

LIFE SATISFACTION IN INDIVIDUALS AGE
SIXTY-FIVE YEARS OF AGE AND OLDER

By

TIA JACLYN WALLACE

Bachelor of Arts
University of Texas at Austin
Austin, Texas
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Master of Science
Texas State University – San Marcos
San Marcos, Texas
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Dissertation Approved:

Dr. Bert Jacobson

Dissertation Adviser

Dr. Doug Smith

Dr. Ed Harris

Dr. Steve Edwards

Dr. A. Gordon Emslie

Dean of the Graduate College

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*“It’s a little like wrestling a gorilla.
You don’t quit when you’re tired,
You quit when the gorilla’s tired.”*

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CHAPTER I

INTRODUCTION

America is in the midst of a major demographic change as the elderly population, those over 65 years of age, has become the fastest growing segment of our population. Statistics indicate that by the year 2030, one-quarter of the United States population will be 65 years and older, which translates to approximately 70 million people (Nied & Franklin, 2002). The United States has already become a society in which there are a greater number of older people than children and youth (Rowe & Kahn, 1998; U.S. Bureau of Census, 2000). The number of elderly 70 years of age and older has been rising in America and it is projected that the percentage of elderly in the total population will double from 13 percent in the year 2000 to 26 percent in the year 2030 (Federal Interagency Forum, 2000).

In 2006, 37 million people age 65 and over lived in the United States, accounting for just over 12 percent of the total population. Over the 20th century, the older population grew from 3 million to 37 million. The oldest-old population (those age 85 and over) grew from just over 100,000 in 1900 to 5.3 million in 2006 (Kochanek, Murphy, Anderson, & Scott, 2004). According to the United States Census Bureau, the Baby Boomers (those born between 1946 and 1964) will start turning 65 in 2011, and the number of older people will increase dramatically during the 2010-2030 period. The

older population in 2030 is projected to be twice as large as in 2000, growing from 35 million to 71.5 million and representing nearly 20 percent of the total U.S. population. The growth rate of the older population is projected to slow after 2030, when the last Baby Boomers enter the ranks of the older population. From 2030 onward, the proportion age 65 and over will be relatively stable, at around 20 percent, even though the absolute number of people age 65 and over is projected to continue to grow. The oldest-old population is projected to grow rapidly after 2030, when the Baby Boomers move into this age group.

In 2004, about one in eight citizens, or approximately 12.5 percent, of the population was 65 and older. In 2011, the Baby Boomers will begin to reach age 65. Thus the population of 65 plus is expected to increase exponentially. In fact, the 65 plus cohort will nearly double within the next 25 years. By 2030, it is estimated that one out of five, or 20%, Americans will be 65 and older (U.S. Department of Health and Human Services, Administration on Aging, 2006; NIH News, 2006). Furthermore, at least 21% of total population, or 86.7 million people, will be ages 65 and older in 2050 (Longley, 2007).

Aging is a lifelong process and varies in its effects on individuals. The elimination of childhood diseases and improvement of sanitation has increased life expectancy in developing nations. With advances in medicine and technology, Americans are living to older ages with healthier lives and lower rates of disability. At the turn of the 20th century, life expectancy was 48 years. Life expectancy has been increasing every year and in the United States the average expectancy reached 75.5 years in 2004 according to the U.S. Census Bureau. Today it is at a record high of 77.3 years.

In fact, the likelihood of an American who reaches the age of 65 surviving to age 90 increased from 14 percent in 1960 to 25 percent in 2006 and is estimated to increase to 40 percent by 2050 (Experience Corps, 2007). With an average life expectancy at birth of 74.5 years for men and 79.9 for women, those who reach age 65 can be expected to live even longer. Men will likely live another decade and a half (16.6 additional years) and women will likely live nearly two more decades (19.5 years) to reach ages 81.6 and 84.5 respectively (Kochanek, Murphy, Anderson, & Scott, 2004). Since older individuals in general become less physically active, the number of sedentary older Americans will, in all probability, drastically increase.

Traditionally, research on aging has focused on losses and problems rather than on successful aging. With the projected growth in the 65 and older demographic group, the cost of taking care of the elderly population will present a huge burden to the nation unless new knowledge can be employed to ensure that this population will not only live longer but also enjoy better health (Blazer, 1990). As this older adult population increases, so does interest in understanding the aging process, in enhancing the quality of life of older adults and providing appropriate mental health and social services. Human service professionals recognize that successful transitions through life's developmental processes can enhance the possibility for older adults to experience greater life satisfaction. A focus on increasing life satisfaction, "successful aging" and associated variables is present in the current literature. "Measuring the quality of life for older persons has grown from a basic interest in indentifying the development of hurdles of aging. The degree to which an individual has successfully cleared these hurdles is commonly referred to as either "life satisfaction or morale" (Salamon & Conte, 1982, p.

194). Life satisfaction in older adults is widely investigated with research focusing on describing or measuring this variable by itself or in relation to other variables.

Unlike previous generations, many people will enter retirement in relatively good health and with a relatively secure financial foundation. This segment of the population is also the healthiest and most vigorous group of older people in the history of the aged population (Manton, Stallard & Lui, 1995; Rowe & Kahn, 1998). During most of its history, America has not had to worry very much about what to do with its elderly population since few people lived long enough to make age an issue. As the older generation begins to reach retirement age, it has become increasingly clear that America will have a large number of adults who will be seeking meaningful post-retirement activities (Pifer & Bronte, 1986; Rowe & Kahn, 1998). Planning what to do with this enormous group of elderly retirees is an issue that can no longer be avoided.

With more and more people living longer lives, things which can improve quality of life or act as a preventative or protective measures against age-related declines in health are becoming vastly more important. All available research literature supports the necessity of regular physical activity as being essential in extending one's active and independent life and in reducing physical and psychological limitations (Salem, Wang, Young, Marion, & Greendale, 2000).

The importance of the life satisfaction concept and the degree of life satisfaction experienced by older adults is becoming a central theme in gerontological studies. Research continues to increase its' focus on life satisfaction and the identification of variables or factors which might contribute to subjective well-being or increased life satisfaction in older adults (Bortner & Hultsch, 1979; Edwards & Klemmack, 1973;

Larson, 1978; Liang, 1982; Morganti, Nehrke, Hulicka, & Cataldo, 1988; Riddick, 1985; Riddick & Daniel, 1984; Ziegler & Reid, 1983). Ryff (1982) states that "...life satisfaction became the most frequently investigated dimension of successful aging" (p. 209).

When conceptualizing life satisfaction, some researchers have looked at factors which objectively quantify an individual's degree of satisfaction based on external factors such as income, social participation, marital status, income and health. Others have focused upon the subjective perceptions of those persons being studied (Brockett, 1987). Although researchers continue to disagree on the definition and specific behavioral components of what constitutes life satisfaction, many who study the concept are searching for a greater degree of understanding as to what makes older adults happy or what will enhance the quality of life of our older adult population.

Not only are there a growing number of older adults, but also these adults are healthier than previous generations (Pillemer & Suitor, 1998). The increasing number of relatively healthy older adults who have more time and energy may constitute one of the most significant societal trends in the coming years. This has lead some researchers to begin studying patterns of life satisfaction in older adults in response to this major demographic shift and in preparation for the increasing number of people who are entering retirement.

Over the past few decades, several technological and psychometric advances have led to improvements in the way in which health status and quality of life can be measured. These advances have not only increased the efficiency for gathering health-related data, but have also led to improvements in measurement precision itself.

The SF-36® Health Survey was first made available in “developmental” form in 1988 (Ware, 1988) and in the standard form (i.e., SF-36® Health Survey) in 1990 (Ware, Snow, Kosinski, & Gandek, 1993). It was constructed to satisfy minimum psychometric standards necessary for group comparisons. The eight health domains represented in the SF-36® Health Survey profile were selected from the 40 domains that were included in the Medical Outcomes Study (Stewart & Ware, 1992). The Medical Outcomes Study was a 4-year longitudinal, observational study of the variations in practice styles and of the health outcomes for chronically ill patients. The domains chosen represent the health domains most frequently measured in widely used health surveys and those believed to be most affected by disease and health conditions (Ware, 1995; Ware, Snow, Kosinski, & Gandek, 1993). The items also represent multiple operational indicators of health, including behavioral function and dysfunction, distress and well-being, objective reports and subjective ratings, and both favorable and unfavorable self-evaluations of general health status (Ware, Snow, Kosinski, & Gandek, 1993).

Although the SF-36® Health Survey proved to be useful for many purposes, 10 years of experience revealed the need and potential for improvements. A need to improve item wording and response choices resulting from the International Quality of Life Assessment (IQOLA) Project and the translation of the SF-36® Health Survey form, as well as an opportunity to update normative data, led to a revision of the survey. In the early 1990’s, studies were initiated to address problems with the meaning of words in some items and to address well-documented shortcomings of the two role functioning scales. The result of these efforts was the development of the SF-36v2® Health Survey (Ware & Kosinski, 2001).

Like its predecessor, the SF-36v2® Health Survey is a multi-purpose, 36-item health survey yielding a profile of eight health domain scales. It can be used across all adult patient and nonpatient populations for a variety of purposes, such as screening individual patients, monitoring the results of care, comparing the relative burden of diseases, and comparing the benefits of different treatments (Baird, Sanders, Woolfenden & Bearhart, 2004; Bertagnoli & Kumar, 2002; Carter, 2002; Ellis & Reddy, 2002; Fitzgibbons, et al., 2006; Han, Lee, Iwaya, Kataoka, & Kohzuki, 2004; Jenkinson, Stewart-Brown, Peterson, & Paice, 1999; Kelly, Brillante, Kusher, Robey, & Collins, 2005; Linder & Singer, 2003; Morrison, Thomson, & Petticrew, 2004; Poole & Mason, 2005; Wang, Taylor, Pearl, M., & Chang, 2004; Wrennick, Schneider, & Monga, 2005; Wyrwich, et al., 2003; Wyrwich, et al, 2004).

Relative to the SF-36® Health Survey, however, the SF-36v2® Health Survey has also incorporated (a) improved instructions and minimized ambiguity and bias in item wording (b) improved layout of questions and answers (c) increased comparability in relation to translations, and cultural adaptations (d) five-level response choices in place of dichotomous choices for the seven items in the Role-Physical and Role-Emotional scales, and (e) elimination of a response option from the items of the Mental Health and Vitality scales. These improvements were implemented after thorough evaluation of their advantages. The SF-36 v2® Health Survey – sometimes referred to as the “international version” – was made available for use by the research and clinical communities in 1996 (Ware & Kosinski, 1996). It represents an improved measurement tool that maintains comparability with the original version in terms of purpose, content, scores, and the psychometric rigor with which it was developed.

Although standardized comprehensive measures of generic functional status and well-being existed prior to the SF-36® Health Survey (e.g. the Sickness Impact Profile [Bergner, Bobbitt, Carter, & Gibson, 1981]), no instrument had received widespread adoption, nor had any one measure been shown to be suitable for use across diverse populations and healthcare settings. As a result, the opportunity to describe differences in functioning and well-being for both the sick and the well was lost. Little was known about how patients suffering from various chronic medical or psychiatric conditions differed from each other in terms of functional status and well-being. The SF-36v2® Health Survey maintains comparability with the SF-36® Health Survey and, like its predecessor, provides a common metric to compare those patients with chronic health problems to those sampled from the general population (Ware, et al., 2007).

Justification

This study will attempt to use life satisfaction research as a tool in identifying various variables (exercise, ethnicity, gender, socioeconomic status, and retirement) that have the potential to increase one's level of life satisfaction and enhance the quality of life of older adults. The increasing population of older adults has generated a need to investigate this area so that we can be responsive to this growing segment of American society. The essential purpose of this study is to continue to this effort.

Purpose of the Study

The purpose of this educational research study was to investigate whether various variables (exercise, ethnicity, gender, socioeconomic status, and retirement) have an effect on the quality of life in individual's age 65 years of age and older. In a society where the population of those 65 years of age and older is expected to double in the next

25 years, it is imperative to find simple, low-risk, inexpensive interventions/treatments to offset preventable declines. This study will help obtain a better understanding of life satisfaction among that group.

Hypotheses

Ho1: There will be no significant difference in the life satisfaction scores (SF-36v2®) between exercisers and non-exercisers.

Ho2: There will be no significant difference in the life satisfaction scores (SF-36v2®) of different ethnic backgrounds.

Ho3: There will be no significant difference in the life satisfaction scores (SF-36v2®) between males and females.

Ho4: There will be no significant differences in the life satisfaction scores (SF-36v2®) among various income levels.

Ho5: There will be no significant differences in the life satisfaction scores (SF-36v2®) among retired individuals than those individuals who are not retired.

Assumptions

The following basic assumptions were made in regards to this study:

1. Participants can read and understand directions and items.
2. Respondents will answer accurately and honestly.
3. Physical, mental, and environmental factors will be unique to each subject.
4. The SF-36v2® instrument that will be used to measure life satisfaction, in the specified population, is a valid and reliable instrument.

5. Differences in socioeconomic status, ethnic background, social activity and exercise and education will provide a larger population to which results may be generalized.

Limitations

The following limitations were made in regards to this study:

1. Subjects will be volunteers.
2. The data that will be collected will be based on self-report by elderly individuals in the SecureHorizons® healthcare plan.

Delimitations

The following delimitations were made in regards to this study:

1. The age of the participants will be limited to male and female adults who are 65 years of age or older.
2. The subjects will be limited to the state of Oklahoma, specifically the Greater Oklahoma City area.
3. Subject's perception of quality of life will be measured by the SF-36v2® instrument.
4. Subjects are members of the SecureHorizons healthcare plan.

Definitions

Life satisfaction – refers to a sense of satisfaction with one's present and past lives.

Atchley (1980) defines life satisfaction in terms of inner satisfaction rather than

external adjustment. If an individual is happy and satisfied with one's life, he/she is adapting successfully to aging.

Quality of Life – Renwick and Brown's (1996) definition of quality of life will be used. Quality of life is defined as the degree to which a person enjoys the important possibilities of his or her life.

Depression – a mood state in which one feels sad, "blue," hopeless, or irritable along with the loss of interest or pleasure in one's usual activities or pastimes. Physical symptoms such as weight loss or weight gain, insomnia, fatigue, feelings of worthlessness, diminished ability to think, or recurrent thoughts of death accompany this mood (American Psychiatric Association, 2000).

CHAPTER II

REVIEW OF LITERATURE

Life Satisfaction Introduction

With the average life expectancy in the United States now at 77 years, quality of life in one's later years is increasingly important. Adults over age 65 who adopt a physically active lifestyle can substantially improve their health to get more out of life. Yet the majority of adults in this age group engage in no physical activity (Nied & Franklin, 2002; Rowe & Kahn, 1998; U.S. Bureau of Census, 2000; U.S. Department of Health and Human Services, Administration on Aging, 2006; NIH News, 2006; Experience Corps, 2007).

Kane and Kane (2000) define life satisfaction as, expectation and perceptions of outcomes for salient components of life such as social situations, relationships, self-worth, and finances across multiple and broad domains and longtime periods. Life satisfaction indicates the older person's happiness with his or her environment, existing conditions, activities, and lifestyle (Mishra, 1992). Rudinger and Thomae (1990) report that the life satisfaction perspective helps to explain why people with differing life styles and values can all successfully adapt to aging.

Literature on life satisfaction is widely available, due in part to the population growth of the elderly and heightened interest in the satisfaction that elderly feel regarding their life. These studies utilize life satisfaction scales to measure how happy or how satisfied the individual is with his/her life. Life satisfaction can be defined as a sense of satisfaction or pleasure about one's present and past life. One view of successful aging accepted by social gerontologists is the life satisfaction approach which maintains that people have aged successfully if they feel happy and satisfied with their present and past endeavors. Atchley (1980) sees this as a subjective approach that defines successful adaptation to aging in terms of inner satisfaction rather than external adjustment.

Life satisfaction, whether referred to as morale, contentment, or successful aging, is generally considered to be a subjective measure of well-being. According to Rudinger and Thomae (1990) the focus of subjective well-being has been to try to explain how people experience their lives, their cognitive assessment, emotional reaction and adjustment to life.

Rudinger and Thomae (1990) viewed life satisfaction as the most notable indicator of successful aging. They stated that according to the widely accepted early conceptualization, life satisfaction is "related to the main goal of life in old age: maintaining and/or restoring psychological well-being in a situation implying many biological, social, and psychological crisis and risks" (p. 269).

In a study conducted on nursing home elderly, Gould (1992) examined the relationship of social factors and functional health to well being in 115 elderly nursing home residents (aged 65-99 years). Subjects were administered the Life Satisfaction in the Elderly Scale and the Sheltered Care Environmental Scale, a 63-item yes/no scale that

focused on cohesion, conflict, independence, self-exploration, organization, resident influence, and physical comfort. Results revealed that functional health status and the social environmental variables of independence and cohesion were significantly related to life satisfaction.

In their study of “Life Satisfaction and Family Strengths of Older Couples,” Sanders and Walters (1985) examined the relationship between family interaction quality of married elderly and their offspring and life satisfaction of the elderly subjects. Information was obtained by means of mailed questionnaires completed by both spouses of 68 married, retired couples who were identified through churches, senior centers, congregate housing units, and personal contacts. Health status was the strongest predictor of life satisfaction followed by certain family strength factors and job prestige, respectively. Variance in life satisfaction of males was best explained by their perception of their health, family strengths, and job prestige.

Madigan, Mise and Maynard (1996) studied the “life satisfaction and level of activity in institutional and community settings.” The study examined the relationship between purposeful activity and life satisfaction of elderly males from five different living settings. Their participation in the study included completion of a modified version of the Elders Interest Activity Scale, the Life Satisfaction Index-Z and a form eliciting basic demographic information. Findings revealed that subjects in the five environments had similar levels of life satisfaction; differences, however, were found in the present level of activity in participation among the sample groups. Results indicated a significant positive but weak correlation between purposeful activity and life satisfaction.

The variables of income and health were identified as having a strong positive relationship to life satisfaction in research by Edwards and Klemmack (1973) and Medley (1980). Edwards and Klemmack (1973) examined three specific areas: 1) the relationships which presently exist between life satisfaction and relevant sociological factors; 2) whether these relationships are altered by utilizing control variables; and 3) the contribution of each identified independent variable in accounting for variance in life satisfaction. Twenty-two independent variables were grouped into six categories: 1) socioeconomic status; 2) background characteristics; 3) formal participation; 4) informal familial participation; 5) informal nonfamilial participation; and 6) health. Every category except informal familial participation was significantly related to life satisfaction. Income was identified as having the strongest relationship to life satisfaction followed by one's own perceived health. Medley (1980) conducted a cross-sectional study in which the focus was to examine life satisfaction across four stages of adult life, by sex. The four stages of life included: early adulthood: 22-34 years of age; early middle age: 34-44 years of age; late middle age: 45-64 years of age; and late adulthood: 65 years and older. The four independent variables consisted of 1) financial satisfaction; 2) health satisfaction; 3) standard of living; and 4) family life. Overall, the four variables accounted for 45% of the variation in life satisfaction for males and 46% of the variation in life satisfaction for females.

Additional studies have identified a variety of other variables which may be predictors of life satisfaction. Campbell (1976) found mental health could be indicated by life satisfaction. Osberg, McGinnis, DeJong and Seward (1987) found functional capacity to be a predictor of life satisfaction for disabled older adults. Baur and Okum

(1983) discovered self-perceived health, perceived adequacy of contact with friends, and locus of control to be significantly correlated with life satisfaction. Riddick's (1985) study found leisure activity to be the strongest predictor of life satisfaction followed by income, health problems and employment status.

In general, most studies on life satisfaction have found significant correlations between life satisfaction and health (Leigh, 1988). For example, Stolar, MacEntee, and Hill (1992) investigated the area of health and life satisfaction. They studied under what circumstances or conditions one could be satisfied with life and one's general health and, also, have decreases in functioning. They sampled from seniors that live in the community and excluded seniors that were institutionalized. Of the remaining 520 eligible respondents, 52% of the sample was male and 48% were female, with a mean age of 77.

Stolar, MacEntee, and Hill (1992) divided life satisfaction into three groups: optimists (very satisfactory), reconciled (average satisfaction), and disappointed (not satisfactory). Results indicated that some health problems were significantly related to current levels of life satisfaction. In this study, the disappointed elders had the most health complaints, and the reconciled had more complaints than the optimists did. Other findings of this study showed that most of the functional disorders (problems that interfere with daily functioning and interacting with other people) are negatively associated with life satisfaction. Examples of functional disorders are sleep problems, nervousness, being unsteady on one's feet and difficulty dressing and bathing.

For the elderly, as for all adults, the quality of life is often judged on the basis of the status of several traits or conditions. Payne and Hahn (1995) believed that "life will

be described by many elderly as being good if they have had no significant declines in the majority of the following areas: (a) health, (b) social status, (c) economic status, (d) marital status, (e) living condition, (f) educational level, and (g) sexual intimacy (1995).”

Health is determined to be the strongest predictor of life satisfaction by Larson (1978). Spreitzer and Snyder (1974) also identified self-assessed health as one of the strongest predictors of life satisfaction. Edwards and Klemmack (1973) researched the relationship of life satisfaction to twenty-two independent variables grouped into six major categories including: socioeconomic status, background characteristics, formal participation, informal familial participation, informal nonfamilial participation and health. Perceived health is identified as having a substantial positive relationship to life satisfaction. Baur and Okum’s (1983), longitudinal study of older adult males and females found that self-perceived health predicted life satisfaction scores. Mancini’s (1980-81) study also showed a relationship between health and life satisfaction ($r = .33, p > .01$).

Park and Vandenberg (1994) found physical health and life satisfaction in the elderly to be positively correlated. Those elderly who tended to be physically disabled seemed to be less satisfied with life. Although these findings of a positive correlation between good health and satisfaction with life are consistently reported throughout the literature, there is significant proportion of the elderly population for whom these findings do not hold true. Park and Vandenberg (1994) reported that many elderly individuals who perceived themselves to be in poor physical health nonetheless expressed satisfaction with life.

Gender

Numerous studies have explored the relationship of life satisfaction and gender. Although much of the literature suggests that both male and female older adults experience comparable degrees of life satisfaction (Collette, 1984; Liang, 1982; Riddick, 1985; Shmotkin, 1990), contradictory findings indicate that older males experience greater life satisfaction than females (Atchely, 1980; Spreitzer & Snyder, 1974) while others have found no direct relationship between life satisfaction and gender (Edwards & Klemmack, 1973).

Liang (1982) examined gender differences in terms of the causal process by which life satisfaction is determined. Liang suggested that life satisfaction was determined by socioeconomic status, health, financial satisfaction, objective social interaction and subjective social integration for both males and females. He determined that no significant differences exist between males and females in life satisfaction scores and that it seems plausible that the same causal mechanism is operating among the males as well as the females in accounting for life satisfaction. Collette (1984) supported the findings of Liang (1982). In a study of males and females, 60 years of age and older, gender differences in life satisfaction and its determinants were examined. Collette (1984) found no appreciable differences between sexes in the process determining morale.

Research by Riddick (1985) also suggests that males and females experience similar degrees of life satisfaction. This study examined the relationship between five variables to life satisfaction in older adult males and females. The five variables include:

1) leisure activities; 2) employment status; 3) health problems; 4) income; and 5) transportation barriers. The coefficient of determination for the set of five variables accounted for 23% of variance in life satisfaction for males and approximately 25% of the variance for females. Shmotkin (1990) also studied subjective well-being as a function of age and gender and found no significant gender differences while exploring life satisfaction in an Israeli population.

Gove, Ortega and Style (2001) conducted research on how self-concept and self-evaluation increases among older adults and compared two theories of aging and self-concept. The first is that one's sense of self will largely depend on one's social role. This theory hold that roles associated with age and gender are closely tied to the norms of society and that if one fulfills that role, they will have a meaningful life. According to this theory, the elderly would have a difficult time feeling successful in their aging since many roles are removed from them. The second theory of aging and self-concept held by life-span developmental psychologists view human development as continuously unfolding. Findings from this study reveal that although there were modest gender differences in these age relationships, overall, women and men appear to experience aging in similar ways.

Alternate findings suggest that males experience greater levels of life satisfaction than females in a study by Spreitzer & Snyder (1974). The results indicated that females experience a higher level of satisfaction from age 18-65, but then this level declined. Spreitzer & Snyder (1974) found that men tended to reach their high point in terms of life satisfaction during the very same period (age 65 to 70) when women reached their low

point. Among the males in the age category 65-70, the men who were still working full-time were more likely to report a high degree of life satisfaction than were retired males.

Feinson (1991) reported that gender plays an important role in beliefs about aging. Part of why this role is so important is that the majority of the older population is women. She reported that in community surveys, women report higher rates of psychological impairment than men. Part of this statistic seems to be due to a number of conditions prevalent among older women such as a substantially lower income than men, higher poverty rates, higher percentage of widows, and social isolation.

Hooyman and Kiyak (1999) agreed with Feinson's findings about aging and gender. Women are the fastest growing segment of the elderly population, yet the elderly population that has been primarily studied has been men. This is unfortunate since the processes of aging and quality of life are often very difficult for men and women. Most of the reasons put forth are sociological differences such as income, health and social status (Hooyman & Kiyak, 1999).

Women in their later years are more impoverished than men. This is especially true when women become widows and are dependent on scarce social security benefits and on incomes that they bring in themselves. Women who spent their lives caring for children, spouses, or older relatives face poverty and inadequate health care and have little chance to regain many resources. In spite of all this adversity, many women show resilience and rely on their friendships and intimate relationships to support them through hard times (Hooyman & Kiyak, 1999).

Hong, Bianca and Bollington (1993) studied "self-esteem: the effects of life-satisfaction, sex, and age." A self-reported questionnaire was administered to 1726

subjects to examine the effects of life satisfaction, gender, and age on self-esteem. Statistical analysis revealed a higher self-esteem for men than women, amongst older subjects, and for those with high life satisfaction.

Lee, Willetts and Seccombe (1998) discussed some interesting findings related to widowhood and psychological well-being. Widowhood seems to affect different people differently, and gender difference is prominent among the possibilities. Although findings have been inconsistent among the studies done on this issue, there are still reasons to expect widowhood to be different and more difficult psychologically for each gender. Lee, Willetts and Seccombe (1998) discussed how widowhood has been suggested to be more difficult for women psychologically because of the greater financial stress after losing a partner, increases their depression and lowers life satisfaction. However, other differences are likely to produce higher depression among men. Some of these are increased health problems men exhibit when widowed, as well as greater difficulty developing social networks (Rubbenstein, Lubben & Mintzner, 1994).

Fitzpatrick (1998) reviewed some literature in the area of bereavement and gender and found that widowers (men) have a higher mortality and suicide rate than widows, and that men experience higher levels of psychological distress. Much of why some people, regardless of gender, have greater life satisfaction than others given similar circumstances has to do with individual personality style, which is discussed later in the chapter.

Ethnicity

Riddick and Stewart (1994) reported that life satisfaction was affected by perceived health and the amount of leisure planning the older adults put into their activities. The subjects in this study were 618 retired females, age 65 and older. The racial composition of this group was 20.6% African American and 79.4% Caucasian. The authors measured differences in life satisfaction and reported that the mean score for older African American females was lower than the mean score for older Caucasian females. When they focused on the factors that influenced life satisfaction they found the important variables were leisure activity participation, perceived health, income, and leisure repertoire planning. The strongest predictor of life satisfaction for older African Americans was perceived health with leisure repertoire planning being the second strongest predictor. They reported that the other variables had no impact on older African Americans' level of life satisfaction.

However, there was a slight difference in the findings for older Caucasians. While the strongest predictor of life satisfaction for both groups was perceived health, the second predictor for Caucasians was leisure activity participation and leisure repertoire planning. Older Caucasian people also appeared not to be impacted significantly by income. The data from this study was obtained via face-to-face, 2-hour interviews that focused on life a life satisfaction index. Questions related to leisure activity and health was directly asked of the participants. The findings of Riddick and Stewart (1994) supported the idea that both groups were affected by the way they saw themselves. However, they stated that the Caucasian group was the only group that was directly affected by their leisure activity.

Krause (1994) studied race differences in life satisfaction among aged men and women. He explored reasons why race differences emerge in examinations of life satisfaction among older adults retired from the work force. A conceptual model was developed and tested with data from 192 older black and 964 older white individuals with a mean age of 72.3 years. Findings from this nationwide survey revealed that older black subjects had lower levels of life satisfaction than did white elderly subjects. This difference may be attributed to the interplay between past aspirations and plans and present financial circumstances, as assessed by current financial strain and economic dependence on family members.

In an examination of the empirical literature looking at subjective well-being among older African American adults, Chatter's (1988) and Jackson's (1988) findings supported the idea that there is a connection between older African Americans' social interaction and strong levels of subjective well-being. Chatter reported that older African Americans thought very highly of their own aging population and looked upon them with respect. Chatter concluded that African Americans held more positive attitudes towards their elderly in many ways. They seemed to interact more with the older population. Older African Americans maintained roles in the family structure. The author suggested that it was important to make sure that there were sufficient numbers and that the variables were equal in both groups. In her investigation Chatter also examined the relationship between activity level and subjective well-being. She confirmed that older African Americans generally have higher rates of involvement in social and religious activities than Caucasians.

Coke (1992) interviewed 166 older African American adults between the ages of 65 and 88. There were 87 male participants and 79 female participants. A structured interview was used to obtain the information needed to determine the subjects' level of satisfaction. The results of this study were that one predictor of life satisfaction for older blacks were their participation in church activities. Another significant predictor of life satisfaction was the amount of time they spent with their family. Among this group, self-rated religiosity was related to life satisfaction.

In contrast to Chatter's findings that older African Americans tended to have high levels of life satisfaction, Krause (1997) found the opposite to have been the case. He studies 1,286 older adults, of whom 192 were African Americans. He found that older African Americans had lower levels of life satisfaction than older Caucasians. He concluded that social class, not race, may have been responsible for his findings.

Income

Much of the literature supports the theory that economic status is an important variable related to life satisfaction. Soldo & Agree (1988) stated that certain categories of older people in the United States are disproportionately poor. These categories include unmarried women, minorities, and the physically disabled. Riddick (1985) hypothesized that income has a direct positive effect on life satisfaction. The study found that greater life satisfaction occurs with increased income.

Happiness has been found to correlate positively with education and income (Doyle & Forehand, 1984; Usui, Keil & Durig 1985), however, some studies have not

found this to be true. Satisfaction with housing, religion, exercise (Tappe & Duda, 1988), availability of transportation, remaining dependents (Roos & Havens, 1991), control over daily activities (Reker and Paulsen, 1997) and employment have all been shown to be positively related to life satisfaction.

Larson (1978) reports that socioeconomic status which includes the components of income, occupational status and education have also been indentified as being related to subjective well-being. Spreitzer and Snyder's (1974) study indentified financial satisfaction as one of the strongest predictors of life satisfaction for the older adult group (age 65 and older). Edwards and Klemmack (1973) support this finding. Their study found that the best predictors of life satisfaction are socioeconomic status, perceived health status and informal participation with nonkinsman. Several other studies confirm a positive relationship between financial adequacy and life satisfaction (Riddick, 1985; Usui, Keil, & Durig, 1985; Medley, 1980; Neugarten, Havighurst & Tobin, 1961).

Dillard, Campbell and Chisholm (1984) examined the relationship of life satisfaction with such characteristics as sex, age, and health status, level of education, marital status, and income status. Eighty-two male and one hundred ninety-nine female elderly persons (mean age 71.8 years) completed a Life Satisfaction Index. Analysis showed that life satisfaction was significantly related to the subjects' education level, income and health status. Data suggest that aging has less impact on life satisfaction than other selected personal characteristics.

Consideration of the potential benefits of providing support in addition to receiving support reveals that the provision of support by older adults is associated with positive affect, life satisfaction, self-appraisals and physical and mental health (Keyes,

2002; Kincade et al., 1996). A recent study looking at the exchange of emotional support and psychological well-being highlighted these potential associations (Krause & Shaw, 2000). However, Krause and Shaw (2000) suggested that among the support providers, the salutary benefits might wane over time, a trend most evident in low-income elders in particular (Krause & Shaw, 2000). The authors tentatively hypothesize that elders with low socio-economic status do not possess adequate “social support skills” to being about positive changes in the circumstances of the support recipients who likely have a similar socio-economic status (Krause & Shaw, 2000).

In this study, Krause and Shaw (2000) conducted a series of regression analyses with data gathered in three waves over a period of seven years. Socio-economic status was measured through the proxy variable education (years of school completed, 4, 8, 12, or 16). Findings indicated that the provision of support was strongly associated with high self-esteem scores for Wave 1 but that its impact diminished by half for Wave 2 and was no longer a statistically significant predictor of self-esteem by Wave 3. At Wave 2, socio-economic status emerged as a significant predictor of self-esteem. For elders with education through the fourth grade, the provision of support had a negative effect on self-esteem. The additive effect was neutral for those with eighth grade educations, slightly positive for those who completed high school, and strongly positive for those with a college (16 year) education. When examined for the sample as a whole, findings indicated that the provision of social support as a positive, though not significant, relationship to self-esteem when measured as an additive effect. In other words, the self-esteem benefits for providing support appear to fade over time for all elders.

Krause and Shaw (2000) conducted additional analyses to address a plausible alternative explanation for the changes in self-esteem: that elders with low socio-economic status provided less support over time, which, in turn negatively influenced their self-esteem. Their findings indicated that the impact of changes in amount of support provided were no longer stronger for elders with low socio-economic status than they were for others. Rival explanations for the weak positive over all effects of providing support such as changes in the environment, shifts in social network composition, or the average relationship tenure of elders with low-socioeconomic status were not explained. In particular, health was not included in the model though previous research indicates that low socio-economic status is associated with health declines in elders (Matthias, Martirosian, Atchison, Lubben, & Schweitzer, 1998). Health declines could diminish overall self-esteem while not necessarily preventing the provision of emotional support.

Social Activity

Much research in the past few decades has focused on the relationship of the external variable of social activity to life satisfaction in older adults. A strong, positive relationship has been revealed in the literature in several studies (Neugarten, Havighurst & Tobin, 1961; Atchely, 1980; Larson, 1978; Riddick, 1985; Tinsley, Teaff, Colbs & Kaufman, 1985; Berkman, 1995; Berkman, Glass, Brissette, & Seeman, 2000; Seeman, 2000; Davis & Swan, 1999; Walen & Lochman, 2000).

The influence of social and recreation programs and activities on life satisfaction has become more prevalent. Studies indicate that participation in various types of social/recreation activities and continued or increased participation in activities during retirement years significantly enhances “successful aging” and increased life satisfaction (Palmore & Luikart, 1977; Larson, 1978; Longino & Kart, 1982; Ragheb & Griffith, 1982). This is of particular importance for older adults whose physical abilities are becoming limited by changes in health. Zimmer, Hickey and Searle (1995) discovered that arthritis sufferers who maintain higher levels of participation, particularly in activities which are social in nature, are less likely to experience a decline in well-being. Some of this research supports the idea that leisure needs are satisfied through participation in various leisure activities (Neugarten, Havighurst, & Tobin, 1961; Atchley, 1980).

Lemon and colleagues (1972) theorized that the more activities in which an older adult engaged, the higher his or her sense of life satisfaction. Conversely, the lower the adult’s activity level, the lower his or her level of life satisfaction. Their theory seemed to be based on assumptions about the relationships among role loss, role supports, and life satisfaction. They reported that the motivation to maintain activities for the older person was not to meet their functional needs but to maintain the need for social support and self-structure, which was assumed to lead the elders to optimal life satisfaction. Activities were classified as informal, formal and solitary. Lemon, Bengston, and Peterson (1972) also hypothesized that all three types of activities would be associated with life satisfaction.

Involvement in social activity is an important factor in life satisfaction in the elderly. Many life satisfaction studies have given social activities prime importance. Park and Vandenberg (1994) break this into two groups: formal and informal social activities. Formal activity was defined as participation in groups that have an established agenda and informal activity involves engagement in unstructured activities with family and friends. Park and Vandenberg continue to say that engagement in formal activity has been found to be correlated with high life satisfaction in the elderly, although there have been notable exceptions. Participants in informal activities have been found to be associated with high morale. The presence of a close friend, women in whom one can confide feelings and problems, is an important factor in the well being of the elderly.

In agreement with Park and Vandenberg's study, O'Connor (1995) reported that involvement with friends is more important to life satisfaction than family relations. A measure of life satisfaction was completed by independently living older adults. They were also asked to describe various aspects of their relationships with their children and friends. The results supported the idea that friendships were most important in determining life satisfaction. He felt that this may be due to family relations being based on feelings of obligation, which reduce closeness and relationship quality, whereas relationships with friends are believed to be voluntary and positive.

Sviden and Borell (1998) conducted a study on the experience of being occupied at a community-based activity center and its' effect on the health and well being of the elderly. Interviews were conducted with nine elderly persons who attended activity centers. The interviews were analyzed by the empirical phenomenological, psychological method (EPP method). The constituents that describe the phenomenon of the experience

of being occupied and spending time at a community-based center were: (a) the center was a safe and familiar setting to attend on a regular basis (b) doing was absorbing and gave pleasure (c) it was a challenge to be able to accomplish something (d) and the activity center was a meeting place where doing is shared with others. The study suggested that the activity center is an important experience as a meeting place where the social component and the engaging in an occupation are essential for the experience and contribute to the health and well-being of the individual.

Baltes and Baltes (1990) theorized that the ratio of personal gains to losses, in such areas as activity level of health, became more unfavorable as people aged. As people aged, many began to recognize that change was inevitable. The adaptive response to those changes was to find ways of coping utilizing the methods that the researchers termed selection, optimization, and compensation. They believed that an understanding of successful aging needed to take into account how older adults adapted to change and learned to modify their activities appropriately.

Previous research leads to the expectation that older people who spend a higher percentage of their time actively engaged in a variety of activities will experience more satisfaction with life (Chatter, 1988; Coke, 1992; Herzog, Franks, Markus & Holmberg, 1998; Hoyt, Kaiser, Peters & Babchuk, 1980; Riddick & Stewart, 1994). Havighurst and Neugarten (1969) theorized that older people who managed to keep active and socially involved, despite aging, felt better about themselves later in life. However, they also recognized, and integrated into their thinking, a view in opposition to activity theory that they called disengagement theory. They identified disengagement as a realization that an older person came to when he or she voluntarily and gracefully disengaged and

becomes satisfied with fewer activities. Because of this withdrawal from some activities and social connections, the older person who disengaged accepted his or her role losses and found substitute roles in which to find satisfaction.

Madigan, Mise and Mynard (1996) studied life satisfaction and level of activity of male elderly in institutional and community settings. They examined the relationship between purposeful activity and life satisfaction of elderly males from five different living settings. Their participation in the study included the completion of a modified version of the Elders Interest Activity Scale, Life Satisfaction Index Z and a form eliciting basic demographic information. Findings revealed that subjects in the five environments had similar levels of life satisfaction; difference, however were found in the present level of activity participation among the sample group. Results indicated a significant positive weak correlation between purposeful activity and life satisfaction.

The research suggests that the impact of social programs on life satisfaction of older adults is strong as the literature indicates that participation in various leisure activities helps to satisfy or fulfill many psychological needs, as well as many social and physical needs. In general, the literature seems to indicate that activity is more frequently associated with good life adjustment in later life than is disengagement. Various forms of activity therapy have been advocated by researchers.

Social Support

Many older adults have a vested interest in continuing their involvement in society after reaching retirement age by staying productive and socially connected. They

are likely to seek meaningful post-retirement and productive leisure activities outside of the work environment in which to spend their time.

Social support is defined as the perceived availability of support, affection, and instrumental aid from significant social partners, primarily family members and close friends (Shumaker & Hill, 1991), as well as neighbors and co-workers (Cantor, 1979). The benefit of social support in relation to health and well-being may stem from a reduction in the psychological impact of stress, although investigators have also reported direct benefits of support, regardless of stress (Cohen & Wills, 1985).

Social support is a critical determinant of health (Barker & Pistang, 2002; Krause, 1997; Oxman & Hull, 1997). Social support dynamics encompass the actual help given to and received by older adults and key elements shaping elders' perceptions of social support. Functional support, sometimes called enacted support, refers to actual assistance. It is frequently described in terms of type, including: 1) tangible or instrumental help (e.g. help performing daily activities and household chores),; 2) emotional support (e.g. showing empathy and caring), and 3) informational assistance (e.g. raising awareness about an issue or service and reporting news) (Antonucci, 1990; Krause & Markides, 1990).

There is an extensive literature on the relationship between social relations and health (Berkman, 1995; Berkman, Glass, Brissette, & Seeman, 2000; Seeman, 2000; Davis & Swan, 1999; Walen & Lochman, 2000). Social integration is defined as account of formal and informal social ties. It is a structural measure including indicators of affiliation with, and connection to, family, friends, and social and religious groups (Berkman, 1995). Social integration is theorized to be related to better health behaviors

and practices because of the sense of obligation generated through connections to close and diffuse individuals and social groups (Berkman, Glass, Brissette, & Seeman, 2000).

Close friendships are known to be extremely important to the well-being of elderly people. Social support and elder well-being have emerged as priorities among the research agenda of the National Institute on Aging (2000) and the Office of Research on Women's Health at the National Institutes of Health (US Department of Health and Human Services [DHHS], 1999). Gerontological scholars have examined the connections between various aspects of social support such as emotional help, the belief that support is available if needed, and the sense that one is integrated into a social network, with overall well-being (Krause & Shaw, 2000; Morrow-Howell, 2000; Lubben & Gironde, 2003).

Bowling, Faquhar and Grundy (1996) studied life satisfaction and associations with social network and support variables in three samples of elderly people. They examined the social network type, health status, and their effects on life satisfaction among 1,415 elderly people (aged 65+ years) from two communities (urban versus semi-rural) who responded to survey questionnaires. The percentage of the total variance in overall life satisfaction that were explained by the model ranged from 22 to 33% between the two samples. The most variation was explained among urban-dwellers aged 85 years of age and older. Although most of the variance was not explained, health status was a more powerful predictor of life satisfaction among respondents living in the urban, but not the semi-rural area.

Structural measures such as frequency of social contacts and functional indicators such as quality of social network and social support are central aspects of social networks

(Cohen, Gottlieb, & Underwood, 2001). Research indicates that although the frequency of social contacts decreases with age (Due, Holstein, Lund, Modvig, & Avlund, 1999; Lang & Carstensen, 1994), satisfaction with the social network tends to increase (Lansford, Sherman & Antonucci, 1998). A meta-analysis has demonstrated that quality of the social network is an important factor for life satisfaction (Pinquart & Sorensen, 2000). Some studies, however, suggest that quantity of the network is more important than quality (Bowling, 1990). Low reported social support contributes to lower life satisfaction and increases depressive symptoms in older adult populations (Newsom & Schulz, 1996).

Boerner and Reinhardt (2003), in their study on life satisfaction of the elderly person who needs assistance with activities of daily living, found that physical disabilities do not necessarily mean that quality of life is diminished. The study revealed those activities involving socialization and a sense of mental and physical control count more than total self-sufficiency.

Rubenstein, Lubben, and Mintzer (1994) supported the idea that social relations were frequently identified as among the basic needs of the elderly. Negative consequences arise from lack of good social interaction. Some of these consequences include major depression, suicide, poor nutrition, and a decrease in immunological function.

The number of friends older adults have can vary greatly depending on their circumstances. Adams and Blieszner (1995) reported that nursing home residents tend to have fewer friends than those dwelling in the community. It is important to remember that maintaining friendships outside the nursing home or residence can be difficult, and

therefore the friendships that are formed may be forced or less than ideal. These relationships, however, are crucial to aging well. This is especially true when individuals experience increased needs, for example, when daily activities become more difficult to handle.

Interestingly, Lang and Baltes (1997) reported that at the same time that increased social support is desired, more reliance on social partners may actually pose a threat to one's autonomy. Lang and Baltes stated that the presence of others in everyday life may increase the likelihood of overprotection or unpleasant emotions. Moreover, social contacts are not always positive but may entail negative exchanges such as criticism and conflict, or even violence. Thus, being with others involves both cost and benefit (Lang & Baltes, 1997).

Adams and Blieszner (1995) agreed with these findings and reported that not all social interactions and personal relationships are good ones, and may not affect the older individual positively. They felt that merely having relationships is not an indication that someone is aging well, but that it is necessary to deconstruct friendship and family relationships. According to Adams and Blieszner (1995) aging well had much to do with the older adults' need to develop relationships with people who help them in ways they need and want help. To feel dependent is worse for their aging process than receiving no help at all. Family and friends of older individuals can help with both emotional support and with their daily functioning, with financial issues, by buffering stress, helping with chores, etc.

On the other hand, Jones and Vaughan (1990) discussed the idea that friendship always contributes to well-being by providing supportive exchanges between two people

who express mutual fondness. These exchanges often include the give and take of intimacy, assistance and emotional support.

In comparison with elders who have no or little support and small networks, older adults who receive moderate amounts of social support and those who have abundant support and large support networks have healthier outcomes on standardized measures of depression and mental distress. This positive association is also evident in elders who report believing that social support is available (Liang, Krasue & Bennett, 2001; Oxman & Hull, 2001; Stolar, MacEntee & Hill, 1993). Conversely, the perception that support is not available is linked with poor mental health outcomes (Dean, Kolody & Wood, 1990; DuPertuis, Aldwin, & Bosse, 2001). For example, little or no anticipated support of any type is particularly disadvantageous when an elder believes that help would not be available from a family member (Dean, Kolody & Wood, 1990; DuPertuis, Aldwin, & Bosse, 2001). The lack of sufficient social support in terms of social network size, social contact, and unmet needs (i.e. low satisfaction), is associated with functional decline, loneliness, and depression (Hurdle, 2001; Matthias, Martirosian, Atchison, Lubben, & Schweitzer, 1998; Wenger, 1997).

Older adults provide many types of support and do so in a variety of ways (Kincade, et al., 1996; Krause & Borawski-Clark, 1994). With data from a nationally representative sample of community dwelling (non-institutionalized) Medicare beneficiaries, Kincade and colleagues (1996) report that nearly one-half (40%) of people over age sixty-five (11 million) provide emotional support to others and 8.5 million older adults provide care for another adult. Evidence exists that elders do provide social support to their network members. Motivations for doing so include a sense of purpose,

altruism, social norms and obligations, reciprocation of support, and the maintenance of a life-long pattern of helping (Hirdes & Strain, 1995; Kincade et al., 1996).

Personality Style

Personality styles have great influence on how we cope with and adapt to the changes of aging (Hooyman & Kiyak, 1999). According to Erikson, Erikson, and Kivnick (1986), the elderly person in the last stage of life is confronted with the task of ego integrity verses despair. Erikson's developmental theory states that life satisfaction is achieved through the task of developing perspectives on one's life, dealing with one's mortality, cultivating relationships and sharing their experiences with the youth (Erikson, Erikson, Kivnick, 1986).

Hong, Bianca and Bollington (1993), refer to life satisfaction refers as "an individual's personal judgment of well-being and quality of life based on his or her own chosen criteria" (p. 547). The researchers examined the relationship of life satisfaction with seven variables and assessed their power in predicting life satisfaction. Six of these variables had to do with personality: psychological reactance (which they defined as the motivational state brought about when freedom is threatened or constrained), self-esteem (defined as a personal judgment of general worth), religiosity (refers to the importance of religion and interest in religion), trait anger (defined as the internalized predisposition to respond with anger across a variety of situations), locus of control (defined as an expectation that behavior and events are controlled by internal or external forces), and depression. They used age as their seventh variable. Data were collected from a sample

of 1,049 adults residing in Australia. The participants were 818 men and 904 women with ages ranging from 17 to 40, with a mean age of 25. The results of this study indicated that the most powerful predictors of satisfaction with life were self-esteem.

The second best predictor was depression. As is now well recorded in the literature, people scoring high on depression tended to be less satisfied with life than those who scored low on this variable. Hong, Bianca and Bollington (1993) pointed out that by reducing depression, the level of life satisfaction can increase, and that the two variables seem to work in either direction. Interestingly, people with internal locus of control were more likely to be satisfied with their lives. Trait anger made a significant contribution toward life satisfaction as well. Religiosity was not dominant; however, it did increase prediction of life satisfaction slightly. The positive relationship between religiosity and life satisfaction suggested that people high in religiosity are likely to be more satisfied with life than those low in religiosity. This study found that age was insignificant in predicting life satisfaction when combined with other predictors. The authors discussed this in terms of the possible shared variance between age and self-esteem. However, in independent analysis, age was significantly positively correlated with life satisfaction, implying that life satisfaction increases with age. This finding is inconsistent with the majority of evidence in the literature which Schachter-Shalomi (1995) discusses as “a process of gradually increasing personal diminishment and disengagement from life” (p. 5).

Hong, Bianca and Bollington (1993) discuss this inconsistency with the majority of the literature and attribute this to the notion that as people age, their “achievements increase and their aspirations decline until the gap between the two eventually closes.

Thus because satisfaction is greater when achievements are close to aspiration, older persons are bound to be more satisfied with their lives” (pg. 556). Although individual personality style may play a role in life satisfaction, most people would agree that remaining social creatures throughout our lives is the key to satisfaction in later years.

Depression

The benefits to psychological well-being have been well documented. In particular, exercise is thought to reduce depression (Bybee, Zigler, Berlinger, & Merisca, 1996; Craft & Landers, 1998; Rief & Hermanutz, 1996; Steptoe, Lipsey & Wardle, 1998), and stress (Bundy, Carroll, Wallace, & Nagle, 1998; Kerr & VandenWollenberg, 1997; Rodgers & Gauvin, 1998) and to heighten self-esteem (Asci, Kim, & Kosar, 1998; DuCharme, Bray, & Brawley, 1998) and general health (Daley & Parfitt, 1996; Szabo, Mesko, Caputo, & Gill, 1998).

In addition to the numerous effects it has on the body, exercise also positively affects the mind. Aerobic exercise has repeatedly been negatively associated with cognitive decline and positively associated with healthy cognitive aging (Lytle, Vanderbilt, Dodge, & Ganguli, 2004; Deary, Whalley, Batty, & Star, 2006). Depression is a complex illness that is an increasing concern.

A major depressive episode is defined as a period of “at least 2 weeks of depressed mood or loss of interest accompanied by at least four additional symptoms of depression” (American Psychiatric Association (APA), 2000, p. 345). Depression is a natural response for many individuals when they have experienced intense stress and

anxiety in their lives, such as (a) the death of a mate, (b) the loss of a sense of self-worth, (c) relinquishment of cherished possessions, or (d) the loss of one's physical fitness (Spitzer, Gibbon, Skodol, Williams, & First, 1994). Older adults encounter these and other losses with greater frequency than at earlier times in their lives.

Many individuals exhibiting symptoms of depression tend to have very limited physical activity, and inactivity in older adults in reduced levels of endurance, strength, balance, and flexibility. (National Institute on Aging (NIA), 2003). Regular exercise, both aerobic and resistance training, is associated with decreased stress levels and increased levels of neurochemicals, such as endorphins, which serve to enhance mood changes and to reduce symptoms of depression in adults even into their 90s (NIA, 2003). Research has demonstrated that regular physical activity is associated with general feelings of well being and the reduced symptoms of anxiety and depression. Also, physical exercise is found to be as effective as psychotherapy in treating some major depressive symptoms (Morgan & O'Connor, 1988). Research by Moore and associates (1998) presented results showing that exercise can be as beneficial as pharmacotherapy and psychotherapy treatment of depressed older adults (Moore & Blumenthal, 1998).

Depression is the second most common mental disorder in long-term care settings, after dementia (Craven, as cited in Best-Martini & Botenhagen-DiGenova, 2003). The U.S. Surgeon General's Report on Mental Health indicates that for community-dwelling elders age sixty-five and older, between 8-20% experience depression (Butler, Lewis & Sunderland, 1998; DHHS, 1999). For older adults living in long term care settings, depression prevalence rates range from 15-25% of the population

(Blazer, 1982; DHHS, 1999). Losses associated with aging, such as declining health and physical and social changes, can contribute to major depression.

Strength training exercise is gaining recognition, among those in the healthcare profession for older adults, as an excellent intervention for all types of depression. While there is no definitive research explaining how resistance training affects one's mood, there is evidence showing a link between exercise and neurotransmitters in the brain. There is also research evidence indicating that as individuals increase their muscle mass they tend to have greater endurance, strength, and better balance (Drowatzky & Drowatzky, 1999), which can result in enhanced feelings of vigor, self-confidence, and well-being. Older adults in this country tend to become more sedentary as they age, and physically inactive people have a tendency to become increasingly frail, less healthy and, thus, more susceptible to depression (Nied & Franklin, 2002).

Researchers at Harvard Medical School conducted a study to address the benefit of resistance exercises in improving depressive symptoms for older adults. Thirty-two volunteers (60 to 84 years) measured as depressed (mild to moderate) were randomly placed in one of two groups, a strength exercise group or a health instruction group. After 10 weeks, 82% of the strength exercisers no longer met the depression criteria, compared to 40% of the health class participants (Singh, Clements, & Fiatarone, 1997).

SF36v2® Health Survey Research

The SF-36v2® Health Survey includes one favorably scored scale measuring each of eight health domains: physical functioning, role participation with physical health

problems (role-physical), bodily pain, general health, vitality, social functioning, roles participation with emotional health problems (role-emotional), and mental health. The SF-36v2® Health Survey was developed to be a brief, broad, generic measure of eight domains, or aspects, of health status that are considered important in describing and monitoring individuals suffering from a disease or illness (Ware, et al., 2007). Although primarily intended for use in population studies, the SF-36v2® Health Survey has proven valuable to physicians and other healthcare providers as a means of evaluating and monitoring individuals seeking treatment for physical or mental health problems. Unlike standard means of assessing health status (e.g., physician examinations, lab tests, mental status examinations), it provides a broad overview of a patient's health status and its effects on his or her functioning. Its incorporation into a standard procedure is facilitated by the fact that it is a brief, patient self-report measure.

Health Domain Scales

Physical Functioning (PF)

The content of the 10-item PF scale reflects the importance of distinct aspects of physical functioning and the necessity of sampling a range of severe and minor physical limitations. Items represent levels and kinds of limitations between the extremes of physical activities, including lifting and carrying groceries; climbing stairs; bending, kneeling, or stooping; and walking moderate distances. One self-care item is included to represent limitations in self-care activities. The PF items capture both the presence and extent of physical limitations using a three-level response continuum. Low scores indicate significant limitations in performing physical activities while high scores reflect little or no such limitations.

Role-Physical (RP)

The four-item RP scale covers an array of physical health-related role limitations, including (a) limitations in the kind of work or other usual activities, (b) reductions in the amount of time spent on work or other usual activities, (c) difficulty performing work or other usual activities, and (d) accomplishing less. Low scores on the RP scale reflect problems with work or other activities as a result of physical problems. High scores indicate little or no problems with work or other daily activities.

Bodily Pain (BP)

The BP scale comprises two items: one pertaining to the intensity of bodily pain and one measuring the extent of interference with normal work activities due to pain. Low scores indicate high levels of pain that impact normal activities while high scores indicate no pain and no impact on normal activities.

General Health (GH)

The GH scale consists of five items, including a rating of health (excellent to poor) and four items addressing the respondent's views and expectations of his or her health. Low scores indicate evaluation of general health as poor and likely to get worse. High scores indicate that the respondent evaluates his or her health most favorably.

Vitality (VT)

This four-item measure of vitality (i.e., energy level and fatigue) was developed to capture differences in subjective well-being. Low scores indicate feelings of tiredness and being worn out. High scores indicate feeling full of energy all or most of the time.

Social Functioning (SF)

This two-item scale assesses health-related effects on quantity and quality of social activities, asking specifically about the impact of either physical or emotional problems on social activities. The degree to which physical and emotional problems interfere with normal social activities increases with decreasing SF scores. The lowest score is related to extreme or frequent interference with normal social activities due to physical and emotional problems; the highest score indicates that the individual performs normal social activities without interference from physical or emotional problems.

Role-Emotional (RE)

The three-item RE scale assesses mental health-related role limitations in terms of (a) time spent in work or other usual activities, (b) amount of work or activities accomplished, and (c) the care with which work or activities were performed. Low scores on the scale reflect problems with work or other activities as a result of emotional problems. High scores reflect no limitations due to emotional problems.

Mental Health (MH)

The five-item MH scale includes one or more items from each of four major mental health dimensions (anxiety, depression, loss of behavioral/emotional control, and psychological well-being). Low scores on MH are indicative of frequent feelings of nervousness and depression while high scores indicate feelings of peace, happiness, and calm all or most of the time.

Reported Health Transition (HT)

A general health item asks respondents to rate the amount of change they experience in their health in general over a 1-yr period on the standard (4 wk) form and over a 1-wk period on the acute (1 wk) form. This item is not used to score any of the eight multi-

item health domain scales or component summary measures; however, it does provide useful information about perceived changes in health status that occurred during the year (on the standard form) or week (on the acute form) prior to administration of the survey.

When administered at the beginning of an episode of care, the SF-36v2® Health Survey can be used to help identify aspects of the patient's health (e.g., functional impairment or distress) that might not otherwise be detected. The results of the initial administration can also serve as a baseline measure of health status that can be compared to results obtained from one or more re-administrations of the survey during the course of treatment, thus providing means of documenting the outcomes of the treatment. The results from one episode of care can also be used as comparison data for subsequent episodes of care. Like its predecessor, the SF-36v2® Health Survey can assist on determining the need for and-or the most appropriate interventions, and predicting treatment outcomes (Ware, et al., 2007).

Results from SF-36v2® Health Survey studies can also be used to determine whether one treatment option is likely to have a more significant impact on a patient's health status or quality of life. For example, Perry et al. (2003) found that patients undergoing laparoscopic nephrectomy have significantly higher postoperative PF, BP, and RE scores than those undergoing mini-incision open donor nephrectomy. At the same time, both groups scored above the average age-matched norms. Camilleri-Brennan and Steele (2002) found no significant differences on any of the SF-36v2® Health Survey domain scales between patients with low rectal cancer with an anterior resection and those with an abdominoperineal resection. These and other findings led the investigators to conclude that there was no significant difference in quality of life

between patients undergoing one or the other treatment. Lanman and Hopkins (2004) investigated changes in the quality of life of patients with cervical disc disease treated with an anterior cervical spine fusion combined with a bioabsorbable interbody spacer. They reported 3-month postoperative score increases for all SF-36v2® Health Survey domain scales, except GH, with the greatest increase occurring on the SF scale (7.4 points), PF scale (5.7 points), and RE scale (403 points).

Russell, Conner-Spady, Mintz, Mallon, and Makysymowych (2003) demonstrated the responsiveness of the SF-36v2® Health Survey and other measures to change in two groups of patients with rheumatoid arthritis – one group considered stable and the other group having persistent and unacceptably high disease levels, beginning in treatment with a drug (infliximab) previously shown to yield a good response. The survey was found to be responsive to the infliximab patients' pain and global assessment after 14 weeks of treatment.

Health plans, employers, and researchers are challenged to find efficient and comprehensive ways of measuring the health of various populations. The measures they use must be well understood and accepted over a wide range, permit comparisons within and across groups, and demonstrate sensitivity to changes in health over time. Ideally, measures would meet all these requirements with as few items as possible, thereby minimizing respondent burden and data collection costs (Ware, et al., 2007). A prime example of how the SF-36v2® Health Survey is used in population monitoring is the Medicare Health Outcomes Survey (HOS; Ware, Gandek, Sinclair, & Kosinski, 2004; Gandek, Sinclair, Kosinski & Ware, 2004) From 1998-2004, the HOS consisted of the SF-36® Health Survey along with questions about activities of daily living (ADLs) and

case-mix and risk-adjustment questions for Medicare beneficiaries enrolled in managed care programs.

As people live longer, healthcare focuses less on mortality than on improving how people feel and function, in the face of multiple chronic diseases or conditions. Many drugs in the discovery and development pipeline hold the promise of reducing the impact of chronic health problems on everyday life. Medical researchers conducting clinical trials now recognize the need to define benefits more broadly than traditional clinical endpoints by including patient reported outcomes (PROs) in clinical trials. Additional clinical evidence based on PROs also commands increasing attention from the FDA, making it critical to the drug review and approval process. The FDA and the National Institute Health (NIH) have launched an effort to encourage the use of PROs, standardize their assessment, and when warranted, grant indications for drugs based on patient-reported evidence of improved functioning and well-being (Ware, et al., 2007).

The SF-36® Health Survey and SF-36v2® Health Survey are becoming widely recognized as leading PRO measures in clinical trials. When included in a clinical trial protocol, the SF instruments can quantify the consumer's experience of improved HRQOL, deliver proof of efficacy that goes beyond traditional clinical endpoints, and provide a scientifically valid body of evidence to facilitate timely regulatory approval. For example, Nicholson, Ross, Sasaki, and Weil (2006) included SF-36v2® Health Survey PCS and MCS scores as endpoints in their Phase IV prospective, randomized trial comparing the efficacy, tolerability, and safety of polymer-coated extended-release morphine sulfate (P-ERMS) and controlled-release oxycodone hydrochloride (CRO) in the treatment of patients with moderate to severe malignant pain. Comparisons of

baseline and 24-week scores revealed significant changes ($p < .05$) in PCS for both treatment groups. Only the CRO group showed significant 24 week change ($p < .05$) on the MCS measure.

Fitzgibbons, et al., (2006) included 2-year change in the SF-36v2® Health Survey scores as one of their primary outcomes in a study of men with inguinal hernia undergoing either standard open tension-free repair with mesh ($n=356$) or “watchful waiting” ($n=364$). A total of 317 and 336 men, respectively completed the 2-year follow-up assessment. The two groups did not differ significantly in amount of baseline to follow-up change on the PCS measure.

Strand et al., (2005) used the SF®-36 Health Survey to assess improvement in function and HRQOL in patients with rheumatoid arthritis assigned to a leflunomide, methotrexate, or a placebo treatment group for 12 months. The baseline scores were found to be significantly lower than the U.S. norms (1-100 scale). Substantial improvements on PCS, PF, BP, GH, VT, and SF were noted for the leflunomide group, with the PCS change being significantly greater than that found for the methotrexate and placebo groups. The leflunomide group had a greater percentage of patients showing two levels of improvement ($>20\%$ and $>50\%$) on this same measure. In a randomized, 1-year trial, Raynauld et al., (2002) found that SF-36® Health Survey PCS scores increased significantly ($p < .0001$) 12 months post-baseline for a group of 127 patients with knee osteoarthritis receiving appropriate care with the addition of an injection of hylan G-F 20 (a visco-supplementation product) each of the first three weeks of the study. No significant change was noted on the SF-36® Health Survey or any of the other quality of life measures for a control group of 128 patients.

The SF-36v2® Health Survey can provide practical solutions to disease management's most pressing measurement challenges. Its reliability and validity in assessing the burden of disease has been demonstrated for several patient populations. Many studies document its ability to predict hospitalization, total medical expenditures, job loss and work productivity, future health, risk of depression, use of mental healthcare, and mortality (Ware, et al., 2007).

For example, Haffer, Bowen, Shannon, and Fowler (2003) assessed participants with one or more of several chronic conditions in the Medicare HOS (using the SF-36® Health Survey) at baseline and again 2 years later to demonstrate the need for disease management programs for chronically ill Medicare enrollees. Sidorov, Shull, Girolami, and Mensch (2003) measured the impact of a disease management program on quality of life of a group of congestive heart failure (CHF) patients using the SF-36® Health Survey. In a broader study, Walker, Landis, Stern, and Vance (2003) used PC and MCS measures derived from the SF-36v2® Health Survey to demonstrate changes in the quality of life of large samples of patients with coronary artery disease, chronic obstructive pulmonary disease, and heart failure who were involved in disease management programs.

In addition, disease-specific surveys can be paired with the SF-36v2® Health Survey to capture a more comprehensive picture of HRQOL benefits. When used with one or more disease-specific measures, it provides information required to screen patients with common chronic conditions such as asthma, congestive heart failure, diabetes, migraine headaches, and osteoarthritis, and to monitor and compare their outcomes over time (Ware, et al., 2007).

Including the SF-36v2® Health Survey scales and measures in predictive models can improve forecasts of future expenditures, resource utilization, risk of depression, use of mental health specialty care, job loss, return to work and work productivity, future health, and mortality. For example, Hornbrook and Goodman (1995) found that results from the SF-36® Health Survey PF, RP, and Gh scales and the HT item to be a better predictor of total annual expenditures for a large sample of HMO subscribers than demographic and clinical variables (e.g., age, existing conditions) alone. Thus, using the SF-36v2® Health Survey in baseline health assessments can help to more accurately quantify patients' healthcare needs and develop effective care plans. Administering it at selective intervals, such as before and after a disease management intervention, will allow the user to quantify physical and mental health outcomes and evaluate the effectiveness of interventions (Ware, et al., 2007).

Containing costs is one of the biggest challenges facing healthcare providers. As employers have begun to shift a greater portion of healthcare costs to employees and families, interest in consumer-driven healthcare has markedly increased. As a result, consumers are taking greater control of their healthcare and becoming more actively engaged in making important treatment decisions. Health plans and disease management companies have responded by making every effort to keep members informed and educated. This trend in healthcare consumerism is also giving rise to increased use of technology. As consumers search the Internet for medical information and data, online healthcare is gradually being personalized, with managed care organizations viewing their Web sites as a core part of their business (Ware, et al., 2007).

When incorporated as part of the standard care process, the SF-36v2® Health Survey can improve and enhance the communication process by providing information that enables healthcare providers to make the best use of the limited time they have to see patients. An example of how the surveys can improve patient communication and management is provided by Wagner et al., (1997). They conducted a controlled study in which 163 consecutive epilepsy patients were administered the SF-36® Health Survey during a prestudy assessment and then again prior to subsequent office visits beginning within 6 months after the prestudy assessment and continuing for 6 months thereafter. During the follow-up visit, 126 of the study participants (70%) were randomly assigned to the intervention condition in which their physicians had access to their assessment results at the time of the encounter. The remaining 37 (30%) were assigned to a control condition in which their physician did not have access to the SF-36® Health Survey results. After each encounter, patients in both conditions completed a satisfaction questionnaire and, in the case of intervention patients, physicians completed a questionnaire regarding the usefulness of the SF-36® Health Survey information during the encounter. Although the two groups of patients did not differ significantly in their attitudes toward or satisfaction with the care, the physicians reported that the survey results provided new information in 63% of the encounters, prompted change in therapy in 12%, was useful for patient communication in 8%. They found that the worse the survey results, the greater utility of the SF-36® Health Survey for patient communication and management.

The SF-36v2® Health Survey also can be used to measure the effects of other attempts at improving communication between patients and their healthcare providers.

Using a randomized crossover design, Detmar, Muller, Schornagel, Wever, and Aaronson (2002) studied the effects of providing HRQOL feedback to physicians and their oncology patients undergoing palliative care. For the purpose of this study, results from the patient self-administered Quality of Life Questionnaire-Core 30 (QLQ-C30 [version 3.0]; Fayers, Aaronson, Bjordal, Curran, & Groenvold, 1999), which was administered before each of four visits, were used. Among several variables investigated was change in patients' scores on the SF-36® Health Survey. The two cohorts of intervention patients and two cohorts of control patients did not differ significantly in health domain scores between the first and fourth visit; however, a significantly greater percentage of the intervention patients exhibited an improvement of 0.5 standard deviations or greater on scale (22% vs. 11%; $p = .05$), suggesting positive emotional effects were brought about as a result of the intervention.

Debate about the uses of health outcomes assessment methods is spreading beyond the arcane realm of methodologists (Maurish, 2002, 2004; Ogles, Lambert, & Fields, 2002; Ware, 1993). Policy analysts and healthcare managers – intent on getting the best value for their dollar – have joined the intellectual fray. Clinical investigators evaluating new treatments and technologies, as well as practicing clinicians seeking better patient outcomes, are also demanding useful assessment methods.

Impact of Exercise

In a society where the population of those 65 and older is expected to double in the next 25 years, it is imperative to find simple, low-risk, inexpensive

interventions/treatments to offset preventable declines. Exercise has repeatedly proven itself a formidable protector against the physical and cognitive declines associated with age. It has been demonstrated that exercise programs with older adults improve both physiological functioning and psychological functioning as well (Kelly, Steinkamp, & Kelly, 1987; Larson, 1978; Mancini & Quinn 1981; Mazzeo & Tanaka, 2001; McGuire et al., 2001; Smith, Keilhofner, & Watts, 1986; Bee & Bjorklund, 2004). The general findings of these studies suggest that many of the physical and psychological problems are not the inevitable result of aging, but rather, the result of the older individual's inactivity and sedentary lifestyle.

The benefits of exercise are well established. Two of the primary benefits for frail adults, are the improvements in functional abilities and the promotion of independence (Berkow, Beers, Bogin, & Fletcher, 2000). Research has confirmed that strength training exercises can have significant impact, not only on physical health, but also on psychological health for men and women in their 70s, 80s and even 90s. Results have revealed considerable increases in muscle mass, resulting in more physical strength and endurance, accompanied by improved mood changes (Fiatarone, et al., 1990).

In an early study, De Vries (1975) demonstrated that older individuals were physically able to improve their fitness level. That is, improved muscle strength and tone, along with improved aerobic ventilation and usable oxygen becomes a measurable benefit of regular participation in an exercise program. Regardless of one's genetic background, or previous activity levels in youth or young adulthood, De Vries found that even a six-week exercise program significantly improved the physiological functioning of an aged population. He wrote that the more a muscle is kept alive, the better its ability to

perform. Therefore, lack of exercise invites atrophy of the muscles, a consideration that appears to be synonymous with the notion that many people fall or even collapse as they age due to the deterioration of their muscles.

Exercise is a relatively low risk and inexpensive treatment for many ailments. It is known to attenuate many age-associated declines, including those in oxygen consumption, cardiac output, and muscle mass. Participation in regular physical activity is also associated with a reduced risk of heart disease, diabetes mellitus, and insulin resistance, hypertension, and obesity. Additionally, exercise can also bring about improvements in bone density, arterial compliance, metabolism, and overall functional capacity (McGuire et al., 2001; Mazzeo & Tanaka, 2001; ACSM, 1998). Taken together, the aforementioned changes result in an improved quality of life and independence in the elderly population.

Functional capacity and health are likely to become compromised in late life and therefore often assumed to be critical for life satisfaction. In a study of functional capacity including participants aged 60 and older, physical activities, including activities of daily living, turned out to be a predictor of life satisfaction (Markides & Martin, 1979). More recent studies on the oldest-old confirm this result (Menec, 2003; Menec & Chipperfield, 1997) and even in very old people, greater functional capacity is associated with greater life satisfaction.

Archival data has presented evidence that even moderate levels of regular physical activity can improve one's health and general well being. Studies in which groups of exercisers were compared to groups of sedentary people on different measures of health, physically active people were usually shown to be healthier and less depressed

(U.S. Department of Health and Human Services ([USDHHS], 1996). Physical activity has long been touted to attenuate physical declines in the elderly. However, studies over the past 25 years have also shown physical activity has proven to aid in cognitive functioning as well. It has been proven that sedentary persons can benefit from the addition of physical activity into their lives at any age. The benefits of exercise are well established. Two of the primary benefits for frail adults, and those with special needs, are the improvements in functional abilities and the promotion of independence (Berkow, Beers, Bogin & Fletcher, 2000). Research has confirmed that strength training exercises can have a significant impact, not only on physical health, but also on psychological health for men and women in their 70s, 80s, and even 90s. Results have revealed considerable increases in muscle mass, resulting in more physical strength and endurance, accompanied by improved mood changes (Fiatarone et al., 1990). Research suggests that many of the biological and physiological effects of growing older and the physical decline which occurs in many older adults are the result of life style factors or the simple disuse of muscles and being “out of shape” (Asci, Kin, & Kosar, 1998).

Carpenter (1982) studied elderly females to determine the effects of regular continual exercise on the resting heart rate, resting blood pressure, estimated VO₂, state anxiety, state depression, and life satisfaction. Rapid walking was done for thirty minutes per day, six days per week, for three weeks. The data analysis indicated that no significant changes in the level or rate of resting heart rate, resting systolic blood pressure, or resting diastolic pressure were evidenced. The daily variability of the resting diastolic was decreased in two subjects during treatment. All the subjects evidenced gross gains of at least 20 percent in estimated max VO₂. No significant change occurred

in state anxiety or life satisfaction, but the depression scores on two subjects appeared to be sensitive to treatment. The exercise treatment was rapid walking for thirty minutes per day, six days per week, for three weeks in each of the two treatment phases. The research design was a multiple baseline A-B-A-B-A design. Subjects kept a daily log in which two subjects indicated they were able to reduce or eliminate the daily ingestion of prescription medicine for depression with no apparent ill effects.

Carpenter's (1982) study yielded positive indications for estimated max VO₂ and depression, but his population of three subjects was small, making the results less generalizable to the whole population of elderly females.

Bennett, Carmack, and Gardner (1982) conducted an eight-week study on the effects of physical exercise two times a week for 45 minutes per session on levels of depression in older adults. Their findings indicate that there was a significant improvement in the emotional and physical states as measured by the Zung Self-Rating Depression Scale of those individuals who participated in the physical exercise program.

Adams and de Vries (1973) conducted an investigation in which seventeen women ages 52 to 79 years participated in a 12-week exercise program. For approximately one hour, three times a week, they exercised with calisthenics, jogging, and stretching. The physical work capacity and resting heart rate showed significant differences between experimental and control groups which established the trainability of the cardiovascular system in older women. It was concluded that the exercise program was both safe and effective for a normal population of older women with the presence of medical and physiological monitoring.

Perri (1981) and Holder (1983) studied the effects of an aerobic exercise program on physiological and psychological variable in the elderly. Perri (1981) tested twenty-three men and women, ages to 65 to 79 in a 14-week aerobic exercise program. The control group consisted of 19 subjects similar in age and education. There were no significant change in depression, anxiety, short-term memory, and resting heart rate in the exercise group or control group. A significant change in locus of control in an internal direction and an increase in self-concept were found in the aerobic exercise group.

Holder (1983) found participation in an eight week exercise program does not produce significant reductions in systolic blood pressure or produce significant changes in heart rate among elderly when compared to a control group. He found participation in an eight week aerobic exercise program produced statistically significant decrease in depression levels and significant decrements in diastolic blood pressure among the elderly compared to a no-treatment group. Results from the above two studies seem conflicting in nature. Perri's study does not compare with the evidence suggested by Carpenter (1982), and Holder (1983). A possible explanation could be the aerobic exercises were not selected specifically for the interests of the participants.

Reiter (1981) studied 73 females subjects aged 65 to 85 in an attempt to determine whether exercise can affect selected mood states such as anxiety, tension, depression, and general feeling of well-being, since it is usually recognized that physical exercise has beneficial physiological effect. The experimental treatment consisted of up to ten special dance exercise sessions, geared to the participation level and interest, which were based on the work of dance movement experts for the elderly. The Spielberger State-Trait Anxiety Inventory was used to measure state anxiety. There were significant changes in

pre and posttest scores in the reduction of state anxiety and improvement of feelings of well-being following the exercise program. The experimental group felt more relaxed, less tense and anxious: they reported being more awake and vital during the way and better able to sleep at night. The controls did not evidence any of these gains. The results were independent of age, setting, institution, socioeconomic status and number of sessions attended.

Reiter (1981) concluded that a moderate exercise program had significant psychological benefits on the 73 elderly female subjects. In summary, physical and creative activities in many forms appear to be effective in delaying the onset or controlling the deleterious effects of aging. They may improve the ability and functional efficiency of systems within the body, decrease depression levels, and contribute to enhancing the satisfaction of life.

Menec and Chipperfield (1997) explored the potential mediating roles of exercise and participation in non-physical leisure activities in the relationship between perceived control and well being (health and life satisfaction) among 1,258 elderly people interviewed in 1983 and 1990. An internal locus of control was positively related to exercising and participation in leisure activities. Exercise and leisure activity participation, in turn, were predictive of better-perceived health and greater life satisfaction. The findings point to potential benefits. These benefits include the increase of the elderly person's sense of control as a means to promote exercise and to increase leisure activity participation and consequently, to enhance overall well being.

In summary, physical activities in many forms appear to be effective in delaying the onset or controlling the harmful effects of aging. They may improve the ability and

functional efficiency of systems within the body, decrease depression levels, and contribute to enhancing the satisfaction of life.

Prescribing exercise or physical activity for older Americans may not be as easy as it appears. Because of the physical changes which occur with age, traditional prescriptions and measures of physical fitness may not be valid in older adults (ACSM, 1998). For example, using target heart rate (percent of HR max) to prescribe or measure exercise intensity can be misleading. Heart rate does vary as a function of age. However, it is also affected by disease, muscle mass, stroke volume, blood pressure, arterial compliance cardiovascular fitness, pulmonary function, training status, and/or medication, all of which typically occur or are associated with age. This means using heart rate without consideration to any such factors may significantly over-estimate or under-estimate exercise intensity.

Additionally, it is recommended that exercise prescription focus on promotion of health and functional capacity rather than aerobic fitness (ACSM, 1998; Mazzeo & Tanaka, 2001; Singh, 2002). Since the decline in cognitive scores becomes greater with each loss of independently completing functional tasks, it only makes sense the focus of fitness training in older adults should be on function (Njegovan et al., 2001). Functional training is also important because declines in function and cognition are associated with a higher possibility of nursing home admittance.

Considering the vast number of adults living into advanced age and the costs of caring for individuals, it is increasingly imperative to identify ways to counteract or reverse age-associated declines in physical and cognitive performance to help increase the quality of life. Through a variety of possible mechanisms, exercise has proven itself a

potent protector of both physical and cognitive function. Both cardiovascular and resistance training have proven themselves safe, feasible, and of much benefit to individuals 65 and older and should therefore be included in their daily lives.

Life satisfaction of the elderly is very important to their well-being. Our elderly population has had a tremendous surge in growth and that growth is projected to continue and with this growth comes the need to help in the promotion of life satisfaction and self-concept in the elderly. This chapter has sought to review literature on life satisfaction and self-concept.

Summary

Many studies have been conducted on life satisfaction of the elderly population; however, a consensus has not been reached on what the most important variables are that will ensure an elderly individual's happiness. More studies are needed to assist in ascertaining which variables are the most important overall in ensuring that our elderly feel satisfied about their lives. Once these variables are identified and research findings are confirmed, policy-making decisions which can be effective in ensuring that the optimum opportunity is provided helping to ensure the life satisfaction of our elderly.

Overall, a great variety of research exists in the literature which focuses on the variable of life satisfaction and this focus has taken several different directions. A minimal number of longitudinal studies have discovered that life satisfaction is relatively stable over time. Some studies attempt to objectively quantify an individual's degree of life satisfaction based upon external factors (activities and social interaction, health,

income, education, gender, etc.). Others focus on the more subjective perceptions which may contribute to life satisfaction and studies attempt to assess the degree of one's life satisfaction either relative to one's own values, expectations or goals, in relation to how well others have done, or in relation to the meaning or purpose of one's life.

Researchers who focus their studies on life satisfaction in relation to external, quantitative variables suggest several which appear to be significantly related to or are strong predictor variables of life satisfaction. Health is identified by some researchers as the strongest predictor of life satisfaction. Other variables determined to be strong predictor variables of life satisfaction include: leisure activity and social interaction, health, socioeconomic status, age, employment, marital status, mental health and functional capacity.

Other researchers have focused their studies on more subjective, qualitative variables such as self-concept and locus of control. The majority of studies which incorporate the self-concept variable report a positive significant relationship between self-concept and life satisfaction. In some research, the variable of locus of control is strongly related to life satisfaction, with older adults who possess a more internal locus of control displaying a higher level of life satisfaction than those older adults with a more external locus of control. Contradictory findings suggest that no significant relationship exists between locus of control and life satisfaction.

Studies which relate life satisfaction to gender report contradictory findings. Several researchers suggest that no significant differences exist between males and females with regard to life satisfaction. Others purport that males experience greater life satisfaction than females, or that no relationship exists between gender and life

satisfaction. Gender differences in locus of control orientation are also noted. Studies which have investigated the combination of self-concept, locus of control and gender relative to life satisfaction have determined that older adults with a more positive self-concept and an internal locus of control are more likely to display a higher degree of life satisfaction.

A review of the literature concerning the variables that impacted on older adults' level of life satisfaction in general, suggested that further research in this area was needed. Further studies of life satisfaction among various ethnic groups are needed to investigate whether life satisfaction is related to the extent and type of activities in which they engaged and whether socioeconomic status, or gender, influences these relationships. In summary, the existing literature indicated that while researchers were beginning to study life satisfaction in the older population, much of the focus was on a certain population of older people. Many ethnic groups have been underrepresented in these studies.

One action that must be taken is to encourage aging adults to stay active and strong into their senior years. Research is currently being conducted to determine what activities should be prescribed and how much is needed to increase one's individual level of life satisfaction, but many questions remain unanswered. For individuals in the health field, it is essential to investigate ways to improve one's level of life satisfaction. Individuals in the health field should inform and educate the older population about the cause and effect of becoming sedentary in their daily lives. It is our goal to provide seniors with access to care and intervention. We also need to educate the public of the

negative effects of an inactive lifestyle at any age, and we should be encouraging people of all ages to begin working early on prevention.

CHAPTER III

METHODOLOGY

Participants

This study was approved by the Institutional Review Board (IRB) of Oklahoma State University May 30, 2008. Volunteer participants for the study were based on the following criteria: 1) 65 years of age and older; 2) enrolled in the SecureHorizons® healthcare plan; 3) currently living in the Greater Oklahoma City area. There were 793 subjects involved in the study.

Data Collection Procedures

Individuals age sixty-five years of age and older, living in the Oklahoma City area, enrolled in the SecureHorizons® healthcare plan, who were not active in a YMCA of Greater Oklahoma City, received a questionnaire packet in the mail. Each packet consisted of a consent form (See Appendix A), a demographic information form (See Appendix B), and a Medical Outcomes Study's SF-36v2® (See Appendix C).

Individuals who were active in a YMCA of Greater Oklahoma City (Earlywine Park YMCA, Bethany YMCA, Northside YMCA, MidTown YMCA, Guthrie YMCA, Trails YMCA, Edmond YMCA, Downtown E.K. Gaylord YMCA, Chickasha Area YMCA, and Midwest City YMCA) filled out the packet of questionnaires at the

YMCA facility they attend.

The forms were either mailed or self-administered to the participants previously mentioned. Mailed packets included specific instructions for the individual to follow. Surveys were completed and mailed back via a self-addressed envelope. Instructions to participants was as follows: (1) subjects will read the consent form that has been approved by the Oklahoma State University IRB; (2) subjects will complete the demographic information form and the Medical Outcomes Study's SF-36v2®; (3) immediately following completion of all questionnaires, forms will be sealed in a confidential packet and mailed back to the researcher.

Individuals completing the packet at a YMCA of Greater Oklahoma City received the same instructions to follow once they were given the packet by a YMCA staff member. The YMCA staff members knew that an individual was a SecureHorizons® member and sixty-five years of age and older once they scanned their identification card for entry into the facility. Once the individual was identified as being a SecureHorizons® member, the YMCA staff member asked the individual if they would like to participate in a research study of "life satisfaction among individuals sixty-five years of age and older," explaining that it was strictly voluntary. If the individual agreed to participate, they were then handed the packet full of forms to fill out. Once finished filling out the forms, the individual sealed the confidential packet and gave it back to the YMCA staff member. Each YMCA sent all the sealed packets through their courier to the Edmond YMCA. The researcher then picked up all the packets once a week at the Edmond YMCA.

Instrumentation

Participants filled out a battery of questionnaires. The full battery included: consent form, demographic information form, and the Medical Outcomes Study's SF-36v2®. The SF-36v2® measures eight domains of health: physical functioning, role limitations due to physical health (role-physical), bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems (role-emotional), and mental health. Additional information related to the SF-36v2® can be found in the statistical analysis section.

1. Informed Consent Form – The Informed Consent form is a document that has been approved by the Oklahoma State University IRB that will educate participants about risks, benefits, and their involvement in the study.
2. Demographic Information Form – The Demographic Information form is a questionnaire for classifying individuals into various categories. The Demographic Information form will require the subjects answer questions regarding their age, sex, ethnicity, income level, health status and retirement.
3. SF-36v2® Health Survey – The SF-36v2® Health Survey is based on the SF-36® Health Survey, long regarded as the world standard for patient-reported health outcomes assessment; the SF-36v2® Health Survey is a 36-item short-form survey that measures general health status. A practical and reliable way to obtain important health outcomes data in a variety of settings, the SF-36v2® measures eight domains of health: physical functioning, role limitations due to physical health (role-physical), bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems (role-emotional), and mental health.

Health status measures have improved over time, benefiting from continued use and research which have resulted in enhancements to both the science and technology of health outcomes surveys. QualityMetric SF™ Generic Health Surveys capture reliable and scientifically valid patient-reported health outcomes information and have been adapted for use in more than 80 languages. Used successfully in more than 1,000 randomized clinical trials reported in over 240 scientific and medical journals, these surveys are proven responsive in 64 disease conditions and are accepted by the Food and Drug Administration as proof of benefit for improved functioning and other patient-reported outcomes.

The SF-36v2® Health Survey offers significant measurement improvements over the original SF-36 Health Survey including: corrected deficiencies in the original SF-36 Health Survey, updated population norms, norm-based scoring that provides direct comparison among all SF™ Generic Health Surveys, substantially increased precision and range of role-functioning scales, significant enhancements in item wording and format.

Statistical Analysis

The SF-36v2® measures eight domains of health: physical functioning, role limitations due to physical health (role-physical), bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems (role-emotional), and mental health. The SF-36v2® yields a score for each of these health domains, as well as summary scores for both physical and mental health and a single utility index. The survey is in a standard form that uses a four-week recall period. The SF-36v2® Health Survey can be self-administered to persons ages 14 and older and can usually be

completed in 8 to 12 minutes.

Health Domain Scales

Physical Functioning (PF)

The content of the 10-item PF scale reflects the importance of distinct aspects of physical functioning and the necessity of sampling a range of severe and minor physical limitations. Items represent levels and kinds of limitations between the extremes of physical activities, including lifting and carrying groceries; climbing stairs; bending, kneeling, or stooping; and walking moderate distances. One self-care item is included to represent limitations in self-care activities. The PF items capture both the presence and extent of physical limitations using a three-level response continuum. Low scores indicate significant limitations in performing physical activities while high scores reflect little or no such limitations.

Role-Physical (RP)

The four-item RP scale covers an array of physical health-related role limitations, including (a) limitations in the kind of work or other usual activities, (b) reductions in the amount of time spent on work or other usual activities, (c) difficulty performing work or other usual activities, and (d) accomplishing less. Low scores on the RP scale reflect problems with work or other activities as a result of physical problems. High scores indicate little or no problems with work or other daily activities.

Bodily Pain (BP)

The BP scale comprises two items: one pertaining to the intensity of bodily pain and one measuring the extent of interference with normal work activities due to pain. Low scores indicate high levels of pain that impact normal activities while high scores indicate no pain and no impact on normal activities.

General Health (GH)

The GH scale consists of five items, including a rating of health (excellent to poor) and four items addressing the respondent's views and expectations of his or her health. Low scores indicate evaluation of general health as poor and likely to get worse. High scores indicate that the respondent evaluates his or her health most favorably.

Vitality (VT)

This four-item measure of vitality (i.e., energy level and fatigue) was developed to capture differences in subjective well-being. Low scores indicate feelings of tiredness and being worn out. High scores indicate feeling full of energy all or most of the time.

Social Functioning (SF)

This two-item scale assesses health-related effects on quantity and quality of social activities, asking specifically about the impact of either physical or emotional problems on social activities. The degree to which physical and emotional problems interfere with normal social activities increases with decreasing SF scores. The lowest score is related to extreme or frequent interference with normal social activities due to physical and emotional problems; the highest score indicates that the individual performs normal social activities without interference from physical or emotional problems.

Role-Emotional (RE)

The three-item RE scale assesses mental health-related role limitations in terms of (a) time spent in work or other usual activities, (b) amount of work or activities accomplished, and (c) the care with which work or activities were performed. Low scores on the scale reflect problems with work or other activities as a result of emotional problems. High scores reflect no limitations due to emotional problems.

Mental Health (MH)

The five-item MH scale includes one or more items from each of four major mental health dimensions (anxiety, depression, loss of behavioral/emotional control, and psychological well-being). Low scores on MH are indicative of frequent feelings of nervousness and depression while high scores indicate feelings of peace, happiness, and calm all or most of the time.

Reported Health Transition (HT)

A general health item asks respondents to rate the amount of change they experience in their health in general over a 1-yr period on the standard (4 wk) form and over a 1-wk period on the acute (1 wk) form. This item is not used to score any of the eight multi-item health domain scales or component summary measures; however, it does provide useful information about perceived changes in health status that occurred during the year (on the standard form) or week (on the acute form) prior to administration of the survey.

The scoring software is designed to assist in evaluating the quality of survey data and improve the validity and precision of scoring. QualityMetric Health Outcomes™ Scoring Software offers: improved data entry capabilities, expanded reporting options, project-based management of data, data quality evaluations,

and missing data estimation.

The QualityMetric Health Outcomes™ Scoring Software gives each participant in the study an individual physical component score and an individual mental component score (SF-36v2®). These component scores were used in SPSS 16.0 to analyze all descriptive data among the variables and between the groups. T-tests and analysis of variance were employed to answer the five research questions. Independent t-tests were used to compare the physical component and mental component summary score (SF-36v2®) means for groups separated by exercise level and/or gender. An independent t-test was also used when comparing the physical component and mental component summary score (SF-36v2®) means of individuals who are retired to individuals who are not retired. For the independent t-tests a two-tailed test was used to determine the level of significance between exercise level, gender and retirement. The alpha level was set at .05 for all tests as the criterion value to determine the presence or absence of significant differences. The dependent variable was the differences in the physical component and mental component summary scores (SF-36v2®). The independent variables were low exercisers and high exercisers, males and females, and individuals who are retired and those who are not. An analysis of variance (ANOVA) was used to identify whether significant differences occurred among ethnicity and among income levels. Statistical significance was set at an alpha level of $p < .05$. Significant F values were obtained so appropriate post hoc procedures were used to explore the significant results.

CHAPTER IV

FINDINGS AND DISCUSSION

Introduction and Descriptive Data

The purpose of this study was to investigate whether various variables (exercise, ethnicity, gender, socioeconomic status, and retirement) had an effect on the quality of life in individual's age sixty-five years of age and older. Data was collected from individual's age sixty-five years of age and older, living in the Greater Oklahoma City area, which are enrolled in the SecureHorizons® healthcare plan. This chapter reports on the data analysis for the study and then discusses the results that were significant in the stated hypothesis.

There were a total of 793 participants involved in the study (407 males and 386 females). About fifty-one percent of the participants were male and 48.7% were female. Descriptive statistics for participants are presented in Tables 1 and 2. The mean age for males was 73.94 (± 6.16) and the mean age for females was 73.85 (± 6.05). The combined mean value for both males and females was 73.90 (± 6.10). The combined mean physical component summary score for the whole group was 37.144 (± 8.26), while the combined mean mental component summary score for the whole group was 37.989 (± 13.25). The mean values and standard deviations for physical component and mental component summary for the male subjects were 36.89 (± 8.19), and 37.86 (± 12.62). For

the females, the means and standard deviations for these same variables were 37.20 (± 8.34) and 38.12 (± 13.25).

Table 1
Descriptive Statistics of all Subjects

	N	Age (y \pm SD)	PCS score (s \pm SD)	MCS score (s \pm SD)
Males	407	73.94 \pm 6.16	36.89 \pm 8.19	37.86 \pm 12.62
Females	386	73.85 \pm 6.05	37.40 \pm 8.34	38.12 \pm 13.91
Group	793	73.90 \pm 6.10	37.144 \pm 8.26	37.989 \pm 13.25

The survey analysis showed that 29.4% of the participants were between the ages of 65-69 yrs of age, 30.5% were between the ages of 70-74 years of age, 18.3% were between the ages of 75-79, and 16.9% were between the ages of 80-84 years of age. The smallest age group was the 85-100 years of age making up only 4.9% of the participants. As demonstrated in Table 2, the participants' age ranged from 65-92.

Table 2
Age of all Subjects

Variable	Number	Percent
65-69 yrs of age	233	29.4
70-74 yrs of age	242	30.5
75-79 yrs of age	145	18.3
80-84 yrs of age	134	16.9
85 + yrs of age	39	4.9

The survey analysis showed that 29.4% of the participants in the study were *single*, while 38.7% of the participants were *married*. 11.9% were *divorced* and 20.1 were *widowed* (Table 3).

Table 3
Current Marital Status for all Subjects

Variable	Number	Percent
Married	307	38.7
Single	233	29.4
Divorced	94	11.9
Widowed	159	20.1

The survey revealed that 48.3% were *Caucasian*, 25.3% were *African Americans*, 10.6% were *Latino*, and 12% were *Native American*. *Asians* made up a very small amount of the group with 3.8% (Table 4).

Table 4
Ethnicity for all Subjects

Variable	Number	Percent
Caucasian	383	48.3
African American	201	25.3
Latino	84	10.6
Asian	30	3.8
Native American	95	12.0

The educational attainment of all participants varied (Table 5). 21.8% of the participant’s highest level of education was *elementary school*, 36.7% had a *high school* educational level, and 24.3% had *some college* experience. 15% of the participants had received a *college degree*, while a small 2.1% received *post college* degrees.

Table 5
Educational Attainment for all Subjects

Variable	Number	Percent
Elementary School	173	21.8
High School	291	36.7
Some College	193	24.3
College Degree	119	15.0
Post College Degree	17	2.1

The physical health features of participants’ overall health were examined. Specifically, participants were asked to rate their health (Table 6). 11% of the participants stated to be in *poor* health, 29.5% believe to be in *fair* health, and 37.2% claim to be in *good* physical health. 20.3% of the participants said they are in *very good* health and only 1.9% believed themselves to be in *excellent* health.

Table 6
Perceived Health for all Subjects

Variable	Number	Percent
Poor	88	11.1
Fair	234	29.5
Good	295	37.2
Very Good	161	20.3
Excellent	15	1.9

Table 7 reveals participants' perceived life satisfaction. 39.2% of the participants are *somewhat satisfied* with their life, 27% are *somewhat dissatisfied* with their life, and 18.2% of the group chose the *neutral* category for life satisfaction. 8.4% of the group was *dissatisfied* and only 7.2% were *satisfied*.

Table 7
Perceived Life Satisfaction for all Subjects

Variable	Number	Percent
Dissatisfied	67	8.4
Somewhat Dissatisfied	214	27.0
Neutral	144	18.2
Somewhat Satisfied	311	39.2
Satisfied	57	7.2

The majority of participants (30.1%) have an average income of \$30,000-\$49,000 a year. 27.9% have an average income of \$50,000-\$69,000, while 27% are making between \$16,000-\$29,000 a year. Participants making *less than \$15,000* a year make up

6.8% of the group and participants making \$70,000 or more make up 8.2% of the group. This information can be found in Table 8.

Table 8
Income Per Year for all Subjects

Variable	Number	Percent
0-\$15,000	54	6.8
\$16,000-\$29,000	214	27.0
\$30,000-\$49,000	239	30.1
\$50,000-\$69,000	221	27.9
\$70,000-\$89,000	49	6.2
\$90,000-\$99,000	11	1.4
\$100,000 +	5	.6

Retirement was split right down the middle (Table 9). 49.9% of the group was *retired* and the other 50.1% of the group was not retired yet. Table 10 shows the weekly exercise for each participant. 35.9% of the participants average exercising merely *1-2 times* per week and participants averaging *3-4 times* per week make up 32.8% of the group. 26.4% of the participants *do not exercise* during the week, while 4.9% exercise *5-7 times* per week on average.

Table 9
Retirement Statistics for all Subjects

Variable	Number	Percent
Retired	396	49.9
Not Retired	367	50.1

Table 10
Weekly Exercise for all Subjects

Variable	Number	Percent
0 Times Per Week	209	26.4
1-2 Times Per Week	285	35.9
3-4 Times Per Week	260	32.8
5 + Times Per Week	39	4.9

Results

Hypothesis 1

Ho1: There will be no significant difference in the life satisfaction scores (SF-36v2®) between exercisers and non-exercisers.

The participants were split into two groups, based on reported weekly exercise. Group 1 was given the name “low exercisers,” as they reported exercising two or less times per week and Group 2 was labeled “high exercisers,” as they reported exercising three or more times per week. An independent t-test was used to test this hypothesis. Comparison of the means (\pm SE) revealed significant differences between low exercisers and high exercisers’ physical component and mental component life satisfaction scores (SF-36v2®) (See Table 11); physical component scores ($t = -41.179$, $df = 736.41$, $p = .000$) and the mental component scores ($t = -63.804$, $df = 718.15$, $p = .000$). High exercisers received much higher physical component and mental component life satisfaction scores (SF-36v2®) than did low exercisers.

Table 11
Life Satisfaction Scores in High and Low Exercisers

		N	Mean	Std. Dev
Physical	Low Ex	494	31.9382	5.22359
	High Ex	299	45.7451	4.13498
Mental	Low Ex	494	28.6324	5.91927
	High Ex	299	53.4468	4.90075

	t	Sig. (2 tailed)
Physical Component	-41.179	.000
Mental Component	-63.804	.000

Hypothesis 2

Ho2: There will be no significant difference in the life satisfaction scores (SF-36v2®) of different ethnic backgrounds.

An analysis of variance was used to test this hypothesis. The analysis of variance revealed significant differences between group physical component and mental component life satisfaction scores (SF-36v2®) (See Table 12); physical component scores ($F = 12.978$, $df = 4$, $p = .000$) and the mental component scores ($F = 15.156$, $df = 4$, $p = .000$). The mean difference was significant at the .00 level.

The Caucasian group received the highest mean scores for both the physical and mental component health domains, while the Native American group received the lowest mean scores for the same categories. The Native American group's mean scores were notably below the other ethnic groups. The ranks of ethnic groups from highest to lowest mean scores were found to be in the same order in both categories. For the physical component mean scores, the Caucasians had the highest mean score, followed by the African Americans, Asians, and then Latinos and Native Americans; the same rank order is true of the mental component mean scores.

Table 12
Life Satisfaction Scores Among Ethnicity

		N	Mean	Std. Dev
Physical	Caucasian	383	38.775	8.565
	A. American	201	36.930	7.894
	Latino	84	35.870	7.626
	Asian	30	36.444	8.630
	N. American	95	32.373	5.872
Mental	Caucasian	383	40.825	13.747
	A. American	201	37.578	12.822
	Latino	84	35.840	13.230
	Asian	30	36.471	12.174
	N. American	95	29.802	7.496

	F	Sig.
Physical Component	12.978	.000
Mental Component	15.156	.000

A Bonferroni post-hoc analysis was conducted to explore the significant results within the different ethnic groups. The Bonferroni post-hoc analysis for the physical component scores revealed differences among many of the ethnic groups (Table 13).

Table 14 revealed differences for the mental component scores as well.

Table 13
Post-Hoc Table of Multiple Comparisons – Physical Component

	Caucasian	A.A.	Latino	Asian	N. A.
Caucasian N=383	--	.084	*.027	1.000	*.000
A.A. N=201	.084	--	1.000	1.000	*.000
Latino N=84	*.027	1.000	--	1.000	*.037
Asian N=30	1.000	1.000	1.000	--	.156
N. A. N=95	*.000	*.000	*.037	.156	--

Table 14
Post-Hoc Table of Multiple Comparisons – Mental Component

	Caucasian	A.A.	Latino	Asian	N. A.
Caucasian N=383	--	*.037	*.013	.733	*.000
A.A. N=201	*.037	--	1.000	1.000	*.000
Latino N=84	*.013	1.000	--	1.000	*.017
Asian N=30	.733	1.000	1.000	--	.131
N. A. N=95	*.000	*.000	*.017	.131	--

All other ethnic groups are found to have significant differences with at least two other ethnic groups, except for the Asian group. There are no significant differences among the physical and mental component life satisfaction scores (SF-36v2®) when comparing Asians to all other groups. In addition, the Caucasian and Native American groups were found to have significant differences with all other ethnic groups, excluding the Asians.

Hypothesis 3

Ho3: There will be no significant difference in the life satisfaction scores (SF-36v2®) between males and females.

A t-test was used to test this hypothesis. Comparison of the means (\pm SE) revealed no significant differences between male and female physical component and

mental component life satisfaction scores (SF-36v2®) (See Table 15); physical component scores ($t = -.879$, $df = 791$, $p = .380$) and the mental component scores ($t = -.270$, 791 , $p = .787$). Males and females received comparable physical component and mental component life satisfaction scores (SF-36v2®).

Table 15
Life Satisfaction Scores in Males and Females

		N	Mean	Std. Dev
Physical	Male	407	36.8929	8.19262
	Female	386	37.4090	8.33569
Mental	Male	407	37.8646	12.61916
	Female	386	38.1194	13.90657

	t	Sig. (2 tailed)
Physical Component	-.879	.380
Mental Component	-.270	.787

Hypothesis 4

Ho4: There will be no significant difference in the life satisfaction scores (SF-36v2®) among various income levels.

The participants were originally categorized by seven income groups. However, there were such a low percentage of individuals in the \$90,000 group and \$100,000 group that the researcher combined the two groups with the \$70,000 group; thus, making a new total of five income groups (Group 1 = 0-\$15,000; Group 2 = \$16,000-\$29,000; Group 3 = \$30,000-\$49,000; Group 4 = \$50,000-\$69,000; Group 5 = \$70,000 +). An analysis of variance (ANOVA) was used to test this hypothesis. The analysis of variance revealed significant differences between group physical component and mental component life satisfaction scores (SF-36v2®) (See Table 16); physical component scores ($F = 24.561$,

df = 4, p = .000) and the mental component scores (F = 24.741, df = 4, p = .000). The mean difference was significant at the .00 level.

Group 5 received the highest mean scores for both the physical and mental component health domains, while Group 1 received the lowest mean scores for the same categories. The ranks of groups from highest to lowest mean scores were found to be in the same order for both categories. For the physical component mean scores, Group 5 had the highest mean score, followed by Group 4, Group 3, Group 2 and Group 1; the same rank order is true of the mental component mean scores.

Table 16
Life Satisfaction Scores Among Income Levels

	Income	N	Mean	Std. Dev
Physical	0-\$15,000	54	32.6330	6.845
	\$16,000-29,000	214	34.4750	7.739
	\$30,000-49,000	239	37.0754	7.956
	\$50,000-69,000	221	39.0609	7.983
	\$70,000+	65	43.4145	7.642
Mental	0-\$15,000	54	32.8319	9.143
	\$16,000-29,000	214	33.5280	11.507
	\$30,000-49,000	239	37.2960	12.850
	\$50,000-69,000	221	41.1581	13.620
	\$70,000+	65	48.7263	13.025

	F	Sig.
Physical Component	24.561	.000
Mental Component	24.741	.000

A Bonferroni post-hoc analysis was conducted to explore the significant results within the different income levels. Bonferroni post-hoc analysis for the physical component scores revealed differences among many of the income levels (Table 17).

Table 18 revealed differences for the mental component scores as well.

Table 17
Post-Hoc Table of Multiple Comparisons – Physical Component

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 1 0-\$15,000	--	1.000	*.002	*.000	*.000
Group 2 16,000-29,000	1.000	--	*.004	*.000	*.000
Group 3 30,000-49,000	*.002	*.004	--	.066	*.000
Group 4 50,000-69,000	*.000	*.000	.066	--	*.001
Group 5 70,000+	*.000	*.000	*.000	*.001	--

Table 18
Post-Hoc Table of Multiple Comparisons – Mental Component

	Group 1	Group 2	Group 3	Group 4	Group 5
Group 1 0-\$15,000	--	1.000	.182	*.000	*.000
Group 2 16,000-29,000	1.000	--	.014	*.000	*.000
Group 3 30,000-49,000	.182	.014	--	.010	*.000
Group 4 50,000-69,000	*.000	*.000	.010	--	*.000
Group 5 70,000+	*.000	*.000	*.000	*.000	--

Group 5 was found to have significant differences with all other groups based on the physical and mental component mean scores (SF-36v2®). Groups 1 and 2 were found to be significantly different from Groups 3, 4 and 5 in the physical component health domain, while the same groups were significantly different from only Groups 4 and 5 in the mental health domain. There was no significance between Groups 3 and 4 in either the physical or mental health domains. Group 3 was only significantly different than Group 5 when looking at the mental health domain.

Hypothesis 5

Ho5: There will be no significant difference in the life satisfaction scores (SF-36v2®) among retired individuals than those individuals who are not retired.

An independent t-test was used to test this hypothesis. Comparison of the means (\pm SE) revealed significant differences between retired individuals and individuals who are not retired physical component and mental component life satisfaction scores (SF-36v2®) (See Table 19); physical component scores ($t = 9.487$, $df = 791$, $p = .000$) and the mental component scores ($t = 11.135$, $df = 791$, $p = .000$). Retired individuals received much higher physical component and mental component life satisfaction scores (SF-36v2®) than did individuals who are not retired.

Table 19
Life Satisfaction in Retired Individuals

		N	Mean	Std. Dev
Physical	Retired	396	39.7864	8.25094
	Not Retired	397	34.5084	7.39247
Mental	Retired	396	42.8706	13.39384
	Not Retired	397	33.1190	11.17002

	t	Sig. (2 tailed)
Physical Component	9.487	.000
Mental Component	11.135	.000

SF-36v2® Health Survey Results

The SF-36v2® Health Survey results were used as a source of information for understanding the health status of the various groups from the study. The general interpretive approach employs a systematic examination of the SF-36v2® Health Survey profile from a broad perspective. This approach involved determining if the mean based scores for the physical health component and the mental health component measures deviate from what is considered the average range for the U.S. general population. When considering group level data, it is recommended that scores within 0.3 standard deviation,

or 3 norm-based scoring (NBS) points, of the mean be considered within the “average” or “normal” range for the U.S. general population. Any health domain scale or component summary measure falling outside the NBS range of 47 to 53 (i.e., more than 0.3 standard deviation or above the mean norm-based score of 50) should be considered outside the average range for the U.S. general population. Thus, when considering group-level results a score on a health domain scale or component summary measure that is less than 47 should be considered indicative of impaired functioning within that health domain or dimension. This more stringent cutoff for group-level data results reflect both the greater confidence that one can have in the obtained group mean scores as well as empirical findings of meaningful differences in functioning that occur between the group-level score ranges of 40 to 44 and 45 to 49. Group mean scores greater than or equal to 47 should be considered average or above average.

However, there are specific norms for gender-by-age sub-samples of the SF-36v2® Health Survey. Comparing results across age groups clearly shows that health status, in particular physical health, is related to age. Generally, the mean scores for all physical health scales and component summary measures decline with age. For example, whereas the mean PF score for the total normative sample is 50.00, the mean score for the 18 to 24 yr old group is higher (53.21) and the mean for the 75 and older group is lower (37.98). The researcher used the mean scores for the 65 to 74 yr old group since 59.9% of the participants in the study were between 65 and 74 years old. Table 20 illustrates the mean scores for both males and females between the ages of 65 and 74 years old.

Table 20
NBS means for 65 to 74 yr olds

	Physical Component Summary
Males	45.19
Females	44.28
	Mental Component Summary
Males	53.34
Females	52.38
	Physical Functioning
Males	45.71
Females	43.54
	Role-Physical
Males	46.02
Females	44.98
	Bodily Pain
Males	48.29
Females	47.32
	General Health
Males	47.98
Females	48.44
	Vitality
Males	51.88
Females	51.07
	Social Functioning
Males	50.09
Females	49.85
	Role-Emotional
Males	48.74
Females	48.11
	Mental Health
Males	53.75
Females	51.44

Because the Physical Component Summary and Mental Component Summary measures are composites that reflect a combination of physical and mental functioning and well-being, the extent of social and role disability, and personal evaluation of health status, the meaning of scores on these measures is not as straight-forward as it is for the more homogeneous health domain scales. In other words, there are more way to obtain

each possible score for each component summary measure, in comparison to the number of ways to obtain each possible score for each health domain scale. However, very high physical component summary and mental component summary scores (i.e., at or around the highest possible norm-based score) indicate the best possible physical and mental (emotional) performance and capacity, respectively, while very low scores (i.e., at or around the lowest possible norm-based score) indicate the worst possible physical and mental performance and capacity, respectively. Specifically, very high scores on the physical component summary measure are indicative of no physical limitations, disabilities, or decrements in well-being; a high level of energy; and a self-rating of health of excellent. Conversely, very low physical component summary scores are indicative of substantial limitations in self-care, physical social, and role activities; severe bodily pain; frequent tiredness; and health rates as poor.

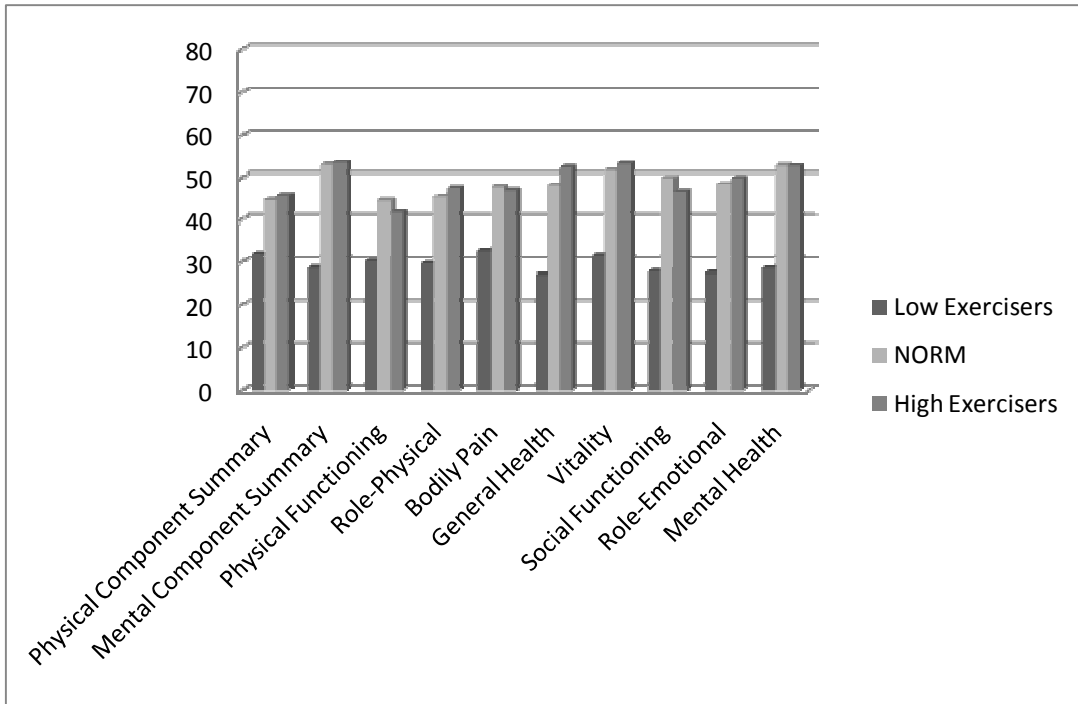
For the mental component summary measure, very high scores indicate frequent positive affect, absence of psychological distress and limitations in usual social or role activities due to emotional problems, and health rated as excellent. In contrast, very low mental component summary scores indicate frequent psychological distress, substantial social and role disability due to emotional problems, and health in general rated as poor.

Figure 2 compares the health domain scores for the two groups, high exercisers and low exercisers. The first scores presented in the profile are the physical component summary and the mental component summary scores. Placement of these measures at the beginning (left side) of the profile emphasizes the importance of first considering group results to overall functioning in the physical and mental health dimensions. The first four health domain scales – PF, RP, BP, and GH (found on the left side of the health domain

scale) have the greatest physical factor content among the health domains. The last four scales – VT, SF, RE, and MH (found on the right side of the health domain scale) have the greatest mental factor content.

As stated earlier in the dissertation, the eight health domains are as follows: PCS – Physical Component Summary, MCS – Mental Component Summary, PF – Physical Functioning, RP – Role Physical, BP – Bodily Pain, GH – General Health, V – Vitality, SF – Social Functioning, RE – Role Emotional and MH – Mental Health.

Figure 1
Health Domain Scores for Total Sample



In looking at Figure 1, one can quickly determine that the health burden is primarily observed among the low exercise group. For example, all eight health domains are well below the population norm for the appropriate age sub-sample, whereas the high exercise group had many of the health domain scores falling in the “normal” range. Low

exercisers have low scores across the entire profile showing impairment in both the physical and mental health components.

Figure 2 compares all the male participants, both high and low exercisers, health domain scores to the norm. As stated previously, the low exercise group fell below the norm in all health domains. The high exercise group mean scores are near or above average on all health domain categories.

Figure 2
Health Domain Scores for Male Participants

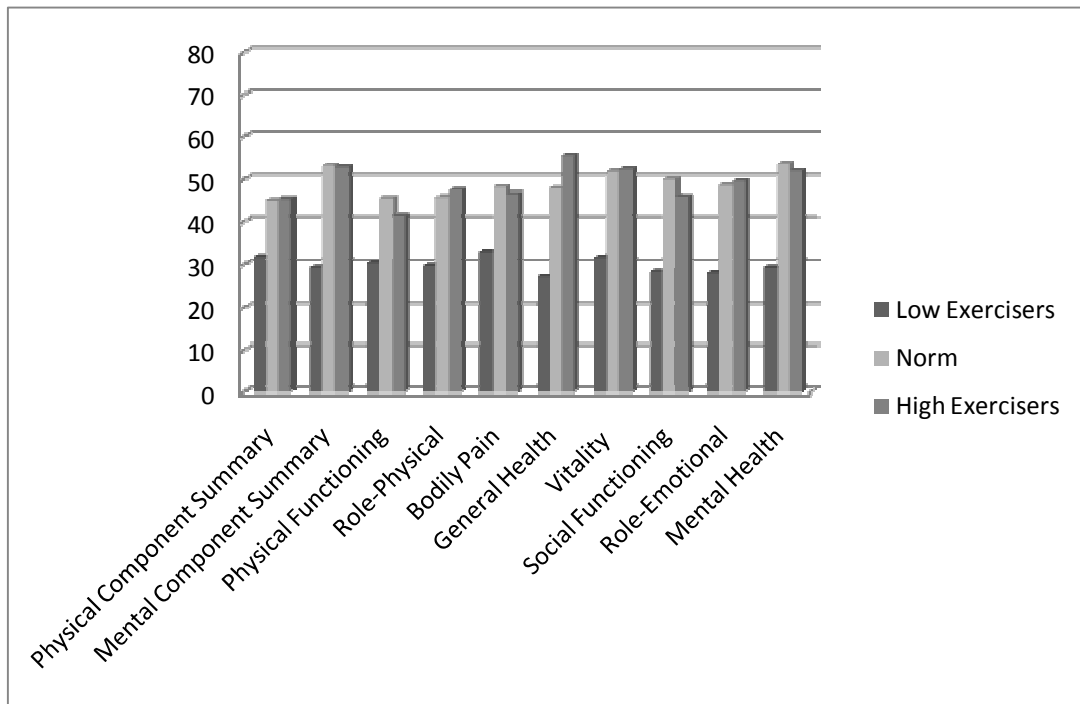
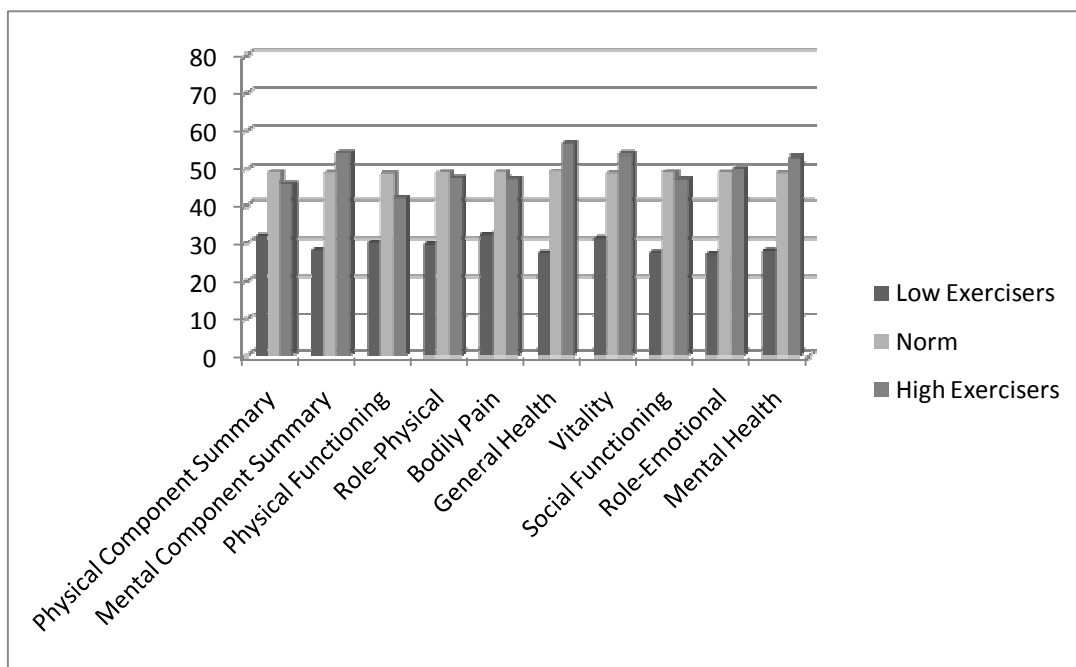


Figure 3 compares all the female participants, both high and low exercisers, health domain scores to the norm. The high exercise group received high scores on both the physical component and mental component health domains, very similar to the male high exercisers. Both male and female high exercisers are unmistakably above the norm subsample for the general health category. This is interpreted as low levels or no physical limitations, disabilities, or decrements in well-being; a high level of energy; and a self-

rating of health of excellent. Conversely, the low exercise group received lower than average scores on both the physical component and mental component health domains. This is indicative of substantial limitations in self-care, physical social, and role activities; severe bodily pain; frequent tiredness; and health rates as poor.

Figure 3
Health Domain Scores for Female Participants



Figures 4 and 5 compare the high and low exercise groups to the general population norm sub-sample. Figure 4 shows what percentage of high exercisers, those individuals who exercise three or more times per week are below the norm, at the norm, or above the norm. Conversely, Figure 5 shows the same information for individuals exercising two or less times per week. The majority of high exercisers (55%) are at the norm for both the physical component summary and the mental component summary. The figures also show that 39% of the high exerciser group is above the general

population norm in overall mental health, while none of the low exercise group is above the norm and 99% of the low exercise group is below the general population norm sub-sample. The category that is surprising for the high exercise group is the physical functioning health domain. 29% of the individuals are at the norm, while an unforeseen 71% are below the general population norm sub-sample. The majority of all other health domain categories for the high exercisers are either at or above the norm, excluding the physical functioning health domain. A huge 51% of the high exercise group is above the norm in the vitality health domain. The low exercise group is below the norm in all eight health domains, while having only 1-3% even at the general population norm in various health domains. 100% of the low exercisers are below the average in the following health domains: mental component summary, vitality, social functioning, and mental health. There are no health domains that the low exercise group has any percentage above the norm.

Figure 4

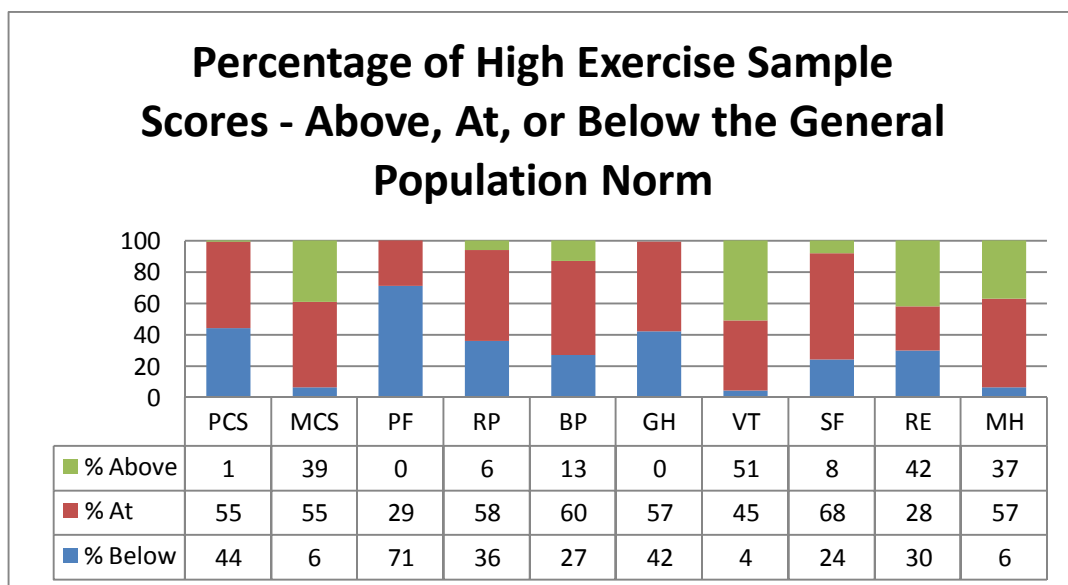


Figure 5

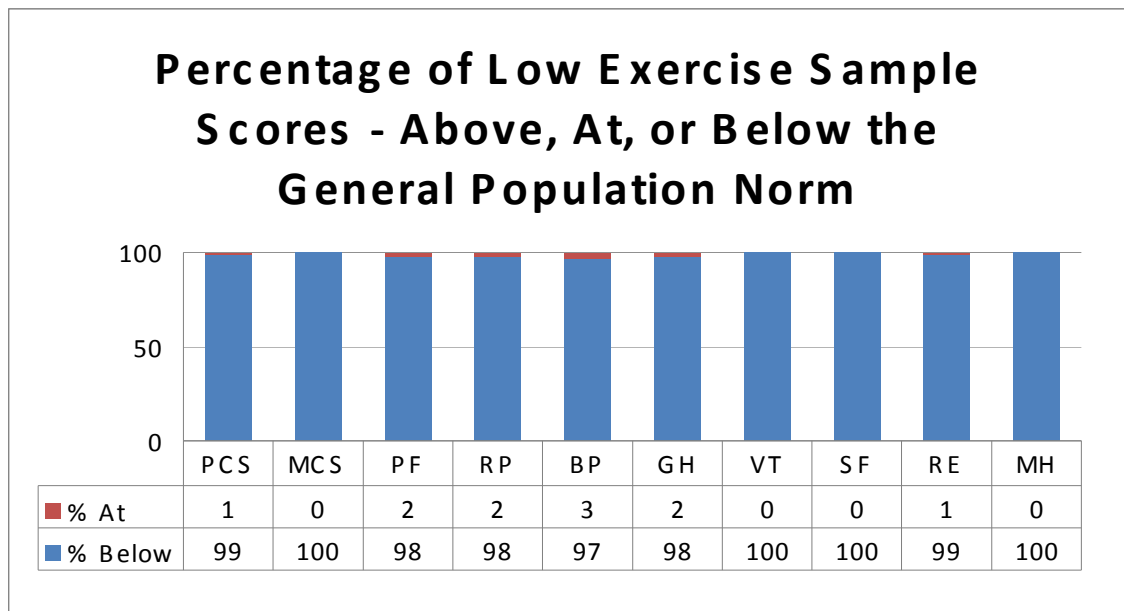


Figure 6 compares the males and females in the high exercise group to the general population norm sub-sample for the physical and mental component summary scores. Males and females received similar percentage scores when looking at the physical component health domain. 55% of the males and 66% of the females are at the physical component norm and only 1% for both genders is above the norm. However, when looking at the mental health domain, the same cannot be said. 67% of males and 42% of females are at the norm, while 55% of females are above the norm, while only 26% of males are above the norm.

Figure 7 compares the males and females in the low exercise group to the general population norm sub-sample. Males and females received exactly the same percentage rates for both the physical component and mental component health domains. 99% of the males and females in the low exercise group were below the general population norm and only 1% was at the norm for the physical health domain. But the low exercise group

scored even worse than that in the mental health domain, having 100% of the males and females in the low exercise group below the general population norm.

Figure 6

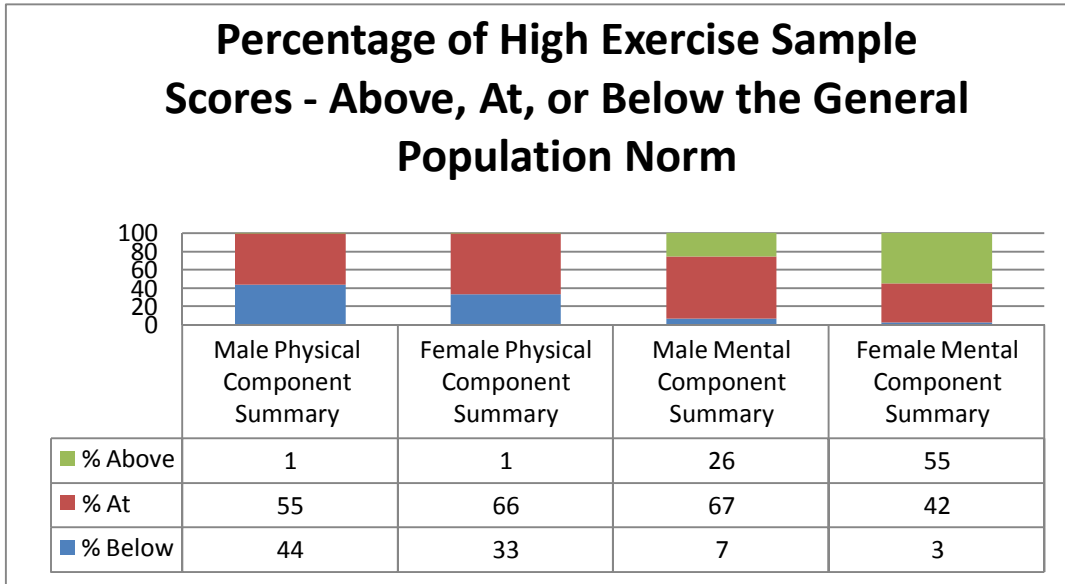


Figure 7

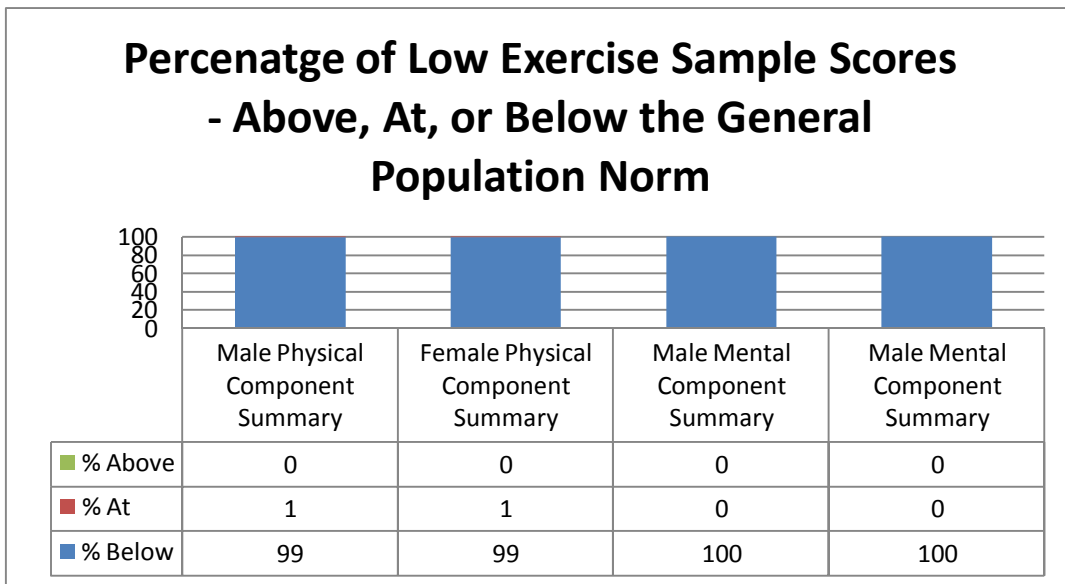
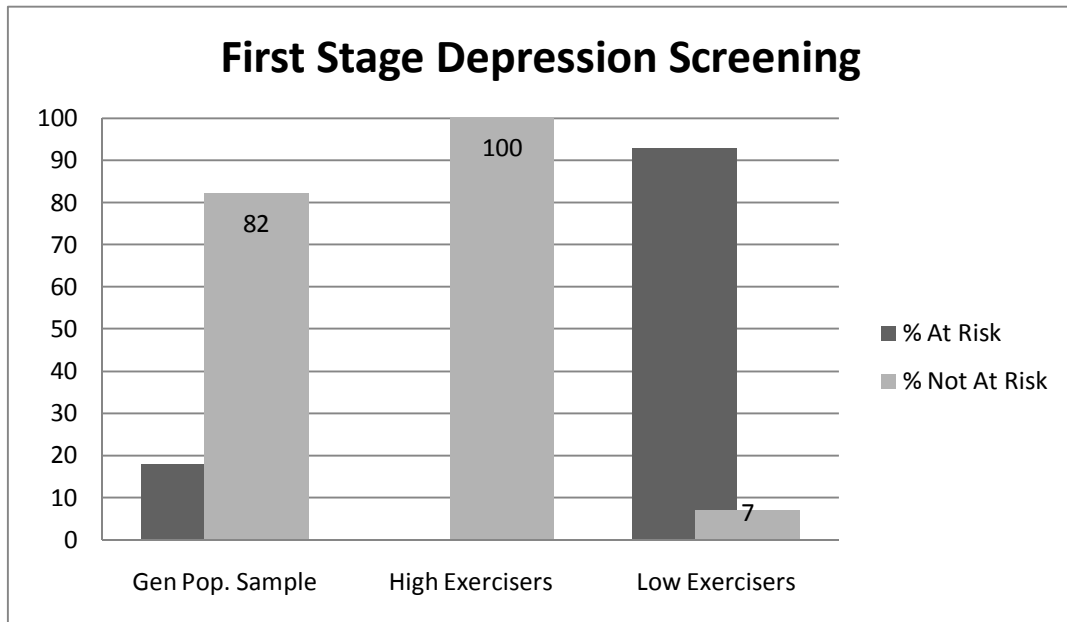


Figure 8 demonstrates first stage depression screening for both the high and low exercise group as compared to the general population norm sub-sample. 100% of the

high exercisers are not at risk for depression; however, 93% of the low exercisers are at risk for depression.

Figure 8



Discussion

This study investigated whether various variables (exercise, ethnicity, gender, socioeconomic status, and retirement) had an effect on the quality of life in individual's age 65 years of age and older using the SF-36v2® Health Survey. This section will further expound on the above findings from the study.

Life satisfaction scores of physical component and mental component health domains were measured using the SF-36v2® Health Survey. The QualityMetric Health Outcomes™ Scoring Software gives each participant in the study an individual physical component score and an individual mental component score (SF-36v2®). These scores along with the descriptive data reported by each participant were analyzed for significance.

Independent t-tests were used on three of the hypotheses and ANOVA's were used on the other two hypotheses. Post hoc tests were used to further investigate any statistical significance. The study was conducted to see if any of the variables (exercise, ethnicity, gender, socioeconomic status, and retirement) had an effect on an individual's quality of life. The results did indicate that certain variables can and do enhance, as well as predict an individual's quality of life.

The variable exercise was measured by each individual reporting how many times per week on average one exercised. The participants were then split into two groups, based on their reported weekly exercise. Group 1 was given the name "low exercisers," as they reported exercising two or less times per week and Group 2 was labeled "high exercisers," as they reported exercising three or more times per week.

The findings of this study are consistent with previous research in general; seniors who are engaged in exercise are more satisfied than dissatisfied with their lives. This research supports Coke's findings that seniors who are involved in activities, such as exercise, are more likely to report a higher degree of life satisfaction (1992). These findings are also similar to the findings of Riddick and Stewart (1994) who found a positive relationship between life satisfaction and exercise. They found that the seniors in their study reported that their level of life satisfaction was directly affected by leisure activities, such as exercise.

The current study also clearly demonstrated the link between exercise and depression. 100% of the individuals who reported exercising three or more times per week were not at risk for depression, while the same cannot be said of individuals who reported exercising two or less times per week. Many researchers have confirmed that

exercise is a key tool in reducing depression (Bybee, Zigler, Berlinger, & Merisca, 1996; Craft & Landers, 1998; Rief & Hermanutz, 1996; Steptoe, Lipsey & Wardle, 1998), and stress (Bundy, Carroll, Wallace, & Nagle, 1998; Kerr & VandenWollenberg, 1997; Rodgers & Gauvin, 1998).

There were significant differences found among many of the various ethnic groups involved in the study. The study revealed that Caucasians had the highest mean scores for both physical and mental health domains and Native Americans received the lowest mean scores among all ethnic groups. It is difficult to compare the findings in this study to current research findings on ethnic groups and one's level of life satisfaction because there have been very few if any studies that directly look at the five ethnic groups examined in the current study. Many studies minimally compare Caucasians and African Americans to one another.

The findings of this study are in accordance with Krause (1997) who found that older African Americans had lower levels of life satisfaction than older Caucasians. Riddick and Stewart (1994) measured differences in life satisfaction and reported that the mean score for older African American females was lower than the mean score for older Caucasian females. However, Chatter (1988) found the opposite to be true. In her investigation, she confirmed that older African Americans generally have higher rates of involvement in social and religious activities than Caucasian, both of which are strong predictors for life satisfaction.

As with this study, other studies which have tried to link gender to life satisfaction, have not revealed significant differences. Much of the literature suggests

that both male and female older adults experience comparable degrees of life satisfaction (Collette, 1984; Liang, 1982; Riddick, 1985; Shmotkin, 1990).

Liang (1982) determined that no significant differences exist between males and females in life satisfaction scores and that it seems plausible that the same causal mechanism is operating among the males as well as the females in accounting for life satisfaction. Collette (1984) supported the findings of Liang (1982). In a study of males and females, 60 years of age and older, gender differences in life satisfaction and its determinants were examined. Collette (1984) found no appreciable differences between sexes in the process determining morale. Contradictory findings indicate that older males experience greater life satisfaction than females (Atchely, 1980; Spreitzer & Snyder, 1974).

Another variable that this study examined was income level. The results clearly revealed that individuals of greater socioeconomic levels scored higher in both the physical and mental component life satisfaction scores (SF-36v2®) than those of lower socioeconomic levels. The higher one's income level gets, the higher the life satisfaction scores will be, according to the current study.

Past research confirms the current findings. Larson (1978) reported that socioeconomic status which includes the components of income has been identified as being related to subjective well-being. Spreitzer and Snyder's (1974) study identified financial satisfaction as one of the strongest predictors of life satisfaction for the older adult group (age 65 and older). Edwards and Klemmack (1973) support this finding. Their study found that the best predictor of life satisfaction was one's socioeconomic status. Spreitzer and Snyder's (1974) study identified financial satisfaction as one of

the strongest predictors of life satisfaction for the older adult group (age 65 and older). Edwards and Klemmack (1973) support this finding. Their study found that the best predictor of life satisfaction was one's socioeconomic status.

As with ethnic groups, there is a lack of literature comparing retirement and life satisfaction. The current study revealed life satisfaction differences among those who are retired and those who are not retired. The individuals who are retired scored significantly higher on the physical and mental component health domains than those individuals who are not yet retired. Yet, because of the lack of research, it is hard to determine if there is in fact a vital link between retirement and life satisfaction or if it was simply the population sample that was investigated. Spreitzer & Snyder (1974) examined life satisfaction among older males and females and found that males who were still working reported higher levels of life satisfaction than those in retirement.

CHAPTER V

CONCLUSION

Summary

America is in the midst of a demographic change; more and more people are living longer lives. Many of these people are somewhat more financially fit than other generations. The older population seems to have more time and energy than previous groups. As our population of older adults continues to rise in the United States, many human service professionals are searching for and focusing on ways to better understand the aging process, how to increase life satisfaction, and enhance the quality of life for our aging population. Assisting older adults to cope in a positive way with life's transitions indicates a degree of successful aging which results in increased life satisfaction. An ever-increasing amount of literature and research is evidence of the search for variables or factors which may enhance life satisfaction for our older adult population.

The purpose of this study was to examine previously identified variables (exercise, ethnicity, gender, socioeconomic status, and retirement) of importance for life satisfaction in late life. The life satisfaction of elders is important because older adults have historically been vulnerable in this society, the population balance now tips toward older adults, and opportunities exist now to increase elder health, simultaneously

maximizing life satisfaction for older adults and reducing healthcare costs. 793 participants (407 males and 386 females) completed the study. Demographic data collected for this study included personal information about the individual participant, such as gender, marital status, perceived health and life satisfaction, and educational attainment. These variables were incorporated into the analysis to compare life satisfaction scores between the chosen demographic variables. This study was conducted to enhance the knowledge base of life satisfaction among senior adults and what improves their level of life satisfaction.

Conclusions

Overall, the data from this study seem to indicate that the variables that impact life satisfaction in senior adults are exercise, ethnicity, income level, and one's retirement. Within the limitations of this research, it is concluded that individuals who exercise at least three times a week have higher levels of life satisfaction than those individuals who exercise two times a week or less on average. The current study also validates that the individuals who are exercising three or more times per week are at a lower risk for depression. 93% of the individuals who reported exercising two or less times per week were at risk for depression. These results coincide with previous research that demonstrates that regular physical activity is associated with general feelings of well being and the reduced symptoms of anxiety and depression. Many individuals exhibiting symptoms of depression tend to have very limited physical activity, and inactivity in older adults in reduced levels of endurance, strength, balance, and flexibility. (National Institute on Aging (NIA), 2003). Regular exercise, both aerobic and resistance training, is associated with decreased stress levels and increased levels of neurochemicals, such as

endorphins, which serve to enhance mood changes and to reduce symptoms of depression in adults even into their 90s (NIA, 2003).

The results are consistent with a large body of work demonstrating a link between exercise and life satisfaction. The results are in line with previous theoretical views on the link between exercise and life satisfaction (Rudinger & Thomaе, 1990; Kelly, Steinkamp, & Kelly, 1987; Larson, 1978; Mancini & Quinn 1981; Mazzeo & Tanaka, 2001; McGuire et al., 2001; Smith, Keilhofner, & Watts, 1986; Bee & Bjorklund, 2004).

The results also indicated that the way senior adults perceived their health correlated positively with their level of life satisfaction. This finding is consistent with other research (Herzog, Franks, Markus, Holmberg, 1998; Hoyt, Kaiser, Peters, Babchuk, 1980) which found that elderly men and women who engage in more activities, including exercise have better physical and mental health. When looking at correlations, cause and effect must be viewed carefully. That is, it is just as possible that more activity leads to better health, as it is that people who are healthier are able to engage in more and more varied types of activities and exercise. Whatever the causal link is between health and activity, it is clear that both of these variables are correlated with life satisfaction.

Other studies (Menec, 2003; Menec & Chipperfield, 1997) on the oldest-old confirm this result as well and even in very old people, greater functional capacity is associated with greater life satisfaction. Even moderate levels of regular physical activity can improve one's health and general well being. Studies in which groups of exercisers were compared to groups of sedentary people on different measures of health, physically active people were usually shown to have higher levels of life satisfaction (U.S. Department of Health and Human Services ([USDHHS], 1996). To enhance the

experience of life satisfaction as senior's age, it appears important to provide opportunities and possibilities for this population to remain active.

Gender played no significant role in life satisfaction in the current study. Males and females received extremely similar SF-36v2® Physical Component and Mental Component score means. The current research study supports the findings that both males and females experience comparable degrees of life satisfaction (Collette, 1984; Liang, 1982; Riddick, 1985; Shmotkin, 1990). This is somewhat different from some of the literature at large (Spreitzer & Snyder, 1974). The literature on life satisfaction and gender seems to be divided into different camps. Some studies say that women tend to have higher life satisfaction than men probably due to more developed social support networks, less depression post widowhood, and closer family ties (Hooyman & Kiyak, 1999). Other studies say that due to women's decreased financial support after losing a husband their life satisfaction decreases, and men tend to remarry sooner and have greater life satisfaction into their old age (Feinson, 1991).

In regard to socioeconomic status, a general conclusion would be that older adults who are better off financially will have higher levels of life satisfaction. The results of the current study are consistent with findings in the literature that have linked higher income levels with higher life satisfaction levels (Edwards & Klemmack, 1973; Medley, 1980; Riddick, 1985). The majority of individuals who are earning more money are also more educated. The researcher considers this a key factor in why life satisfaction rises with one's income level. The individuals that have received higher levels of education simply understand the importance of exercise. They recognize the consequences, as well as the numerous benefits of making time for exercise in one's life. Individuals of high

socioeconomic status do not have to worry about money so they can essentially sit back and enjoy life, as well as retirement. Someone of lower socioeconomic status may agonize and fret about how they will pay the bills each month. The opportunity to exercise for someone of lower socioeconomic status might just not be there, especially if someone is forced to work multiple jobs. The majority of individuals who are retired are the same individuals that have higher levels of educational attainment thus resulting in being of higher socioeconomic status. They have more opportunities for leisure activities, such as exercise. These same individuals also have better healthcare, which is a huge life stressor for older adults.

Recommendations

In spite of the strengths of the present study, the results may have somewhat limited generalizability. The participants sampled tended to be homogenous. The majority of the participants were Caucasian and living in the Greater Oklahoma City area. In future research, it may be important to take a sample from a more diverse setting. For example, compare Oklahoma SecureHorizons® members with that of other states or take a bigger sample of Oklahoma SecureHorizons® members. Sampling from two different states may be important in finding a wider range of results. A similar study also needs to be conducted using a larger sampling of various ethnic groups so that ethnic differences may be addressed in a superior manner.

Not only looking at a larger sample of SecureHorizons® members, but conducting research across a broader range of groups would contribute to a better understanding of the variables that lead to life satisfaction. Comparing life satisfaction scores among individuals still living in their own home to individuals living in assisted

living facilities and/or living in nursing homes would bring another dynamic to the pool of research. The bulk of prior research focuses generally on senior adults living independently in the community. The need to study senior adults who live in settings where they receive formal and informal support needs to be identified.

While feasibly more economical to conduct than a large multi-year clinical test, there are a number of shortcomings associated with the nature of this study. These data represent only a single point in time. A single SF-36v2® survey only gives a limited perspective of one's life satisfaction. Testing throughout one's adult life would improve the validity of the study and may need to be addressed for future research. Gaining knowledge on what predicts life satisfaction in late life requires a longitudinal design. A similar study needs to be carried out that involves pre, mid, and post testing of various exercise modalities (cardiovascular, weight training, mind/body, balance skills, etc.). This would allow researchers to view what exercise modalities can in fact improve life satisfaction among older adults.

The SF-36v2® is predominantly designed for clinical settings, and this sample was taken from residential homes and fitness centers, neither which is classified as a clinical setting. There should always be continued investigation into instrumentation that is sensitive and accurate for measuring life satisfaction in senior adults.

This study did not take into account one's social support. Many researchers have investigated social support and found that is a critical determinant of health (Barker & Pistang, 2002; Krause, 1997; Oxman & Hull, 1997). With the senior adult population growing; any new light that can be shed upon the enhancement of life satisfaction would be beneficial.

The high rate of depression reported here calls for increased public attention to be placed on mental health risks and protective factors for older adults. Public service campaigns may improve awareness of problems and treatment options for senior adults themselves and their family members. To accomplish this goal, individuals, advocates, service providers, and key stakeholders can form partnerships focused on interventions and policies that foster psychological and physical well-being of senior adults. Future gerontological research needs to continue to examine the specific nature and circumstances surrounding the positive association between the provision of support and psychological well-being. The scope of this research did not include an examination of social support.

These future recommendations will also help to improve the strength of the study in general. The data from this study seem to indicate that the major variables that impact life satisfaction in the elderly population are one's exercise level, income level, educational level and retirement. That is, all senior adults are more satisfied with life if they are more active, healthier, and have greater financial resources. The results indicated that the way older adults perceived their health correlated positively with their level of life satisfaction, both physically and mentally.

As mentioned in the introduction to this dissertation, one of the core purposes for conducting this research was to expand the database on life satisfaction among the senior adult population. The general population needs to be better informed regarding the potential health benefits of exercise for senior adults. There are numerous avenues in which to campaign for more public awareness regarding the United States' aging population and the necessity to exercise. The American Association of Retired Persons is

one of the largest and most powerful organizations in this country. Public awareness could be greatly enhanced through publications from their newsletter alone. The YMCA, various fitness centers, and local churches across the country offer health services to hundreds of thousands of older individuals. Education on the importance of exercise alone should become a vital part of their program. The elderly population is often ignored, stereotyped, and misunderstood. It is vitally important that researchers help people understand that getting older doesn't have to be equated with the end of all good things. If this study has helped dispel some negative myths about the aging process than that alone makes it worthwhile.

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APPENDICES

APPENDIX A
CONSENT FORM

CONSENT FORM AND INFORMATION REGARDING
“Life Satisfaction in Individuals Sixty-Five Years of Age and Older”

INTRODUCTION

You are invited to participate as a subject in this study through Oklahoma State University, to survey life satisfaction and self-concept of senior adults. Approximately 2,000 senior adult subjects in the greater Oklahoma City area will be included in this study. It is believed that the results of this study will be useful in identifying variables that have the potential to increase one’s level of life satisfaction and enhance the quality of life of senior adults. It is imperative to find simple, low-risk, inexpensive interventions/treatments to offset preventable declines among senior adults. This study will help obtain a better understanding of life satisfaction among that group.

STUDY DETAILS

As a participant in this study you will be asked to respond to statements regarding your attitudes and beliefs regarding your satisfaction with life and self-concept. You will also be asked questions regarding your demographic and socioeconomic status. The survey will take approximately 10 minutes to complete.

You were selected because you are aged 65 or above and reside in the greater Oklahoma City area. You will be one of approximately 1,500 subjects chosen to participate in this study.

CONFIDENTIALITY

This information is for research purposes only; it will be kept strictly confidential. The records of this study will be kept private. Any written results will discuss group findings and will not include information that will identify you. Research records will be stored securely and only researchers and individuals responsible for research oversight will have access to the records. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research. Data will be destroyed once it is transcribed at completion of the study.

RISKS

There are no known risks to you as a subject in this study.

BENEFITS

Participation in this study is strictly voluntary. Information from this study can be used to identify variables that have the potential to increase one’s level of life satisfaction and enhance the quality of life of senior adults.

CONTACT INFORMATION

If you have any questions about this research project you may contact the investigator Tia J. Wallace at Oklahoma State University, Department of Health and Human Performance, 1202 Farm Road, Stillwater, OK 74075. She may be reached by telephone at 405-744-4298. If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-1676 or irb@okstate.edu.

PARTICIPATION

There will be no impact on your relationship with the YMCA if you choose not to participate in this study.

CONSENT

The completion and return of the survey indicates your consent to participate in the research.

APPENDIX B
DEMOGRAPHIC INFORMATION FORM

DEMOGRAPHIC INFORMATION FORM

Age: _____

Please check one of the following boxes:

Gender

- Male
- Female

Marital Status

- Single
- Married
- Divorced
- Widowed

Ethnicity

- Caucasian
- African American
- Latino(a)
- Asian
- Native American
- Other (please specify) _____

Education Level

- Elementary School
- High School
- Some College
- College Degree
- Post College

Please rate your current physical health. Circle one of the following that best describes your health during the past 3 months.

Excellent Very Good Good Fair Poor

Please check the box that corresponds to your total current annual income:

- Below \$15,000
- \$15,000 - \$29,000
- \$30,000 - \$49,000
- \$50,000 - \$69,000
- \$70,000 - \$89,000
- \$90,000 - \$99,000
- Above \$100,000

Please check one of the following:
How satisfied are you with your life?

- Very Satisfied
- Somewhat Satisfied
- Neutral
- Somewhat Dissatisfied
- Dissatisfied

How many times a week, on average, do you exercise?

- None
- 1-2 times per week
- 3-4 times per week
- 5 or more times per week

Are you currently retired?

- Yes
- No

APPENDIX C
SF36v2® HEALTH SURVEY

Your Health and Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. *Thank you for completing this survey!*

For each of the following questions, please mark an in the one box that best describes your answer.

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Compared to one year ago, how would you rate your health in general now?

Much better now than one year ago	Somewhat better now than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse now than one year ago
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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3. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
• Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Lifting or carrying groceries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Climbing <u>several</u> flights of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Climbing <u>one</u> flight of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Bending, kneeling, or stooping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Walking <u>more than</u> a mile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Walking <u>several</u> hundred yards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Walking <u>one</u> hundred yards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Bathing or dressing yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼

- a. Cut down on the amount of time you spent on work or other activities.
- b. Accomplished less than you would like....
- c. Were limited in the kind of work or other activities.....
- d. Had difficulty performing the work or other activities (for example, it took extra effort)

5. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼

- a. Cut down on the amount of time you spent on work or other activities
- b. Accomplished less than you would like....
- c. Did work or other activities less carefully than usual

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

Not at all	Slightly	Moderately	Quite a bit	Extremely
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. How much bodily pain have you had during the past 4 weeks?

None	Very mild	Mild	Moderate	Severe	Very Severe
▼	▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
	▼	▼	▼	▼	▼
• Did you feel full of life?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have you been very nervous?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have you felt so down in the dumps that nothing could cheer you up?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have you felt calm and peaceful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Did you have a lot of energy?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have you felt downhearted and depressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Did you feel w/out out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have you been happy?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Did you feel tired?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. How TRUE or FALSE is each of the following statements for you?

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
• I seem to get sick a little easier than other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• I am as healthy as anybody I know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• I expect my health to get worse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• My health is excellent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

THANK YOU FOR COMPLETING THESE QUESTIONS!

APPENDIX D
INTERNAL REVIEW BOARD FORM

Oklahoma State University Institutional Review Board

Date: Friday, May 30, 2008
IRB Application No: FD0293
Proposal Title: Life Satisfaction Among Individuals Sixty Five Years of Age and Older

Reviewed and Processed as: Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 5/29/2009

Principal

Investigator(s):

Tia J. Wallace	Bert Jacobson
1202 W. Farm Road	204 Willard
Stillwater, OK 74078	Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 46 CFR 46.

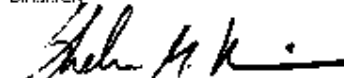
The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct the study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unpredictable and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Shelia Kennison, Chair
Institutional Review Board

VITA

Tia Jaclyn Wallace

Candidate for the Degree of

Doctor of Philosophy

Dissertation: LIFE SATISFACTION IN INDIVIDUALS AGE SIXTY-FIVE YEARS OF AGE AND OLDER

Major Field: Health, Leisure and Human Performance

Biographical:

Personal Data: Born in Milwaukee, Wisconsin, December 9, 1980, the daughter of Jack and Tracy Wallace

Education: Graduated from Eustace High School, Eustace, Texas, May 1999; received Associates of Arts from Trinity Valley Community College, Athens, Texas, May 2001; received Bachelors of Arts degree from the University of Texas at Austin, Austin, Texas, 2003; received Masters of Science degree from Texas State University – San Marcos, San Marcos, Texas, May 2005; completed the requirements for the Doctor of Philosophy in Health, Leisure and Human Performance at Oklahoma State University in December 2008.

Experience: Health and Fitness Director, Tinker Area YMCA (2005-2007); Graduate Teaching Assistant in the Department of Health and Human Performance, Oklahoma State University, (2005-2007); Health Educator for University Health Services and HHP Adjunct, Oklahoma State University, (2007 to present).

Professional Memberships: Oklahoma Association of Health, Physical Education, Recreation and Dance (OAHPERD)

Name: Tia Jaclyn Wallace

Date of Degree: December, 2008

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: LIFE SATISFACTION IN INDIVIDUALS AGE SIXTY-FIVE YEARS OF AGE AND OLDER

Pages in Study: 151

Candidate for the Degree of Doctor of Philosophy

Major Field: Health, Leisure and Human Performance

Scope and Method of Study: The purpose of this educational research study was to investigate whether various variables (exercise, ethnicity, gender, socioeconomic status, and retirement) had an effect on the quality of life in individual's age 65 years of age and older. The sample consisted of 793 participants (407 males and 386 females), living in the Greater Oklahoma City area, who were enrolled in the SecureHorizons® healthcare plan. The SF-36v2® Health Survey calculated physical component summary scores, as well as mental component summary scores. These scores were then used to find significance in SPSS.

Findings and Conclusions: Independent t-tests revealed significant differences between low exercisers and high exercisers' physical component and mental component life satisfaction scores (SF-36v2®); physical component scores ($t = -41.179$, $df = 736.41$, $p = .000$) and the mental component scores ($t = -63.804$, $df = 718.15$, $p = .000$). An analysis of variance revealed significant differences between group physical component and mental component life satisfaction scores (SF-36v2®) for different ethnic backgrounds; physical component scores ($F = 12.978$, $df = 4$, $p = .000$) and the mental component scores ($F = 15.156$, $df = 4$, $p = .000$). Comparison of the means (\pm SE) revealed no significant differences between male and female physical component and mental component life satisfaction scores (SF-36v2®); physical component scores ($t = -.879$, $df = 791$, $p = .380$) and the mental component scores ($t = -.270$, 791 , $p = .787$). An analysis of variance revealed significant differences between group physical component and mental component life satisfaction scores (SF-36v2®) among different income levels; physical component scores ($F = 24.561$, $df = 4$, $p = .000$) and the mental component scores ($F = 24.741$, $df = 4$, $p = .000$). Comparison of the means (\pm SE) revealed significant differences between retired individuals and individuals who are not retired physical component and mental component life satisfaction scores (SF-36v2®); physical component scores ($t = 9.487$, $df = 791$, $p = .000$) and the mental component scores ($t = 11.135$, $df = 791$, $p = .000$). One's exercise level, ethnic background, income level and retirement status all play a role in life satisfaction levels. However, no differences were found between males and females.

ADVISER'S APPROVAL: Dr. Bert Jacobson
