 2 | 0.8 | 7 | 3.0 | 5 | 5.4 | 14 | 2.4 |
| Other | 7 | 2.7 | 7 | 3.0 | 3 | 3.3 | 17 | 2.8 |
| **Housing** | | | | | | | | |
| Own home | 160 | 62.0 | 136 | 58.9 | 43 | 47.3 | 399 | 57.0 |
| Apartment/Condominium | 38 | 14.8 | 36 | 15.8 | 23 | 25.3 | 97 | 16.3 |
| Elderly Housing | 50 | 19.4 | 49 | 21.2 | 18 | 19.8 | 117 | 19.7 |
| Other | 10 | 3.9 | 10 | 4.3 | 7 | 7.7 | 27 | 4.5 |
| **Health Rating** | | | | | | | | |
| Excellent | 26 | 10.6 | 23 | 10.1 | 10 | 10.9 | 59 | 10.4 |
| Good | 114 | 46.5 | 105 | 46.1 | 42 | 45.7 | 261 | 46.2 |
| Fair | 83 | 33.9 | 86 | 37.7 | 35 | 38.0 | 204 | 36.1 |
| Poor | 17 | 6.9 | 12 | 5.3 | 3 | 3.3 | 32 | 5.7 |
| Very poor | 5 | 2.0 | 2 | 0.9 | 2 | 2.2 | 9 | 1.6 |

(table continues)

Table 5. (continued)

| | 65-74 | | 75-84 | | 85+ | | Total sample | |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | N | % |
| | (264) | (44.4) | (237) | (39.8) | (94) | (15.8) | (595) | (100) |
| Relationship with God | | | | | | | | |
| No | 7 | 2.9 | 10 | 4.4 | 3 | 3.3 | 20 | 3.6 |
| Yes | 216 | 88.9 | 189 | 84.0 | 74 | 82.2 | 479 | 85.8 |
| Not sure | 20 | 8.2 | 26 | 11.6 | 13 | 14.4 | 59 | 10.6 |
| Import of religious services | | | | | | | | |
| Very important | 154 | 63.4 | 142 | 63.1 | 55 | 59.8 | 351 | 62.7 |
| Important | 45 | 18.5 | 45 | 20.0 | 25 | 27.2 | 115 | 20.5 |
| Somewhat important | 29 | 11.9 | 29 | 12.9 | 11 | 12.0 | 69 | 12.3 |
| Not important | 15 | 6.2 | 9 | 4.0 | 1 | 1.1 | 25 | 4.2 |
| Frequency of attendance | | | | | | | | |
| None | 21 | 8.8 | 17 | 7.8 | 8 | 8.8 | 46 | 8.4 |
| At least once per year | 28 | 11.7 | 25 | 11.5 | 10 | 11.0 | 63 | 11.5 |
| Once a month | 11 | 4.6 | 13 | 6.0 | 12 | 13.2 | 36 | 6.6 |
| At least once per week | 180 | 75.0 | 163 | 74.7 | 61 | 67.1 | 404 | 73.6 |

Note. Numbers may not total 100% due to missing values. Dashed line (----) indicates none reported.

fourths listed one or more chronic health problem. Heart disease (including hypertension) was most frequent (46.0%), with arthritis and mobility difficulties, including osteoporosis, joint replacement, back problems, knee injuries, wheelchair use and Meneire's disease listed as primary by 16.0% of the sample. Of special interest was that over 80% indicated some form of arthritis, although not always given as the major health problem. Visual or hearing limitations, diabetes, CVA, or nerves/depression were considered disabling by 3% of the sample. Other health problems (less than 1% each) included cancer, pulmonary disease, Crohn's disease, Parkinson's, military or burn injuries or memory difficulty. Implications of the fact that most participants listed several chronic conditions and overall frequency of arthritis listings are that health status of the study sample is comparable to that of the older population.

Personal Factors

The sample was predominantly White and female (Table 4), closely parallelling U.S. Bureau of Census (1996) representation of the older population. There is a greater representation of older Blacks in the study sample than in national data. That senior housing resources had a preponderance of Black residents may account for this difference. More than one-half of the participants reported incomes of less than $20,000 per year. This is fewer than the 71% estimated by the Bureau of Census (1996). The percentage of the sample reporting mid-range and incomes of $\geq$ $50,000 per year was similar to that reported nationally (U.S. Bureau of Census, 1996). The reason for the difference in reported low income is not readily evident, especially

considering the use of low income housing and senior centers, unless this was influenced by attempts for equal distribution of data collection sites according to levels of income. Additionally, census bureau data (1998) gives indication that the percent of older adults reporting lower incomes is gradually declining. Income data was not provided by some participants. Many commented verbally and in writing that their income was "no one else's business".

The majority of elders reported having a high school diploma or higher (Table 4). Of those reporting more than a high school education, approximately one-fifth reported a college degree or higher. These levels are comparable to those reported nationally. Source of spirituality was measured by categories of Protestant or Other Belief, in accordance with dictionary definitions of Protestant being other than Catholic, Jewish, Anglican or Eastern religions (Random House, 1995). Stated religious beliefs indicated the majority were Protestant or other Christian category as noted in the methods section of Chapter III. Belief systems specified by participants as "other Christian" (and included in the Protestant category for this study) included Holiness, Salvation Army, Pentecostal, Lutheran and Charismatic. Included in the "Other Belief" category were participants indicating Catholic, Jewish, Eastern, atheists, agnostics or other beliefs. Other specified beliefs included Mormon, Jehovah's Witness, Seventh-day Adventist, Episcopal and "no specific belief". Approximately 2% stated being agnostic or atheist.

## Major Concepts

### Social support

Respondents' perceived moderate social support. The young old age group perceived slightly more support and the middle old group perceived slightly less than either of the other two groups (Table 6). Blacks and males perceived less social support than Whites and females (Table 7).

### Spiritual Well-Being

Findings of spiritual well-being were strong for this sample of older adults, with highest scores from the oldest cohort (Table 6). Blacks and Whites both reported strong perception of spiritual well-being with little difference in scores. However, males expressed only "moderate" perceptions of spiritual well-being, while females had strong perceptions (Table 7).

### Commitment

This sample of older adults (Table 6) indicated a moderate level of commitment to self and motivation to promote their own health among all three age groups. The 65-74 age group had the greatest commitment, with those 75-84 expressing the least sense of commitment. Blacks and males had less commitment than Whites and females (Table 7), but those scores were within the moderate range.

### Exercise

Participation in exercise activities (Table 6) was in the low to moderate range. Young old respondents reported the most exercise and old old respondents indicated the least exercise. Comparison by race indicated Blacks exercised less than Whites.

Table 6. Social support, spiritual well-being, commitment, physical activity, nutrition, stress management and health responsibility scores by total sample and age group.

| | Total Sample | | 65-74 | | 75-84 | | 85+ | |
|---|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD | M | SD |
| Scale | (N=595) | | (n=264) | | (n=237) | | (n=94) | |
| Social Support (PRQ85) | 138.17 | 19.95 | 139.11 | 20.57 | 136.97 | 20.10 | 137.47 | 17.75 |
| Spiritual Well-Being | 107.09 | 12.22 | 106.98 | 12.75 | 106.67 | 12.19 | 108.45 | 10.68 |
| Commitment (CS) | 96.39 | 14.43 | 98.32 | 13.84 | 94.70 | 15.09 | 95.25 | 13.86 |
| Physical Activity (PAS) | 16.65 | 6.05 | 17.56 | 6.27 | 16.07 | 5.76 | 15.54 | 5.82 |
| Nutrition (NUTR) | 24.64 | 5.06 | 25.03 | 5.06 | 24.27 | 5.19 | 24.47 | 4.69 |
| Stress Management (SMS) | 22.01 | 4.35 | 22.21 | 4.35 | 21.69 | 4.43 | 22.25 | 4.16 |
| Health Responsibility (HRS) | 22.54 | 5.64 | 22.96 | 5.75 | 22.27 | 5.65 | 22.02 | 5.20 |

Note. PRQ85 = Personal Resource Questionnaire 85; JAREL = Spiritual Well-Being Scale; CS = Commitment Subscale; PAS = Physical Activity Subscale; NUTR = Nutrition Subscale; SMS = Stress Management Subscale; HRS = Health Responsibility Subscale.

Table 7. Social support, spiritual well-being, commitment, physical activity, nutrition, stress management and health responsibility scores by race and gender.

| | Race | | | | Gender | | | |
|---|---|---|---|---|---|---|---|---|
| | Black | | White | | Male | | Female | |
| Scale | M | SD | M | SD | M | SD | M | SD |
| | (n=80) | | (n=515) | | (n=196) | | (n=399) | |
| Social Support (PRQ85) | 135.34 | 24.17 | 138.41 | 19.21 | 135.68 | 20.03 | 139.14 | 21.03 |
| Spiritual Well-Being | 107.41 | 12.29 | 107.04 | 12.22 | 104.29 | 13.74 | 108.47 | 11.16 |
| Commitment (CS) | 95.97 | 13.89 | 96.46 | 14.53 | 94.07 | 15.01 | 97.54 | 14.02 |
| Physical Activity (PAS) | 13.99 | 5.11 | 17.06 | 6.08 | 16.62 | 5.92 | 16.66 | 6.12 |
| Nutrition (NUTR) | 22.42 | 4.66 | 24.99 | 5.04 | 23.50 | 4.97 | 25.20 | 5.02 |
| Stress Management (SMS) | 20.31 | 4.28 | 22.28 | 4.31 | 21.51 | 4.05 | 22.26 | 4.48 |
| Health Responsibility (HRS) | 21.19 | 5.18 | 22.74 | 5.68 | 21.31 | 5.63 | 23.14 | 5.54 |

Note. PRQ85 = Personal Resource Questionnaire 85; JAREL = Spiritual Well-Being Scale; CS = Commitment Subscale; PAS = Physical Activity Subscale; NUTR = Nutrition Subscale; SMS = Stress Management Subscale; HRS = Health Responsibility Subscale.

Little difference was noted by gender, with both males and females reporting that they practiced some type of exercise (Table 7).

Nutrition

This sample of older adults often selected foods according to the food pyramid or avoided unhealthy foods frequently. The young old participated in making healthy food choices (Table 6) slightly more than either of the other age groups. Scores for race and gender subpopulations were similar with Blacks and males having poorer nutritional behaviors than Whites and females (Table 7).

Stress Management

Older adults participated in stress reducing activities on a frequent basis (Table 6), with the middle old age group indicating more stress reduction behaviors than the other two age groups. Blacks exhibited fewer stress reduction behaviors than Whites, and males had fewer behaviors than females (Table 7).

Health Responsibility

These older adults assumed responsibility for their own health consistently across age groups (Table 6). Blacks and males reported less health responsibility than Whites and females (Table 7).

In summary, the sample included 595 White or Black adults between the ages of 65 to 100. Overall, the sample reported moderate perception of social support and levels of commitment. Feelings of spiritual well-being were strong, especially among the oldest old. Most respondents reported participating in health-promoting behaviors. However, exercise behaviors declined with age. The middle old group had better

stress management skills, but poorer nutritional behaviors than the other age groups. The level of health responsibility behaviors was consistent across the age groups.

## Reliability

Cronbach's reliability coefficients were calculated to determine internal consistency on all seven scales and subscales (Table 8). Alpha coefficients reported for this study are standardized. In group comparison research a coefficient alpha ($\alpha$) of .80 is considered adequate, and in early stages of predictive research a modest reliability of $\alpha = .70$ is acceptable (Nunnally & Bernstein, 1994). Reliability coefficients for the total sample and age groups 65-74 and 75-84 were equivalent and consistent with earlier reported findings. Coefficient alpha for the oldest age group was consistently lower especially for the Stress Management and Nutrition Subscales.

Table 8. Cronbach's Alpha ($\alpha$) for scaled instruments by age group*

| Scale | Total Sample (N = 595) $\alpha$ (n*) | 65-74 (n = 264) $\alpha$ (n*) | 75-84 (n = 237) $\alpha$ (n) | 85+ (n = 94) $\alpha$ (n*) |
|---|---|---|---|---|
| PRQ85 | 0.89 (552) | 0.90 (249) | 0.89 (218) | 0.85 (85) |
| JAREL | 0.82 (556) | 0.84 (252) | 0.82 (218) | 0.76 (86) |
| CS | 0.83 (559) | 0.84 (252) | 0.83 (220) | 0.81 (87) |
| PAS | 0.87 (554) | 0.88 (250) | 0.86 (217) | 0.84 (87) |
| NUTR | 0.75 (572) | 0.76 (256) | 0.76 (228) | 0.71 (88) |
| SMS | 0.72 (557) | 0.73 (253) | 0.73 (218) | 0.68 (86) |
| HRS | 0.82 (557) | 0.84 (245) | 0.81 (223) | 0.77 (89) |

Note. PAS = Physical Activity Subscale; NUTR = Nutrition Subscale; SMS = Stress Management Subscale; HRS = Health Responsibility Subscale; CS = Commitment Subscale; PRQ85 = Personal Resource Questionnaire 85.
* Valid case numbers will vary because of missing values.

## Research Question 1

This question addressed differences in social support, spiritual well-being, commitment and health-promoting behaviors among three age groups of older adults. Significant differences in two primary concepts, commitment and physical activity, were found among the three age groups (Table 9). Differences occurred between age groups I and II in level of commitment. Age group I had the highest level of commitment, while age group II had the lowest level of the three groups. The youngest old had the most exercise behaviors and differed from both the middle old and oldest old groups. The oldest old practiced the least amount of the exercise activities (Table 10). No significant differences occurred for perceived level of social support, spiritual well-being, or the health-promoting behaviors of nutrition, stress-management and health responsibility among the age groups.

## Research Question 2

To examine for relationships among Personal Factors, Social Support, Spiritual Well-Being, Commitment and Health-Promoting Behaviors in each of the three age groups of older adults, the data were analyzed by maximum likelihood estimation of

Table 9. Differences in Social Support, Spiritual Well-Being, Commitment and Health-Promoting Behaviors among age groups.

| | Soc. Supp. | Sp. W-B. | Commit. | Hlth-Promot. Behav. | | | |
|---|---|---|---|---|---|---|---|
| | (PRQ85) | (JAREL) | (CS) | (PAS) | (NUTR) | (SMS) | (HRS) |
| F Ratio | 0.76 | 0.73 | 4.33* | 5.76* | 1.48 | 1.1 | 1.43 |

* $p \leq .05$.

Table 10. Scheffe' comparison of Commitment and physical activity by age group.

| Commitment | | | | Physical Activity | | | |
|---|---|---|---|---|---|---|---|
| Age Group | | 2 | 3 1 | Age Group | | 3 | 2 1 |
| Mean | | | | Mean | | | |
| 94.70 | 2 | | | 15.56 | 3 | | |
| 95.25 | 3 | | | 16.07 | 2 | | |
| 98.32 | 1 | * | | 17.56 | 1 | * | * |

* $p < .05$.

the structural equation models (SEM) using the Amos program (Arbuckle, 1997a). The SEM process permitted simultaneous identification of direct and indirect paths leading to health promoting behaviors, as well as the inclusion of measurement error. The decision was made to develop the best fitting model for the entire sample of older adults, and subsequently to test this model within each of the age groups.

The analysis was conducted using the covariance matrix of 595 cases. Specification of the structural model was developed on the basis of theorized relationships. Identification of the best fitting model was determined using the modification indices, significance levels, stability of the model, changes in fit indices and congruence with the conceptual framework. The Measurement Model, depicted in Figure 4, illustrates the complete model before trimming. To insure that the final model fit the data better than other possible combinations, five alternative models (two recursive and three nonrecursive) were tested for the best balance of parsimony and fit for the total group. The selected model was then tested in each age group. Goodness of fit measures included the chi-square goodness of fit test between the reproduced and

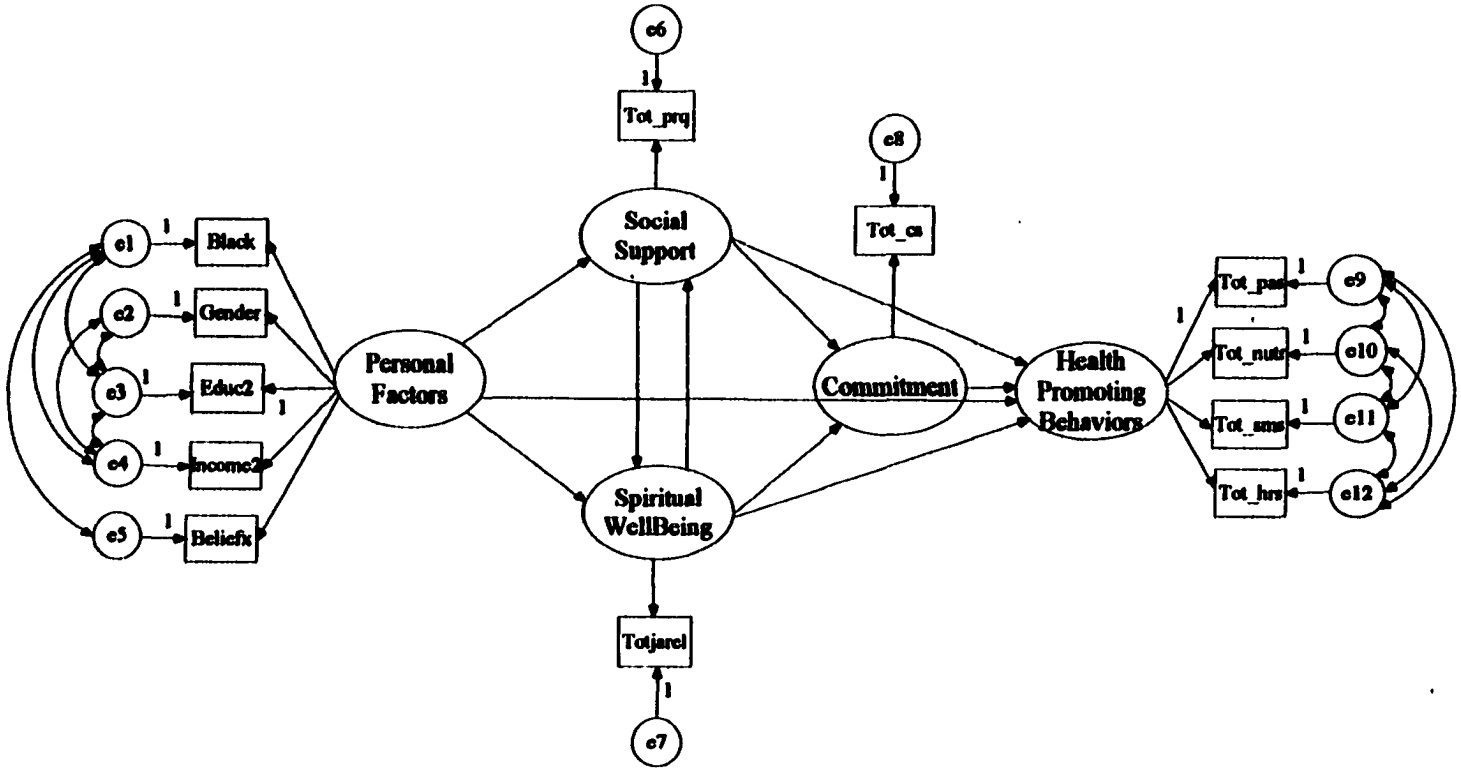


**Figure 4.** **Untrimmed measurement model: Relationships among personal factors, social support, spiritual well-being, commitment and health promoting behaviors.**

observed covariance matrices, the chi-square/degrees of freedom relative likelihood ratio (RLR), the Goodness of Fit Index (GFI), Normed Fit Index (NFI), Comparative Fit Index (CFI) and the Parsimony Normed Fit Index (PNFI) (Loehlin, 1998; Mueller, 1996; Munro, 1997).

In SEM a small, nonsignificant chi-square is desired, providing evidence that the model and data are congruent and that any difference is too great to be readily attributed to sampling error. Chi-square goodness of fit for this study model based on the total sample was not significant, $X^2$ (35, $\underline{N}$ = 595) = 30.89, $p$ = .67, suggesting that the model fits the data well. Models with RLRs of less than 3:1 are considered to have a good fit (final model RLR = 0.881). The GFI examines explained covariance relative to total covariance and compares the model to a baseline model. NFI assesses fit relative to a baseline "null" model, while the CFI provides a similar assessment with compensation for sample size. Values of 0.90 or greater for GFI, NFI and CFI measures indicate good fit between the model and data with values approaching "1" indicating excellent fit. Attained goodness of fit scores for the final model provided further support that this model fit the data well (GFI = 0.991, NFI =0.981, CFI = 1.00). The PNFI adjusts NFI by the ratio of degrees of freedom of the observed model to those of a baseline model with desired higher scores corresponding to fewer unknown parameters and more parsimony. Scores should be close to NFI scores. Because of its nonrecursive nature and level of complexity, the model does not attain the level of parsimony that a more restrictive model would. PNFI score for this model was 0.520.

Measures of poor fit included the Root Mean Square Error of Approximation (RMSEA) and its related probability of close fit (pCLOSE). RMSEA is relatively insensitive to sample size. A score of zero indicates perfect fit and values of less than .05 indicate a very good fit in relation to degrees of freedom. The pCLOSE tests a hypothesis that RMSEA in the population is less than .05. Like the chi-square, non-significance is desired (Loehlin, 1998). Scores for this model were RMSEA = .000 with pCLOSE > 1.0, indicating that the model is a close fit in the total sample with strong probability of a close fit in the population. Stability Index for the nonrecursive subset in the final model was 0.425. An index of less than one indicates that the system of linear equations and parameter estimates associated with the models is "stable" (Arbuckle, 1997b). Table 11 summarizes the fit indices for the model in the total sample and for each age group.

Five paths in the final model were not significant at the $\alpha = .05$ level. The final structural model (Figure 5) represents the theoretical model of health-promoting behaviors in the total sample of older adults and the best fit statistical model. Path estimates are standardized scores, preferred when comparisons are made across different variables and categorical variables are involved (Loehlin, 1998). Relevant measures of goodness of fit and badness of fit were assessed. Among the age groups, significance levels of those and other paths fluctuated, either attaining or decreasing in significance. Some paths could be deleted with model improvement in one group, but not others. Attempts to delete or constrain insignificant paths that were retained caused

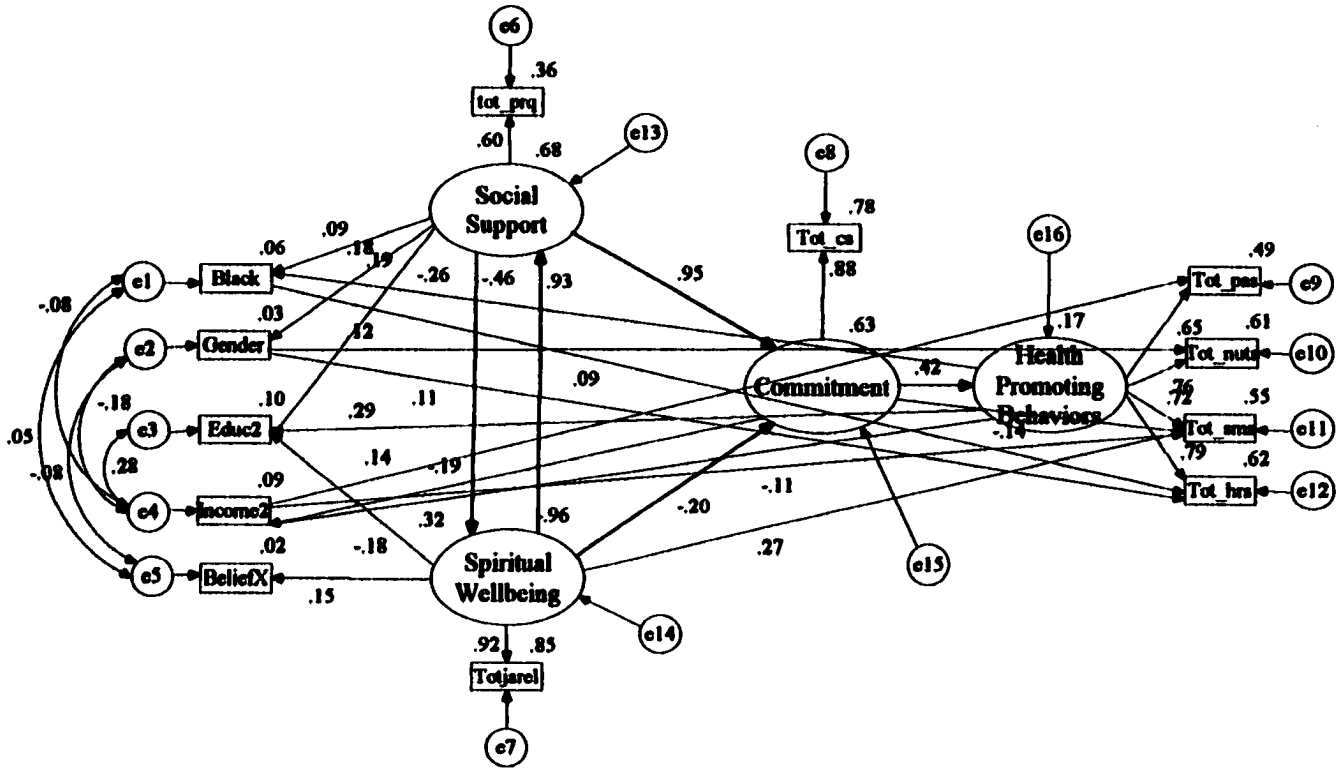


**Figure 5. Final structural model for total sample: Relationships among personal factors, social support, spiritual well-being, commitment and health-promoting behaviors. (Chi sq = 30.85, df = 35, p = .67)**

Table 11. Model fit and stability indices for total sample, age group I, age group II and age group III.

| Index | Groups | | | |
|---|---|---|---|---|
| | Total (N=595) | I (n=264) | II (n=237) | III (n=94) |
| Chi-Square/df | 30.85/35 | 31.50/34 | 32.46/35 | 19.70/33 |
| p | .67 | .59 | .59 | .97 |
| RLR | 0.881 | 0.926 | 0.927 | 0.597 |
| GFI | 0.991 | 0.982 | 0.978 | 0.963 |
| NFI | 0.981 | 0.958 | 0.955 | 0.918 |
| PNFI | 0.520 | 0.494 | 0.507 | 0.551 |
| CFI | 1.000 | 1.000 | 1.000 | 1.000 |
| RMSEA | 0.000 | 0.000 | 0.000 | 0.000 |
| pCLOSE | 1.000 | 0.988 | 0.983 | 0.995 |
| Stability | 0.425 | 0.554 | 0.429 | 0.678 |

either an unstable model or deterioration in model fit. Table 12 summarizes the paths estimated for each model with levels of significance and direction of influence indicated.

That the model is nonrecursive, with interaction effects between Social Support and Spiritual Well-Being, was evidenced through comparisons with alternate recursive and nonrecursive models and efforts at attaining the strongest model fit indices. The final structural model (Figure 5) was found to be consistent with the data from the total sample. Configuration of the final model conformed to the theoretical model in all age groups. Differences in relationships and strengths of relationships between personal factors and the primary concepts occurred in all age groups, with the greatest differences manifested in age group III.

Table 12. Level of significance and direction of influence of path estimates in trimmed models for total sample, age group I, age group II and age group III.

| Estimated Paths | Groups | | | |
|---|---|---|---|---|
| | Total (N=595) | I (n=264) | II (n=237) | III (n=94) |
| Race (Black)--> | | | | |
| Social Support | # (+) | (+) | (+) | ------- |
| HPB | **** (-) | *** (-) | **** (-) | # (-) |
| HRS | ** (+) | * (+) | (+) | ------- |
| Gender--> | | | | |
| Social Support | ****(+) | ------- | *** (+) | ------- |
| HPB | ------- | ****(+) | ------- | (+) |
| NUTR | ****(+) | ------- | (+) | ------- |
| HRS | ****(+) | ------- | (+) | ------- |
| PAS | ------- | ** (-) | ------- | ------- |
| SMS | ------- | *** (-) | ------- | ------- |
| Education--> | | | | |
| Social Support | (+) | ------- | ------- | **** (-) |
| SWB | # (-) | (-) | (+) | (+) |
| Commitment | ------- | (+) | ------- | ------- |
| HPB | ****(+) | (+) | ****(+) | # (+) |
| PAS | ------- | ------- | ------- | # (+) |
| Income--> | | | | |
| Commitment | **** (-) | (-) | **** (-) | ------- |
| HPB | ****(+) | # (+) | ****(+) | ------- |
| PAS | ****(+) | ****(+) | (+) | ------- |
| SMS | **** (-) | ------- | **** (-) | ------- |

(table continues)

Table 12. (continued)

| Estimated Paths | Groups | | | |
|---|---|---|---|---|
| | Total (N=595) | I (n=264) | II (n=237) | III (n=94 |
| So. of Spirit.(Beliefx)--> | | | | |
| SWB | *** (+) | (+) | *** (+) | (-) |
| NUTR | ------- | ------- | ------- | ** (-) |
| Social Support--> | | | | |
| SWB> | (-) | (+) | (-) | ****(+) |
| Commitment• | (+) | (+) | (+) | (+) |
| Spiritual Well-Being--> | | | | |
| SS• | (+) | (+) | (+) | (+) |
| Commitment | *** (-) | # (-) | # (-) | (-) |
| NUTR | ------- | *** (-) | ------- | ------- |
| PAS | ------- | ------- | * (-) | (-) |
| SMS | *** (+) | ------- | ** (+) | # (+) |
| Commitment | | | | |
| HPB | ****(+) | ****(+) | ****(+) | (+) |
| SMS | # (-) | ------- | # (-) | ------- |

Note. All estimated paths are included regardless of significance level. Symbols (-) or (+) indicates direction of relationship. A dashed line (----) indicates the path is not in the model for that age group.

• Unable to determine significance because path constrained.

# $p \leq .15$. * $p < .05$. ** $p < .01$. *** $p < .005$. **** $p < .001$.

Age Group I

The basic structure of the model remained the same in age group I as for the total sample. Health-Promoting Behaviors was a direct function of Commitment (Figure 6). Indirect influences on Health-Promoting Behaviors were from Social Support and Spiritual Well-Being through Commitment, with both direct and indirect influences from individual personal factors. Commitment was both a direct and indirect function of Social Support, Spiritual Well-Being and Personal Factors.

Personal Factors was not supported as a latent variable; however, each personal characteristic had direct and/or indirect effects on one or more of the primary concepts and was found to be more relevant in relation to specific health behaviors (Table 12). No significant associations occurred between the personal factors and Social Support or Spiritual Well-Being in age group I. Race and gender were directly related to the Health-Promoting Behavior concept, indicating that Blacks had fewer healthy behaviors than Whites and females had more healthy behaviors than males. Blacks assumed more health responsibility than Whites. The effects of gender (being male) were relevant to higher levels of physical activity and stress management only in age group I. An effect by income on the Health-Promoting Behavior concept was present, but only approached significance in this age group (Table 12), suggesting more involvement in health-promoting behaviors by those with higher incomes. Specifically, higher income levels were found to have a direct positive effect on better physical activity behaviors.

The relationships between Social Support and Spiritual Well-Being were not

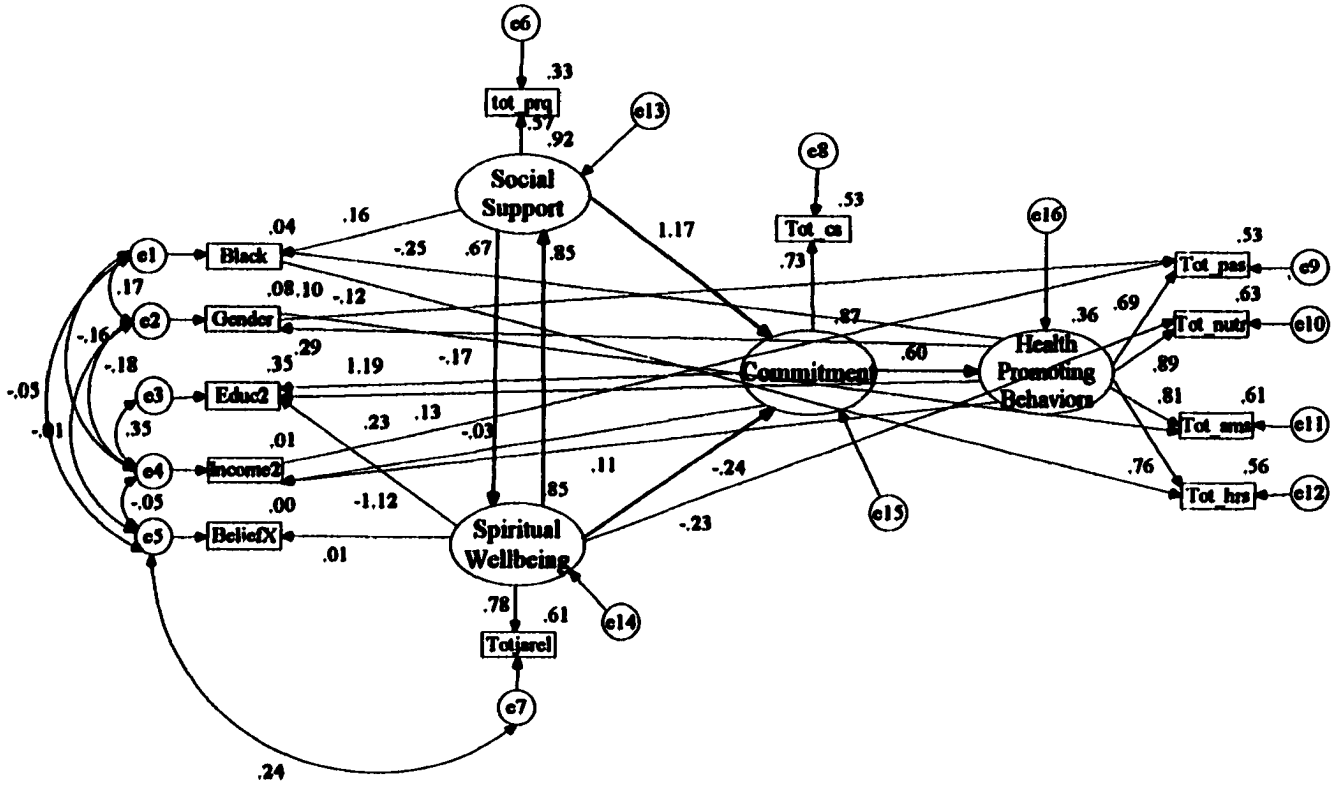


**Figure 6. Model for age group I: Relationships among personal factors, social support, spiritual well-being, commitment and health promoting behaviors.**
**(Chi sq = 29.90, df = 34, p = .67)**

significant in this cohort, and their combined negative effect on Commitment through Spiritual Well-Being only approached significance (Table 12). It is possible that Social Support and/or Spiritual Well-Being may have only minimal influence on level of Commitment in young old adults.

A surprising and new finding is that the influence of SS and SWB on Health-Promoting Behaviors was only indirectly through Commitment and not directly. The relationship between Commitment and Health-Promoting Behaviors was positive and one of the strongest in this age group. However, a negative association occurred between Spiritual Well-Being and nutritional behaviors. Those with higher levels of spiritual well-being were found to have fewer healthy nutritional practices.

Another interesting finding pertained to Source of Spirituality. During model development and testing, the Modification Indices recommended direct paths in each of the four models between Source of Spirituality and at least one of the personal factors and with a health behavior impacted by the personal factors. While a covariance between race and Source of Spirituality was anticipated, in all groups attempts at specification with recommended paths revealed that covariances between Source of Spirituality and other personal factors resulted in much stronger models. For example in age group I, recommended Modification Indices included paths for race to Source of Spirituality and Source of Spirituality to health responsibility. Also recommended was the covariance between race and Source of Spirituality. The covariance was found to provide a stronger, more stable model fit than a direct path between race and Source of Spirituality, and was positive, indicating an effect between

being Black and belonging to a Protestant faith. Being Black had a direct, positive and significant impact on health responsibility in the young old group. This relationship is influenced in some way by belonging to a Protestant faith, suggesting that source of an individual's spiritual belief may have an effect not accounted for (either directly or indirectly) on healthy behaviors.

Age Group II

The structure of the final model fit more closely in age group II than in either of the other two age groups. Relationships among the primary concepts remained the same, with the exception of the reciprocal relationship between Social Support and Spiritual Well-Being (Figure 7). An unanticipated finding was a negative relationship (though not significant) for the impact of Social Support on Spiritual Well-Being, while Spiritual Well-Being maintained a positive effect on Social Support. This occurred only in this age group, suggesting that for middle old adults level of spiritual well-being may not be influenced by perception of social support, but higher perceptions of social support may occur when the sense of spiritual well-being is higher. The combined relationship of Social Support and Spiritual Well-Being on Commitment through Spiritual Well-Being only approached significance (as in age group I) and remained negative. A strong association between Commitment and the HPB concept remained in this cohort.

Spiritual Well-Being was directly associated with physical activity and stress management, but not with nutritional behaviors (Table 12). Higher levels of Spiritual Well-Being were related to fewer exercise behaviors, but better stress management.

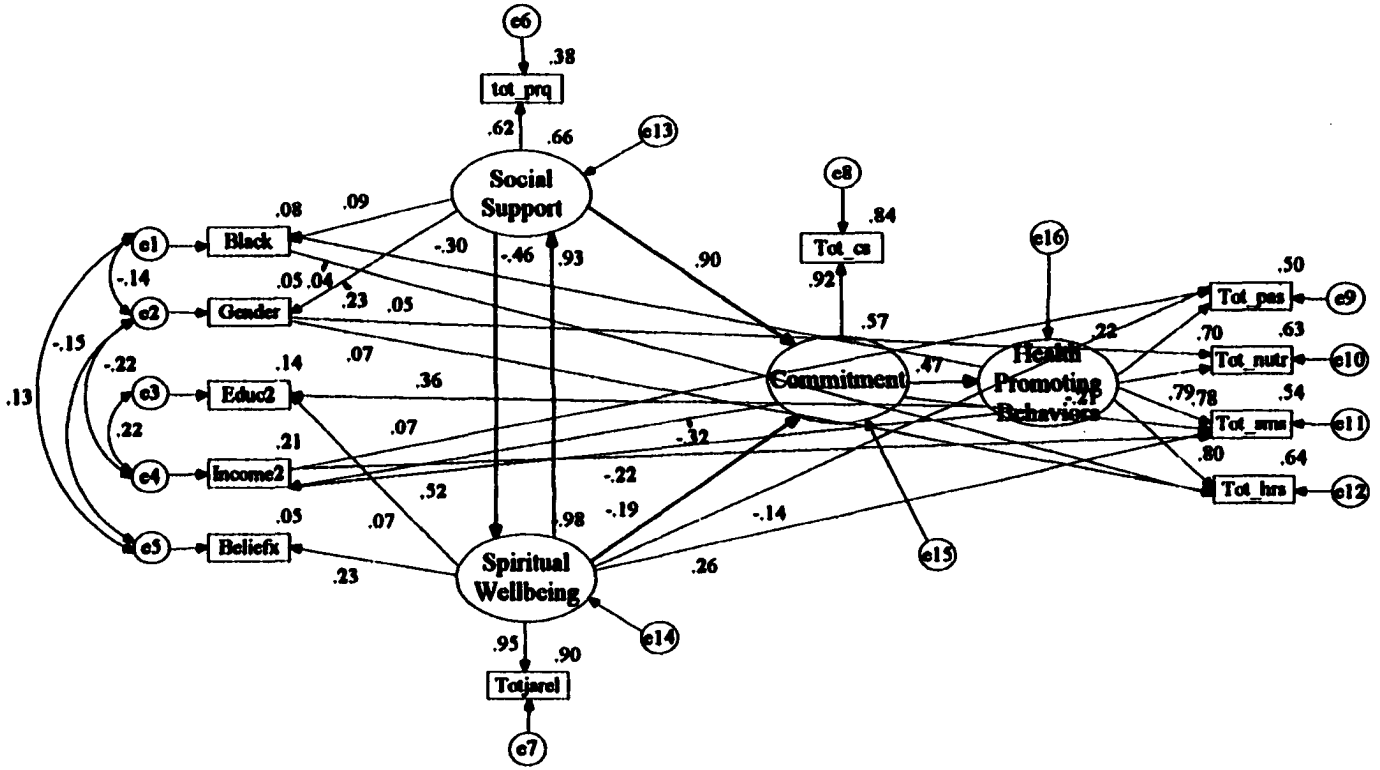


**Figure 7. Model for age group II: Relationships among personal factors, social support, spiritual well-being, commitment and health-promoting behaviors. (Chi sq = 32.56, df = 35, p = .59)**

Commitment also influenced better stress management behaviors in this age group, but only approached significance, possibly indicating a modifying effect with sense of Spiritual Well-Being. It is noteworthy that only in this cohort was the effect of source of spirituality significantly related to Spiritual Well-Being. Being of a Protestant belief had a positive influence on higher Spiritual Well-Being. Significance was attained in this cohort for the covariance between race and Source of Spirituality (Table 13), implying an influence by religious affiliation with Blacks and assumption of health responsibility.

Several differences were found in relationships among the personal factors and primary concepts, and in levels of significance (Table 12). Race remained negatively associated with Health-Promoting Behaviors (i.e., Blacks had poorer overall Health-Promoting Behaviors than Whites). The specific association between being Black and having more health responsibility was present, but no longer significant for middle old adults. Only in this cohort was an association found indicating gender (being female) influenced higher perception of social support. The influence of gender on the Health-Promoting Behavior concept found in age group I was not present in this age group. The influence of higher levels of education on better Health-Promoting Behaviors was significant, while the association between education and Spiritual Well-Being changed from negative to positive. Having a higher income level became associated with less commitment, more Health-Promoting Behaviors, and better stress management in age group II. The relationship between higher income and better exercise behaviors was no longer significant, as it was in the young old cohort.

Table 13. Significance and direction of influence of covariance estimates in trimmed models for total sample, age group I, age group II, and age group III.

| Covariance | Groups | | | |
|---|---|---|---|---|
| | Total (N=595) | I (n=264) | II (n=237) | III (n=94 |
| e1 <---> e2 | ------- | ****(+) | * (-) | ------- |
| e1 <---> e3 | ------- | ------- | ------- | (-) |
| e1 <---> e4 | * (-) | **** (-) | ------- | ------- |
| e1 <---> e5 | (+) | (-) | * (+) | ------- |
| e2 <---> e4 | **** (-) | *** (-) | **** (-) | ------- |
| e2 <---> e5 | * (-) | (-) | ** (-) | (-) |
| e3 <---> e4 | ****(+) | ****(+) | *** (+) | ------- |
| e4 <---> e5 | ------- | # (-) | ------- | ------- |
| e5 <---> e6 | ------- | ------- | ------- | ** (+) |
| e5 <---> e7 | ------- | * (+) | ------- | ------- |

Note. All estimated covariances are included regardless of significance level. Symbols (-) or (+) indicates direction of relationship. A dashed line (----) indicates the covariance is not in the model for that age group.
#p ≤ .15. * p < .05. ** p < .01. *** p < .005. **** p < .001.

Age group III

This age group's model structure deviated the most from the final model and from models for age groups I and II (Figure 8). Although the relationships among Social Support, Spiritual Well-Being, Commitment, and Health-Promoting Behaviors remained for the oldest cohort, there were differences in significance and direction of influence. The relationship of high Social Support and better Spiritual Well-Being was present in this age group (Table 12). The combined effect of Social Support and Spiritual Well-Being on Commitment was present, but did not approach significance among the oldest old cohort. Similarly, the association between Commitment and Health-Promoting Behaviors was not significant, indicating that commitment does not impact Health-Promoting Behaviors among the oldest old. Spiritual Well-Being was not related to any of the health behaviors in this cohort. A significant direct relationship was found between Source of Spirituality and nutritional behaviors, indicating that those of a Protestant faith had fewer healthy nutritional behaviors. The relationship between Source of Spirituality and Spiritual Well-Being was no longer significant in the oldest group, indicating that Source of Spirituality was not a factor in Spiritual Well-Being for those age 85 and older.

Of the personal factors, only education and source of spirituality were associated with any major concept or outcome behavior in age group III. Those with higher education levels had significantly lower perceptions of Social Support than did participants with less education. Educational level only approached significance in its relation to the Health-Promoting Behavior concept and physical activity. Source of

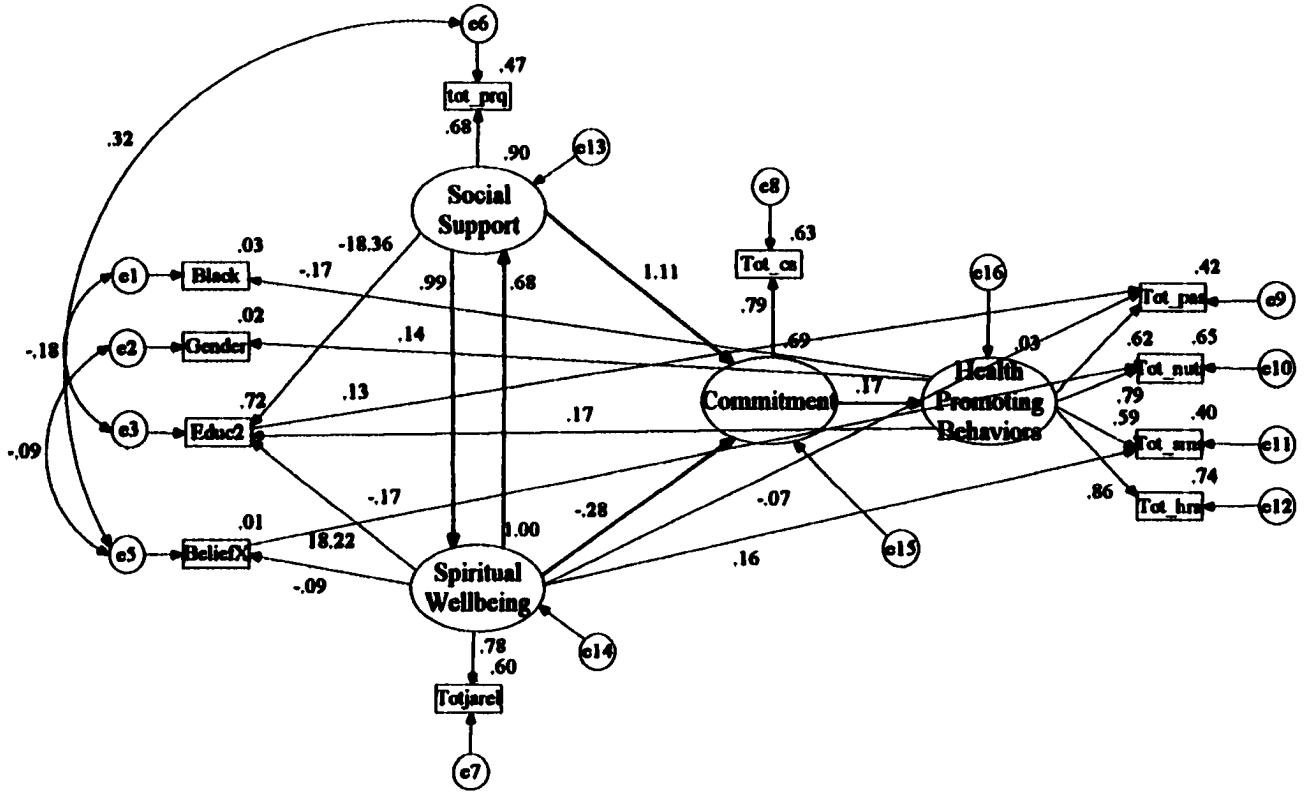


**Figure 8. Model for age group III: Relationships among personal factors, social support, spiritual well-being, commitment and health-promoting behaviors.**
**(Chi sq = 19.70, df = 33, p = .97)**

Spirituality (being Protestant) was related to poorer nutritional behaviors. It is interesting that a positive and significant covariant effect between Source of Spirituality and the Social Support indicator was present in this cohort, suggesting an influence of being of a Protestant faith on perception of higher social support. Race was not associated with Social Support, Health-Promoting Behaviors or Health Responsibility. Gender was not related to any primary concept or outcome behavior. Income was deleted as a personal factor due to a lack of fit in the model, perhaps indicating a lack of variation or homogeneity in income among the older age group. No personal factor had a direct association with Commitment in the oldest old.

## Summary of Findings

The sample of 595 senior Black and White, male and female representation of older adults was similar to elders nationally with respect to demographic and socioeconomic indicators and health status. The age groups differed in level of Commitment and participation in exercise behaviors. Age group I had the highest level of commitment and exercise participation. Age group II had the lowest commitment level, while age group III participated in fewer exercise behaviors.

The model tested was consistent in the total sample and each of the age groups. Personal Factors was not supported as a distinct concept. Differences in relationships and strengths of relationships between individual personal factors and the primary concepts and behavioral outcomes occurred in all three age groups, with the greatest differences manifested in age group III. Perception of Social Support was not associated with any personal factors, with the exception of gender in age group II and

education in group III. Spiritual Well-Being was only influenced by Source of Spirituality in age group II. Income was the only personal factor found to influence level of Commitment and in age group II alone. Each personal factor had a direct impact on the Health-Promoting Behaviors concept and a specific behavioral outcome in at least one age group, with the exception of Source of Spirituality. No direct association occurred between Source of Spirituality and Health-Promoting Behaviors.

A surprising finding was that neither Social Support nor Spiritual Well-Being had direct effects on the Health-Promoting Behavior concept. Rather, their influence was indirect through Commitment. Spiritual Well-Being, however, was directly associated with specific health behaviors in each age group. It is noteworthy that the relationship between Commitment and Health-Promoting Behaviors was one of the strongest in each of the models with the exception of age group III, where no significance in association was detected. Only in age group III was the influence of Social Support on Spiritual Well-Being significant. It is also of interest that the combined influence of Social Support and Spiritual Well-Being on Commitment was significant for the total sample, approached significance in age groups I and II, and was not significant in age group III.

# CHAPTER V

## DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

A theoretical model derived from Pender's Health Promotion Model (1996), with proposed expansion to include Spiritual Well-Being and Source of Spirituality, was tested. The hypothesized relationships among Social Support, Spiritual Well-Being Commitment and Health-Promoting Behaviors, and with individual personal factors, were supported in this sample and across the three age groups of elders. Personal Factors was not supported as a latent concept. A surprising and new finding was that both Social Support and Spiritual Well-Being were only indirectly related to Health-Promoting Behaviors through Commitment in all three age groups. Source of Spirituality was related to Social Support, Spiritual Well-Being and various personal factors, as well as nutritional behaviors in this older sample.

### Age Group Differences

Differences found among the three older age groups were in relation to Commitment and physical activity. Of the current research, commitment is not assessed, but inferred (e.g., Kim, Bramlett, Wright, & Poon 1998). Direct measurement was found in two earlier studies, both providing support for findings of this investigation. As one of three subscales of health-related hardiness, commitment was reported (Jones, 1991) to have the strongest correlation with health promotion behaviors and with social support. Beyea (1991), utilizing the Commitment Subscale of the Health-Related Hardiness tool, investigated commitment to health practices. Higher levels of commitment in that study were related to the older group and those

with more education. No relationship was found with gender or income.

Significant differences in participation in physical activities by age group and findings that exercise behaviors decline with aging are not surprising. According to initial Healthy People 2000 reports (USDHHS, 1991), less than one-third of noninstitutionalized elderly reported participation in moderate physical activity and less than 10% in routine vigorous physical activity. More current research has also demonstrated a decline in exercise with aging (Conn, 1998), even though physical exercise by the elderly has been demonstrated to increase functional status by 67% and decrease the need for mental health care by 10% (Frenn, 1996; Kimble & Longe, 1989).

Reported research suggests that social support becomes increasingly important in old age (Mitchell, 1996), yet the current study found no significant change among the age groups. A possible explanation is that, in spite of the inevitable loss of family and friends with aging, satisfaction with social support does not decline (McColl & Friedland, 1995). That sense of Spiritual Well-Being was high for this sample, with no significant difference among age groups, is consistent with research findings that spirituality/spiritual well-being is very important to older adults (Koenig & Weaver, 1997).

No differences were noted in nutritional behaviors among the age groups of this sample. This is an interesting finding because hunger and malnutrition pose significant health problems for community-dwelling seniors, and have been related to morbidity, mortality and quality of life. Stress management behaviors were consistent

across the age groups. Earlier findings by Viverais-Dresler and Richardson (1991) indicated that older adults perceived their ability to cope and manage stress as coming from strong religious beliefs. Although few studies have assessed health responsibility as a variable in the older population, findings from this study of no difference among the three groups were supported by earlier research that the majority of elderly viewed themselves as most responsible for their health (e.g., Schafer, 1989; Young, 1996).

## Model Testing

In the model testing, the relationships and concepts were supported with the exception of the Personal Factors latent concept. Although latency was not supported, individual personal factors in each elderly cohort were related to the major concepts, as well as to specific health behaviors. Relationships existed between personal factors (except Source of Spirituality) and the concept of Health-Promoting Behaviors and between each personal factor and specific health behaviors. These findings signified that the personal factors exerted their influence on health-promoting behaviors either directly or through other causal mechanisms. It appeared that specific personal factors were more relevant to the performance of one behavior than to that of another behavior.

### Age group I

As anticipated, individual personal factors in the youngest old cohort were related to the major concepts of the model, as well as to specific health behaviors. Similar findings were obtained in a study using SEM to explore Pender's model (Johnson et al., 1993). The sample was younger, but relationships between the

personal factors and one or more of the outcome health behaviors were found.

While higher income facilitated overall health-promoting behaviors and physical activity specifically, in the present study income had a deleterious effect on Commitment. More education was associated with more Commitment in this cohort. Because income and education are usually related, the reason for reversal in effects of each on Commitment is unclear. A moderating effect may occur between the two, buffering their influence on Commitment.

Combined influences of Social Support and Spiritual Well-Being, in addition to the relationship of education and income, provided a major explanation for the presence of Commitment in this cohort. That Social Support and Spiritual Well-Being were related to Health-Promoting Behaviors only through Commitment, lends validation to the fact that the influence of Commitment on Health Promoting Behaviors in age group I was strong. The relationship between Social Support and Commitment is supported by other research (Beyea, 1991; Jones, 1991). The young old tend to conceptualize being healthy as the ability to perform social roles (Hemstrom, 1993), thus, social pressures or encouragement may have a strong impact on decisions to commit, or the level of commitment, to a behavior. Also, Spiritual Well-Being includes awareness of, and ability to, draw upon inner resources and strengths thus facilitating the older adult's ability to commit to certain behaviors. An interesting finding in this group was that the relationship between Source of Spirituality and Spiritual Well-Being was not significant. Sample characteristics, in that over 90% of this cohort were of a Protestant denomination, may have negated the

ability to detect a significant relationship.

Age group II

More frequent relationships were noted in the middle old cohort between the individual personal factors and outcome behaviors, as well as between Spiritual Well-Being and outcome behaviors. The mortality differential between males and females has probably increased enough to cause gender differences in relation to Social Support to be more notable in this cohort. Previous research has indicated that, as spouses and significant others are lost, widowed females tend to seek out other social resources more so than widowed males (Barer, 1994; Unger, Johnson, & Marks, 1997). Also, older females utilize private health professionals and participate in routine health care more than older males (Weaver & Gary, 1996). Females were noted to have more health responsibility in the current study.

The influence of income was stronger in this cohort than in either of the other two age groups. Having higher income still had a deleterious effect on Commitment, but was associated with more Health-Promoting Behaviors. Education was no longer related to Commitment, but was more strongly related to Health-Promoting Behaviors. The findings in relation to Commitment are in opposition to that of Beyea (1991) who reported associations between higher levels of Commitment and higher education, but no associations between Commitment and income, in that sample of older adults.

The associations between Social Support and Spiritual Well-Being and between Spiritual Well-Being and Commitment in this cohort suggest that those with better perception of Social Support also report less Spiritual Well-Being and, thus, lower

levels of Commitment. The result is puzzling until the relationship of Source of Spirituality to the concepts is examined. Relationships between Source of Spirituality and race and gender were also present. Blacks, especially Black females, have had higher frequency of religious practices and use of religious coping behaviors and a stronger link between religion and health, than their White counterparts (Stolley & Koenig, 1997).

Relationships among Social Support, Spiritual Well-Being and Commitment had a combined influence on Health-Promoting Behaviors through Commitment. Spiritual Well-Being was related to outcome behaviors, physical activity and stress management. Commitment had an added negative influence on stress management behavior. It is likely that these effects may be a result of the combined indirect relationship of Social Support, Spiritual Well-Being and income on Commitment and individual health-promoting behaviors.

Age group III

It is evident that this oldest cohort and factors influencing their health-promoting behaviors were different from either of the other two older age groups. The most influential of the personal factors in this age group was education. No associations were found between race or gender and Social Support. However, both Social Support and Spiritual Well-Being were related to education. Education was also the only personal factor related to an outcome behavior, with higher education effecting increased levels of physical activity.

The relationship between Social Support and Spiritual Well-Being was

significant only in this age group, adding emphasis to the importance of Social Support for our oldest old. The influence of spiritual factors on individual outcome behaviors is more prevalent. Higher Spiritual Well-Being influencing better stress management and overall mental status has been substantiated in prior research (Weaver, Flannelly, Flannelly, Koenig, & Larson, 1998). There is a strong possibility that the negative relationship of Spiritual Well-Being on exercise may not be a function of Spiritual Well-Being in this cohort. Rather, the concept of Spiritual Well-Being, as modified by religious denomination membership and rate of attendance, may be a predictor of the amount of physical activity.

Source of Spirituality was related to health-promoting behaviors, specifically nutritional behaviors. Although there is an increasing amount of research concerning spirituality and religiosity (attendance at spiritual activities), researchers have rarely considered religious or spiritual factors when studying older adults. Only one current study was located examining the influence of denominational affiliation on social, psychological and health characteristics of elders. The author reported that religious attendance was associated with personal factors (race), social support (higher), and better health status, suggesting that religious affiliation is important to older adults' physical and emotional well-being (Koenig, 1998).

The relationships between Social Support and Commitment and between Spiritual Well-Being and Commitment were weaker in group III than in either of the other groups. The relationship between Commitment and Health-Promoting Behaviors was not present. Researchers have posited that health is a subjectively defined

phenomenon which changes as a person ages, and that the oldest adults may be more concerned with health behaviors that enhance stability rather than with actions to affect change (Hemstrom, 1993). The Health Promotion Model directs attention to past behaviors and habits as often being the best predictor of current behavior. This oldest cohort of adults developed health behaviors prior to knowledge of health promotion and risk reduction.

## Conclusions

Results of this study support Pender's Health Promotion Model in explaining health behaviors in older adults and provide evidence that older adults are a diverse and complex population. The theoretical model derived from Pender's revised Health Promotion Model was supported in the total sample and across the three age groups of elders. Findings of the importance of Spiritual Well-Being to older adults and the relationship between Social Support and Spiritual Well-Being endorsed both the proposed interrelationship between the two concepts and that Spiritual Well-Being and Source of Spirituality would be appropriate additions to the Health Promotion Model. Significance of relationships among Social Support, Spiritual Well-Being and individual behaviors in all three age groups indicates that their combined efficacy on practice of healthy behaviors is of more value than by individual influences. Findings supported the inclusion of a Spiritual variable as one of the Personal Factors (as indicated by Source of Spirituality) within the Individual Characteristics and Experiences category and Spiritual Well-Being as a variable within the Behavior-Specific Cognitions and Affect category. Addition of these elements to the Health

Promotion Model would provide additional and valuable insight for available resources, as well as other predictors of healthy behaviors.

That latency of Personal Factors was not supported indicates that each factor should be considered separately for investigation. Relationships, strength and direction between individual personal factors and the major concepts and with the outcome variables were varied among the age groups in this study. Evidence of little relevance between personal factors and health-promoting behaviors in the oldest cohort suggests a heterogeneity among members of that group not evidenced among members of the two younger cohorts. The fact that personal factors were related to indicators of Health-Promoting Behaviors, such as nutrition, are consistent with other reports that behaviors are often based on sociocultural origin and are influenced by regional, ethnic and religious preferences. That the association between Social Support and Spiritual Well-Being was only significant for those aged 85 and older further supports the position by this researcher that both Social Support and Spiritual Well-Being increase in importance with aging.

Social Support and Spiritual Well-Being were related to Health-Promoting Behaviors through Commitment in each age group. Of the major concepts, Social Support was not directly related to a specific healthy behavior. Additionally, the relationship between Commitment and Health-Promoting Behaviors was no longer significant in age group III, indicating that there was a reduction in level of commitment to health-promoting behaviors as persons aged.

Pender's Health Promotion Model (1996) reflects the perspective of behaviors

as part of a lifestyle that is a product of interrelationships and includes recommendations for investigating the interaction of those relationships with other factors. Findings supported efficacy of the Health Promotion Model to examine and explain the multidimensional nature of older individuals. This study's investigation of factors impacting health-promoting behaviors of older adults revealed that the relationships among the studied concepts and personal factors are multifaceted, with individual and combined influences on both commitment and health-promoting behaviors. Results validate the direction provided by Pender's Health Promotion Model that: (a) relevance of variables predictive of a given behavior are shaped by individual characteristics (such as adjustment for age); (b) specific health-promoting behaviors of older adults should be targeted for investigated rather than considered a conceptual entity; and that (c) investigation of personal factors should be limited to those relevant to explanation or prediction of the targeted behavior. The goals of Healthy People 2000 (USDHHS, 1991) and Healthy People 2010 (USDHHS, 1999) are based on the premise that health promotion strategies are related to individual lifestyle and choices made in a social context as reflected by Pender's conceptualization.

## Implications

Pender's Health Promotion Model provides an effective guide for investigating and explaining the influences in older adult decisions to engage in health-promoting behaviors. For example, this study finding that Personal Factors was not supported as a latent concept is consistent with Pender's position that factors should be limited to

those that are "theoretically relevant to explanation or prediction of a given target behavior" (Pender, 1996, p. 68). Thus, future investigations of health-promoting behaviors should incorporate individual personal factors as possible predictors. Further research guided by the Health Promotion Model needs to incorporate spiritual well-being, as well as consideration of the combined influence of social support and spiritual well-being. Similarly, health-promoting behaviors should not be studied as a discrete variable in relation to older adults. Rather, factors relevant to individual health-promoting behaviors need to be investigated. Understanding of the influences of specific factors on individual behaviors can help nurses and other health professionals to predict which older adults are, or are not, likely to assume responsibility for a healthier lifestyle.

Knowledge of the relationships among spiritual beliefs, social support and commitment to health-promoting behaviors has significance for professionals because spiritual health and physical health have, until recently, been perceived by the lay public as separate entities. Nurses, other health providers and religious leaders can use information of the interrelating nature of social situational and spiritual variables and their potential influence on a healthy lifestyle for predicting and planning. More specifically, it is important for all health providers and religious leaders to understand the differences in individual older adults' perceptions of needs to maintain health. Nurses are in a significant position to facilitate and optimize the health status of the elderly and can play a critical role in reducing the strain on health care resources.

There is evidence of increased sensitivity among older adults of the need to

take a more active role in maintaining and promoting their health. Health professionals are challenged to find ways to incorporate older adult desires to help themselves by encouraging participation in individualizing health programs to facilitate better health experiences. Accurate assessment of each cohort within the elderly population is needed to contribute to the basis for interventions and program decisions. By addressing spiritual beliefs and social support needs more specifically, and adding to knowledge about their relationships to behavior, health promotion programs should result in consistently positive outcomes for the older adult.

Health promotion has to be easily accessible, non-intrusive and relevant to be acceptable to older persons, as recommended by Healthy People 2010 (USDHHS, 1999). Recommendations for health promotion are more likely to be successful if elders can integrate their beliefs and values into an individualized culturally sensitive health plan. For example, a Black female may not follow nutritional counseling that does not include traditional foods. Knowledge of findings, such as those from this investigation, can help nurses and other health professionals to design and implement health promotion educational materials and programs with a cultural context.

Health promotion programs that emphasize both social interaction and physical activity, such as group walking or exercise classes, may show the greatest benefits in preventing or delaying age-related declines in health and mortality. Types of recommended exercise should be age group specific. Participation in some physical activities (e.g., swimming, tennis, hiking, jogging) requires socioeconomic resources. Individuals in lower income brackets have been found to participate more in home-

and job-related activities (Ford et al., 1991). In addition, individuals using mobility support devices (wheelchairs, walkers, braces, canes) can not be expected to walk briskly, jog, play tennis or participate in activities usually used in assessment of physical activity levels.

Nurses and other health care providers may find that the oldest adults benefit from individualized approaches to health promotion that focus on quality and stability rather than quantity of life. For example, capitalizing on behaviors to maintain blood pressure, weight, activities of daily living and instrumental activities of daily living, rather than objectives such as increasing or decreasing cholesterol, may be a more effective way to focus attention on the need for health-promoting behaviors among older adults. Incorporating stretching and bending movements involved in activities such as yard-work, bed-making and other household activities (especially for those using assistive devices and in wheelchairs) could be perceived as more realistic and feasible types of exercise behaviors, encouraging greater commitment to participation in measures to facilitate health and functional status. Nurses, especially nurse practitioners, working in conjunction with senior agencies, residences and religious congregations would be in an excellent position to facilitate overall healthier practices by older adults, and especially the oldest old. Hospitals seeking to expand gerontological services might consider placing nurses in these areas one or more times each month to assess, answer questions, encourage and educate.

Further research about the practice of health-promoting behaviors in older adult age subgroups may be derived from this study. To further enhance the body of

nursing knowledge and increase the data base for assessment of elderly healthy behaviors, the following investigations are recommended:

1. Because the sample size for age group III was marginal, this study should be replicated among a larger sample of that cohort.
2. Longitudinal studies of each cohort to determine if differences are in fact age-related, causing changes in a given cohort as it ages; or a result of sociocultural and environmental influences, resulting in constancy of factors influencing behaviors in a given cohort as it ages.
3. Further exploration of the interrelationships of social support and spiritual-well being and their influence on specific health-promoting behaviors among elders.
4. Further investigation of the relationship of Commitment to individual health-promoting behaviors among elders.
5. Personal factors and health-promoting behaviors should be individualized, not considered as latent constructs in investigations of older adults.
6. Further psychometric evaluation of the HPLP II is needed for use with older adults, especially the Stress Management Subscale.

## Summary

This correlational study of 595 community-dwelling senior adults has added to the body of knowledge in several ways. Study findings: (a) support Pender's Health

Promotion Model in content and usefulness for explaining and understanding older adult health-promoting behaviors; (b) provide a basis for recommending expansion of the Health Promotion Model by the inclusion of source of spirituality and spiritual well-being; (c) explain the relevance of commitment to health-promoting behaviors; (d) explain the relationships of social support and spiritual well-being to commitment and individual health-promoting behaviors; and (e) explain the influence of personal factors on individual health-promoting behaviors in each of the three elderly age groups.

The older adults in this sample were not a homogenous group. However, heterogeneity was noted within the subgroups, especially the oldest old group. A new and surprising finding was that Social Support and Spiritual Well-Being only influenced Health-Promoting Behaviors through Commitment and not directly. Specific personal factors were found to be more relevant to the performance of certain behaviors than to that of others within each age group. Level of commitment declined in importance with aging. Health-Promoting Behaviors, while important conceptually, was not relevant as a latent concept in studying healthy behaviors of the elderly. Rather, individual health-promoting behaviors and the factors impacting them varied from group to group. Source of Spirituality, possibly modified by the ability to attend or frequency of attendance at religious activities, was found to have influence on Commitment, Social Support, Spiritual Well-Being and certain health-promoting behaviors.

Implications were primarily for the efficacy of the Health-Promotion Model for

planning, providing and evaluating health promotion programs for older adults. Additional gains from this study are the need for awareness of the influence of spiritual health on physical health and for culture specific and age-relevant health-promotion programming. Further investigation is warranted among elders.

Health promotion for older adults can significantly affect health status and quality of life issues. This study has underscored the importance of social and spiritual interactions for encouraging healthy behaviors. Health promotion interventions that draw upon internal individual strengths facilitated by social interactions and spiritual beliefs may be more effective in preventing or delaying age-related declines in health and mortality, as well as showing the greatest benefits in preserving the functional independence of the elderly. As we move into the new millennium, it is imperative that health care providers (a) recognize the heterogeneity of older adults, (b) be cognizant of the bio-psycho-social and spiritual elements attributed to health by elders, and (c) work to reduce age biased attitudes that exist within the health care arena, as well as among older adults themselves.

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# APPENDIXES

# APPENDIX A

# DEMOGRAPHIC QUESTIONNAIRE

# HEALTH STUDY QUESTIONNAIRE

1. Age _____

Please place a check ( ) next to the category that best describes you in each of the following:

2. _____ a. Male _____ b. Female

3. Marital Status:
_____ a. Married _____ c. Widowed _____ e. Separated
_____ b. Single _____ d. Divorced

4. What is your primary racial or ethnic group:
_____ a. White _____ d. Hispanic
_____ b. African-American _____ e. Native American
_____ c. Asian _____ f. Other (Please identify)_____

5. What is the highest level of education you have competed?
_____ a. 8th grade or less _____ e. College graduate
_____ b. Some high school _____ f. Graduate school
_____ c. High school graduate _____ g. Post graduate
_____ d. Some college

6. What is your current employment status?
_____ a. Employed full time _____ e. Housewife
_____ b. Employed part-time _____ f. Student
_____ c. Retired _____ g. Other (Please identify)_____
_____ d. Unemployed

7. Please state your occupation or the type of work which you were involved in most of your life_____

8. What is your current yearly income range?
_____ a. Less than $9,999 _____ e. $40,000-$49,999
_____ b. $10,000-$19,999 _____ f. $50,000-$59,999
_____ c. $20,000-$229,999 _____ g. $60,000-$69,999
_____ d. $30,000-$39,999 _____ h. $70,000 or more

9. With whom do you currently live? (Check all that apply, such as spouse and children).

_____ a. Alone
_____ b. Spouse
_____ c. Children
_____ d. Companion
_____ e. Other relatives

10. Where do you currently live?

_____ a. Own house
_____ b. Apartment
_____ c. Condominium
_____ d. Elderly housing
_____ e. Other (Please explain)_____

11. Do you have a disability?

_____ a. No _____ b. Yes (Please specify)_____

12. How would you rate your overall health?

_____ a. Excellent
_____ b. Good
_____ c. Fair
_____ d. Poor
_____ e. Very poor

13. What is your religion or belief system?

_____ a. Catholic _____ e. Islam _____ h. Agnostic/skeptic
_____ b. Protestant _____ f. Hinduism _____ i. Atheist
_____ j. Jewish _____ g. Buddhism _____ j Other belief
_____ k. Other Christian Please specify if other_____

14. Do you have a personal relationship with God?

_____ a. No _____ b. Yes _____ c. Not sure

15. How important to you is attending religious services?

_____ a. Very important
_____ b. Important
_____ c. Somewhat important
_____ d. Not important

16. How often would you attend religious service if able?

_____ a. Not at all
_____ b. Once a year
_____ c. Several times a year
_____ d. Once a month
_____ e. Once a week
_____ f. More than once a week

17. How often do you usually attend religious service?

_____ a. Not at all
_____ b. Once a year
_____ c. Several times a year
_____ d. Once a month
_____ e. Once a week
_____ f. More than once a week

Thank you for giving of your time to participate in this study. Your answers to the questions, as well as any additional comments will be of value in planning future health promotion programs for yourself and other senior adults. Please use this sheet for any comments or suggestions that you might like to make about the study, questions, format, or any other information you feel would be helpful.

# APPENDIX B

## RESEARCH INSTRUMENTS - CONTACT INFORMATION

Information about, and a copy of the Health-Promoting Lifestyle Profile II may be obtained by contacting:

Susan Noble Walker, Ed.D., R.N., F.A.A.N.
University of Nebraska Medical Center
College of Nursing
[redacted]

Information about, and a copy of the Personal Resource Questionnaire (PRQ85) maybe obtained by contacting:

Clarann Weinert, S.C., Ph.D., R.N., F.A.A.N.
College of Nursing
[redacted]

Information about, and a copy of the JAREL Spiritual Well-Being Scale maybe obtained by contacting:

Ruth Stollenwerk, R.N., DNSc
College of Nursing
[redacted]

Information about, and a copy of the Health Related Hardiness Scale maybe obtained by contacting:

Susan E. Pollock, Ph.D., R.N., F.A.A.N.
School of Nursing
[redacted]

# APPENDIX C

## LETTERS OF PERMISSION TO USE INSTRUMENTS

COLLEGE OF NURSING

MARQUETTE
UNIVERSITY

January 20, 1998

Clara S. Boland, MN, RN
[redacted]

Thank you for your interest in the **JAREL Spiritual Well-Being Scale**.

You have our permission for use and reproduction of the above named scale for your research. There is no charge for this permission.

In reciprocation, we ask you to send us a complimentary copy of any reports, abstracts, or publications you prepare in which our materials are used. These will be catalogued in our files to serve as a resource for other researchers and clinicians.

If you have any questions, please feel free to contact JoAnn Hungelmann, RN, DNSc, formerly of Loyola University of Chicago School of Nursing whose current address is 5729 North 97th Street, Milwaukee, WI 53225, [redacted] E-mail [redacted] or Ruth Stollenwerk, RN, DNSc, Marquette University College of Nursing, Milwaukee, WI 53201-1881, [redacted]

If you desire reprints of the article "Focus on Spiritual Well-Being: Harmonious Interconnectedness of Mind-Body-Spirit—Use of the JAREL Spiritual Well-Being Scale" in the November/December 1996 issues of *Geriatric Nursing*, Vol. 17, No. 6, please purchase from Mosby's Journal reprints [redacted]

Sincerely,
[redacted]
Ruth Stollenwerk, RN, DNSc
JoAnn Hungelmann, RN, DNSc
Eileen Kenkel-Rossi, RN, MSN
Loretta Klassen, RN, MS

RS:bja

Enclosure

CLARK HALL P.O. BOX 1881 MILWAUKEE, WISCONSIN 53201-1881 TELEPHONE (414) 288-3800 FAX (414) 288-1597

MONTANA
BOZEMAN

**College of Nursing**

Main Campus
Sherrick Hall
P.O. Box 173560
Bozeman, MT 59717-1560
Phone (406) 994-3783
Fax (406) 994-6828

Billings Campus
Campus Box 574
MSU • Billings
Billings, MT 59101
Phone (406) 657-2912
Fax (406) 657-1715

Great Falls Campus
2800 11th Ave. South
Suite 4
Great Falls, MT 59405
Phone (406) 455-5610
Fax (406) 455-2526

Missoula Campus
32 Campus Drive
Missoula, MT 59812-8238
Phone (406) 243-6515
Fax (406) 243-5745

# *PERMISSION TO USE THE PERSONAL RESOURCE QUESTIONNAIRE*

**PERMISSION TO USE THE PRQ85**

**IS GRANTED TO: Clara S. Boland, MN, RN**

**THE PRQ85 IS A TWO PART INSTRUMENT . EITHER PART -1 OR PART -2 OR BOTH PARTS MAY BE ADMINISTERED. HOWEVER, THE TOOL MAY NOT BE MODIFIED WITHOUT CONSULTATION WITH THE AUTHORS.**

[redacted]

**Clarann Weinert, SC,PhD,RN,FAAN**

**DATE: January 12 1998**

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER
School of Nursing
Office of the Dean

Lubbock, Texas 79430
(806) 743-2749

Dear Colleague:

Thank you for your interest in the Health Related Hardiness Scale (HRHS). I am happy to make this instrument available to you for research as a way of collecting data from various populations. The requirements for using this instrument are listed below. After I receive this form and a copy of your abstract, I will mail you a copy of the instrument.

My policy is to grant permission to use the HRHS for research purposes if I:

1. receive an abstract of the proposed research;
2. am assured of receiving the results of the study;
3. receive a copy of the reliability and validity estimates obtained;
4. am assured that no further psychometric analyses will be done; and
5. am credited with authorship in any use, associated report, or publication involving the instrument.

I agree to the above requirements and have enclosed an abstract of my proposed research.

[redacted]

Sincerely

Susan E. Pollock, PhD, RN, FAAN
Professor and Associate Dean for Research
School of Nursing
Texas Tech Health Sciences Center

[redacted]

c:\winword\research\hrhs\contract.496

*An EEO / Affirmative Action Institution*

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER

School of Nursing
Office of the Dean

Lubbock, Texas 79430
(806) 743-2740

April 8, 1998

Clara Boland, RN, [redacted]

Dear Ms. Roland:

Enclosed is the HRHS and instructions for use that you requested. I received your abstract and contract letter on 4/6/98.

Welcome to Texas! Be sure to let me know your new address when you move. I'm assuming you will finish your doctoral work at UT. Good luck with your research and let me know if I can be of any assistance.

Sincerely,

[redacted]

Susan E. Pollock, PhD, RN, FAAN
Professor and Associate Dean for Research

Enc.

University of Nebraska Medical Center
Nebraska's Health Science Center

College of Nursing
Gerontological, Psychosocial, & Community Health Nursing
600 South 42nd Street
Box 985330
Omaha, NE 68198-5330
(402) 559-6362
Fax: (402) 559-6379

Dear Colleague:

Thank you for your request and payment to use the *Health-Promoting Lifestyle Profile II*. As indicated in the enclosed form, you have permission to copy and use the enclosed *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.

We thank you for your interest in the *Health-Promoting Lifestyle Profile II* and wish you much success with your efforts.

Sincerely,

[redacted]

Susan Noble Walker, EdD, RN, FAAN
Professor and Chair,
Department of Gerontological, Psychosocial and Community Health Nursing

Encl.: Health-Promoting Lifestyle Profile II
Scoring instructions
List of publications reporting use of the original Lifestyle Profile

# APPENDIX D

## IRB APPROVAL (FORM A) - PILOT STUDY

**Form A**

IRB #_____

**Certification for Exemption from IRB Review for Research Involving Human Subjects**

---

**A. PRINCIPAL INVESTIGATOR(s) and/or CO-PI(s):**
PI - Clara S. Boland, MN, RN, Doctoral Student
Advisor - Dr. Debra Wallace, CON

**B. DEPARTMENT/UNIT:** College of Nursing

**C. COMPLETE MAILING ADDRESS AND PHONE NUMBER OF PI(s) and CO-PI(s):**
Principal Investigator -
Clara S. Boland, MN, RN,
College of Nursing
University of Tennessee
[redacted]

Home Address - [redacted]

Advisor -
Debra C. Wallace, PhD, RN, Associate Professor
College of Nursing
University of Tennessee
[redacted]

**D. PROJECT TITLE:** Pilot Study - The Relationships Among Social Support, Spiritual Beliefs, and Commitment to Health-Promoting Behaviors in Older Adults

**E. EXTERNAL FUNDING:** Grant for primary study - Sigma Theta Tau, Gamma Chi Chapter.

**F. GRANT SUBMISSION DEADLINE(if applicable):** N/A

**G. STARTING DATE:** 06/22/98

**H. ESTIMATED COMPLETION DATE:** 09/30/98

**I. RESEARCH PROJECT:**
1. **Objectives of Project:**
The purpose of the primary study is to explore factors that may enhance the practice of health promoting behaviors in older adults. The purpose of the pilot project is to determine clarity of forms, instructions and administrative procedures and to establish procedures for coding and entering data. Only functionally independent, community dwelling older adults will be used in the primary and pilot studies.

**2. Subjects:**
English-speaking adults, age 65 and older who are self-caring community dwellers and without known mental impairment. No payments or incentives will be offered to participants.

A minimum of eighteen participants will be solicited for the pilot study from the Grapeland Senior Citizens Center, Grapeland, Texas. A letter of permission from the agency is attached.

Participants for the primary study will be solicited from senior centers, senior residences, social and civic groups, and religious institutions in three different geographic locations: the Beckley, West Virginia area; Knoxville, Tennessee area; and Palestine-Tyler Texas area. At lease 300 participants will be required for the primary study. Recruitment efforts will be made to achieve adequate gender and minority representation.

**3. METHODS or PROCEDURES:**
Participants will complete demographic information and four questionnaires requiring approximately 45-50 minutes. Questionnaires pertain to perception of social support, spiritual well-being, heath-promoting practices, and level of personal commitment. Consent will be implied by participation. A cover letter given to each participant will explain this and that participation is voluntary. No penalty will be incurred by participants (or agency) for deciding not to participate or terminating participation before completion of the forms. The PI's name, address, and phone number will be given in case concerns arise or a report of findings is desired.

Potential risks for participation in this study/pilot are considered to be minimal and include possible fatigue from time involved to complete forms and/or concerns arising from possible perception of lack of a healthy lifestyle or social support. If concerns are expressed, the researcher will have identified a resource person from each agency to refer the participant for further assistance or referral. This researcher has over 20 years experience in clinical nursing practice, health teaching and identifying client needs for referral.

To ensure confidentiality, no names or other identifying information (i.e., addresses, social security numbers, etc.) will be required. Forms will be coded according to site only. All information will be further coded for entry into a password protected, computer data base. The PI, dissertation committee chair, and supervised research assistants (if used) will have access to the data. The PI will do all coding, data entry, and analysis for the pilot study. Data and coding numbers will be kept in a locked file either at the PI's home or in the office of the dissertation committee chair, Dr. Debra Wallace, at the College of Nursing. The dissertation committee will also have access to the data for confirmation of analysis. Committee members are: Dr. Martha Alligood, CON; Dr. Sandra McGuire, CON; Dr. Billy C. Wallace, College of Human Ecology; and Dr. Carol Kasworm (not confirmed), College of Education. Findings will be reported as grouped data and without individual identifiers. Upon completion of the study, forms will be maintained in a locked file by the primary researcher for future study and analysis.

**4. CATEGORY(s) FOR EXEMPT RESEARCH PER 45 CFR 46:**
This study falls under paragraph 4: "Research involving the collection or study of existing data, documents, records, pathological specimens or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects."

**J. CERTIFICATION:** The research described herein is in compliance with 45 CFR 46.101(b) and presents subjects with no more than minimal risk as defined by applicable regulations.

| Principal Investigator | Clara S. Boland, MN, RN | [redacted] | 6/5/98 |
|---|---|---|---|
| | Name | Signature | Date |

| | | | |
|---|---|---|---|
| Student Advisor | Debra C. Wallace, PhD, RN<br>Name | [redacted]<br>Signature | 6-5-98<br>Date |
| Dept. Review Comm. Chair | Maureen Gosier<br>[redacted], PhD, RN<br>Name | [redacted]<br>Signature | 6-8-98<br>Date |
| **APPROVED:** Dept. Head | Joan L. Creasia, PhD, RN<br>Name | [redacted]<br>Signature | 6/8/98<br>Date |

6/5/98

# APPENDIX E

## IRB APPROVAL (FORM A) - PRIMARY STUDY

**Form A**

**IRB #_____**

**Certification for Exemption from IRB Review for Research Involving Human Subjects**

---

**A. PRINCIPAL INVESTIGATOR(s) and/or CO-PI(s):**
PI - Clara S. Boland, MN, RN, Doctoral Candidate
Advisor - Dr. Debra Wallace, CON

**B. DEPARTMENT/UNIT:** College of Nursing

**C. COMPLETE MAILING ADDRESS AND PHONE NUMBER OF PI(s) and CO-PI(s):**
Principal Investigator -
Clara S. Boland, MN, RN,
College of Nursing
University of Tennessee
[redacted]

Advisor -
Debra C. Wallace, PhD, RN, Associate Professor
College of Nursing
University of Tennessee
[redacted]

**D. PROJECT TITLE:** The Relationships Among Social Support, Spiritual Well-Being, Commitment and Health-Promoting Behaviors in Older Adults (Dissertation)

**E. EXTERNAL FUNDING:** Grant ($350.00) - Sigma Theta Tau, Gamma Chi Chapter.

**F. GRANT SUBMISSION DEADLINE(if applicable):** N/A

**G. STARTING DATE:** 10/26/98

**H. ESTIMATED COMPLETION DATE:** 08/30/99

**I. RESEARCH PROJECT:**
1. Objectives of Project:
The study purpose is to explore factors that may enhance the practice of health promoting behaviors in older adults. Only functionally independent, community dwelling older adults will be recruited.

2. Subjects:
A minimum of 240 participants will be solicited from senior centers, senior residences, social and civic groups and religious congregations in three different geographic areas: Southern West Virginia; Eastern Tennessee; and Eastern Texas. Criteria for inclusion will be English-speaking adults, age 65 and older who are self-caring community dwellers and without known mental impairment. No payments or incentives will be offered to participants. Agency directors/leaders will be contacted for permission to access agency members/residences. Examples of letters requesting and granting access to agencies are attached. Recruitment efforts will be made to achieve adequate gender and minority representation.

3. METHODS or PROCEDURES:
Participants will complete demographic information and four questionnaires requiring approximately 30-50 minutes. Questionnaires pertain to perception of social support (Personal Resource Questionnaire 85), spiritual well-being (JAREL Spiritual Well-being Scale), level of personal commitment (Commitment Subscale of Health-Related Hardiness Scale), and health-promoting practices (Exercise, Nutrition, Stress Management, and Health Responsibility Subscales of Health-Promoting Lifestyle Profile II). Consent will be implied by participation. A cover letter given to each participant will explain that participation is voluntary and implies consent. No penalty will be incurred by participants (or agency) for deciding not to participate or terminating participation before completion of the forms. The PI's name, address, and phone number will be given in case concerns arise or a report of findings is desired. Once distributed, the cover letter will be read aloud by the PI. For participants who may have difficulty completing the forms due to conditions such as arthritis, visual problems, low reading levels or fatigue, the PI will provide help by either reading the forms aloud or arranging for a trained volunteer to help with form completion in a separate room.

Potential risks for participation in this study are considered to be minimal and include possible fatigue from time involved to complete forms and/or concerns arising from possible perception of lack of a healthy lifestyle or social support. If concerns are expressed, the researcher will have identified a resource person from each agency to refer the participant for further assistance or referral. This researcher has over 20 years experience in clinical nursing practice, health teaching and identifying client needs for referral. Feedback will be requested from agency leaders for assistance in identifying participants who are without mental impairment.

A pilot study with 22 participants from an East Texas senior center was conducted to determine readability, face validity, amount of time required for completion of forms, clarity of directions and administrative procedures and to establish procedures for coding and entering data. UTK IRB approval was obtained for the pilot study.

To ensure confidentiality, no names or other identifying information (i.e., addresses, social security numbers, etc.) will be required. Forms will be coded according to site only. All information will be further coded for entry into a password protected, computer data base. The PI, dissertation committee chair, and supervised research assistants (if used) will have access to the data. The PI will do all coding, data entry, and analysis. Data and coding numbers will be kept in a locked file either at the PI's home or in the office of the dissertation committee chair, Dr. Debra Wallace, at the College of Nursing. The dissertation committee will also have access to the data for confirmation of analysis. Committee members are: Dr. Martha Alligood, CON; Dr. Sandra McGuire, CON; Dr. Billy C. Wallace, Health & Leisure Safety; and Dr. Betsy Postow, Philosophy. Findings will be reported as grouped data and without individual identifiers. Upon completion of the study, forms will be maintained in a locked file by the primary researcher for future study and analysis for a minimum of three years.

**4. CATEGORY(s) FOR EXEMPT RESEARCH PER 45 CFR 46:**
**This study falls under paragraph 2: "Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging tot the subjects' financial standing, employability, or reputation."**

**J. CERTIFICATION: The research described herein is in compliance with 45 CFR 46.101(b) and presents subjects with no more than minimal risk as defined by applicable regulations.**

| | | | |
|---|---|---|---|
| Principal Investigator | Clara S. Boland, MN, RN<br>Name | [redacted] | 10/30/98<br>Date |
| Student Advisor | Debra C. Wallace, PhD, RN<br>Name | | 10/31/98<br>Date |
| Dept. Review Comm. Chair | Maureen Gröer, PhD, RN<br>Name | | 11/5/98<br>Date |
| APPROVED: Dept. Head | Joan L. Creasia, PhD, RN<br>Name | | 11/3/98<br>Date |

# APPENDIX F

# CODE BOOK SAMPLE PAGES

-- SYSFILE INFO --

File a:\main595.sav
Created: 14 Oct 99 13:26:00 - 138 variables and 595 cases

File Type: SPSS Data File N of Cases: 595
Total # of Defined Variable Elements: 138
Data Are Not Weighted Data Are Compressed
File Contains Case Data

Variable Information:

| Name | | Position |
|---|---|---|
| ID | actual respondant case number<br>Format: F4 | 1 |
| AREA | geographic area<br>Format: F2<br>Value Label<br>1 Eastern Texas<br>2 Southwestern West Virginia<br>3 Southeastern Missouri<br>4 Eastern Tennessee | 2 |
| CITY | city/community<br>Format: F2<br>Value Label<br>1 Grapeland, TX<br>2 Palestine, TX<br>3 Beckley, WV<br>4 Huntington, WV<br>5 Barboursville, WV<br>6 Milton, WV<br>7 Knoxville, TN<br>8 Cape Girardeau, MO<br>9 Jackson, MO<br>10 Sikeston, MO<br>11 Marble Hill, MO<br>12 Chaffee, MO | 3 |
| AGENCY | Type of group/agency/setting<br>Format: F2<br>Value Label<br>1 senior center<br>2 senior residence<br>3 religious congregation<br>4 civic organization<br>5 social organization | 4 |
| AGE | individual ages<br>Format: F3 | 5 |

AGEGP agegroup 6
Format: F3

| Value | Label |
|---|---|
| 1 | 65-74 |
| 2 | 75-84 |
| 3 | 85 + |

GENDER gender 7
Format: F1

| Value | Label |
|---|---|
| 0 | male |
| 1 | female |

MARSTAT2 widowed 8
Format: F1

| Value | Label |
|---|---|
| 0 | not widowed |
| 1 | widowed |

BLACK race - black/white 9
Format: F1

| Value | Label |
|---|---|
| 0 | white |
| 1 | black |

EDUC2 recoded educational level 10
Format: F4

| Value | Label |
|---|---|
| 0 | less than high school graduation |
| 1 | high school graduation or higher |

INCOME2 recoded income level 11
Format: F1

| Value | Label |
|---|---|
| 1 | less than $9,999 |
| 2 | $10,000-$19,999 |
| 3 | $20,000-$29,999 |
| 4 | $30,000-39,999 |
| 5 | $40,000-49,999 |
| 6 | $50,000 or more |

# APPENDIX G

# CONFIDENTIALITY STATEMENTS

## Confidentiality Statement

I, Patricia N. Ferrell, agree to participate as a research assistant in the Health Promotion by Older Adults dissertation project directed by Clara Boland. I have received two training sessions and understand that the data collection procedure is to be conducted in a professional manner and that confidentiality of all collected data must be maintained. I agree not to disclose the identity of any participants and will not disseminate any findings or information about the study.

[redacted] 12/17/98

(Patricia N. Ferrell) Date

[redacted] 12/17/98

(Clara S. Boland) Date

**Confidentiality Statement**

I, Charlotte Sargent, agree to participate as a research assistant in the Health Promotion by Older Adults dissertation project directed by Clara Boland. I have been instructed in the data collection procedure and understand that confidentiality of all collected data must be maintained. I agree not to disclose the identity of any participants and will not disseminate any findings or information about the study.

[redacted] 5/14/99

(Charlotte Sargent) Date

[redacted] 5/14/99

(Clara S. Boland) Date

# APPENDIX H

# SAMPLE INTRODUCTORY LETTER OF REQUEST FOR ACCESS TO AGENCY

April 5, 1999

Clara S. Boland, MN, RN
[redacted]

Dear

Thank you for your willingness to work with me toward the collection of information for my project. As I explained, the purpose of the project is for my doctoral dissertation and to look at things that might help older adults to keep themselves healthy. Understanding this will be beneficial to providers of health care in developing health promotion programs and encouraging healthy practices for older adults. Therefore, it is important to obtain feedback and the opinions of as many older adults as possible.

I will be asking participants to complete questionnaires and provide some demographic information. The process will require approximately 20-40 minutes. There will be no identifying codes or marks on any of the forms, nor will names, addresses, or social security numbers be asked. Choosing to participate, not to participate, or to stop before completing the forms will have no effect on the agency(ies) or services/activities provided to the members. Participation is strictly voluntary.

Potential risks for participation are minimal and include possible fatigue from time involved in completing the forms and/or concerns arising from doing or not doing a particular behavior. No payment is offered for participation, but possible benefits include a sense of satisfaction or pride from participation in the project, increased insights into their own behavior, and the possibility of starting or changing health behaviors as suggested by the questions.

Information from the forms will be used in coded form only, and all completed questionnaires and information or comments will be kept in a locked file cabinet to assure confidentiality. Only myself and my dissertation committee will have access to the forms. This study has been approved by both the review boards of the College of Nursing and the Institutional Review Board of the University of Tennessee, Knoxville, TN.

It is anticipated that the study will take approximately two years; however, once completed, participants may receive a copy of the findings by contacting:

Clara S. Boland, MN, RN
[redacted]

This same information will be provided to each person who participates in the project. Thank you for considering allowing me access to your centers.

Sincerely yours,

Clara S. Boland

# APPENDIX I

## RESEARCH PACKET COVER LETTER - PILOT STUDY

July, 1998

Dear Participant,

I am a graduate student at the University of Tennessee, Knoxville, TN., working toward a PhD in nursing. The purpose of this project is to look at things that might help older adults keep themselves healthy. Understanding this will help health care providers to develop health promotion programs for older adults. Therefore, your personal responses to the enclosed questions are extremely important.

Completion of the study questions and requested personal information will require approximately 30-50 minutes. There will be no identifying codes or marks on any of the pages, nor will names, addresses, or social security numbers be asked. You will not be asked to sign anything. Your consent is indicated by completion of the questionnaire. If you should desire not to participate, or to stop before completing the questions, there will be no changes in services or activities you participate in at this center. Your participation is strictly voluntary.

Potential risks for participation are minimal and include possible fatigue from time involved in completing the forms and/or concerns about doing or not doing a particular behavior. No payment is offered, but possible benefits include a sense of satisfaction or pride from participation in the project, increased insights into your own behavior, and the possibility of starting or changing health behaviors as suggested by the questions.

Information from the forms will be used in coded form only, and all completed questionnaires and information or comments will be kept in a locked file cabinet to assure confidentiality. Only myself and my dissertation committee will have access to the forms. This study has been approved by both the review boards of the College of Nursing and the Institutional Review Board of the University of Tennessee, Knoxville, TN.

If you wish to receive a copy of the study results or have any questions about this study, please contact me at [redacted] or at the address given below. It is anticipated that the study will take approximately two years to complete.

Thank you for your willingness to consider participating in the study.

Sincerely yours,

[redacted]

# APPENDIX J

## RESEARCH PACKET COVER LETTERS - PRIMARY STUDY

Sept., 1998

Dear Participant,

I am a graduate student at the University of Tennessee, Knoxville, TN., working toward a PhD in nursing. The purpose of this project is to look at things that might help older adults keep themselves healthy. Understanding this will help health care providers to develop health promotion programs for older adults. Therefore, your personal responses to the enclosed questions are extremely important.

Completion of the study questions and requested personal information will require approximately 30-50 minutes. There will be no identifying codes or marks on any of the pages, nor will names, addresses, or social security numbers be asked. You will not be asked to sign anything. Your consent is indicated by completion of the questionnaire. If you should desire not to participate, or to stop before completing the questions, there will be no changes in services or activities you participate in at this center. Your participation is strictly voluntary.

Potential risks for participation are minimal and include possible fatigue from time involved in completing the forms and/or concerns about doing or not doing a particular behavior. No payment is offered, but possible benefits include a sense of satisfaction or pride from participation in the project, increased insights into your own behavior, and the possibility of starting or changing health behaviors as suggested by the questions.

Information from the forms will be used in coded form only, and all completed questionnaires and information or comments will be kept in a locked file cabinet to assure confidentiality. Only myself and my dissertation committee will have access to the forms. This study has been approved by both the review boards of the College of Nursing and the Institutional Review Board of the University of Tennessee, Knoxville, TN.

If you wish to receive a copy of the study results or have any questions about this study, please contact me at [redacted] or at the address given below.

Thank you for your willingness to consider participating in the study.

Sincerely yours,

[redacted]

Clara S. Boland
[redacted]

Dec., 1998

Dear Participant,

I am a graduate student at the University of Tennessee, Knoxville, TN., working toward a PhD in nursing. The purpose of this project is to look at things that might help older adults keep themselves healthy. Understanding this will help health care providers to develop health promotion programs for older adults. Therefore, your personal responses to the enclosed questions are extremely important.

Completion of the study questions and requested personal information will require approximately 30-50 minutes. There will be no identifying codes or marks on any of the pages, nor will names, addresses, or social security numbers be asked. You will not be asked to sign anything. Your consent is indicated by completion of the questionnaire. If you should desire not to participate, or to stop before completing the questions, there will be no changes in services or activities you participate in at this center. Your participation is strictly voluntary.

Potential risks for participation are minimal and include possible fatigue from time involved in completing the forms and/or concerns about doing or not doing a particular behavior. No payment is offered, but possible benefits include a sense of satisfaction or pride from participation in the project, increased insights into your own behavior, and the possibility of starting or changing health behaviors as suggested by the questions.

Information from the forms will be used in coded form only, and all completed questionnaires and information or comments will be kept in a locked file cabinet to assure confidentiality. Only myself and my dissertation committee will have access to the forms. This study has been approved by both the review boards of the College of Nursing and the Institutional Review Board of the University of Tennessee, Knoxville, TN.

If you wish to receive a copy of the study results or have any questions about this study, please contact me at [redacted] or at the address given below.

Thank you for your willingness to consider participating in the study.

Sincerely yours,

[redacted]

Clara S. Boland
[redacted]

# APPENDIX K

# PEARSON'S CORRELATION MATRICES

Table K1. Pearson's Correlation Matrix of personal factors, social support, commitment, spiritual well-being and health-promoting behaviors for the total sample (N = 595).

| | Agegrp | Race | Gender | Educ. | Source | Income | PRQ85 | CS | JAREL | NUTR | HRS | PAS | SMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age group | 1.000 | | | | | | | | | | | | |
| Race | -0.063 | 1.000 | | | | | | | | | | | |
| Gender | 0.030 | 0.004 | 1.000 | | | | | | | | | | |
| Education | -0.013 | -0.062 | 0.016 | 1.000 | | | | | | | | | |
| So. of Spirit. | -0.102* | 0.043 | -0.045 | 0.005 | 1.000 | | | | | | | | |
| Income | -0.050 | -0.144* | -0.174* | 0.318* | -0.025 | 1.000 | | | | | | | |
| Soc. Supp. | -0.040 | -0.052 | 0.082* | 0.079 | 0.067 | 0.042 | 1.000 | | | | | | |
| Commitment | -0.100* | -0.011 | 0.113* | 0.157* | 0.077 | -0.052 | 0.422* | 1.000 | | | | | |
| Spirit W-B | -0.030 | 0.010 | 0.160* | 0.054 | 0.140* | -0.006 | 0.462* | 0.484* | 1.000 | | | | |
| Nutrition | -0.055 | -0.173* | 0.159* | 0.263 | 0.053 | 0.175* | 0.174* | 0.260* | 0.175* | 1.000 | | | |
| Health Resp. | -0.067 | -0.094* | 0.153* | 0.227* | 0.051 | 0.156* | 0.239* | 0.297* | 0.212* | 0.623* | 1.000 | | |
| Phys. Activ. | -0.133* | -0.173* | 0.004 | 0.235* | -0.005 | 0.301* | 0.137* | 0.260* | 0.138* | 0.507* | 0.526* | 1.000 | |
| Stress Mgmt. | -0.017 | -0.153* | 0.081* | 0.163* | 0.091* | 0.078 | 0.286* | 0.288* | 0.552* | 0.552* | 0.545* | 0.474* | 1.000 |

*$p \leq .05$ (2-tailed).

Table K2. Pearson's Correlation Matrix of personal factors, social support, commitment, spiritual well-being and health-promoting behaviors in age group I (ages 65-74; n = 264).

| | Race | Gender | Educ. | Source | Income | PRQ85 | CS | JAREL | NUTR | HRS | PAS | SMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Race | 1.000 | | | | | | | | | | | |
| Gender | 0.116 | 1.000 | | | | | | | | | | |
| Education | -0.058 | 0.003 | 1.000 | | | | | | | | | |
| So. of Spirit. | -0.039 | 0.005 | 0.019 | 1.000 | | | | | | | | |
| Income | -0.176* | -0.163* | 0.312* | -0.042 | 1.000 | | | | | | | |
| Soc. Supp. | -0.043 | 0.047 | 0.046 | 0.009 | 0.008 | 1.000 | | | | | | |
| Commitment | -0.010 | 0.119 | 0.197* | 0.011 | 0.024 | 0.405* | 1.000 | | | | | |
| Spirit. W-B | 0.036 | 0.172* | 0.010 | 0.157* | 0.027 | 0.431* | 0.495* | 1.000 | | | | |
| Nutrition | -0.154* | 0.228* | 0.235* | 0.023 | 0.090 | 0.116 | 0.247* | 0.206* | 1.000 | | | |
| Health Resp. | -0.025 | 0.223* | 0.207* | -0.015 | 0.063* | 0.228* | 0.307* | 0.263* | 0.467* | 1.000 | | |
| Phys. Activ. | -0.202* | 0.039 | 0.257* | -0.032 | 0.309* | 0.151* | 0.347* | 0.275* | 0.510* | 0.467* | 1.000 | |
| Stress Mgmt. | -0.127* | 0.038 | 0.145* | 0.063 | 0.070 | 0.230* | 0.309* | 0.375* | 0.565* | 0.578* | 0.556* | 1.000 |

* $p \leq .05$ (2-tailed).

Table K3. Pearson's Correlation Matrix of personal factors, social support, commitment, spiritual well-being and health-promoting behaviors in age group II (ages 75-84; n = 237).

| | Race | Gender | Educ. | Source | Income | PRQ85 | CS | JAREL | NUTR | HRS | PAS | SMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Race | 1.000 | | | | | | | | | | | |
| Gender | -0.128* | 1.000 | | | | | | | | | | |
| Education | -0.052 | -0.014 | 1.000 | | | | | | | | | |
| So. of Spirit. | 0.106 | -0.088 | 0.007 | 1.000 | | | | | | | | |
| Income | -0.019 | -0.216* | 0.315* | -0.048 | 1.000 | | | | | | | |
| Soc. Supp. | -0.082 | 0.125 | 0.168* | 0.070 | 0.089 | 1.000 | | | | | | |
| Commitment | -0.041 | 0.158 | 0.212* | 0.136* | -0.074 | 0.416* | 1.000 | | | | | |
| Spirit. W-B | -0.002 | 0.177* | 0.148* | 0.215* | -0.027 | 0.483* | 0.485* | 1.000 | | | | |
| Nutrition | -0.220* | 0.081 | 0.325* | 0.132* | 0.299* | 0.275* | 0.327* | 0.153* | 1.000 | | | |
| Health Resp. | -0.178* | 0.095 | 0.295* | 0.093 | 0.276* | 0.309* | 0.333* | 0.184* | 0.633* | 1.000 | | |
| Phys. Activ. | -0.186* | -0.071 | 0.213* | -0.003 | 0.337* | 0.195* | 0.257* | 0.012 | 0.511* | 0.577* | 1.000 | |
| Stress Mgmt. | -0.190* | 0.122 | 0.217* | 0.123 | 0.084 | 0.296* | 0.286* | 0.312* | 0.548* | 0.521* | 0.418* | 1.000 |

* $p \leq .05$ (2-tailed).

Table K4. Pearson's Correlation Matrix of personal factors, social support, commitment, spiritual well-being and health-promoting behaviors in age group III (ages 85+, n=94).

| | Race | Gender | Educ. | Source | Income | PRQ85 | CS | JAREL | NUTR | HRS | PAS | SMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Race | 1.000 | | | | | | | | | | | |
| Gender | 0.017 | 1.000 | | | | | | | | | | |
| Education | -0.113 | 0.131 | 1.000 | | | | | | | | | |
| So. of Spirit. | 0.042 | -0.058 | -0.045 | 1.000 | | | | | | | | |
| Income | -0.197 | -0.088 | 0.348* | 0.037 | 1.000 | | | | | | | |
| Soc. Supp. | -0.017 | 0.057 | -0.080 | 0.170 | 0.015 | 1.000 | | | | | | |
| Commitment | -0.043 | -0.054 | -0.120 | -0.028 | -0.265* | 0.082 | 1.000 | | | | | |
| Spirit. W-B | -0.040 | 0.038 | -0.075 | -0.094 | -0.054 | 0.525* | 0.490* | 1.000 | | | | |
| Nutrition | -0.133 | 0.168 | 0.170 | -0.149 | 0.099 | 0.031 | 0.055 | 0.139 | 1.000 | | | |
| Health Resp. | -0.137 | 0.104 | 0.097 | 0.048 | 0.131 | 0.042 | 0.125 | 0.133 | 0.670* | 1.000 | | |
| Phy. Activ. | -0.107 | 0.101 | 0.226* | -0.046 | 0.164 | -0.096 | 0.082 | 0.030 | 0.474* | 0.566* | 1.000 | |
| Stress Mgmt. | -0.155 | -0.029 | 0.061 | 0.044 | 0.051 | 0.061 | 0.208* | 0.257* | 0.517* | 0.507* | 0.366* | 1.000 |

* $p < .05$ (2-tailed).

# VITA

Clara Boland was born in Williamson, WV on June 26, [redacted] She attended public schools in Southern West Virginia, graduating in 1959 from Woodrow Wilson High in Beckley, WV. A Bachelor of Science degree in Nursing was earned from Alderson-Broaddus College, Philippi, WV in 1963. Clara married that same year and moved to Charleston, WV where she was employed at the Charleston Memorial Hospital, advancing from staff to head nurse of the Intensive Care Unit. In 1967 she moved to Gainesville, FL. where she entered the University of Florida Master's program in cardiovascular nursing. After graduating she worked for 1 ½ years as assistant head of the Gainesville Veterans Administration Hospital Surgical ICU, resigning to pursue a teaching career at Santa Fe Community College in Gainesville. Following seven years of teaching and two children, Clara and her family returned to Beckley, WV. During the following years she worked at the Beckley VAH as Clinical Specialist for the ICU and Coronary Step-down Unit, as well as Inservice Educator. She also worked as an independent consultant to area hospitals and nursing agencies. In 1992 Clara joined the faculty of The College of West Virginia in Beckley to assist in development of a baccalaureate nursing program. During that time she became interested in gerontological nursing and, in January of 1996, entered the doctoral program at the University of Tennessee, Knoxville to pursue a Ph.D. in nursing with a minor in gerontology. Degree requirements were completed in December, 1999. At present she is a consultant with a hospital in Cape Girardeau, MO to assist in expansion of their gerontological services, both in house and into the community.