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A THEORETICAL PERSPECTIVE  
OF FACTORS THAT RELATE TO THE  
FUNCTIONAL INDEPENDENCE  
OF MATURE ADULTS

by

Richard N. Ashden, D.C.

A dissertation submitted in partial fulfillment  
of the requirements for the degree

Doctor of Education

University of San Diego

1998

Dissertation Committee

Edward Kujawa, Ph.D., Director  
Johanna Hunsaker, Ph.D.  
Elmer Baldwin, Ed.D.

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## ABSTRACT OF THE DISSERTATION

Limited understandings by policy makers and health care providers about living conditions in later adulthood continually constrains mature adults from doing more for themselves, and society. These circumstances move society to devalue mature adults. Less valued mature adults tend to become even more dependent, that is, increasingly less willing to care for themselves, and less able to contribute to the social good. As a result, a vicious cycle has been created, and it causes mature adults to live lower quality lives, and become increasingly dependent on others.

To empower mature adults in later life, this study does the preliminary work to develop an instrument to discover which quality of life indicators/factors best explain Functional Independence (FI). The six indicators investigated were the (1) Activities of Daily Living Status (ADLS) or competency in the performance of essential daily tasks, (2) Physical Status (PS) or the level of physical activity, (3) Cognitive Status (CS) or good mental health, (4) Social Status (SS) or supportive relationships, (5) Environmental Status (ES) or the freedom from undue stressful life events and everyday frustrations, and (6) Health Status (HS) or the mitigation/absence of chronic diseases. Empowering mature adults to do more for themselves, and society has the potential to engender more enlightened social attitudes about later adulthood.

To learn more about these six quality of life indicators, data highlighting the most relevant research studies were accumulated, and a 32-question survey was created. Administrators then were contacted at five senior citizen centers to make arrangements to administer the survey. After taking steps to protect all subjects, the survey questionnaire was piloted to a sample of 12 mature adults, and completed by a total sample of 160 subjects who could be conveniently recruited at five senior citizen centers.

The data analysis reported demographics showing a majority of the sample of mature adults were female (98), Caucasian (134), over 66 (130), married at least once (122), and high school graduates (147). Factor analysis revealed a seven-factor solution accounting for 62.1% of the variance of FI. Four of the seven factors consisted of three or more questions, and significant factor loadings for 22 of the 26 survey questions were analyzed. Internal consistency reliability was measured using Cronbach's alpha; based on the five inter-item subscales (ADLS, PS, CS, ES, SS) analyzed, it was found that the overall alpha for Functional Independence (FI) was .7771. In contrast, based on the 26 questions analyzed, it was found that the overall alpha for Functional Independence (FI) was .8285. Null hypotheses testing showed that significant correlations existed among each pair of quality of life variables analyzed; this was consistent with the research reviewed.

## DEDICATION

I would like to dedicate this dissertation to my best friend for over twenty years, my wonderful and outstanding wife, Laura Ashden. Her unremitting faith, unqualified love, and untiring efforts helped me through many difficult times that arose since I entered the University of San Diego doctoral program in 1992. I truly appreciate the money, time, and energy that she contributed to my efforts; her enthusiastic encouragement, and timely efforts on my behalf assured the timely completion of this dissertation.

I also want to dedicate this dissertation to my three deceased parents, Vivian, Herman (my step-father since 1966), and Morris. My mother Vivian, always caring for me, taught me to focus on maintaining good health during the most stressful times. My step-father, Herman, a remarkable man, and a good father; he encouraged me to adopt a triumphant attitude, and to tackle, and successfully complete the most challenging tasks. My father, Morris, although we were often apart, always seemed proud to have me as his son; besides being a chess buddy, he offered his financial support during chiropractic college, and then when I graduated, furnished the financial help I needed to open my first chiropractic practice.

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I also want to thank other supportive people such as Mrs. Nehmat Saab, Sonia Causey, and Heidi Carty. Mrs. Nehmat Saab of the Los Angeles College of Chiropractic Library helped me successful complete an in-depth the article search. Another excellent librarian, Sonia Causey of the University of San Diego Library, on many occasions, helped me find materials needed for my dissertation. I also want to express my deep gratitude to the academic computing division at the University of San Diego for the incredibly helpful consultation services of Heidi Carty; her guidance in helping me analyze my data using SPSS computer software was invaluable.

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## CHAPTER I

### STATEMENT OF THE PROBLEM

#### Introduction

Limited understandings by policy makers and health care providers about living conditions in later adulthood continually hampers mature adults from doing more for themselves, and society. Because of later adulthood limitations, policy makers and health care providers are less able to facilitate a higher level of functioning for independent living for mature adults. As a result, mature adults lose a measure of their Functional Independence, become increasingly dependent on others, and live lower quality lives.

Over the long-term, mature adults are not empowered by virtue of their living conditions or by virtue of societal expectations to enjoy the kind of life that would render their contributions more valued (Carstensen, 1996). Ultimately, these less valued mature adults tend to become more dependent, that is, increasingly less willing to care for themselves, and less able to contribute to the social good. Society overall loses when it inadvertently allows mature adults to become needlessly infirm and overly dependent on others. This later adulthood predicament encourages a society to "lump together a group of people and characterize them by the group's lowest common denominator

[and in the process], we are apt to overlook the individuals with the most to offer" (Carstensen, 1996, p. B3).

### **Scholarly Research**

To assist mature adults to become more willing, and more able to care for themselves, and contribute more to the social good, policy makers and health care providers must gather additional knowledge and acquire a deeper understanding of Functional Independence. Scholars inform us that a higher level of functioning in later adulthood may involve examining such quality of life indicators as the Activities of Daily Living, Physical Status or the daily level of physical exercise, Cognitive Status or the overall mental health condition, Social Status or the quality of supportive relationships, Environmental Status or the cumulative stress created by stressful life events (SLEs) and everyday frustrations/hassles, and Health Status or the distressing influence of active chronic diseases in later adulthood (Appendix A). Satisfying these lifestyle factors can ameliorate common everyday stressors, build Functional Independence, foster a perception of self-efficacy, and encourage more enlightened social attitudes toward aging. With this new knowledge, policy makers, and health care providers may begin to rethink their ideas about aging.

Aging is a highly complex process complicated by tremendous variations among the mature adult population. It is not a disease. Although aging is a natural part of the

life cycle, it requires a prodigious amount of adaptation, stamina, and flexibility (Hall, 1995). By gathering additional knowledge of how lifestyle factors in later life can promote the Functional Independence of mature adults, the future public policies and practices of health care leaders will more effectively help mature adults contribute to their own quality of life, and to the social good.

### **Background of the Problem**

As we approach the beginning of the 21st century, our society is confronted by a significantly changing age distribution in the American population (Koplan & Livengood, 1994). In a twenty years span since the late 1960s, the mature adult population grew twice as fast as the rest of the American population; moreover, this rapid growth is expected to accelerate early in the next century as the large baby-boom generation progresses through middle age, and approaches later adulthood (Soldo & Agree, 1988). The problem now confronting our society is that there will be nearly 50 million Americans who are 60 years of age or older by the end of this 20th century (Stump, 1991).

This increase in the proportion of mature adults in the American population is not a sudden change. Since the late 1960s, life expectancy in the mature adult population has risen at unprecedented rates, from 70.2 years in 1965 to 74.5 years in 1983 (Scommegna, 1984). In fact, increases in the mature adult population, both in numbers and in

proportion to the whole, is increasing rapidly in most parts of the world (Darnton-Hill, 1995). As a result of this new longevity, most children born today will live well beyond their 70th birthday, and therefore further add to the size of the mature adult population (Green, 1982). However, there are social, economic, and educational consequences of increasing longevity (Peterson, 1983).

### Prevalence of Chronic Diseases

In our rapidly aging society, chronic disease and disability pose the most significant threat to successful aging (Rose, 1991). In spite of increases in longevity in the 20th century, trends in longer living have not been matched by the extension of a healthy life (Rogers, 1990; Annual Report, 1985). In other words, mature adults have suffered from, and been handicapped by the increased burden of many chronic diseases and disabilities (Koplan & Livengood, 1994; The Picture of Health, 1987). For example, the increasing proportion of mature adults in American society portends a higher incidence of dementia and heart disease (Annerstedt, 1993; Makrides, Simpson & Officer, 1995).

While the incidence of coronary heart disease is declining in the general population, its prevalence and impact is increasing, in later adulthood, as the number of mature adults increases (Makrides et al., 1995). In fact, several angina mature adult survivors with long-term

coronary heart disease were found to have a significantly higher risk for diminished functional capabilities; extended survival combined with long-term functional disabilities among mature adults most likely will increase society's burden significantly (Nickel & Chirikos, 1990).

The very perception of such morbid conditions combined with the trend toward longer living has convinced society to negatively stereotype mature adults as feeble, senile, disabled, and needing to be confined to nursing homes. Little attention has been given to the fact that as much as half of the functional decline due to conditions associated with aging may result from preventable chronic diseases (O'Brien & Vertinsky, 1991). Essentially, despite living longer, mature adults' health was poorer whether judged by their level of Functional Independence, number of health problems reported, Cognitive Status or rate of hospitalizations (Roos, Havens & Black, 1993).

#### Social Devaluation Of The Aging Cycle

The social devaluation of mature adults tends to increase their dependency on society, and also decrease their quality of life. This, in turn, incites the social devaluation of mature adults to become more highly exaggerated, and more deeply ingrained in the public's collective mind. Ultimately, these less valued mature adults tend to become more dependent, that is, increasingly less willing to care for themselves, and less able to

contribute to the social good. The sad aftermath of this vicious cycle is that it further undermines the Functional Independence of mature adults which, in turn, reconfirms society's original devaluation of mature adults.

This distorted societal thinking may be brought on, and fueled, in part, by limitations in the knowledge available about which high quality of life indicators best enhance the Functional Independence of mature adults. As a result of this lack of knowledge, this distorted thinking goes relatively unchallenged, and as a consequence tends to help sustain the vicious cycle. The basis of this vicious cycle is that the increase in chronic diseases in later adulthood stimulate society to devalue the usefulness of mature adults which, in turn, further serves as a motivation for a decline in their level of functioning for independent living (FIL). The chronicity of this vicious cycle is intensified by the fact that policy makers and health care providers have accumulated less knowledge about the last 30 years of life than they have learned about the last five (Carstensen, 1996).

Health restrictions. Although longevity has risen dramatically in the 20th century, wisdom is still not communicated more often because mature adults continue to suffer and die precociously from health conditions that are preventable and potentially reversible (Bortz & Bortz, 1996; Rogers, 1990; Newton, Lazarus, & Weinberg, 1984). Wisdom in

later adulthood expresses itself through a "detached and yet active concern with life itself in the face of death itself" (Erikson, 1964, p. 131). In the past, wisdom was not communicated to other generations because mature adults often became too unhealthy or did not live long enough beyond the advent of later adulthood.

In the 1990s, the expression and/or communication of wisdom, and a concern with life have not increased maximally in the mature adult population because of a comparable rise in chronic diseases and lengthy disabilities (Laukkanen, Kauppinen, Era & Heikkinen, 1993; The Picture of Health, 1987). For example, Semaan (1993) found a significant correlation between seven chronic health conditions (diabetes, cancer, arteriosclerosis, stroke, hip fracture, and neurological and lung conditions) and functional impairment in later adulthood in each of seven basic and ten instrumental activities of daily living. As a consequence, the threat of enormous numbers of mature adults growing increasingly dependent from these chronic diseases motivates society to devalue mature adults.

Limited knowledge. Limitations in practical knowledge about later adulthood are partly responsible for American society devaluing the wisdom and experience of mature adults. For example, a highly valid and widely applicable assessment instrument that accurately measures Functional Independence remains to be perfected (Ikegami, 1995).



However, to date, too little is known about the intricate relationship that exists between habitual or regular physical activity (especially that of lower-to-moderate intensity) and the maintenance of day-to-day functioning in mature adults (DiPietro, 1996). In addition, too little is known about the specific effect of moderate exercise on kinematic gait mechanics (Prassas, Rominger, & Barber, 1995). Furthermore, too little is known about the impact of strength training on physical performance or disability (McClure, 1996). Undeniably, there is still a paucity of research knowledge on later adulthood, and too few solutions to cope with the problems of aging (Swensen, 1983).

Stereotypical thinking. Without a doubt, "societal values in the United States have contributed to the myth that old age, debilitation, and illness are synonymous" (Schuster & Ashburn, 1980). Typical myths on aging incorporate such stereotypical attitudes as (1) most mature adults gradually become senile and incompetent, have lower intelligence, and are stubborn, gruff, and cranky, (2) most mature adults are unhappy and reside in nursing homes, and (3) most mature adults are destined to become weak, feeble, and eventually disabled (Hall, 1995). In fact, studies have shown that important components of fitness such as motor abilities and physical, psychological, and social capacities normally deteriorate with age; as a result, several

functional impairments typically develop in later adulthood (Mota, Paiva & Silva, 1995).

Aging, generally, has come to be associated with increased body fat, decreased muscle mass, lower maximal O<sub>2</sub> uptake, and lower energy intake. This decline in overall physical fitness was due in part by a decrease in regular physical activity (Meredith, Zackin, Frontera & Evans, 1987). Moreover, mature adult groups were found to contain more sedentary individuals, and fewer moderately active individuals (i.e. those taking exercise only once or twice a week); specifically, the less active group had lower VO<sub>2</sub> max values and higher body fat, body weight and blood pressure values when compared with more active groups (Bland & Williams, 1988). To sum up, aging has been found to be obligatorily associated with reduced maximal aerobic power reduced muscle strength, and therefore, reduced physical fitness (Astrand, 1992). Moreover, strength loss combined with declining physical fitness may partly account for several of the common misperceptions about aging held by many health care professionals; for example, a majority of health care professionals regarded mature adults to be more underprivileged than was actually the case (Singleton, Harbison, Melanson & Jackson, 1993).

The far-reaching repercussions of all these myths is that it hinders efforts to gain a more complete understanding of later adulthood, diminishes the ability of

mature adults to care for themselves, and undermines their potential to make everyday contributions to the social good. As a result, the American public devalues the wisdom and experience of mature adults, and blindly comes to regard later adulthood as an endpoint that limits mature adults' future usefulness in society (Robbert, 1981). Distorted stereotypical thinking today routinely equates the aging process with disease and disuse (Bortz & Bortz, 1996) instead of such distinguished values as wisdom, dignity, knowledge, respect, and obedience (Brown, 1990).

Financial difficulties. Because of limitations in knowledge, and the effects of myths on aging, relatively uninformed policy makers and health care providers periodically authorize enormous sums of money on senior programs; millions of dollars and large quantities of time and energy are spent yearly to care for mature adults. Past statistics have shown that mature adults earn half the income of their younger counterparts, and a sharp decrease in labor force participation rates with increasing age (Every Ninth American, 1982). As a result, mature adults are routinely expected to deplete more resources than they contribute back to society. In fact, economists estimate that government expenditures are three times greater for the elderly than for children (Soldo & Agree, 1988).

An estimated 50 percent of the U.S. federal budget will be spent on senior programs by the year 2025; as a result,

the impact of longer lives on the current system of public programs for mature adults might lead to financial disaster (Scommegna, 1984). For example, in one senior program, federal funding accounted for 46% of the program's budget, state government for 18%, local government for 21%, and United Way for 11% (Prieto, 1987). Although federally-funded medical research has played an important role in declines in mortality, federal research dollars have not always been applied to research needed to slow down the aging process, and enhance Functional Independence (Scommegna, 1984).

Escalating health care costs. More recent studies have shown health care costs to be seven times higher for this group, yet relatively little medical research has focused on the preventive aspects of the aging process (Stump, 1991). As society ages, a problem is presented to policy makers, and health care providers; the increased population of frail mature adults, those over 55 years of age, creates a complex set of diverse needs and long-term concerns (Dennehy, 1995). Frail mature adults are particularly vulnerable to a health system that is fragmented and fails to focus on such preventive aspects as the preservation or restoration of function (Evans, Yurkow & Siegler, 1995). This realization, coupled with other deep societal changes, has rendered traditional ways of conceptualizing, understanding, and accommodating the aging process inadequate (Darnton-Hill,

1995; Pratt, 1981). In essence, the traditional medical approach to assessing quality of life, rooted in the physical, mechanical functions of the body, by itself, is inadequate, particularly for long-term care residents; life is more than a series of physical functions (e.g. bathing, dressing, eating, toileting, sleeping), the traditional health care approach, based on the physical, mechanical functions of the body, by itself, is inadequate for assessing quality of life (Goodwin-Johansson, 1996).

#### Reforming the Health Care System

The present health care system has been characterized as fragmented, bureaucratic, and driven by cost efficiency rather than by the motive of high-quality care (Ross & MacDonald, 1994). For policy makers, significant changes are needed to implement the performance of high-quality services, and the reduction of health care costs (Morrissey et al., 1995). For health care providers, problems needing change are described best by diminishing resources, and a lack of control in a context of aging, multiple health problems, and impending death (Ross & MacDonald, 1994). Nevertheless, contrary to previous assumptions, mature adults can benefit substantially from health promotions, and disease prevention programs (Koplan & Livengood, 1994).

Health promotion. There is a need to develop and implement effective health promotion programs for mature adults (Koplan & Livengood, 1994). For example, policy

makers and health care providers might consider designing and implementing a reconditioning program to build strength, promote mobility, and increase balance for people over the age of 60 (Stump, 1991). In addition, greater attention needs to be focused on an organized approach to patient follow-up practices (Morrissey et al., 1995).

A more organized patient follow-up may be required for mature adults taking prescribed medications. For example, because of prolonged delays in metabolizing and/or excreting foreign substances, and because of involuntional changes that customarily occur in mature nervous systems, mature adults tend to be oversensitive to toxicity, and drugs often have marked side-effects; this can be seen with combinations of psychotropic drugs that may have mental side-effects, and until the drug is discontinued, the resulting confusion and behavioral drug-induced changes may be incorrectly interpreted as dementia (Osimani & Freedman, 1991). In essence, because relatively little is known about effective health promotion methods, the needs of mature adults such as maximizing quality of life in chronic illness, are often managed inadequately (McDermott, 1995).

Disease prevention. The correlation between maximizing quality of life, disease prevention, and sound nutritional status still has not been fully recognized (Fitzpatrick, McGee, Browne & McLaughlin, 1993). Nevertheless, mature adult patients at-risk for nutritional deficiencies were

found to be highly predisposed to physical disabilities, lowered self-esteem, depression, and a variety of psychological difficulties (Fitzpatrick et al., 1993). Also yet to be fully recognized is the fact that lifestyle factors such as exercise activity, body weight levels, consumption of antioxidants, daily dietary fiber, vitamins and proteins were all found to be influential factors in determining the overall health and vitality of the mature adults (Simon, 1996). With this in mind, adding Medicare reimbursements for preventive services, and encouraging significant office systems changes, by itself, probably will not lead to effective implementation of preventive services in community medical practices (Morrissey et al., 1995).

Preventing institutionalization. The risks of institutionalization tend to rise along with the functional impairments in activities of daily living, the absence of a proficient caregiver, advancing age, and the presence of dementia (Glazebrook, Rockwood, Stolee & Fisk, 1994). Impairments in the basic and/or instrumental activities of daily living, and an associated decline in Functional Independence greatly increases the likelihood that mature adults will become institutionalized (Glazebrook et al., 1994; Worobey & Angel, 1990). Therefore, policy makers and health care providers ought to consider that there are still many unmet needs among mature adults (Raphael et al., 1995). Moreover, any future functional impairment/decline can

increase unmet needs to such a point that they actually exceed the capacity of existing helping networks (Stoller & Pugliesi, 1991). At such a point, institutionalization, whether it be in a hospital or nursing home, becomes more likely. Unfortunately, a majority of patients in traditional institutional long term care show further cognitive deterioration (Annerstedt, 1993).

Some serious major issues faced by mature adults that may precipitate functional impairments in the basic and/or instrumental activities of daily living include loss of home, possessions, friends (Rabins, Storer & Lawrence, 1992). In fact, over the long-term, impairments in the basic and/or instrumental activities of daily living were found to be significant predictors of mortality (Cohen, Saltz, Samsa & McVey, 1992; Reuben, Siu and Kimpau, 1992). In order to avoid mortality and/or institutionalization, it first may be necessary for mature adults to avoid any significant decline in the activities of daily living; in other words, it is important for mature adults to strive to regain, maintain, and/or optimise their level of functioning for independent living (FIL) (Glazebrook et al., 1994; Molaschi, Ponzetto, Ferrario & Scarafiotti, 1995; Nydevik & Eller, 1994).

#### More Leisure Education Needed

Generally, education has the potential to provide significant preventive health care improvements for mature



adults. Specifically, leisure education programs for mature adults ought to consider emphasizing the enhancement of quality of life and Functional Independence by empowering individuals with the required knowledge and skills needed to age successfully (Cosky, 1987). One such leisure education program could focus on Osteoporosis.

Identifying Osteoporosis. The identification of Osteoporosis in an aging population is important (Walker, 1994). The incidence of osteoporotic fractures is already at epidemic proportions in the United States, it is expected to increase steadily into the next century as the population ages (Martin, 1995). Therefore, it is important to learn how preventive bone density measurements (BDM) can be accomplished using methods such dual-photon absorptiometry (DEXA) to detect osteoporosis; mature adults fall more often as they age, and fractures at particularly vulnerable sites have been found to increase exponentially with the decline in bone mass/bone mineral density (Walker, 1994).

Over 250,000 mature adults are hospitalized each year for the treatment of a fractured hip, and this by itself, engenders considerable medical, and socioeconomic costs to society; the pernicious consequences of hip fractures due to falls and osteoporosis include loss of confidence and a premature deterioration in Functional Independence (Allegrante, MacKenzie, Robbins, & Cornell, 1991). In fact, Osteoporosis has been strongly linked as a predisposing

cause of fractures (Walker, 1994), and therefore falls are a primary cause of injury, disability, dependence, and death among mature adults (Poll, 1992). Nevertheless, to date, the number of controlled studies looking at interventions to lower fall incidence have been limited (Wolter & Studenski, 1996).

Dealing with Osteoporosis. Concerning osteoporosis, recent research has focused on preventive measures that employ such nutritional factors as calcium and vitamin D, and regular physical activity (Martin, 1995). However, more leisure education programs are needed to teach mature adults how to prevent, identify, and/or treat osteoporosis as well as other potential health problems (Cosky, 1987). Generally, more leisure education programs could help facilitate preretirement education planning for use of leisure, retraining for new activities, safe recreation, and coping with the dynamic changes of later adulthood; for this reason, it is important to gain more understanding concerning the educational needs and learning characteristics of mature adult learners (Peterson, 1983).

#### Past Work Retirement Policies

To date, the American public has been persuaded to think of later adulthood as an endpoint, a time of poor health, and debilitation (Robbert, 1981). Past policies emphasized the heavy demands of physical work; therefore, significant declines in physical capabilities could sharply

intensify the stresses and strains of heavy physical work, and make further employment unlikely (Suurnakki, Nygard & Ilmarinen, 1991). Moreover, in the mature adult population, physical disabilities (PD), and chronic illnesses have been strongly correlated with restricted activity days (RADs) (Scholes, LaCroix, Wagner & Grothaus, 1991). To sum up, customary changes in physical working capacity that routinely come forth with age often have a negative impact on the employability of mature adults in jobs with heavy physical work demands (Shephard, 1987).

Declining employability. The decline in muscle strength, aerobic power, and tolerance of thermal loads affects the employability of mature adults doing heavy physical work (Shephard, 1987). For example, strength loss is a common deficit often associated with poor physical performance and recurring falls among more frail mature adults (McClure, 1996). As a result of declining physical fitness, a large and increasing number of mature adults continue to live just below, at, or just above physical disability, often needing only a minor intercurrent illness to render them functionally dependent (Astrand, 1992). In short, the image of mature adults passing retirement age is still a negative one; society still assumes that their physical and mental health has declined, and they have lost interest in their work environment (Schroeder, 1986). Therefore, the current trend is to retire mature adult

employees early instead of letting them gradually phase into retirement (Zuehlsdorff & Baldwin, 1995). Unfortunately, for many mature adults, leaving a meaningful career for a life of inactivity, and/or the isolation with retirement, frequently leads to housing, sickness, social, and material problems (Schroeder, 1986).

New retirement policies needed. Despite the commonness of the physical inactivity, and mental decline in later adulthood, a tremendous inter-individual variation exists among mature adults in regard to their rate of aging; for example, for those employees who have chosen a daily lifestyle that tends to conserve their physical and mental fitness, vigorous training can reduce several components of biological aging by as much as 20 years (Shephard, 1987). As a result, and in contrast to past retirement traditions, the active work role for mature adults, potentially, can now extend well into one's 70's (Mitchell & LeClair, 1994). To sum up, for physically fit mature adults, it seems manifestly unfair to forcibly retire them. Therefore, policy makers ought to consider new policies that can help to bring about economic and ideological changes that curb the traditional idea of work and retirement (Krain, 1995).

#### The Need for More Understanding

Policy makers and health care providers, because of their incomplete understanding of what constitutes a high quality of life in later adulthood, rarely give serious

thought to the actuality that mature adults are still capable, to varying degrees, of giving something valuable back to society. In addition, because of their incomplete understanding, policy makers and health care providers inadvertently restrict mature adults from doing more for themselves, and society. Too little recognition has been given to the actuality that many mature adults have worked in their professions and been involved in their communities for decades. When deciding health care issues, policy makers have given too little thought to the actuality that, to varying degrees, elderly people are still capable of giving something significant back to others.

Still capable after all these years. Many who study aging believe that certain aspects of the inevitable aging process can be attributed to other factors such as lifestyle and environment (Stump, 1991). For example, later adulthood symptoms such as fatigue, lack of muscle co-ordination, dysarthria, and difficulty in maintaining attention may be incorrectly labelled, and collectively dismissed as an integral part of the aging process. However, it has been shown that sleep promotion resulting in adequate sleep can reduce these symptoms and restore activity, and begin a positive trend toward health, and well-being; hence, adequate sleep can be of enormous value in helping mature adults retain their Functional Independence and quality of life (Hudson, 1996).

Mature adults now retire earlier from their employment, for example, a lifelong career position, to become more active than ever (Shephard, 1987). In fact, it was discovered that the rates of participation were steadily increasing for mature adults in most physical, cultural, educational, and volunteer activities (Delisle, 1993). As an illustration, the number of subjects from both mature adult and younger groups taking part in regular physical exercises three or more times a week did not vary significantly from one age group to the next (Bland & Williams, 1988). In essence, by refuting myths about inability of mature adults to increase their strength, health care providers most likely will motivate more mature adult patients to take on the fitness challenge (Munnings, 1993).

New work policies needed. Problems of mature adults are less physical than social; scientists, politicians, and social institutions have been successfully disproving these negative images (Schroeder, 1986). The continuation of work has the potential to become more a function of job demands accommodating worker capacities, than arriving at a particular chronological age of retirement; consequently, policy makers and health care providers ought to consider designing more interventions that can ultimately rehabilitate and/or effectively manage disability related work performance problems for the mature adult workers

(Mitchell & LeClair, 1994). In essence, aging is not synonymous with illness, helplessness, and a decline in physical and mental health.

Hiring mature adults workers ought to oblige employers to implement ongoing management strategies for reducing potential injury, illness, and frailty, and developing habits to promote wellness; for example, the role of daily physical exercise in maintaining cardiovascular function, pulmonary function, musculoskeletal performance, and conditioning ought to be considered of the highest importance to the mature adult population (McCarthy, 1996). In essence, wellness interventions that include nutrition and daily exercise may play an important role in maintaining Functional Independence in later adulthood (McCarthy, 1996).

#### **Importance of the Study**

The importance of the study is that it can enlighten health care leaders and society to the fact that mature adults are a resource, potentially capable of contributing something valuable to themselves, and to society. Although mature adults present society with immense challenges, "they also present a tremendous resource that we cannot afford to ignore (Carstensen, 1996, p. B3)." For this reason, we need to think about gaining additional knowledge of the quality of life indicators for later adulthood. Added knowledge, most likely, will build understanding, and focus our energies toward legislating more effective health care, and

implementing more progressive social policies for mature adults. A potential outcome will be the integration of mature adults back into all aspects of society (Swensen, 1983), and, in essence, making them more productive again (Neugarten, 1983).

"For the first time in human history, the nature of old age is relevant to the functioning of our entire society (Carstensen, 1996, p. B4)." Accordingly, health care leaders ought to consider learning more about the major quality of life indicators that best determine Functional Independence in order to begin reversing the vicious cycle arising from distorted societal thinking. Indeed, a more complete understanding of the quality of life indicators that determine Functional Independence in later adulthood, most likely, will reduce resources frequently misspent because of the limited knowledge of our health care leaders.

#### **Purpose of the Study**

The purpose of this research study was to do the preliminary work necessary to develop an instrument to measure the Functional Independence of mature adults. By determining and enhancing the Functional Independence of mature adults, they may be enabled to serve themselves better, become more effective contributors to the social good, and less dependent on society's resources to meet their daily needs. For this purpose, this study can shed



light on how mature adults can be helped to live more independently.

To accomplish this purpose, the preliminary work was done to develop an instrument to discover which quality of life indicators best determine the Functional Independence of mature adults. A four-stage methodology was utilized. In the first stage, a review of the literature was conducted using Chirolars (at chiropractic colleges), Medline, Psych Lit, ERIC, Nursing and Social Work (at San Diego State University) Indices, and a new instrument was developed to measure Functional Independence. In the second stage, administrators at five senior citizen centers in San Diego County were contacted in order to make arrangements to administer the survey questionnaire. In the third stage, after specifying the population, number of subjects, site location, and protection of subjects criteria, the new survey questionnaire was administered to a sample of mature adults.

In the fourth stage, preliminary psychometric testing of the instrument was completed including a exploratory factor analysis, and a reliability estimation. In Chapter V, the results of this study are discussed in detail in order to arrive at the study's final conclusions, and make future recommendations as to what policy makers and health care providers might do to investigate further the specific

quality of life indicators in later adulthood that best determine Functional Independence in later adulthood.

The guiding research question was "To what degree do each of the six quality of life indicators in this study measure/determine the Functional Independence of mature adults?" The six indicators proposed in this study were the Activities of Daily Living (ADL), Physical, Cognitive, Social, Environmental, and Health Statuses of mature adults. Variations in one or more quality of life indicators, such as a reduction in the Activities of Daily Living Status, may be manifested by a decline in Functional Independence/Status. Specifically, such a decline may be manifested by an impaired ability to perform such daily functions as eating, moving from place to place (called transferring), walking, dressing, and caring for personal hygiene (e.g. bathing and toileting) (Freels, Cohen, Eisdorfer & Paveza, 1992; Ikegami, 1995). Similarly, a decline in Cognitive Status may be manifested by an impaired ability to perform such functions as using telephones, handling finances, operating/taking transportation, assuming responsibility for taking one's medication as prescribed, and when severe, by the dysfunctional use of a toothbrush or comb (Barberger, Commenges, Gagnon & Letenneur, 1992; Borell, Ronnberg, Sandman, 1995).

### **Assumptions of the Study**

Mature adults, policy makers, and health care providers often think of later adulthood as a time of retirement, of poor health, and of debilitation rather than as a time well-suited for a higher quality lifestyle. Negative social perceptions of aging can indirectly affect the perceptions that older adults have of themselves, and their abilities; these changed perceptions can eventually lead to decreased Functional Independence. Creating more emphasis on accurately measuring Functional Independence will facilitate research of this phenomenon and an enhanced understanding of how to maintain or increase Functional Independence in later life, may enable health care leaders to create more informed policies and invigorating practices. The results may enable mature adults to lead a higher quality of life, raise their Functional Independence, and reduce their present dependency on society's resources to meet their daily needs.

### **Definition of Terms**

The following definitions relate exclusively to the quality of life indicators that best determine Functional Independence. In most cases, rather than just defining the term in a strictly technical way, an attempt was made to convey its meaning in a comprehensive manner in order to enhance understanding.

### Quality of Life

Quality of life in later adulthood refers to an active lifestyle that may include but is not limited to (1) developing a positive attitude toward aging, retirement, and life; (2) making the best possible financial preparation; (3) maintaining good health through proper diet, exercise, and rest; (4) enjoying leisure time hobbies; (5) maintaining a good sense of humor; (6) continuing to learn; (7) strengthening family ties; (8) avoiding boredom; (9) learning to control anger, frustration, and stress; (10) developing friendships; (11) gaining a knowledge of the aging process; and (12) accepting aging as a natural part of life (Wright, 1986).

### Functional Independence

Functional Independence (FI) refers to mature adults level of functioning, mentally and physically, for the purpose of being a resource to themselves, and society (Laukkanen et al., 1993; Ruta, Garratt, Leng, Russell and McDonald, 1994). In this study, the level of functioning for independent living has been hypothesized to consist of six quality of life indicators. The six quality of life indicators proposed in this study to determine Functional Independence include (1) Activities of Daily Living Status (adequate competency in the performance of essential daily tasks), (2) Physical Status (a healthy level of physical exercise), (3) Cognitive Status (good mental health), (4)

Social Status (supportive interpersonal relationships), (5) Environmental Status (freedom from undue stressful life events and everyday hassles), and (6) Health Status (an absence or mitigation from the burden of debilitating chronic diseases).

ADL Status. Activities of Daily Living Status (ADLS) refers to the ability to perform such daily functions/tasks as moving from place to place (called transferring), walking, dressing, eating/feeding, and caring for personal hygiene (e.g. bathing and toileting/elimination), sleeping, orientation, and cooperation (Chiodo, Kantan, Gerety & Mulrow, 1994; Nagatomo, Nomaguchi, Fukuzako & Ueyama, 1987; Freels et al., 1992; Mahurin, DeBettignies & Pirozzolo, 1991; Ikegami, 1995; Goodwin-Johansson, 1996; Johansson, Thorslund, & Smedby, 1993; Roos et al., 1993).

Physical Status. Physical Status refers to the maintenance of a suitable level of physical exercise by engaging in a regular routine that serves to improve strength, flexibility and balance in mobility, and promote a heightened sense of well-being (Mota et al., 1995; Hickey, Wolf, Robins & Wagner, 1995; Ruuskanen & Ruoppila, 1995). In later adulthood, physical activity focuses more on regular low-intensity exercises; these exercises serve to improve flexibility and balance in mobility, within or outside the home, and promote a heightened sense of well-being (Hickey et al., 1995; Ruuskanen & Ruoppila, 1995;

Koplan & Livengood, 1994; Wahl, 1994). Thus, an acceptable level of daily physical activity has been found to enhance mature adults' level of functioning for independent living (FIL) while simultaneously reducing their restricted activity days (RADs), and the need for acute and chronic care services (Tsuji, Minami, Keyl & Hisamichi, 1994; Yu, 1995; Shephard, 1993; Scholes et al., 1991). Restricted activity days (RADs) typically have been associated with increases in physical disabilities (Scholes et al., 1991).

Osteoarthritis is a common, nonfatal, chronic condition characterized by degenerative changes in the synovial membranes, contiguous bones, and articular cartilage of the movable joints; it is found mainly in mature adults, originating from overuse, and/or musculoskeletal injury associated with excessive physical activity over time, and may cause them considerable pain which often can lead to loss of joint function and disabilities (Dorlands, 1974; Murray & Pizzorno, 1991).

Osteoporosis refers to a long-term decline in bone mass often affecting the entire skeleton, but "usually greatest in the spine, hips, and ribs" (Murray & Pizzorno, 1991, p. 454).

Cognitive Status. Cognitive Status is a quality of life indicator that refers to the state of one's mental health as it pertains primarily to levels of depression in later adulthood (Shmueley-Dulitzki, Rovner & Zisselman, 1995;

Osimani & Freedman, 1991). The presence of depressive symptoms, and decreased cognitive capacity has been found to have a significant association with the loss of Functional Independence, and an increased risk for the onset of disability (Stallones, Marx & Garrity, 1990; Laukkanen et al., 1993). Memory loss, and behavioral disorders are also sources of functional impairments (Goldstein, McCue, Rogers & Nussbaum, 1992). In fact, memory loss was found to be a robust predictor of the decline of instrumental skill levels, eventually resulting in cognitive bias, and restructuring (Barrows, 1995; Goldstein et al., 1992; Kosloski, Datwyler & Montgomery, 1994). For these reasons, significant levels of depression, memory loss, and behavioral disorders are regarded as inversely related to Functional Independence, and therefore may be a major cause of functional impairments.

Depression refers to the presence of five of following eight criteria that include (1) weight gain/loss from significant changes in appetite, (2) insomnia or other significant changes in sleep habits, (3) either inactivity or excessive activity, (4) a loss of interest in usual activities, for example, a decreased sexual drive, (5) inordinate fatigue, (6) inappropriate guilt, self-reproach or feelings of worthlessness, (7) reduced capacity to concentrate, and (8) recurrent notions concerning suicide or

death; the depressed state must continue for at least one month to be termed depression (Murray & Pizzorno, 1991).

Dementia refers, generally, to a loss of mental faculties that is accompanied by a progressive deterioration of cognitive functions most often characterized and exacerbated by intractable thinking/reasoning (Stedman, 1982; Dorlands, 1974). It is a clinical neurobehavioral syndrome, with an organic and/or psychological etiology, characterized by a irrecoverable deterioration of cognitive/intellectual functions; this deterioration most often centers on such basic cognitive functions as attention and concentration, memory, manipulation of acquired knowledge (abstraction, calculation, judgment), and use of language (Thomas, 1977; Stedman, 1982; Osimani & Freedman, 1991). Moreover, cognitive functions that normally decline with age in later adulthood, are especially altered and degenerated in dementia (Osimani & Freedman, 1991).

Dysarthria is a speech disorder emerging from a neurologic impairment affecting phonation, that is, making vocal sounds, respiration and/or articulation (Friel, 1974; Osimani & Freedman, 1991).

Social Status. Social Status is the quality of life indicator that refers to the level of social integration in supportive relationships characterized by mature adults helping one another, promoting self-knowledge, and strengthening coping abilities (Stevens, 1983; Halstead &



Fernsler, 1994; Turk-Charles, Rose & Gatz, 1996). As a result, active social resources in later adulthood, most often, are measured by the size of the social network, and the frequency of social interaction (Roberts, Dunkle & Haug, 1994). Consequently, an increased level of social integration in a cohesive, close-knit network of mature adults has been found to be empowering, and immediately related to the enhancement mature adults' level of functioning for independent living (FIL) (Olsen, Olsen, Svensson, Waldstrom, 1991).

Environmental Status. Environmental Status refers to undue stressful life events (SLEs), and everyday frustrations/hassles, considered together and/or individually, directly originating or indirectly participating in the onset of functional impairments (Holahan, 1987; Jacks, 1981; Rittner & Kirk, 1995). In this context, the number and intensity of undue stress life events and/or daily frustrations/hassles are inversely correlated with Functional Independence. In other words, as the cumulative stress of life events, and daily frustrations rises, the level of functioning for independent living (FIL) among mature adults tends to decline. For example, it has been estimated that hospitalized mature adults experienced an average of 3.5 negative stressful life events (SLEs) during the 3 years prior to their admission to the hospital (Laforge, Nirenberg, Lewis & Murphy, 1993).

Any major change in the environment may be considered stressful (Padus, 1986). Specific examples of stressful life events include the "death of a close family member" or any significant other, negative or undue stressful life events such as "fired from work," and positive life-changing events like "marriage" or "marital reconciliation" are all high on the "Stress Rating Scale" (Padus, 1986, p. 71; Holmes & Rahe, 1967). In like manner, a hip fracture due to a fall represents a more serious musculoskeletal injury, and can precipitate a decline in the level of functioning for independent living (FIL) (Allegrante et al., 1991). Other stressful life events perceived to be highly stressful for mature adults include planning for retirement and transportation difficulties, decreased income, decreased strength with age, forgetfulness, and death of a spouse, relatives, and/or friends, (Sijuwade, 1991; Quackenbush & Barnett, 1995).

On the other hand, in spite of the obvious seriousness of the undue stressful life events, relatively trivial everyday frustrations/hassles, not the weighty and more random stressful life events, were found to be the primary determinants of daily distress in later adulthood (Holahan, 1987). For example, it was reported that subjective well-being was more profoundly influenced by sleeplessness because of worry, family problems, unexplained fears, and depression than by undue stressful life events (Starrett,

1985). Even in a residential environment, the prime determinant of daily morale and life satisfaction levels was found to be everyday frustrations (Golant, 1984). For example, in one study, a majority of mature adults were pleased because they felt more at ease living in stair-free homes (Smith, 1994).

Health Status. Health Status is a quality of life indicator that refers to the negative impact of chronic diseases on Functional Independence; arthritis, stroke, heart attack, hypertension, sensory impairments, stomach, and pulmonary disease are some of the diseases that have a particularly profound impact on Health Status (Koplan & Livengood, 1994; Laukkanen et al., 1993; Yu, 1995; Dorfman, 1995; Ruta et al., 1994). The number and severity of chronic diseases are inversely related to mature adults' functional level of independent living (FIL), and therefore ought to be considered a major source, and prime augments of functional impairments (Semaan, 1993; Yu, 1995; Laukkanen et al., 1993). For example, a significant correlation was found in mature adults between seven chronic health conditions (diabetes, cancer, arteriosclerosis, stroke, hip fracture, and neurological and lung conditions), and the functional impairments detected in each of seven basic, and ten instrumental activities of daily living (Semaan, 1993).

## Definitions Relating to Methodology and Data Analysis

For the purpose of this study, a mature adult subject is defined as a man or woman of any culture, at least 55 years old, physically able to travel to a senior center, and cognitively competent enough to fill out the survey questionnaire independently (Offer and Sabshin, 1984).

Factor analysis refers to statistical techniques whose common objective is to represent a set of variables in terms of a smaller number of "underlying factors... responsible for the covariation among the observed variables" (Kim & Mueller, 1978, p. 12); it is "used in an attempt to identify factors underlying the observed data" (Christensen, 1991, p. 129), and "to assess construct validity" (Huck & Cormier, 1996, p. 93). Factor analysis has been called a "direct extension... of the well-known statistical concepts of regression theory and partial correlation theory" (McDonald, 1985, p. 14). It makes use of a methodology that helps explain the "amount of (remaining) common variance in a correlation matrix" (Bryant & Yarnold, 1995, p. 129). A correlation matrix refers to a tabular procedure used to summarize all the correlations found between a set of variables.

Factor loading, an important part of factor analysis, refers to a coefficient found in a matrix factor pattern where "the columns usually refer to common factors and the rows to the observed variables" (Kim & Mueller, 1978, p.

77). The Factor Loading Coefficient refers to a correlation between a variable and a factor (Eigenvector); the Eigenvalue refers to the "portion of the total variance of a correlation matrix that is explained by an eigenvector" (Bryant & Yarnold, 1995, p. 128).

"Reliability data refers to estimates of internal consistency, and temporal stability" (Boersma & Chapman, 1992, p. 45). Reliability alludes to the consistency across "parts" of a measuring instrument/questionnaire; "parts" refers to the individual questions or to subsets/subscales of questions, and the extent to which they measure the same thing (Huck & Cormier, 1996).

Internal consistency reliability refers to the closeness or intercorrelation that exists among the different "parts" of a questionnaire (Brown & Alexander, 1991; Trickett & Moos, 1995). Estimates of internal consistency are obtained using Cronbach's alpha [which] correlates the different items within a scale in order to establish the scale's reliability (Boersma & Chapman, 1992). "In 1951, Cronbach presented a comprehensive synthesis and discussion of various methods for estimating internal consistency and related them to a single general formula known as Cronbach's alpha" (Crocker & Algina, 1986, p. 138). Now that high speed computers have rendered complex computations more practical, Cronbach's alpha is reported with greater regularity (Brown & Alexander, 1991). To

assess internal consistency by using Cronbach's alpha, a researcher is required to only administer a questionnaire a single time to a single group of subjects; after all responses have been scored, the end result is an index of the test's utility expressed by "a number between 0.00 and +1.00" (Huck & Cormier, 1996, p. 79).

A correlation coefficient (R) involves more than one independent variable that may explain variations in a dependent variable (Babbie, 1992); it refers to a statistical procedure that explains the extent to which two sets of data are related, that is, "the degree of association between two quantitative variables (Hale, 1990, p. 104)." For example, a high correlation coefficient index (whether positive or negative) indicates that two sets of data are closely associated or highly correlated with each other. It would be considered most ideal if the proposed variables ("x") correlated highly with the single criterion FI variable ("y"), at the same time, correlate relatively poorly with each of the other proposed quality of life "x" variables. In other words, the six quality of life "variables should have low correlations among themselves" (Hinkle, Wiersma & Jurs, 1994, pp. 464, 477).

A variable/factor refers to a quantity or value subject to change, that is, differs in some characteristic to which it belongs (Dorlands, 1974). The standard deviation of a variable refers to a measurement or amount "by which the

values in the data collected differ from the mean" (Hanke & Reitsch, 1991, p. 96). It is most often reported along with its "corresponding mean and gives an indication of the variability of [the] obtained [outcomes]" (Durlak, 1995, p. 328).

The variance refers to the square of the standard deviation (Hinkle et al, 1994), and it is a "measure of the degree of spread of a distribution around its mean" (Casella & Berger, 1990, p. 58); numerically, "it is the average of the squared differences between the data values and the mean" (Hanke & Reitsch, 1991, p. 95). In performing the SPSS (Statistical Package for the Social Sciences) computations, the "homogeneity of variance [Levene Test] assumption legitimizes the aggregating of the sum of squares from both groups [being evaluated], and the pooling of the associated degrees of freedom" (Hopkins & Glass, 1978, p. 257). In turn, degrees of freedom alludes to the "number of data elements that are free to vary" (Hanke & Reitsch, 1991, p. 98).

Analysis of variance (ANOVA) is used to "compare the [differences among the] means of more than two groups, and the effect of the categorical [indicator] variables on the dependent [criterion] variable is evaluated" (Hale, 1990, p. 126). In contrast, T-tests determine the "differences in mean scores between two groups" (Hale, 1990, p. 83). The mean of a data set refers to the "sum of all measurements

divided by the total number of measurements in the data set" (Dietrich & Kearns, 1986, p. 65).

The confidence interval refers to the "level of confidence... that the computed interval contains the parameter being estimated... [and calculated to be] "the complement of the level of significance (1 minus alpha)" Hinkle et al., 1994, p. 197). The level of significance or alpha refers to the "probability of making a Type I error, [that is,] rejecting  $H_0$  [the null hypothesis] when it is true" (Hinkle et al., 1994, p. 170).

Although mature adults are living longer than ever before, they also tend to suffer more from long-term chronic illnesses. To make their longer living span more tolerable, and possibly enjoyable, it may be necessary to recognize, and then find remedies for the rising number of functional impairments/disabilities in later adulthood. Without any question, "For the first time in human history, the nature of old age is relevant to the functioning of our entire society" (Carstensen, 1996, p. B3).

The Tukey Post Hoc Test refers to a multiple-comparison follow-up or "a posteriori test" (Huck & Cormier, 1996, p. 325) to an ANOVA; by contrasting the groups under consideration, it is useful to "identify which pairs of means differ [significantly]" (Hinkle et al., 1994, p. 357).



**CHAPTER II**  
**REVIEW OF THE LITERATURE**

**Introduction**

Because mature adults are living longer than ever before, predominant social thinking, mature adults' future usefulness to themselves, and society remains limited (Hall, 1995; Annerstedt, 1993; Makrides et al., 1995; Koplan & Livengood, 1994; Rose, 1991; Rogers, 1990; The Picture of Health, 1987; Annual Report, 1985; Robbert, 1981). More research is needed, in light of their new longevity, to discover new techniques, and design better interventions that can assist in the recovery, maintenance, and/or enhancement of mature adults' level of functioning for independent living (FIL); this will enable them to perform better in the basic and instrumental activities of daily living (Danner, Beck, Heacock & Modlin, 1993).

To help remedy mature adults' current functional limitations, Chapter II links knowledge from the research literature in such a way that policy makers, and health care providers can become better informed, and gain a more complete understanding regarding the six proposed quality of life indicators that determine Functional Independence in later adulthood. The six quality of life sections in Chapter II include: (1) the Activities of Daily Living Status; (2) Physical Status or the daily level of physical activity; (3) Cognitive Status or the overall mental health

condition; (4) Social Status or the availability of quality, supportive relationships; (5) Environmental Status, that is, the cumulative distress created by stressful life events (SLEs) and everyday frustrations/hassles; and (6) Health Status or the burdensome impact of active chronic diseases in later adulthood. Based on these six indicators, this research study does the preliminary work of developing an instrument that can measure the Functional Independence of mature adults. The problem, as further described in the Historical Perspective section, is that policy makers and health care providers' limited understanding about living conditions in later adulthood continually hampers mature adults from doing more for themselves, and society.

#### Historical Perspective Section

The Historical Perspective section describes past limitations in knowledge that have prevented mature adults from maintaining their Functional Independence, and remaining active in society. Therefore, the purpose of this historical perspective section is to educate the reader on how researchers first focused on the various aspects of quality of life in the 1980s, then focused on gaining more knowledge concerning Functional Independence in the 1990s, and lastly began to gain a better understanding of the relationship between several specific quality of life indicators, and mature adults' level of functioning for independent living (FIL).

## Functional Independence and Quality of Life

The Functional Independence section explains what Functional Independence is, and why it is so important. Functional Independence, for example, refers to the abilities of mature adults first to serve themselves, mentally and physically, in the activities of daily living, and then later to serve others in society (Mota et al., 1995; Lurie, 1983; Allegrante et al., 1991).

At the onset, cognitive impairments in the instrumental activities of daily living (IADL) would be manifested, in particular, by impairments in utilizing transportation effectively, handling finances prudently, using a telephone properly, and/or competently taking responsibility for following prescribed medication regimens precisely (Barberger-Gateau, Commenges, Gagnon & Letenneur, 1992). However, deepening levels of cognitive impairments can affect everyday functioning in areas such as the utilization of community services available to mature adults, personal safety, and self-care, for example, taking responsibility for one's own hygiene needs (Nadler, Richardson, Malloy & Marran, 1993). A complex cognitive loss would be manifested by a severely impaired ability to use such common objects as a spoon or fork for eating or a toothbrush or comb for grooming (Borell et al., 1995).

Social capacity is an aspect of Functional Independence that refers to a level of functionality, a potential

capability within active and willing mature adults, to become an important resource by continuing to assume an active, and independent role in the community after retirement. The nature of this later adulthood role may include retired mature adults assuming positions of their choosing such as continuing employment or becoming volunteers in the community. Nowadays, an active work role for mature adults can extend well into the 70's (Mitchell & LeClair, 1994). In light of this new development, more human risk management services are needed to help dispel old myths, and better understand the new realities concerning functionally independent mature adult workers (Parker, Bergmark & Dell, 1994).

Other benefits of increased functionality. As the mature adult population strengthens their Functional Independence, it has an opportunity to benefit society in greater ways than ever before. With the advancement of technological resources and time-saving devices, mature adults have large blocks of discretionary time available to pursue chosen activities, and use their free time more meaningfully (Zak & Sullivan, 1992; Mobily, Lemke & Gisin, 1991; Belnap, 1981). Examples of mature adults as a social asset are demonstrated by the many successful volunteer programs that provide rewarding experiences and opportunities for sharing skills, knowledge, experience, and promoting friendships between generations (Matters, 1990).

Social interdependence is an aspect of Functional Independence that refers to the intergenerational relationships highlighted by beneficial transfers that reflect the wisdom, knowledge, and experience of each generation, and thereby offer new opportunities that can increase the well-being and serve each generation (Levitt, Guacci & Weber, 1992; Mitchell, 1992; Yamada, 1994). Interdependence among all generations appears to stimulate intergenerational transfers at all stages of the life course (Soldo & Agree, 1988). Intergenerational programs were associated with increases in well-being for each generation (Levitt et al., 1992). In short, volunteerism was found to be a positive experience for the giver and the receiver (Baines, 1986). Perhaps this accounts for why rates of participation in most physical, cultural, educational, and volunteer activities, during the 1980s, sharply increased (Delisle, 1993).

Transforming later adulthood. There is an advantage in transforming mature adults' new free time into a more personal form of self-expression (Allen & Chin-sang, 1990). For example, the wide application of leisure education may stimulate the future design and implementation of a wide variety of leisure/recreational programs; examples of such programs are retraining or second-career preparation, diploma or degree completion, and pre-retirement education that may include planning the use of leisure time,

recreational programs, and coping with stress (Peterson, 1983). In light of these options, a future paradigm shift may feature new policy initiatives that seek to redesign education in general in order to incorporate more mature adult learners and more leisure-oriented education that would further enhance the Functional Independence of mature adults (Krain, 1995).

Indicators that determine/enhance functionality. In order to enhance daily functioning, studies on successful aging ought to consider identifying the modifiable factors that determine Functional Independence in later adulthood (DiPietro, 1996). In order to accomplish this, researchers, policy makers, and health care providers must first realize that for the most part, mature adults with a healthy daily lifestyle will live mostly free of disabling diseases and injuries until near the end of life (Leigh & Fries, 1994; Molaschi et al., 1995; Nydevik & Eller, 1994). With this in mind, this research study posits that there are six proposed quality of life indicators that determine, and most likely enhance Functional Independence in later adulthood. These six quality of life indicators described in detail in this chapter include: (1) the capacity to perform the Activities of Daily Living (ADL Status); (2) a healthy level of physical exercise/activity (Physical Status); (3) good mental health (Cognitive Status); (4) supportive interpersonal relationships (Social Status); (5) increased

freedom from undue stressful life events (SLEs) and everyday frustrations (Environmental Status); and (6) an absence or decreased burden from debilitating chronic diseases (Health Status).

### **Historical Perspective**

In the 1980s, early research focused more on quality of life rather than Functional Independence in later adulthood. Several key quality of life indicators were proposed by a number of early researchers. The concept of Functional Independence was actually introduced in the 1980s, but it did not become a central focus of contemporary research until the 1990s.

#### **Early Researchers**

Starrett (1985) suggested that subjective well-being and life satisfaction could be measured by considering the number of distressing events experienced from family problems, depression, sleeplessness because of worry, and unexplained fears; in total, Starrett (1985) identified as many as twenty-six quality of life indicators in his study on subjective well-being.

Quality of life focus. Examples of Starrett's quality of life indicators include family income, living arrangements, ethnicity, urban/rural residence, home ownership, residential mobility, contact with kin, contact with friends and neighbors, church attendance, use of formal mental health services, use of informal mental health

services (spouse, relatives, friends), and self-rated Health Status. By utilizing a step-wise regression analysis to calculate the relative importance and interrelationship of each indicator, Starrett concluded that subjective well-being was best predicted by consideration of informal mental health support systems, use of formal support systems, and one's present Health Status.

In contrast, Michalos (1981) alluded to just 12 domains that are primarily responsible for determining quality of life in later adulthood: state of health, financial security, kind and frequency of family contact, relationship with spouse, friendships, suitability and atmosphere of housing, area lived in, recreational activities, spiritual fulfillment, self-esteem, convenience of transportation, provision of government services, and life as a whole. However, Jacks (1981) focused on just six quality of life indicators such as housing, transportation, crimes against the elderly, availability of legal services, arts and humanities, and the creative use of time.

Still other researchers such as Flanagan (1982) studied a multitude of factors that were hypothesized to most likely govern overall quality of life in later adulthood. Flanagan's factors included relationships with spouse, children, friends, relatives, work and Health Status, amount of socializing and active recreation, passive recreation, material well-being, helping, understanding oneself,



learning, creativity, and government. In contrast, Golant (1984), after conducting structured interviews with a random sample of 400 mature adults, and asking them to complete questionnaires assessing personality traits, demographic variables, socioeconomic status, life stage, activity patterns, and environmental experiences, concluded that individual differences and environmental experiences, such as engaging in supportive relationships, together explain nearly half of the statistical variation in mature adults' life satisfaction levels. Although Maguire (1983) also emphasized social supports, he focused on health, and financial status as the important quality of life indicators that specifically augmented life satisfaction levels in later adulthood.

Coleman (1984) also studied life satisfaction levels, but focused on living patterns and changing family situations, highlighting community opportunities, and emphasizing employment housing and retirement issues. One retirement issue raised by Coleman (1984) concerned the intergenerational contact between the mature adult population, and the younger generations. Coleman (1984) anticipated that contact between generations would help knit society more closely together; her recommendations focused on improving quality of life, and making later adulthood more meaningful for mature adults.

Wright (1986) also envisioned aging to be a meaningful adventure, and she speculated that proper preparation could make it deeply exciting. To prepare for aging, and its many opportunities, Wright (1986) considered conditions comprising a healthy lifestyle to include: (1) developing a positive attitude toward aging, retirement, and life; (2) making the best possible financial preparation; (3) maintaining good health through proper diet, exercise, and rest; (4) enjoying hobbies; (5) maintaining a sense of humor; (6) continuing to learn; (7) strengthening family ties; (8) avoiding boredom; (9) learning to control anger, frustration, and stress; (10) developing friendships; (11) gaining a knowledge of the aging process; and (12) accepting aging as a natural part of life.

Functionality focus. In essence, early researchers conjectured that a high quality life could be a product of such indicators as supportive social relationships, acceptable levels of health and wellness, environmental factors such as finding a satisfying residence and meeting safety and transportation needs, personal growth, adequate financial preparedness, finding a refuge that was free from undue stress, and more. Jacks (1981) was one of the few early researchers to link functionality to quality of life indicators; she postulated that several elements could work together to determine functionality. For example, Jacks (1981) hypothesized that meeting basic physical needs,

choice, and increased freedom from undue stressors could determine functionality.

Other early researchers that were concerned with functionality include Wells and Singer (1988). These two researchers investigated how groups of residents, staff in long-term care institutions, and the families of mature adults worked to improve their immediate environment by strengthening supportive relationships, highlighting personal development, optimizing Functional Independence, and increasing residents' influence in order to maximize quality of life. In addition, Norris (1983), by administering a questionnaire to assess effectiveness of functioning, that is, using physiological and psychological measures to assess biophysiological, perception/cognition, and interpersonal/environmental functioning, speculated that the development of an effectiveness of functioning model for later adulthood was possible; his beginning hypothesis specified high psychological involvement, independent functioning, and acceptance to be the groundwork for effective functioning in later adulthood.

Further research on optimizing Functional Independence in later adulthood was later inspired by the LeBlanc (1987) study. LeBlanc (1987) reported that mature adults, between the ages of 75 and 82, who maintained a consistent level of integrity and emotional health, did not consider themselves old, and saw no reason to retire from life. It was clear

that mature adults, in spite of their chronological age, still had much to offer themselves, and the potential to give more back to society than was presently being done. Nevertheless, in the 1980s, there were still many unmet needs among mature adults, needed changes had yet to be made in societal thinking about later adulthood, and in the implementation and delivery of many senior programs.

### Contemporary Researchers

In the 1990s, it became an accepted fact that mature adults can cope better, live more fulfilling lives, and learn to use their own resources more to enhance their daily experience better than they presently did. Study after study began to confirm this appraisal. For example, active women aged 65-74 remained so busy that they were reported to be willing and able to participate in leadership programs (Allen, 1991). In contrast, limitations in physical activities within and outside the home significantly augmented the risk factors involved in heart disease mortality (Tsuji et al., 1994).

In another example, a 14 year follow-up study reported that perceived social integration was able to delay mortality in general and cardiovascular mortality in particular (Olsen et al., 1991). In addition, Turk-Charles et al. (1996) found that lifelong and intimate friends as well as significant self-knowledge strengthened the coping abilities of mature adults. All the above examples suggest

that enhancing quality of life factors in later adulthood can augment the Functional Independence (FI) of mature adults. In fact, to support these changing attitudes about later adulthood, Goranson (1992) proposed that children learn, at the earliest possible age, more positive and realistic attitudes toward aging.

Because mature adults still have many unmet needs, improving the quality of life (QOL) for mature adults in American society is an increasingly important goal of public health planning and programming (Raphael et al., 1995). In the past, researchers such as Swensen (1983) had made sweeping proposals, such as making structural changes that could eventually reintegrate mature adults back into all aspects of society; Neugarten (1983) also advocated a bold structural change when she suggested that American society needed to think about reintegrating many mature adults back into its productive sector.

Contemporary obstacles. Unfortunately, there are many obstacles to reintegrating mature adults back into society. According to Suurnakki, Nygard, and Ilmarinen (1991), the physical demands of work, aging, and declining physical capacity increased the stress and strain of daily work. Daily work often includes peak loads that can be a risk for older workers. In addition, ongoing management strategies for reducing potential injury, illness, and frailty and developing habits that promote wellness have yet to gain

popular acceptance (McCarthy, 1996). Moreover, a correlation between poor nutritional status, and a lower quality of life for mature adult still has to be fully recognized (Fitzpatrick, McGee, Browne & McLaughlin, 1993).

Social thinking, in the past, has viewed later adulthood as an end point; therefore, mature adults' future usefulness to society was regarded to be severely limited (Robbert, 1981). Nevertheless, there exists today, many occupations such as administrative and teaching work, that may have high requirements for mental capacity, but don't have high physical workload requirements; moreover, for those engaged in an employment that requires a high mental capacity, there are support groups available to help cope with work stress (Suurnakki, et al., 1991). For example, contemporary wellness intervention groups emphasize that proper rest, good nutrition, and daily exercises can play a key role in the maintenance of cardiovascular and pulmonary functions as well as strengthening the musculoskeletal performance of the mature adult population (McCarthy, 1996).

Overcoming contemporary obstacles. In light of what was surveyed, policy makers, health care practitioners, and mature adults can begin to reverse the vicious cycle associated with the bulk of distorted thinking concerning later adulthood. To accomplish this, health care leaders first must contemplate learning more about quality of life in later adulthood. This will help them gain a more

complete understanding in order to rethink their ideas about aging, quality of life and Functional Independence in later adulthood. Generally speaking, to help mature adults become more functionally independent, health care leaders need to assess daily functions such as communication, motor skills, and procedural learning in order to improve care, and design interventions that will help mature adults recover, maintain, and strengthen their abilities to perform the basic and instrumental activities of daily living (Danner et al., 1993).

To determine Functional Independence in later adulthood, scholarly research in the 1990s has distinguished six robust quality of life indicators. These six indicators include: (1) the capacity to perform the Activities of Daily Living (ADL Status); (2) a healthy level of physical exercise/activity (Physical Status); (3) good mental health (Cognitive Status; (4) supportive quality relationships (Social Status); (5) increased freedom from undue stressful life events (SLEs) and everyday frustrations (Environmental Status); and (6) an absence or decreased burden from chronic diseases (Health Status).

### **Functional Independence**

Functional Independence (FI) refers to mature adults' level of functioning for independent living (FIL), that is, their capacities to serve as a resource first to themselves in the basic and instrumental activities of daily

living, and then, depending on how well they can function, to serve others in society on a regular basis (Mota, 1995; Lurie, 1983; Allegrante et al., 1991). It is a broad concept that addresses functions and activities on the physical, psychological and social levels (Mota et al., 1995). Physical and psychological well-being as well as societal/community involvement can be the primary motivational factors that serve to stimulate mature adults to strive to maximize their quality of life, and optimise their Functional Independence (Mosqueda, 1996).

#### Assessing Functional Independence

The level of functioning for independent living can range from total independence, first declining to a mild impairment, and then deteriorating further downward to a complete disability (Yu, 1995). Although a widely applicable and highly valid functional assessment instrument, using for predicting and/or measuring outcomes, and planning care, remains to be perfected (Ikegami, 1995). With this in mind, developing an accurate profile of Functional Independence (FI) for mature adults may initially require assessing both Physical and Cognitive Statuses (Barrows, 1995). Both physical and cognitive performance can be assessed reliably through the use of unidimensional and/or multidimensional instruments combined with several self-report measures (Yu, 1995).



In performing their functional assessments, practitioners ought to consider a comprehensive evaluation that includes detecting behavioral changes in such clinical areas as memory, mood, psychiatric well-being, instrumental activities of daily living (IADL), activities of daily living (ADL), social behavior, and disturbing behavior (Tremmel & Spiegel, 1993; Wind, Schellevis, Van-Staveren & Hooijer, 1995). Also worth assessing are nutritional or metabolic disorders that may cause functional impairments; for example, utilizing a bivariate analysis, it was discovered that mature adults with low or high body mass index (BMI) had the highest risk of functional impairments (Galanos, Pieper, Corroni-Huntley & Bales, 1994).

In another example, mature adults at-risk for nutritional deficiencies also showed functional impairments consisting of physical disabilities and symptoms of aging, lowered self-esteem, higher depression, and significant cognitive impairments (Fitzpatrick et al., 1993). In essence, because there are so many sources of functional impairments, functional outcomes are often simply reported in terms of the number of dependencies detected in the basic and instrumental activities of daily living (Goldstein, Michelson, Clarke & Lenert, 1993). Undeniably, the more clear and complete the functional assessment is, the more effective the subsequent treatment can be.

Functional impairments and disabilities. Generally speaking, treatments in Japan are frequently so effective that a mature adult there, at age 60, on the average, can expect to spend about 18.7 yrs (81%) in Functional Independence, and only about 4.4 yrs (19%) in disability throughout their remaining lifetime (Liu, Liang, Muramatsu & Sugisawa, 1995). In fact, a decline in the level of functioning for independent living (FIL) has been found to be a significant predictor of mortality (Cohen et al., 1992; Rozzini, Bianchetti, Franzoni & Zanetti, 1991). In the United States, a primary goal of the studies on successful aging could be to identify the modifiable factors that help maintain the independence of mature adults in their everyday functioning (DiPietro, 1996). To this end, Leigh and Fries (1994) posit that mature adults with a healthy daily lifestyle will live mostly free of disabling diseases and injuries throughout their lifetime. In essence, functionally independent mature adults, most likely need not be afflicted with multiple pathologies nor do they have to suffer from any functional disabilities or impairments regarding their basic (ADL) or instrumental (IADL) activities of daily living until very near the end of life (Molaschi et al., 1995; Nydevik & Eller, 1994).

Evidence of functional decline. Being admitted to an institution such as a hospital or long-term nursing home, in some instances, may be a sign of functional decline, and/or

that the end of life is approaching. As an illustration, it was found that the Katz Activities of Daily Living score and the 7-item Physical Performance Test (PPT) independently could predict approaching death or initial nursing home placement and later mortality (Reuben et al., 1992). A thirteen year study found that the risk of mortality was significantly associated with poorer functional ability as well as an older chronological age (Bowling & Windsor, 1995). In addition, while mortality was found to vary directly and be positively associated with impairments in functional status, it was also found to depend on health and mental status as well (Rozzini et al., 1991; Cohen et al., 1992).

Hence, significant associations exist between death and all Functional Independence measures (Reuben et al., 1992). By applying this knowledge, it was found that the Winchester Disability Rating Scale (WDRS-2) could be used as a means to limit hospitalizations or nursing home confinement because it can identify depression, and the subtle deterioration that foretells the loss of Functional Independence (Oliveri, Carpenter, and Demopoulos, 1994). In essence, predicting the loss of a measure of Functional Independence can be used to reduce the number of mature adults who are institutionalized, and also limit their premature mortality.

### Still a Social Asset

Because Functional Independence (FI) refers to mature adults being a resource, mentally and physically, to themselves, and to society, it is important to do more than just limit the institutionalization, and premature mortality of mature adults. The reality of daily living in later adulthood is that it consists of more than a series of basic functions (Goodwin-Johansson, 1996). One example, concerning the working futures of mature adults, may be that the continuation of employment has gone beyond what has been the rule in previous years. According to Mitchell and LeClair (1994), the active work role for mature adults can extend well into the 70's. Research findings have shown that physical activity delays or slows age-related physiological deterioration (Prassas, Rominger, & Barber, 1995). Shephard (1987) posits that vigorous training can reduce some components of biological age by as much as 20 years. Mature adults, in many instances, are highly motivated, well organized, hardworking, and capable of adapting successfully (Clennell, 1990).

In the past, the cessation of work was based almost entirely on the arbitrary arrival of a chronologically preset retirement age; however, age discrimination will become reversed as the mature adult generation grows, gradually becomes a more significant work force with respectable work performance record (Mitchell & LeClair,

1994). Nearly all mature adults who entered second careers after retirement reported a high degree of personal satisfaction because they felt more independent, and more in control of their new work world (Lieberman & Lieberman, 1981). Therefore, it may be unfair to require the retirement of mature adults, whatever their age, if they have chosen a lifestyle that has essentially conserved their basic physical capacities.

A continuation of work into later adulthood, may require new job positions in society, and a new willingness by employers to accommodate the declining worker capacities of mature adults rather than the old standard where the physical demands of work, and the decline in physical capabilities routinely increased the stress and strain of work for mature adults, and made further employment unlikely (Suurnakki et al., 1991). Customary changes in physical working capacity that come with age could negatively impact the employability of mature adults attempting to perform heavy work requirement jobs; this negative impact is particularly significant because of typical age-related decreases in such physical capacities as aerobic power, muscular strength, and tolerance of thermal load (Shephard, 1987).

Parker et al. (1994) contended that more human risk management services are needed for functionally independent mature adults in order to dispel old myths, and better

understand the new realities concerning older workers. In reviewing the retirement activities of mature adults from 1979 to 1989, it was discovered that leisure is a basic dimension of life in later adulthood. Mature adults now retire earlier from their employment, a lifelong career position, to become more active than ever. Delisle (1993) discovered that the rates of participation for mature adults in most physical, cultural, educational, volunteer activities and traveling were steadily increasing.

Reasons for increased volunteer activity in later adulthood were that it was an economically sound decision for mature adults, and being recruited was relatively easy (Glasgow & Hampson, 1995). Glasgow and Hampson (1995) found it efficient to recruit mature adults volunteers for psychological studies in Osteoarthritis and noninsulin dependent Diabetes Mellitus, over other age groups, particularly during low periods when the prevalence of the disease of interest in the general population was lower than usual.

Another example of increased activity in later adulthood involves the role of mature adult volunteers in well-established hospital-based palliative care programs (Brazil & Thomas, 1995). This role requires some training, and consists primarily of providing social support that helps to enhance the lives of hospital patients, and their family members, and also assists in bereavement follow-up

(Brazil & Thomas 1995). In essence, mature adult participation benefits others. One illustration was revealed in the favorable evaluation given by hospital staff members; they gradually came to regard mature adults as trained volunteer personnel, and as a result, important team members of their hospital staff (Brazil & Thomas, 1995). In essence, volunteerism was found to be a positive experience for the giver and the receiver (Baines, 1986).

Social interdependence. There is interdependence among all generations that stimulates intergenerational transfers at all stages of the life course (Soldo & Agree, 1988). When it comes to mature adults, these intergenerational transfers can offer unique benefits for all generations. Intergenerational relationships were associated with increases in well-being for each generation (Levitt et al., 1992). According to Mitchell (1992), mature adults may face growing limitations from physical impairments and diminishing opportunities, but, simultaneously, they may also experience new freedoms related to discovery, learning, changing values, and unencumbered self-direction.

One intergenerational program, the Family Friends Program, matches senior volunteers with families of chronically ill or disabled children; senior volunteers may serve society as a source of information and stability to a family, a teacher of basic life skills, a role model to the children, and a parent model to the parents (Rural Family

Friends, 1991). Benefits for mature adults are many. Volunteers reported increases in confidence and satisfaction with their training, and volunteer roles (Brazil & Thomas, 1995). Mature adults can do many things that can have positive effects on their perceived leisure competence and strengthen such psychological resources as self-esteem and coping abilities (Searle & Mahon, 1991; Roberts et al., 1994).

Intergenerational programs may help maintain the health and independence of mature adults (Farley, 1995). Successful volunteer programs provide rewarding experiences and opportunities for sharing skills, knowledge, experience, and promoting friendships between each generation (Matters, 1990). An interdependence may exist among the generations since so many burdens and benefits have become associated with intergenerational transfers at all stages of the life course (Soldo & Agree, 1988). The volunteer activities in later adulthood often develop into learning experiences for mature adults and other people, and the development of mutual support systems is common (Yamada, 1994). There is a rising trend for more volunteer opportunities to become available in education for experienced and competent mature adults (Expert Consultation on, 1989). With this in mind, rates of participation in most physical, cultural, educational, and volunteer activities, during the 1980s, sharply increased (Delisle, 1993).



Leisure opportunities. With the advancement of technological resources and time-saving devices, available time for leisure and recreation has increased substantially (Zak & Sullivan, 1992). It is not unusual for mature adults to have large blocks of discretionary time available to pursue chosen activities (Belnap, 1981). To become more of a resource, that is, to contribute more back to the society, mature adults ought to consider formulating a plan, making a decision, taking definite action, adapting to resistive environmental circumstances, and lastly, changing much of their free leisure time into more socially useful time (Expert Consultation, 1989). In a contemporary sense, leisure does not only refer to the freedom from needing to work in order to survive, but it also refers to transforming this new free time into a personal form of self-expression (Allen & Chin-sang, 1990).

#### Using Functional Independence Creatively

Leisure, today, is a fundamental part of the mature adults' lifestyle (Delisle, 1993). In fact, in one instance, the abundance of free time accompanying retirement may be limited by physical, cognitive, and social capacities of mature adults to use their free time meaningfully (Mobily et al., 1991). Another limitation involves finding enough creative uses for free time in later adulthood (Jacks, 1981). Creatively using free time may first depend

on becoming more aware of the types of leisure/recreational activities available.

Types of leisure activities. Examples of outdoor physically active leisure time activities include gardening, walking (Allison & Geiger, 1993), taking part in camping programs (Hupp, 1987), attending recreational events, and communicating and socializing freely with others (Horiguchi & Inami, 1991). Habitual physical activities such as leisurely walking, moving, sitting, and standing, according to the Yale Physical Activity Survey (YPAS), correlate positively with estimated VO<sub>2</sub>max ( $r = 0.60$ ;  $P = 0.003$ ), marginally with body mass index ( $r = -0.37$ ;  $P = 0.06$ ), and inversely with percent body fat ( $r = -0.43$ ;  $P = 0.03$ ) (DiPietro, Caspersen, Ostfeld & Nadel, 1993).

There is a wide range of indoor leisure activities available today. For example, mature adults living in public housing seemed content to place a high priority on sedate activities such as sleeping, watching television, preparing food, resting, and eating (Nasar & Farokhpay, 1985). In contrast, no physical ailment seemed to dissuade frail, institutionalized mature adults from participating in computer games; group participation and interaction was induced just by physically locating the computer within the common living area (Weisman, 1994). Other indoor leisure activities include receiving engaging visits from children, relatives, and friends (Horiguchi & Inami, 1991), tai chi,

mah-jongg, television watching, and sewing (Allison & Geiger, 1993).

Habitual mental leisure activities such as reading are useful for relaxing body and mind, gathering knowledge of current events, meeting spiritual needs, information-gathering to achieve specific goals, coping better with stress, satisfying personal pleasures, and promoting quality of life by serving as a means fulfilling the desire to learn (Smith, 1993). Research studies have shown that mature adults retain the abilities to learn, that is, their intellectual capabilities are often maintained throughout later adulthood (Peterson, 1983). Involvement in a reading or leisure education program may help mature adults learn more about their retirement needs, and also help to prepare them for the sundry stresses and strains of later adulthood.

Applications of leisure education. The wide application of leisure education may stimulate the future design and implementation of a wide variety of leisure/recreational programs; examples of such programs are retraining or second-career preparation, diploma or degree completion, and pre-retirement education that may include planning the use of leisure time, recreational programs, and coping with stress (Peterson, 1983). Furthermore, pre-retirement educational programs may emphasize transition or choice-making skills to deal with issues involving adaptation to change (Ashman, Suttie & Bramley, 1995).

Other reasons to promote leisure education and activities include the need for companionship, novelty, escape, solitude, expressiveness, lifelong learning, and increased life satisfaction (Purcell & Keller, 1989; Ragheb & Griffith, 1982).

The degree of participation, the level of involvement in leisure education and activities is influenced by many variables including life satisfaction (Wynne & Groves, 1995). Participation depends on the opportunities and constraints present, and this participation, in turn, predicts life satisfaction; overall satisfaction, opportunities, and constraints, considered in unison, explain 32 percent of the variance in mature adults' rate of participation in leisure activities (Losier, Bourque & Vallerand, 1993). Continued participation depends on such variables as entertainment, personal development as well as educational and cultural factors (Kautzmann, 1990). Variables that affect continued life satisfaction include regular physical activities, adequate socialization, and overall health and wellness; life satisfaction issues may be effectively addressed through recreative/leisure pursuits (Hawkins & Kultgen, 1990). Pursuing leisure activities such as regular physical exercise, can create increased perceptions of competence in the activities of daily living (Mobily, Lemke, Ostiguy & Woodard, 1993).

Benefits of leisure activities. Despite limitations from age-related diseases and/or injuries, mature adults displayed enhanced feelings of self-esteem, and heightened feelings of mastery after computer instruction sessions; they appeared to benefit from the opportunity to learn new leisure skills and engage in a supervised experience (Kautzmann, 1990). Other benefits derived from leisure education programs include increasing personal skills in particular leisure activities, cultivating more social interaction skills, increasing health-promotion attitudes, and augmenting leisure awareness with the intent to identify previously undeveloped leisure resources (Tabourne, 1992). In addition, leisure education and leisure activities in later adulthood often promote life satisfaction by empowering mature adults with the added knowledge and skills needed to age successfully (Cosky, 1987). Truly, the intelligent use of leisure time can help mature adults adjust more effectively to the physical and psychological changes associated with aging (Smith & Couch, 1990).

Enhancing Functional Independence. Adjustments often are made in order to facilitate the learning performance of mature adults; including slower pacing and making provisions for declines such as those found in vision and hearing (Peterson, 1983). Despite age-related declines, the use of computers and computer games has provided much entertainment, and served as a learning and diagnostic tool

for frail, institutionalized mature adults (Weisman, 1994). Following a short-term computer training program, the attitudes of mature adults transformed from reluctance to enthusiasm toward using the computer and showed a slow progression upward in functional skills. Mature adults demonstrated a change in mood toward a more positive temperament; they showed an increased interest in other activities as well as some transfer of their improved physical skills into other areas (Groves & Slack, 1994), and in general, were less computer anxious (Dyck & Smither, 1994).

The use of computers, and computer-assisted instruction/learning also were found to stimulate mature adults to develop more positive attitudes, increase quality of life, and enhance Functional Independence (Groves, 1990). Leisure activities, such as computer learning, generally offered mature adults the opportunity to take risks, experience excitement, and gain mastery; such opportunities encourage an increased sense of responsibility, more control over one's own destiny, and over the long-term, support a higher level of functioning for independent living (FIL) (Waldman, 1993).

A future paradigm shift may feature new policy initiatives that seek to redesign education to incorporate more mature adult learners and more leisure-oriented education (Krain, 1995). Leisure education has a positive

impact on perceived leisure control, leisure competence, and life satisfaction, and this, in turn, can foster a sense of psychological well-being and enhance Functional Independence (Searle, Mahon, Iso-Ahola & Sdrolias, 1995; Searle & Mahon, 1991). However, to accomplish this encompassing change successfully, policy makers, and health care practitioners may need more knowledge and understanding about the quality of life indicators that determine the Functional Independence in later adulthood.

#### Determining Functional Independence

Policy makers, health care practitioners might consider ways to gain more knowledge, and a deeper understanding of the quality of life indicators that determine the level of Functional Independence of mature adults. The quality of life indicators that may determine Functional Independence are: (1) sufficient capacity/competence to perform the Activities of Daily Living (ADL Status); (2) an adequate level of physical exercise (Physical Status); (3) good mental health (Cognitive Status); (4) supportive, quality relationships (Social Status); (5) increased freedom from undue stressful life events (SLEs) and everyday frustrations/hassles (Environmental Status); and (6) an absence or reduced burden from debilitating chronic diseases (Health Status).

## ADL Status

ADL Status refers to the abilities of mature adults to perform effectively the diverse basic activities of daily living (ADL) during later adulthood (Roos et al., 1993). A functional assessment of ADL Status involves the evaluation of mature adults' capacities to carry out such activities of daily living as moving from place to place (called transferring), mobility, orientation, walking, cooperation, social roles, sleeping, dressing, hand activities, eating/feeding, caring for personal hygiene (e.g. bathing and toileting/elimination), and home chores (Chiodo et al., 1994; Nagatomo et al., 1987; Freels et al., 1992; Mahurin et al., 1991; Ikegami, 1995; Goodwin-Johansson, 1996; Johansson et al., 1993; Roos et al., 1993; Hickey et al., 1995). In the home environment, for many mature adults, the bathroom presents the largest number of challenges followed by the kitchen where a significant number of basic activities of daily living are performed (Mann, Hurren, Tomita & Charvat, 1995).

For mature adults who are already competent in the activities of daily living continued peak performance was found to be the best predictor of sustained Functional Independence (Marsh & Kersel, 1993). Functionally independent mature adults do not need to be afflicted with multiple pathologies or functional disabilities/impairments that diminish the activities of daily living until very near



the end of life (Molaschi et al., 1995; Nydevik & Eller, 1994). However, depending on the current ADL Status, Functional Independence can be enhanced or impaired.

#### Enhanced Functionality

Enhancing Functional Independence is associated with, and often directly proportional to the increased accessibility of important environmental resources; this benefit can have a positive influence on mature adults' performance of the basic activities of daily living (Starrett, 1985; Laforge et al., 1993; Wahl, 1994; Haga, Shibata, Ueno & Nagai, 1991). Successful aging involves achieving significant functional improvements in the performance of the activities of daily living (Smith & Couch, 1990). Raising the level of available environmental/social resources utilized may promote a higher quality of life, and may heighten Functional Independence in later adulthood because tends to enhance ADL (activities of daily living) competence (Haga et al., 1991). Mature adults, potentially, are highly motivated, well organized, and hardworking in performing the activities of daily living (Clennell, 1990; Marsh & Kersel, 1993).

Variations in the performance of the activities of daily living can vary with body mass index (BMI), and the level of physical activity. For example, a relationship exists between body mass index (BMI) and the ability to perform activities of daily living; the greater the extreme

(low or high) of BMI, the greater the risk for functional impairment (Galanos et al., 1994). Also, mature adults who participated in regular physical activities/exercise had less difficulties in performing the activities of daily living (Sdroliash, Ready, Searle, 1995).

A significant correlation was found to exist between the motor functions of mature adults, and their overall ability to perform the activities of daily living (Nishimura, Kobayashi, Hariguchi & Takeda, 1993; Lichtenberg & Nanna, 1994). Higher activities of daily living capabilities prior to a hip fracture also were associated with higher levels of physical functioning after recovery and rehabilitation (Roberto & Bartmann, 1993). In addition, pursuing routine leisure activities such as regular physical exercise also can help create increased perceptions of competence in the activities of daily living (Mobily et al., 1993).

Building greater Functional Independence in the activities of daily living, and gaining greater perceived control over daily events can significantly reduce the negative impact of environmental stressors on psychological and physical well-being; this can occur in the senior population, in part, by motivating mature adults to make choices/changes that tend to reduce significantly the adverse effects of stress (Roberts et al., 1994; Zuccala, Cocchi & Carbonin, 1995; Idler & Kasl 1995; Burnette & Mui,

1994; Allegrante et al., 1991; Holahan, 1987; Morganti, Nehrke & Hulicka, 1990; Smith & Couch, 1990). In contrast, a reduced sense of control/choice in everyday life was found to be associated with greater impairments in the performance of the activities of daily living (ADL), and more depressive symptoms (Burnette & Mui, 1994). For example, an association was found between depression and incontinence; incontinent (ICN) mature adults were found to be more depressed than were continent ones (CN) (Morris, Browne & Saltmarche, 1992). A feeling of loss of control regarding health may negatively impact on mature adults' level of functioning in the activities of daily living (Starrett, 1985; Laforge et al., 1993; Wahl, 1994; Haga et al., 1991).

#### Impaired Functionality

A functional decline may be manifested by an impaired ability to perform any of the activities of daily living functions (Freels et al., 1992; Sandman, Norberg, Adolfsson & Eriksson, 1990). For example, it was found that although one-fifth of the mature adults (n=617) were functionally independent in all activities at age 70, almost one-half of that same population at age 76 were required to use assistive devices (AD) in order to remain mobile enough to continue performing their daily life activities successfully (Sonn, 1996). During this period of change, a fear of falling was found to be predictive of a future decline in the activities of daily living (Franzoni, Rozzini, Boffelli

& Frisoni, 1994). This fear of falling was determined to be a major contributor to a decline in functionality, and a source of increased dependence in the basic activities of daily living (Tinetti & Powell, 1993; Roberts & Wykle, 1993). In essence, any loss of Functional Independence may increase the risk of disability in the activities of daily living (ADL) (Bruce, Seeman, Merrill & Blazer, 1994; Shmueli-Dulitzki et al., 1995).

Major issues that may confront mature adults concern the loss of one's home, possessions, and/or friends; these losses often precipitate impairments/disabilities in the activities of daily living, and a subsequent loss of Functional Independence (Rabins et al., 1992). Other serious issues that also increased the risk of disability in the activities of daily living were found in the areas of cognition, and disruptive behaviors (Vitaliano, Young, Russo & Romano, 1993). Research findings have demonstrated that disruptive behaviors exhibited in nursing homes increased in proportion to the severity of activities of daily living dysfunction (Spector & Jackson, 1994). Mature adults frequently have disabling chronic conditions (e.g. activities of daily living disabilities) which have been shown to lower profoundly their leukocyte count, and simultaneously provoke depressive symptoms (Brown, Salive, Guralnik & Wallace, 1995).

In the 1980s and 1990s, the mature adult population largely was beset by an unexpected rise in chronic diseases and lengthy disabilities (Laukkanen et al., 1993; The Picture of Health, 1987). Chronic diseases such as arthritis, diabetes, cancer, arteriosclerosis that can precipitate angina or long-term coronary disease, stroke, hip fracture, neurological and lung conditions have been found to have a negative impact on at least seven basic and ten instrumental activities of daily living (Semaan, 1993; Nickel & Chirikos, 1990; Rose, 1990; Dorfman, 1995). Research findings suggest that as mature adult patients progress through the course of a chronic disease, their temporal adaptation skills and performance in the activities of daily living often deteriorate progressively (Venable & Mitchell, 1991).

ADL Status and depression. Significant predictors of depressive symptoms were determined to include increases in the number of activities of daily living impairments (Burnette & Mui, 1994). Depressive symptomatology, even in high-functioning mature adults, is associated with a decline in Cognitive Status, a loss of Functional Independence, and an increased risk of disability in the activities of daily living (ADL) (Bruce et al., 1994; Shmueli-Dulitzki et al., 1995; Oliveri et al., 1994). It also was determined that the presence of a chronic illness such as depression had a significant impact on Functional Independence in the basic

activities of daily living in later adulthood (Laukkanen et al., 1993; Ruta et al., 1994). This is illustrated in the case of mature adults who had all been functionally independent prior to a stroke, but, in part, because of a depressive symptomatology developed after the stroke, became dependent on help even in the most important basic activities of daily living, for example, communication (Nydevik & Eller, 1994; Tsuji et al., 1994). The Activities of Daily Living Scale or the GBS-M Scale can identify the subtle deterioration in Health Status that often accompanies a lengthy depression (Rogers, Holm, Goldstein & McCue, 1994; Dencker & Gottfries, 1995).

ADL Status and dementia. The subtle degeneration characteristic of a geropsychiatric dementia, may be best detected by performance tests such as, first, the Activities of Daily Living Scale of the Older Americans Resources and Services Multidimensional Functional Assessment (OARS-ADL) and, second, by the Performance Assessment of Self-Care Skills (PASS) (Rogers et al., 1994). The purpose for rating overall performance on the Activities of Daily Living (ADL) Scale is that it increases the specificity and sensitivity for diagnosing dementia (Warren et al., 1989). The Performance Assessment Scale goes one step further by rating functionality in order to demonstrate that mature adults with severe dementia require a substantial amount of help, from family, relatives or other caregivers, in performing

the activities of daily living (Pearson et al., 1989; Arnold, Gur, Shapiro & Fisher, 1995).

The DSM-III-R, Mini-Mental State Examination (MMSE), Clinical Dementia Rating (CDR) Scale, Activities of Daily Living (ADL), and the Instrumental Activities of Daily Living (IADL) Scale all can be used by health care practitioners to assess the clinical severity of dementia (Juva et al., 1994; Ashford, Shan, Butler & Rajasekar, 1995). By utilizing more than one testing instrument, policy makers and/or health care practitioners may begin to gather the knowledge needed to understand more fully how the various grades of dementia negatively impact on Functional Independence (Juva et al., 1994).

Once dementia progresses to the stage where communication is lost, in a parallel manner, a substantial loss of Functional Independence occurs, and there is a significant decline in the ability of non-communicating mature adults to perform the basic activities of daily living (Birkett, 1994). In particular, increased dependence in bathing, and/or dressing activities was associated with a rise in drinking frequency (Laforge et al., 1993). Three drinking patterns in mature adults with AD (Alzheimer's Disease); they included (1) chronic alcohol abuse, (2) chronic abuse followed by long-term abstinence, and (3) problem drinking in later life (Larkin & Seltzer, 1994).

Open communication is often thought of as an essential activity of daily living (Nydevik & Eller, 1994). Feelings, once openly shared, most often lend themselves to positive discussion and calm appraisal (Low, 1986). Positive relationships, in turn, tend to promote efficacy-enhancing attitudes such as open communication, genuine trust, and mutual understanding which may all be helpful in stressful situations (Allegrante et al., 1991; Heidrich, 1994).

To help mature adults become more functionally independent, health care leaders might consider assessing such daily functions as open communication, motor skills, and procedural learning; the goal would be to improve care, and design interventions that will enable mature adults to perform better in the activities of daily living as well as assist in the recovery, maintenance, and enhancement of Functional Independence (Danner et al., 1993).

ADL Status and the risk of institutionalization. The presence of dementia, the absence of a proficient caregiver, and advancing age were found to be associated with impairments in the activities of daily living, the loss of Functional Independence, and a higher risk of institutionalization (Osterweil, Martin & Syndulko, 1995; Glazebrook et al., 1994; Worobey & Angel, 1990). Any functional impairment/decline such as found in dementia can increase unmet needs to such a point that they actually exceed the capacity of existing helping networks (Stoller &



Pugliesi, 1991); Dementia is typically associated with a decline of Functional Independence in the activities of daily living and an increased risk of institutionalization (Glazebrook et al., 1994). Eligibility criteria for long-term care was determined to depend on the number of ADL disabilities, and cognitive impairments (Spector & Kemper, 1994).

ADL Status and the efficacy of institutionalized care.

A majority of patients in traditional institutional long term care show further cognitive deterioration (Annerstedt, 1993). Disruptive behaviors in nursing homes have been reported to have increased in proportion to the severity of cognitive impairments, activities of daily living dysfunctions, and incontinence (Spector & Jackson, 1994). In the mild phase of dementia, the behavioral disturbances were found to be proportional to the length of duration of the disease, and a decreased capacity to accomplish the basic activities of daily living (Grafstrom, Fratiglioni & Winblad, 1994). Because of a decreased functional ability, mature adults became more dependent on the institution's staff to step in, and provide the necessary activities of daily living (Loew & Rapin, 1994). As a result, caregivers for institutionalized mature adults were found to experience more stress in the nursing home environment than caregivers assisting noninstitutionalized in-home mature adults in the

activities of daily living (Stephens, Kinney & Ogrocki, 1991).

ADL Status and mortality. Predictors of mortality, and signs of impending death include the impairments/losses of basic and instrumental activities of daily living, and mobility (Cohen et al., 1992; Reuben et al., 1992; Parker, Thorslund & Nordstrom, 1992). Accordingly, the Katz Activities of Daily Living score and the 7-item Physical Performance Test (PPT) could be used as independent predictors of more an immediate impending death or an impending institutionalization (Reuben et al., 1992).

### **Physical Status**

The Functional Independence of mature adults is directly influenced by Physical Status. Physical Status refers to a suitable level of physical activity such as engaging in regular exercises that improve strength, flexibility and balance in mobility, and promote a heightened sense of well-being (Mota et al., 1995; Hickey et al., 1995; Ruuskanen & Ruoppila, 1995). Physical activity, potentially, has preventive and therapeutic benefits as well the capability to improve quality of life for mature adults (Barry, Rich & Carlson, 1993). The level of daily physical activity is directly related to, and enhances mature adults' level of independent living; as an example, more physical activity has been shown to increase flexibility, and this, in turn, can reduce restricted activity days (RADs) (Tsuji

et al., 1994; Yu, 1995; Shephard, 1993; Scholes et al., 1991). A decline in Functional Independence, which in the past has been attributed to the natural consequences of the aging process, now can be traced back to immobility, in other words, the lack of physical activity (Meush, 1984).

#### Immobility and Functional Decline

The greatest impact on Functional Independence comes from physiologic changes that affect mobility (Barry et al., 1993). A significant correlation exists between motor function, and the ability to perform the activities of daily living (Nishimura et al., 1993). Using a stepwise multiple regression analysis, Yu (1995) found that the level of physical activity was a major predictor of physical and total level of functioning for independent living (FIL).

Physical activity involves a series of increasingly integrated steps taken to perform and maintain the basic components of physical function; moreover, increasing levels of physical activity appear to be associated with better functioning, even in mature adults with already-existing chronic disease (DiPietro, 1996). For this reason, an improvement in physical capabilities can result in a higher level of functioning for independent living (FIL) (Barry et al., 1993).

Regular exercise has many beneficial effects on the health of mature adults (Cosky, 1989; Bland & Williams, 1988). Data reported from several epidemiological studies

suggest that regular physical activity is not only essential to maintain physical health, but also helps to accomplish many other higher-order tasks or goal-oriented functions (DiPietro, 1996). Physical exercise in the form of regular physical activity, and routine training can both preserve and stimulate profound improvements in the Functional Independence of mature adults (Astrand, 1992). Physically inactive mature adults often have to endure the hardship of less favorable health, and lower functional status (Van Den Hombergh, Schouten, Van Staveren, Wvan Amelsvoort & Kok, 1995).

#### The Benefits of Exercise

Regular physical activity in later adulthood may be considered essential for the optimal functioning of the human body (Astrand, 1992). Mature adults who choose a lifestyle that conserves their physical fitness enjoy many unique benefits. These unique benefits may be categorized into circulatory, neuromusculoskeletal, and general classifications.

Circulatory benefits. Regarding the circulatory system, regular physical activity was associated with a clinically significant lowering of diastolic blood pressure (Rauramaa et al., 1995). Although aging was found to be associated with decreased maximal heart rate (HR-max) and maximal stroke volume (SVmax), the decrease in SVmax can be improved, as shown by an enhanced systolic and diastolic

response immediately after exercise training; moreover, this enhancement in cardiac function was preserved even at an advanced age (Tate, Hyek & Taffet, 1995). More active mature adults had higher VO<sub>2</sub> max (peak oxygen intake) values, lower body fat, healthier body weight, and better blood pressure values than less active mature adults (Bland & Williams, 1988).

Neuromusculoskeletal benefits. Regarding the neuromusculoskeletal system, it was found that mature adults who engaged in repetitive and habitual walking, flexibility, and strength training exercises can prevent muscle weakness, impaired gait, and postural imbalances (Barry, 1993). Physical activity programs appeared to enhance strength, flexibility, and balance, significantly, challenging the common belief that motor abilities and capacities routinely deteriorate with advancing age (Mota et al., 1995). Research has convincingly showed that strength loss is modifiable even in the oldest old (McClure, 1996). This is promising news in light of the fact that musculoskeletal disorders may still make up a sizable component of the total number of impairments found in the mature adult population (Kelsey, White, Pastides & Bisbee, 1979).

Short-term studies demonstrated that degenerative conditions such as Osteoarthritis may be effectively abetted by regular exercise; mature adults reported improvements in physical capacity, reduced pain, disability, and difficulty

with activities that require ambulation and transferring from a sitting to standing position (Ettinger & Afable, 1994). Osteoarthritis is a common, nonfatal, chronic condition characterized by degenerative changes in the synovial membranes, contiguous bones, and articular cartilage of the joints; it is found mainly in mature adults, and may cause them considerable pain which frequently can be disabling (Dorlands, 1974). The prevalence of Osteoarthritis was 2.5 times higher in the mature adult population, as the source of activity-related pain, than in younger athletes (Matheson, MacIntyre, Taunton, Clement & Lloyd-Smith, 1989). It most frequently originates from overuse and/or musculoskeletal injuries associated with excessive physical activity, and it masks a complex interplay of joint wear and tear, pain, and physical deficits that coalesce to produce muscle weaknesses, and loss of joint function (Murray & Pizzorno, 1991).

Generally, Osteoarthritis (OA) is characterized by mature adults as a serious, painful, chronic, incurable condition that requires higher levels of self-management, reduces their quality of life, and increases their use of medical services (Hampson, Glasgow & Zeiss, 1994). In particular, Osteoarthritis frequently attacks the lower extremities, often affecting the muscles of the legs, and producing a corresponding decline in aerobic work capacity. In fact, Osteoarthritis (OA) of the knee is a common

clinical presentation in later adulthood (Ettinger & Afable, 1994). Moreover, associated conditions such as metatarsalgia, plantar fasciitis of the feet, and meniscal injury of the knee were also found to be more common in later adulthood (Matheson et al., 1989).

Fortunately, physical activity provides therapeutic benefits for Osteoarthritis (Barry et al., 1993). In addition, mature adults, who were still actively working reported a consistent pattern of less symptoms, that is, more enjoyment, and a higher quality of life than mature adults who had retired or were currently out of work (Bendtsen & Hornquist, 1992). In fact, the Arthritis Foundation and many health care practitioners now acknowledge that many exercises/activities may help improve the condition of inflamed joints (Sample, 1990).

General benefits. Other important benefits of exercise for mature adults include stress reduction, better sleep, muscle relaxation, positive mood, and improved perceptions of the self (O'Brien & Vertinsky, 1991; Meush, 1984). Walking, flexibility, and strength training exercises were found to prevent muscle weaknesses, and impairments in gait and balance (Barry, 1993). Physical activity was reported to improve coordination skills, improve joint flexibility, enhance muscle strength, and increase endurance, adaptability, and resistance to infections (Meush, 1984). DiPietro (1996) went one step further in a report that

reveals a positive association between higher levels of physical activity, and higher functional levels for independent living even in mature adults with already-existing chronic diseases. In the face of existing diseases, increases in physical activity deserve special emphasis to prevent deterioration, and avoid the eventual loss of Functional Independence in later adulthood.

### Risks of Falling

Falls are a primary cause of injury, disability, dependence, and death among mature adults (Poll, 1992). Falls in mature adults are frequent and their causes multifaceted (Wolter & Studenski, 1996). The main elements that may significantly increase the risks of falling can be explained/divided into physical and mental factors.

Physical factors. Poor physical functioning due to strength loss, impaired gait, and postural imbalances are the most common underlying causes for falls (Barry et al., 1993; McClure, 1996). A loss of lower extremity muscle strength, in particular, raises the risk of falls in the mature adult population (Judge, Lindsey, Underwood & Winsemius, 1993). Mature adults tended to fall more often as they become more unsteady and immobile with advancing age (Martin, 1995). It was found that of the number of mature adults (n=617) who were independent in all activities at age 70, one fifth at age 70 as compared to almost half of the population at age 76 used assistive devices (AD) to remain



mobile enough to perform their daily life activities successfully (Sonn, 1996). Performance of the activities of daily living was found to be the best predictor of continued Functional Independence (Marsh & Kersel, 1993).

Mental factors. The cause of falls during relatively nonhazardous activities can arise from a loss of mobility and flexibility, and from a low perceived self-confidence (Tinetti & Powell, 1993). Dependence caused by low perceived self-confidence, and fear of falling during relatively nonhazardous activities can be a major contributor to mature adults' decline, and thus, an early omen of a gradual loss in Functional Independence (Tinetti & Powell, 1993). In fact, fear of falling was found to be common among mature adults with a history of impaired mobility (McClu-Chandler, Duncan, Sanders, & Studenski, 1996). Fear of falling has been linked a diminished physical performance, increased depression, and increased disability (McClu-Chandler et al., 1996).

Fear of falling constitutes an independent risk factor for disability because it causes mature adults to unnecessarily restrict their daily activities (Burker, Wong, Sloane & Mattingly, 1995). In essence, fear of falling during relatively nonhazardous activities is a major contributor to the decline in Functional Independence in later adulthood (Tinetti & Powell, 1993). Sonn (1996) discovered that one-fifth of the mature adults studied at

age 70 as compared to almost half of the same sample at age 76 required assistive devices (AD) in their daily life activities. A rise in the use of assistive due to physical impairments lowers maximal walking speed, reduces knee extensor strength, and decreases stair-climbing capacity, and these reductions impact negatively on mature adults' level of functioning for independent living (FIL) (Sonn, 1996). As mature adults become older and increasingly dependent on assistive devices, they tend to restrict their everyday activities more because they fear falling down and hurting themselves during relatively nonhazardous activities (Tinetti & Powell, 1993).

#### Results of Falling

Studies of immobilized subjects have consistently found bone atrophy; bone atrophy or involution of bone may pose serious health risks (Smith & Raab, 1986). The resulting osteoporosis symptomatic of bone atrophy affects more than 25 million people in the United States (Wardlaw & Wese, 1995). Frequently, falls in mature adults with osteoporosis often result in bone fractures (Smith & Gilligan, 1987). In addition, fracture risk from falls has been found to increase exponentially due to the declines in bone mass and bone mineral density (BMD) associated with advancing age (Martin, 1995).

Using regression models, a direct association was discovered between muscle mass and bone mineral content;

hence decreases in muscle mass associated with age may indicate a concurrent bone loss (Yeater & Main, 1984; Hughes et al., 1995). This bone loss may account for the fact that over 250,000 mature adults are hospitalized each year for the treatment of a fractured hip, and this by itself (Allegrante et al., 1991). Although the incidence of osteoporotic fractures is already at epidemic proportions in the United States, it is expected to increase steadily into the next century as the population ages (Martin, 1995). The pernicious consequences of hip fractures due to falls and osteoporosis include loss of confidence and a premature deterioration in Functional Independence (Allegrante et al., 1991).

Prevention of falls. Any multidisciplinary multifaceted treatment plan ought to consider an activity prescription designed to help mature adults gradually regain their Functional Independence when it comes to the basic and instrumental activities of daily living (Tinetti & Powell, 1993). Exercise reduces the rate of bone loss, and promotes an increase in bone mass (Smith & Raab, 1986). Higher activities of daily living capabilities prior to a hip fracture were associated with higher levels of physical functioning after recovery and rehabilitation (Roberto & Bartmann, 1993).

The best natural protection against bone loss associated with aging is to engage in regular physical

exercise which retards or prevents progressive bone loss, and aids recovery if an injury does occur. The role physical activity plays in the prevention of Osteoporosis is considered to be highly significant (Yeater & Main, 1984). Long-time athletes that were still active at over 70 years of age maintained a superior trabecular bone mass when compared to the average mature adult (male or female) population of the same age (Suominen & Rahk, 1991).

There are three risk factors that precipitate falls, namely, muscle weakness, impaired gait, and postural imbalances, that can be rectified by activities that emphasize walking, flexibility, and strength training prevention programs (Barry et al., 1993). Indeed, any exercise program ought to consider emphasizing lower-extremity strengthening, regular walking, and postural control exercises that are designed to improve balance, and thus lower mature adults risk of future falls and fall-associated injuries (Judge et al., 1993). Research findings demonstrate convincingly that strength loss is modifiable even in the oldest mature adults (McClure, 1996). Moreover, physical activities that actively increase musculoskeletal strength and postural flexibility will also reduce the risk of falling and the risk of injury when falls do occur (Poll, 1992).

Additional prevention methods. Other factors relevant to preventing falls include creating a safe environment,

wearing proper shoes, and coping with dizziness. By correlating the results of an activity of daily living score, a depression symptom checklist, and stability evaluation when standing with feet together, it was found that chronic dizziness was strongly correlated to a fear of falling; almost half (47%) of the mature adults studied expressed a fear of falling, in comparison with only 3 percent of controls (Burker et al., 1995). Coping with dizziness, and preventing falls may require the creation of a safe exercise environment, preventive physical exercise, and the promotion of self-confidence.

Steps that mature adults can take to create this safe environment include, first, initiating a program of moderate exercise (e.g. walking, gardening, house/yard work), and second, taking steps to reduce known household hazards (Weiner, 1988; DiPietro, 1996). A safe exercise environment also includes the appropriate shoes, that is, shoes that will decrease the chances of falling while engaged in physical activities designed to increase strength, promote balance, and reduce falls (Poll, 1992). In addition, a good prevention program may include the promotion of efficacy-enhancing beliefs, that is, mutual aid and social support aimed at reducing the loss of confidence that associated with the fear of falling (Allegrante et al., 1991).

## Types of Exercise

For more sedentary mature adults, a low-intensity preventive exercise program can improve peak oxygen intake ( $VO_2$  max), and cardiorespiratory responses; these improved responses were regarded as comparable to the health-enhancing responses derived from high-intensity exercises (Belman & Gaesser, 1991). Most encouraging was the fact that mature adults, in spite of active conditions such as arthritis, hypertension, and related heart disease, through low-intensity exercises, actually improved their mobility as well as the time and number of steps needed to walk a measured course (Hickey et al., 1995).

Calisthenics is an exercise regimen that can easily be performed by sedentary mature adults (Famundsen, Devl & Ellingham, 1989). It does not require expensive equipment or a large gymnasium facility, and it has many health benefits. Benefits such as a significant decrease in heart rate (HR), systolic blood pressure (SBP), and rate-pressure product (RPP) occurred, and an equally significant increase in maximal aerobic power (MAP) evolved from this training (Famundsen et al., 1989). Regular aerobic exercise retards the customary decline in maximal aerobic power or peak oxygen intake ( $VO_2$ max) associated with aging (Kasch, Boyer, Van Camp, Verity, Wallace, 1990).

Other types of exercises performed by mature adults that preserve maximal aerobic power, and peak oxygen intake

include aquatic therapy, endurance training, and basic resistance strength training. Aquatic Exercise Therapy is an effective way of increasing joint flexibility and functional status while reducing pain and difficulty in performing daily tasks (Templeton & O'Kelly, 1996). Endurance training significantly increases physical capacity in mature adults depending, in part, on the specific duration of exercise bouts, and actual length of the training regime (Green & Crouse, 1992). The extent of participation in endurance exercises by previously sedentary mature adults was found to be correlated with better overall physical health (Stewart, 1993). Furthermore, regular endurance exercises can be particularly effective in checking an age-related decline in Functional Independence associated with in later adulthood (Shinkai et al., 1995).

Two examples of endurance exercises are uphill treadmill walking or stair climbing exercises performed an average of three times per week for about 30-45 minutes at approximately 80 percent of the individual's maximal heart rate reserve. The findings after six months of endurance training include an increased peak oxygen intake ( $V_{O2max}$ ), and increased resting plasma and blood volume (11.2% and 11.2% and 12.7% respectively with  $P \leq 0.05$ ); the far-reaching significance of these findings is that they are similar to that of younger individuals, and this suggests that, despite obvious age differences, mature adults may

also benefit substantially from weekly endurance training (Carroll, Convertino, Graves, Lowenthal & Pollack, 1995). All things considered, as mature adults age, they can enjoy significant growth in stamina, flexibility, strength, and overall fitness from regular physical activity (Stamford, 1994).

Strength training programs can also help mature adults remain physically active and functionally independent longer (Strength training: A bridge to, 1989). One reason is that increased strength leads to improved balance and functional mobility; thus, almost every mature adult can derive benefits from a basic resistance training program (Munnings, 1993). Besides the expected increases in strength in all muscle groups used, special benefits derived from strength training also included improved maximum heart rate (HR), and lower systolic and diastolic blood pressures values during all exercises, and at all intensities (McCartney, Martin, McKelvie, MacDougall & Sale, 1989).

While weight-bearing exercises were useful in preventing or reversing age-related osteoporosis, mature adults with very low fitness levels or with preexisting fractures were best able to strengthen and protect their bone structure by non-weight-bearing or low-impact exercise (Smith & Gilligan, 1987). Regular physical activity can positively influence physical capacity particularly among conspicuously sedentary mature adults (Mota et al., 1995).



Even moderate sports participation was associated with an enhanced physical capacity; this enhancement has major implications for maintaining a high Functional Independence in the later years of life (Kavanagh & Shephard, 1990). Regular participation in activities of moderate intensity (such as walking, gardening, house/yard work) should be encouraged to maintain and enhance day-to-day functioning in later adulthood (DiPietro, 1996).

### Turning Back Time

The positive effects of these different types of exercise programs support the mounting evidence that regular physical activity has a beneficial effect on health (Bland & Williams, 1988). Mature adults can improve their physical capabilities through proper exercise (Danner & Edwards, 1992). For example, it has been found that physical activity can delay and slow down age-related physiological deterioration (Prassas, Rominger, & Barber, 1995). In fact, vigorous physical training can reduce some components of their biological aging process by as much as 20 years (Shephard, 1987). However, Stamford (1994) cautions, prior to beginning a new exercise routine, mature adults ought to consider obtaining their doctor's okay first especially if they have a disability or get tired easily. In addition, it is critical to implement a properly designed and implemented exercise program that can help mature adults maintain an independent and active lifestyle.

The program must be designed to avoid exercise-related difficulties such as overexertion, injuries or accidents to which the elderly are especially prone. One prudent precaution would be to undergo an evaluation to show any preexisting condition--especially cardiovascular, musculoskeletal, or neurologic--that would preclude a particular exercise or require treatment before commencing the program (Van Amp & Boyer, 1989). If pain is felt while exercising, prudence suggests that the exercise must always be stopped, for example, to avoid muscle damage (Lee & Evans, 1991; Stamford, 1994).

Through proper physical training, mature adults can achieve the level of the physical fitness of a much younger sedentary person; this is because maintaining and improving endurance, strength, flexibility and balance, supported by strategies that effectively deal with emotional stress, can improve quality of life well into the 70s, 80s, and 90s (Danner & Edwards, 1992). Physical activity also provides therapeutic benefits for patients who have arthritis or dementia (Simon, 1996). Physical activity can enhance physiologic and psychological functions that, in turn, may stimulate mature adults to regain and maintain Functional Independence (Shephard, 1993).

Physical activity can also help create a vitalizing cycle that will help mature adults establish a high level of functioning for independent living (FIL). By protecting

mature adults against premature deterioration, physical activity helps to maintain motor performance and mobility, thereby enabling mature adults to lead a more independent life (Meush, 1984). Physical activity promotes feelings of psychological well-being (Ruuskanen & Ruoppila, 1995). Healthy cognition, in turn, was found to be an important precursor of ambulation, and the successful execution of the activities of daily living (ADL) in later adulthood (Lichtenberg & Nanna, 1994).

Mature adults ought to consider spending a minimum of 20-30 minutes of their daily schedule engaged in a healthy, and pleasing physical exercise. The promotion of regular daily exercise in order to enhance Functional Independence can offer mature adults a unique opportunity to have a fuller, richer, and more productive life experience (O'Brien & Vertinsky, 1991).

### **Cognitive Status**

Cognitive Status refers to the state of one's mental health or psychological well-being as determined primarily by levels of depression in later adulthood (Rozzini et al., 1991; Shmuelly-Dulitzki et al., 1995). An increase in depressive symptomatology associated with a decrease in Cognitive Status has been found to be significantly related to a decline in Functional Independence, and an increased risk for a future disability (Stallones et al., 1990; Laukkanen et al., 1993).

A significant correlation exists between Cognitive Status, significantly influenced by levels of depression, and/or dementia, and the daily functional abilities of mature adults (Warren, Grek, Conn & Herrmann, 1989; Yu, Johnson, Kaltreider & Craighead, 1992). Standardized tests evaluating Cognitive Status, and Functional Independence show these two to be closely related; significant correlations were found between Cognitive Status, as measured by the MDRS (Mattis Dementia Rating Scale), and Functional Independence, as measured by the DBS (Dementia Behavioral Scale) (Nussbaum, Goreczny & Haddad, 1995).

#### Depression

Depression is determined by the presence of a minimum of four (five is considered conclusive) of following eight criteria that include (1) weight gain/loss from significant changes in appetite, (2) insomnia or other significant changes in sleep habits, (3) either inactivity or excessive activity, (4) a loss of interest in usual activities, for example, a decreased sexual drive, (5) inordinate fatigue, (6) inappropriate guilt, self-reproach or feelings of worthlessness, (7) reduced capacity to concentrate, and (8) recurrent notions concerning suicide or death; according to the American Psychiatric Association, this depressed state must continue for at least one month to be termed clinical depression (Murray & Pizzorno, 1991).

Depression in mature adults is associated with cognitive impairments (Osimani & Freedman, 1991). In addition, depression often plays a major role in determining Functional Independence (Pearson, Teri, Reifler & Raskind, 1989; Zuccala et al., 1995). In fact, using the Diagnostic and Statistical Manual of Mental Disorders-III-Revised (DSM-III-R) to diagnose depression, a highly significant relationship between depression and a loss of Functional Independence was discovered; moreover, depression was frequently the most powerful variable associated with a loss of Functional Independence (Shmuelly-Dulitzki et al., 1995; Murray & Pizzorno, 1991).

Using the basic and instrumental activities of daily living scales, mobility assessments, the Center for Epidemiologic Studies Depression Scale, and the Mini-Mental State Examination (MMSE), a loss of Functional Independence was found to have a significant association with hearing and visual impairments, education, joint pain, dyspnea, the MMSE score, and depression; however, using a regression analysis, researchers discovered that only dyspnea, the MMSE score, and depression were always significantly correlated with a loss of Functional Independence (Barberger-Gateau, Chaslerie, Dartigues & Commenges, 1992). In fact, high depressive symptoms were found to be related significantly to an increased risk for the onset of a disability (American Journal of Public Health November, 1994).

Effects of depression. High depressive symptomatology, even in high-functioning mature adults, is associated with a decline in Cognitive Status, a loss of Functional Independence, and an increased risk of disability in the activities of daily living (ADL) (Bruce et al., 1994; Shmueli-Dulitzki et al., 1995). In long-term survivors of a stroke, depression has been found to be highly associated with the loss of Functional Independence (Sharpe, Hawton, Seagroatt & Bamford, 1994). This is illustrated in the case of mature adults who had all been functionally independent before stroke, but partially because of the depressive symptomatology that developed after a stroke, became dependent on help even for some of the most important basic activities of daily living, for example, communication (Nydevik & Eller, 1994). Besides the loss of Functional Independence, depression associated with a disability in the activities of daily living (ADL) was also highly predictive of stroke mortality (Tsuji et al., 1994). Lastly, depressive symptomatology may be an early sign of dementia especially in senile dementia of the Alzheimer type (SDAT) (Osimani & Freedman, 1991).

Predictors of depressive symptoms. A depressive symptomatology is most easily recognized by first identifying the factors that predict its onset. Predictors of depressive symptomatology include greater numbers of physical illnesses, poor perceived health, more perceived

unmet needs, and a reduced sense of control in life (Mui, 1993; Burnette & Mui, 1994). Additional predictors of depression include the deepening activities of daily living impairment, and the recent loss of a significant other (Burnette & Mui, 1994). Moreover, depressive symptomology can be identified by two factors associated with depression, that is, mood disturbance (MDD) and motivation disturbance (MTD); both were found to be significantly correlated with increasing disability, and decreasing Cognitive Status (Forsell, Jorm & Winblad, 1994). Mature adults in poor to fair health were almost four times more likely to complain of a high number of depressive symptoms in comparison with those who reported good to excellent health (Stallones, Marx & Garrity, 1990). This finding may be partially explained by the significant correlation that exists between higher prevalence of depression and no regular physical exercise (Ruuskanen & Ruoppila, 1995). In particular, high depressive symptoms were significantly correlated with poorer perceived health, identifiable behavioral disorders, and a low number of club/organization memberships (Stallones et al., 1990). Identifying the factors associated with depressive symptomatology raises the possibility of appropriate recognition and early treatment which may, in turn, improve quality of life, and reduce functional disability (Shmueli-Dulitzki et al., 1995).

### Loss of Functional Independence

In addition to depression, memory loss and behavioral disorders also have been identified as determinants of functional status. For example, research has shown that significant levels of depression, memory loss, and, disruptive behavioral disorders are inversely correlated with Functional Independence; this means, potentially, all three determinants also can be major sources of functional impairments (Yu et al., 1992; Goldstein et al., 1992). Generally, the mechanism of memory loss is that it stimulates the ego to engage in such coping mechanisms as cognitive biases, and a process of cognitive restructuring; specifically, memory loss can be regarded as a robust predictor of diminished cognitive and functional status because it almost always signifies a significant decline in the ability to perform the instrumental skill levels of daily living (IADL) (Barrows, 1995; Goldstein et al., 1992; Kosloski et al., 1994). Significant levels of depression, memory loss, and/or behavioral disorders, individually or in combination, are regarded as major sources of functional impairments.

Basic screening tests. A basic screening for Cognitive Status may include a functional assessment, Mini-Mental State Examination (MMSE), and Diagnostic and Statistical Manual of Mental Disorders-III-Revised (DSM-III-R), an index of the activities of daily living (ADL), and the



instrumental activities of daily living scale (IADL) (Murray & Pizzorno, 1991; Barberger-Gateau et al., 1992; Juva, Sulkava, Erkinjuntti & Valvanne, 1992; Yu et al., 1992; Juva, Sulkava, Erkinjuntti & Ylikoski, 1994; Wind et al., 1995). A basic screening of this kind seeks to detect cognitive changes in such clinical areas as depression, memory, mood, psychiatric well-being, instrumental activities of daily living (IADL), activities of daily living (ADL), social behavior, and disturbing behavior (Murray & Pizzorno, 1991; Tremmel & Spiegel, 1993).

Other screening tests. The Winchester Disability Rating Scale (WDRS-2) has the potential to be used as a means to limit hospitalizations or nursing home confinement because it can identify depression, and the subtle deterioration that foretells the loss of Functional Independence (Oliveri et al., 1994). Pertinent data collected from the Center for Epidemiological Studies Depression Scale can also be helpful in identifying depression (Yu et al., 1992). Moreover, tests such as the Performance Assessment of Self-Care Skills (PASS), and the Activities of Daily Living Scale can help identify the subtle deterioration that often accompanies a lengthy depression (Rogers, Holm, Goldstein & McCue, 1994). In addition, the GBS-M scale also measures activities of daily living (ADL), and thus can also be useful in detecting the

cognitive changes that most often accompany depressive symptoms (Dencker & Gottfries, 1995).

### Evaluating Cognitive Change

As mature adults age, their Cognitive Status routinely diminishes, and as a result, their level of functioning for independent living (FIL) tends to decline (Yu et al., 1992). Hence, there may be a rise in the number of instrumental activities of daily living (IADL) limitations (McFall & Miller, 1992). Whenever this is the case, the rising level of impairments in the performance of the instrumental activities of daily living (IADL) varies inversely with the declining level of Functional Independence in everyday living. Besides Functional Independence, the instrumental activities of daily living (IADL) are regarded to be strongly associated with Cognitive Status as measured by the Mini-Mental State Examination (MMSE) (Burton, German, Rovner & Brant, 1992; Chiodo et al., 1994). Some illustrations of the instrumental activities of daily living include dressing, bathing, eating, walking, transferring, and toileting (Freels et al., 1992). These instrumental activities can be further subdivided into vegetative survival activities such as eating and continence, and advanced cultural activities such as dressing (Caradoc-Davies & Dixon, 1991).

Onset of cognitive impairments. Of particular relevance is the fact that cognitive declines can

precipitate functional declines in such instrumental activities of daily living (IADL) as cleaning, shopping, transportation, and cooking (Sonn, 1996). When there was a significant decline in Cognitive Status, the four IADL items most identified with the onset of cognitive impairment were (1) telephone use, (2) handling finances, (3) using transportation, and (4) taking responsibility for one's own daily medication intake (Barberger-Gateau et al., 1992).

Regarding using transportation, because of the need to rely on an inflexible transportation system, and because they were cognitively impaired or too old to drive, non-drivers lacked flexibility in scheduling their time and could not always participate in many activities at neighborhood senior citizen centers (Belnap, 1981). As a result, fears of social isolation from family, friend, and neighborhood support systems, and of possible future victimization were exacerbated (Rittner & Kirk, 1995). Regarding medication intake, medically ill mature adults, sometimes encounter difficulties in understanding and/or memory that impede their efforts to follow prescribed medication regimens precisely; these cognitive difficulties may result in a decreased ability to comply with prescribed medication regimens (Fitten et al., 1995). Even in nonprescription regimens such as the relaxation-based stress management program for myocardial infarction (MI), treatment adherence was considered to be an important independent

outcome variable essential to achieving a reduction in anxiety (Trzcieniecka-Green & Steptoe, 1994).

Severe cognitive impairments. If more severe impairments occur, mature adults may become impaired or even unable to use such common objects as a spoon or fork to feed themselves or even a toothbrush or comb to groom themselves; when this deep an impairment occurs, mature adults are rated to have suffered a complex cognitive loss, and therefore regarded as severely impaired (Borell et al., 1995). Moreover, such a severe cognitive loss is not confined just to feeding and grooming. Whenever severe impairments develop, the loss of Functional Independence is associated with impairments in a multitude of ADL and IADL functions (Sandman et al., 1990).

#### Dementia in Later Adulthood

In the United States, an estimated fifteen percent of mature adults are demented; ten percent are mildly to moderately impaired, and only about five percent are severely functionally impaired (Osimani & Freedman, 1991). An increasing proportion of mature adults in society means a higher prevalence of dementia (Annerstedt, 1993). Three-quarters of mature adults with dementia were found to live in institutions, and the other one-quarter most often lived with a helpful and caring family member or relative because they often required many supporting services (Juva et al., 1992).

Dementia involves serious impairments requiring supportive services because it originates from a deterioration of cognitive functions or loss of mental faculties in many areas (Dorlands, 1974). Functions that normally decline with age in mature adults, are especially altered in dementia (Osimani & Freedman, 1991). In particular, dementia is a clinical neurobehavioral syndrome, with an organic and/or psychological etiology, characterized by a irrecoverable deterioration of cognitive/intellectual functions; this deterioration involves such basic cognitive functions as attention and concentration, memory, manipulation of acquired knowledge (abstraction, calculation, judgment), and language (Thomas, 1977; Stedman, 1982; Osimani & Freedman, 1991).

A significant association exists between Cognitive Status and various aspects of dementia (Nishimura et al., 1993). As has been noted, attention, concentration, memory, manipulation of acquired knowledge and language changes are early signs of dementia (Osimani & Freedman, 1991). Specifically, loss of attention and concentration is evidenced when mature adults cannot focus their attention for more than several seconds at a time; loss of memory may occur because memory is particularly dependent on the individual being attentive and fully concentrating (Osimani & Freedman, 1991).

Deterioration in the ability to manipulate knowledge may be manifested as impaired judgment, increased difficulties in manipulating old knowledge, and by fixated thoughts, that is, intractable thoughts that are not readily modified by abstract or logical thinking (Osimani & Freedman, 1991). Progressive mental deterioration, a characteristic of dementia, can be exacerbated by intractable thinking because it intensifies stresses associated with novel experiences, and promotes childish behavior such as self-centeredness (Stedman, 1982). Other initial difficulties associated with dementia include impairments in language production as manifested by word finding difficulty, and subsequently by the habit of substituting one word for another with a similar meaning or similar sound (Osimani & Freedman, 1991). For this reason, dementia is the major restrictive problem in early Alzheimer's disease (Poser & Ronthal, 1991).

Regarding etiology of dementia, it can be primary or secondary in origin. Primary dementia, in later adulthood, occurs independently, and represents 80 percent of the total cases; secondary dementia, that is, dementia due to or arising from such general medical conditions as depression, alcoholism or drug intoxication, represents only 20 percent of the total cases (Stedman, 1982; Osimani & Freedman, 1991). The two major classifications of primary dementia include the senile dementia of the Alzheimer type (SDAT),

and multi-infarct dementia (MID) (Suemaru, Hashimoto, Ogasa & Hirasawa, 1991; Osimani & Freedman, 1991).

Senile Dementia of the Alzheimer Type. In Senile Dementia of the Alzheimer Type (SDAT), neuropathologic damage occurs in various cortical association areas located in the temporal, parietal, and frontal lobes; this damage occurs in the form of senile plaques, neurofibrillary tangles, and Hirano bodies (Osimani & Freedman, 1991). For this reason, a relatively high proportion of mildly impaired AD evidenced impairment across a number of functional domains, suggesting that functional impairment may occur with relatively high frequency in these mature adult patient groups (Zimmer, Hayden, Deidan & Lowenstein, 1994). Patterns of impairment may vary according to the origin of the damage (Osimani & Freedman, 1991). Impairments in memory, language skills, and manipulation of acquired knowledge are early signs of SDAT (Osimani & Freedman, 1991; Zimmer et al., 1994). Symptoms such as confusion, apathy, lack of initiative, and loss of interest in most happenings in daily life are not uncommon at sundry times; in the later stages of this disease, language production and comprehension are poor, and many unfinished sentences are characteristic (Osimani & Freedman, 1991).

In some SDAT cases, a totally unrelated external cause, such as moving into a new house, may precipitate a rapid deterioration in Cognitive Status. However, in progressive

diseases such as SDAT, most degenerative changes occur insidiously, that is, gradually over months and years. When this is the case, the subtle degeneration characteristic of a geropsychiatric dementia, may be best detected by performance tests such as, first, the Activities of Daily Living Scale of the Older Americans Resources and Services Multidimensional Functional Assessment (OARS-ADL) and, second, by the Performance Assessment of Self-Care Skills (PASS) (Rogers et al., 1994). Self-reporting of subjective complaints and evaluations most effectively reveals impaired orientations and disturbances of apperception (Strohle, Richert, Maier & Gutzmann, 1995). Hence, a physical self-maintenance and task-oriented evaluation as well as the Mini-Mental State Examination (MMSE), an index of activities of daily living (ADL), and instrumental activities of daily living scale (IADL) have been used regularly to evaluate cognitive functions (Warren et al., 1989). In addition, the Porteus Maze test may be a useful evaluation of planning ability, and executive performance or dysfunction in Alzheimer's disease (AD) patients with dementia (Mack & Patterson, 1995).

Multi-infarct Dementia. In Multi-Infarct Dementia (MID), the sudden onset of symptoms may vary according to the location of ischemic strokes within the brain; the extent of the resulting neurologic damage is manifested by the sudden episodes of symptoms that reflect a stepwise



progressive deterioration characteristic of MID (Osimani & Freedman, 1991). Common symptoms include dysarthria, attention, and memory problems, and frontal signs (Osimani & Freedman, 1991). Dysarthria is a speech disorder emerging from a neurologic impairment affecting phonation, that is, the making of vocal sounds, respiration and/or articulation (Friel, 1974; Osimani & Freedman, 1991). Frontal signs are a direct result of a frontal lobe dysfunction of the brain; common manifestations involve personality changes such as irritability, impulsivity, disinhibition, and perseveration, that is, the tendency to concentrate on or the inability to shift away from the same thought, task and/or movement (Osimani & Freedman, 1991). Optimistically speaking, multi-infarct dementia (MID) can be arrested by preventing new infarcts, that is, by reducing high-risk factors, for example, high blood pressure and diabetes (Osimani & Freedman, 1991).

Assessment and diagnosis of Dementia. The diagnostic assessment of dementia is based on a clinical history, mental status examination, neuropsychological testing, and several follow-up examinations over a period of six months to one year (Osimani & Freedman, 1991). For example, the severity of dementia varies according to memory status, other cognitive functions such as level of self-care, and daily functioning criteria, that is, the level of functioning in the performance of the basic and instrumental

activities of daily living (Wind et al., 1995). With this in mind, any comprehensive functional assessment of mature adults with dementia most often will include tests to measure the daily activities that deal with time, money, and require a minimum level of self-care (Stern, Hesdorffer, Sano & Mayeux, 1990; Caradoc-Davies & Dixon, 1991; Loewenstein, Ardila, Rosselli & Hayden, 1992).

In a psychogeriatric assessment of mature adults in public housing, dementia and major depression were the most common diagnoses made by health care practitioners (Roca, Storer, Robbins, Tlasek, 1990; Rabins et al., 1992). For this diagnostic purpose, health care practitioners may employ neuropsychological tests such as the Diagnostic and Statistical Manual of Mental Disorders-III-Revised (DSM-III-R) to assess for either depression and/or dementia (Juva et al., 1992). In addition to the DSM-III-R, the Mini-Mental State Examination (MMSE), the Clinical Dementia Rating (CDR) Scale, the Activities of Daily Living (ADL) and the Instrumental Activities of Daily Living (IADL) Scale all can be used by health care practitioners to assess the clinical severity of dementia (Juva et al., 1994). In addition to the DSM-III-R, MMSE, CDR, ADL, and IADL, any further assessment of the severity of dementia can be accomplished by administering such tests as the Global Assessment of Dementia, Average Global Clinical (AGC) Scale; the main purpose of these tests is to measure cognitive,

behavioral, basic and instrumental daily living skills (Ashford et al., 1995).

Despite the various tests available to diagnose dementia, unsuspected alcohol abuse, and the underdiagnosis of early-onset and late-onset alcoholism by health care practitioners may be an underlying cause of additional health and social problems. Signs of alcoholism include trauma (fractures), hypertension, macrocytosis, peripheral neuropathy, depression, insomnia, loss of libido, late-onset seizure disorder, confusion (masquerading as dementia), and below standard self-care (Dufour & Fuller, 1995).

Therefore, it is necessary to accurately diagnose dementia (Strohle et al., 1995). The principal grades of dementia include normal, borderline or questionable, mild, moderate and severe (Edwards, Baum & Deuel, 1991; Nishimura et al., 1993). Using a multi-level approach, a correct diagnosis and accurate grade of dementia can be determined. Many assessment instruments may be needed (Strohle et al., 1995).

Each assessment instrument used in assessing dementia has a purpose. For example, the Diagnostic and Statistical Manual of Mental Disorders-III-Revised (DSM-III-R) instrument can be used to diagnose dementia and/or depression (Juva et al., 1992; Shmuelly-Dulitzki et al., 1995). The DSM-III-R is an important instrument because dementia and major depression are the most frequent

diagnoses made by health care practitioners (Rabins et al., 1992).

The purpose of the Mini-Mental State Examination (MMSE) is that it can assess Functional Independence, that is, it is predictive of the level of functioning in the activities of everyday living (Warren et al., 1989; Weinberger, Samsa, Schmader & Greenberg, 1992). The Mini-Mental State Examination (MMSE) also assesses Cognitive Status and helps to identify severe dementia; the Performance Assessment Scale goes one step further by rating functionality in order to demonstrate that mature adults with severe dementia require a substantial amount of help, from family, relatives or other caregivers, in performing the activities of daily living (Pearson et al., 1989; Arnold et al., 1995). For example, a typical assessment of everyday performance could utilize the following 10 rating scales to assess functional abilities: Fine Motor Skills, Gross Motor Skills, Dressing, Eating, Expressive Language, Receptive Language, Time and Orientation, Money-Related Skills, Instrumental Activities, and Social Interaction (Mahurin et al., 1991).

The purpose for rating overall performance on the Activities of Daily Living (ADL) Scale is that it increases the specificity and sensitivity for diagnosing dementia (Warren et al., 1989). Generally, the Activity of Daily Living Scale rates mature adults in such areas as walking, dressing, eating, elimination, orientation, cooperation, and

sleep (Nagatomo et al., 1987). In contrast, the Clinical Dementia Rating (CDR) Scale rates daily functions by specifically focusing on self-care, safety, money management, cooking, medication administration, and the ability to utilize available community services (Nadler et al., 1993). To sum up, by utilizing more than one testing instrument, policy makers and/or health care practitioners may begin to gather the knowledge needed to understand more fully how the various grades of dementia negatively impact on Functional Independence (Juva et al., 1994).

Assessment of functionality in Dementia. The presence of dementia is associated with functional impairments in the activities of daily living causing a loss of Functional Independence, and a higher risk of institutionalization (Glazebrook, Rockwood, Stolee & Fisk, 1994). Hence, a significant inverse relationship exists between the severity of dementia and the Functional Independence of mature adults (Oakley, Sunderland, Hill & Phillips, 1991). Functional independence can decline as a result of common problems such as physical dependency, forgetfulness, and inertia; the intensity of these problems was found to vary directly with the grade or severity of the dementia (O'Connor, Pollitt, Roth & Brook, 1990). Once dementia progresses to the stage where communication is lost, in a parallel manner, a substantial loss of Functional Independence occurs, and there is a significant decline in the ability of

non-communicating mature adults to perform the basic and instrumental activities of daily living (Birkett, 1994).

Almost inexplicably, many communication-disabled mature adults, are somehow able to retain the capability for self-care and, on occasion, exhibit islands of ability to carry out higher order tasks involving more complex thought (Birkett, 1994). Basic self-care is an important factor in retaining some level of Functional Independence in mature adults with dementia and probable Alzheimer's disease (AD) (Stern et al., 1990; Caradoc-Davies & Dixon, 1991). In addition, strong social support can be helpful. For example, in a group of 34 married couples in which one partner was diagnosed as demented, and lived at home, 40 percent were being cared for primarily by husbands or wives, most of whom were themselves over the age of 75 (Pollit, Anderson & O'Connor, 1991). In light of what was just concluded, the variables associated with good Cognitive Status and Functional Independence were being without dementia, and having strong social support (Burton et al., 1992).

### **Social Status**

Social Status refers to the level of social integration as it pertains to supportive relationships; supportive relationships are characterized by mature adults' helping one another, promoting self-knowledge, and strengthening coping abilities (Stevens, 1983; Halstead & Fernsler, 1994;

Turk-Charles et al., 1996). As a result, active social resources in later adulthood, most often, are measured by the size of the social network, and the frequency of social interaction (Roberts et al., 1994).

Mature adults who belonged to a supportive close-knit social network/cohesive community, in which they cultivated strong personal ties to family members, good friends, and/or relatives were found to be happier and healthier, better able to cope with stress, and remarkably resistant to emotional and physical ills (Padus, 1986). Raising the level of social resources utilized tends to help improve the quality of life in later adulthood and may help raise Functional Independence by helping to improve ADL (activities of daily living) competence (Haga et al., 1991). Thus, the level of one's social integration is directly related to, and often enhances Functional Independence (Olsen et al., 1991).

#### The Benefits of a Support System

Supportive relationships were evaluated by mature adults as crucial to their enjoying a high quality of life (O'Connor, 1995). In general, a good support system can help cope with stressors that involve change; specific changes may include developing a second career, taking a new job position, and/or moving to a new residential location (Patel, 1991; Matheny & Riordan, 1992). Over the long-term, a good support system can help mature adults cope with

difficult circumstances, and additionally help attain higher levels of functioning (Patel, 1991).

Recovering health. Specifically, mature adults who relied on social supports while recovering from a hip fracture were found to have higher levels of physical functioning than those recovering without such supportive relationships (Roberto & Bartmann, 1993). Good quality interpersonal relationships can help mature adults get through nearly anything (Padus, 1986). A good social support system can buffer the impact of stress from injury or disease; this buffering effect occurs, in part, because mature adults who confide in one another tend to become more stress-resistant (Padus, 1986). For example, one study found that 30 percent of disabled mature adults regained their functioning abilities within three years, in part, because of interpersonal help provided to them by their social support system (Liu et al., 1995).

The loss of confidence that often accompanies an injury in later adulthood, and the deterioration in the level of functioning for independent living (FIL) that often follows, may indeed be impeded, and possibly reversed. It is not surprising that to recover and/or maintain good overall health, positive relations with others emerged as the most important dimension (Heidrich, 1994). This is supported by a study of mature adults, in a nursing home, who participated in a work therapy program, and reported that



jobs requiring a high degree of contact with other mature adults created, for them, substantially more positive feelings than noncontact jobs (Voeks & Drinka, 1990). Hence, functional limitations, even in later adulthood, probably can be addressed, helped, and overcome through the positive influence of supportive relationships.

Successful aging. Successful aging involves achieving significant functional improvements in performing the activities of daily living; this can be accomplished by helping mature adults cope better with the stresses of later adulthood (Smith & Couch, 1990). The way this might be accomplished is to first comprehensively assess function and then help promote optimal performance in such areas as cognition, interpersonal skills, self-care, leisure, work, and utilization of community resources (Butin & Heaney, 1991). For example, an ideal intervention model for mature adults limited by hip fractures resulting from falls, might involve the promotion of efficacy-enhancing beliefs combined with mutual aid from supportive relationships (Allegrante et al., 1991). To create and implement a successful intervention, health care practitioners ought to consider more emphasis on untapped goals, aspirations, interests, and strengths of mature adults, rather than focusing on their current problems, deficits or pathologies; interventions designed and driven by the personal goals, aspirations, interests, and strengths of mature adults themselves, most

likely will promote a higher level of functioning for independent living (FIL) (Sullivan & Fisher, 1994).

Despite imperfections such as smoking cigarettes, undue stressful life events, and a high fat diet, mature adults with good supportive relationships, and an adequate support system tended to live longer than isolated people with the same or similar weaknesses (Padus, 1986). In fact, supportive relationships were found to play a significant role, and have a large impact on the rehabilitation process; they helped mature adults regain and maintain a high level of functioning in the activities of daily living (Patel, 1991). Moreover, almost all psychosocial rehabilitations, aging strategies, therapeutic interventions, particularly in such areas as cognition, interpersonal skills, self-care, leisure, work, and utilization of community resources have objectives in common; they all seek to positively impact on well-being, promote optimal performance and enhance Functional Independence (Butin & Heaney, 1991). Therapeutic interventions in later adulthood include the promotion of leisure activities, independent living, work, various therapies, a higher level of independent living and community-orientation, increased involvement with significant others, and other meaningful activities (Smith & Couch, 1990).

Meaningful relationships. A good support system can provide a sense of involvement and personal meaning.

Involvement and meaning were found to be two important predictors as to how old mature adults felt inside; mature adults who felt younger inside tended to have more meaningful experiences, and appeared to be more involved and in control of their lives than other mature adults (Baum, 1981). For example, work was more personally meaningful particularly if there was an opportunity to do a variety of tasks; meaningful work provided more job satisfaction and encouraged more job involvement (Lambert, 1991).

In another example, the predilection to engage in reminiscence activity was found to be based on a personal wish to experience more personal meaning and achieve more self-understanding by recalling private past life experiences (e.g. death of a spouse, retirement) and sharing them with others (Quackenbush & Barnett, 1995; Webster, 1994). There exists a positive, significant correlation between quality of life in later adulthood and the number of meaningful roles performed and mature adults' level of involvement in each of these roles (Elliott & Barris, 1987).

Finding meaning in later adulthood may involve taking life day-by-day, affirming self through interrelationships, and moving beyond disabilities and/or other aging challenges by learning to cope in healthier ways (Mitchell, 1990; Smith & Couch, 1990; Thompson, 1993). This reinforces and expands a sense of self in a way that adds meaning and relevance to daily life. It may encourage more openness to experience,

and the building of more meaningful relationships, that is, relationships founded on open communication and also built on the groundwork foundation of trust, confidence, and a positive belief system.

Self-enhancing beliefs can be created and then propagated by first cultivating a more positive mental attitude (PMA). Benefits of positive mental attitudes are that they foster optimism and hope; other benefits include enriched relationships, increased happiness, and improved health (Bruckbauer & Ward, 1993; Padus, 1986; Peale, 1978). In fact, seventy-seven percent of the participants in one study agreed that PMA can prevent illness and 94 percent agreed that PMA can aid in recovery from illness; in addition, several participants believed that a positive mental attitude might help prevent or even aid in a recovery from cancer (Bruckbauer & Ward, 1993). In essence, mature adults can alter their lives by first altering their attitudes of mind (Peale, 1978).

#### Where to Find Support

Almost without exception, the daily attitudes of mature adults are influenced, to a great degree, by their interpersonal relationships at community institutions, such as the church, and senior center, and within the community at-large (Allen & Chin-sang, 1990).

Community status. Mature adults can have significant relationships with one another and also maintain a high

Social Status in their community (Rodeheaver, 1983). Maintaining family status occurs by accumulating social credit in the community across one life span or across several generations; other factors which help maintain this high Social Status include a history of participation, leadership, and shared commitment to the community as well as attending and assuming principle roles at church (Rodeheaver, 1983). Specific examples of the types of social relationships in the community that are particularly beneficial to reduce mortality and increase functionality are going to church, seeing friends and neighbors, volunteering, and talking with other more infirm mature adults (Sabin, 1993).

Church membership. Church membership is a practical source of social support (Padus, 1986). Church support systems may be responsible, in part, for good health because, church belief systems or philosophies embrace the concept that a tremendous power exists in the universe that may lift any individual above all difficult situations (Peale, 1978). For example, studies revealed that churches such as the Mormons, and Seventh-day Adventists both advocate certain healthful practices known to increase life span (Padus, 1986). For any significant injury or disease, it can be helpful for mature adults to seek support or assistance at church. It is not surprising that elderly

people were found to have the greatest amount of religious commitment (Krause, 1995).

#### Who to Choose for Support

It is self-enhancing for mature adults to choose prudently the right circle of people they would like to have in their social personal support systems; examples of the right people for mature adult support systems are close friends, like-minded and respectful people, role models, challengers, referral agents, helpers, and professionals (Matheny & Riordan, 1992).

Close friends like, nurture, and care about each other even if they don't always share common interests. In contrast, like-minded friends may have the same interests and share the same ideas. Respectful mature adults show their regard for the competence, the contributions, and the wisdom of other mature adults that they support; moreover, they helped the most during times of transition and change. Role models are people who are already in the role that the mature adults is trying to reach; consequently, role models help mature adults further define where they want to be (Matheny & Riordan, 1992). Challengers can help mature adults push themselves to work for what they want, that is, develop the needed skills to be and do what they want. Referral agents cannot personally help mature adults, but they know of other helpers who have the required expertise. Helpers are usually friends who can be depended on in a

crisis; they are often experts who can provide relevant assistance. On the other hand, professionals are experts who apply their specialty in an effort to assist those in the type of situation requiring their expertise. Hence, each person in the support system plays a vital role in influencing the outcomes of a variety of situations (Matheny & Riordan, 1992).

### Cornerstones of Supportive Relationships

In light of what was just discussed, almost without exception, it is quality not quantity of relationships that counts most in a supportive relationship (Flanagan, 1990). These relationships are based on such intangibles as genuine trust, open communication, and developing the spirit of closeness with other people (Padus, 1986).

Genuine trust. Genuine trust cannot be manufactured; it develops naturally, by its own process. Moreover, "genuine trust develops slowly... [and is] earned" (Corey & Corey, Callanan, Russell, 1988, p. 64). Trust, caring and closeness evolved from the time spent just being together (Dyer & Vriend, 1980). Using a personal support system developed over time, relies, in part, on solid relationships built with trustworthy friends. Moreover, strong relationships built on a solid foundation of trust often encourage its members to remain open enough to negotiate compromises; inevitably, in a close circle of friends, it is often necessary to frame compromises (Flanagan, 1990). An

atmosphere of genuine trust and compromise, in turn, tends to foster an honest sharing and expression of thoughts, feelings, values, actions, relationships, and to learn to carry this trust into everyday situations (Corey & Corey, 1992).

A description of a strong trusting relationship among mature adults might include the expression of feelings without fear of censure; a willingness to decide, and pursue specific personal goals; a focus on self, not on others; and the willingness to risk disclosing personal aspects of oneself. Strong trusting relationships evolve from learning how to get along with people, that is, winning the trust of friends, and influencing other mature adults in positive ways (Giblin, 1956). Friends developing from such relationships tend to support each other in the direction of their choice and help each other grow stronger (Seashore, 1980). In this way, genuine trust can lead to a higher level of functioning and more independent living.

Open communication. Close genuine relationships among mature adults are built on a foundation of trust, confidence, compromise and through open communication. Although these kind of relationships do not happen overnight, once a group's communication is open, then feedback is usually being given openly/freely, and accepted nondefensively. Open communication frequently relieves conflict and stress (Nathan, 1990). Once relevant issues



and behaviors have been identified through open communication, it becomes easier for mature adults to see and explore alternative behaviors and solutions (Wicks, 1979). Hence, open communication is often thought of as an essential activity of daily living (Nydevik & Eller, 1994).

It may be prudent to share feelings with somebody who can be trusted to understand them. Feelings, once openly shared, can lend themselves to matter-of-fact discussion and calm appraisal (Low, 1986). In the process, group members may attempt to clarify fully the meaning in their experiences. It can pay dividends to work toward building meaningful everyday relationships by strengthening communication skills, sharing feelings openly, building self-esteem, and esteem for others.

Developing esteem for self and others. Self-esteem may be a gauge, that is, a way of keeping track, by monitoring the feedback we get from the significant people around us in order to decide how well we are performing in our community. For example, of the mature adults, in a nursing home, who participated in a work therapy program, 90 percent reported an increase in self-esteem as a result of having a job and making contact with other people; moreover, 80 percent of these mature adults believed their work contributed something valuable to the general community (Voeks & Drinka, 1990). It makes good sense to notice and acknowledge the inborn value of people in the community; it can help foster

good, fulfilling relationships (Giblin, 1956). Esteem does not just refer to self-esteem; it can include esteem for others as well. There needs to be a healthy balance. Once people have esteem for each other as well as themselves, they, most likely, will be better able to build a more lasting community together. Mature adults are like everyone else, that is, they are always looking for other people who will raise them in value, that is, hold them in high esteem; such "appreciation is like magic" (Giblin, 1956, p. 65). Hence, whenever we attempt to do something significant in life, we ought to consider that esteem for others in close relationships is an essential element on route to our highest success (Padus, 1986).

Developing a spirit of closeness. Intimate friends, relatives, and marriage appear to offer greater protection from illness than a church or community group affiliation (Padus, 1986). When mature adults already have significant personal self-knowledge, lifelong and intimate friends can strengthen their coping abilities (Turk-Charles et al., 1996). Intimate friends can be so supportive that they can be called at two o'clock in the morning if they are genuinely needed, and they will act delighted to take the call; therefore, a worthwhile goal is to have six intimate friends who are more than just good friends (Padus, 1986). Such relationships, once they develop, can be the biggest

ally in achieving other worthwhile goals (Matheny & Riordan, 1992).

### The Spousal Relationship

For mature adult couples, the spousal relationship exemplifies the principal, most influential relationship affecting overall quality of life in later adulthood (Flanagan, 1982). To this end, it was discovered that conjugal support affected life satisfaction through the coping behavior of reframing; accordingly, supportive spousal relationships were associated with cognitive restructuring, which, in turn, was predictive of better overall life satisfaction (Ducharme, 1994).

Avoiding disabilities. It was discovered that a decline in Functional Independence greatly increased the likelihood that an unmarried mature adult might become institutionalized (Worobey & Angel, 1990). In fact, mature adults who didn't have spouses, had more disabilities, and these disabilities reduced their capacity to engage in daily exercise as compared to mature adults who did not have any disabilities (Sands & Kozleski, 1994). Moreover, mature adults with disabilities rated themselves as having moderate to low Functional Independence, even though they felt that being functionally independent was a high priority (Avery, Speare & Lawton, 1989; Sands & Kozleski, 1994).

Approximately 40 percent of mature adults with dementia and low Functional Independence were being cared for at home

mainly by their spouses, most of whom were themselves over the age of 75 (Pollit et al., 1991). On the other hand, if without a spouse, disabilities in mature adults were strongly associated with living in group housing (Avery et al., 1989). One of the most positive factors affecting health in later adulthood is a high quality spousal relationship (Kriegsman, Penninx & van-Eijk, 1994).

Recovering from illness. Mature adults on the mend, in spite of not being able to work or socialize, need unconditional positive regard from their spouses to help them derive some benefit, at a minimum, from the emotional stress of their disease (Padus, 1986). Love and recovering good health seem to go hand in hand; love can trigger healthy physiological reactions because caring for others appears to be a boost to the caregiver's own immune system (Padus, 1986). Supportive relationships can help mature adults gain understanding, increase their sense of integrity, and find more meaning in life (Stevens, 1983). A hostile spouse can sometimes stand in the way of a recovery (Padus, 1986). The quality of the marital relation may be closely related to degree of recovery, overall psychological well-being and physical Health Status (Shek, 1995). Diabetes education and self-care programs can successfully improve knowledge and Functional Independence in mature adult patients; spousal involvement tends to optimise the beneficial effects of these programs and further improve

metabolic control of the disease (Gilden, Hendryx, Casia & Singh, 1989).

Developing a second career. A supportive relationship with one's marital partner is highly correlated with significant improvements in coping behaviors (Ducharme, 1994). Improvements in coping behaviors, and the influence of a good supportive spousal relationship may result naturally in the satisfaction of common skill acquisition needs, and the development of new career objectives (Patel, 1991). In addition, because of a paradigm shift in corporate strategy that includes new policy initiatives to extend the work life of mature adult workers, career changes are becoming a more common phenomena (Krain, 1995). This phenomena is also due to more individually determined career stages, increasingly rapid technological changes (Kerka, 1991), and new more positive attitudes toward work (Ashman et al., 1995).

After initially retiring, mature adults who entered second careers in collaboration with their spouses reported increased levels of marital satisfaction (Lieberman & Lieberman, 1981). Working mature adults were found to participate more in organizations compared to nonworking retirees (Khullar, 1989). In light of what was just concluded, a significant positive association appears to exist between marital status, work status, and overall life satisfaction (Holahan, 1981). With this in mind, mature

adults ought to consider their social contacts, and especially the spousal relationship, to be precious parts of their quality of life and a determinant of their level of Functional Independence (Farquhar, 1995).

#### Formal and Informal Support Systems

Mature adults who lived alone reported a greater number of psychological symptoms than mature adults living with others; therefore, it is not surprising that they also required more psychological support to help them alter their attitudes, and cope with their symptoms (Burnette & Mui, 1994). Although formal or informal mental health support systems can help mature adults develop better attitudes and cope better with the stressors of later adulthood, it was found that subjective well-being is best achieved by the use of informal mental health support systems followed by the use of formal support systems (Starrett, 1985).

Contrasting formal and informal care. Although individualized health counselling and group wellness sessions involves monitoring of blood pressure, Health Status, support, and health teaching; however, by itself, it can not totally meet all the health care needs of mature adults (Viverais-Dresler, Bakker, & Vance, 1995). It has been found that formal care has more of a complementary role to informal support, even when formal care is relatively well developed (Johansson et al., 1993). This complementary role may be best described as a negative reciprocal

relationship between informal and formal support system use, that is, use of one system appears to reduce the need for the other, and vice versa (Miner, 1995).

In spite of the fact that informal support systems are very enabling (Jette, Branch, Sleeper & Feldman, 1992), declines in functioning may produce increases in unmet needs that eventually exceed the capacity of many informal networks (Stoller & Pugliesi, 1991). When this is the case, knowledge of and orientation to a formal service system emerged as the most important determinants of its ultimate use (McCaslin, 1989).

Benefits of formal care. Formal systems can provide effective assistance. For example, in brief group therapy, it was found that major benefits were derived from sharing experiences and listening to each other's comments regarding their marriages, part-time job searches, and leisure time activities (Salvendy, 1989). In a second example, a five session intervention demonstrated improvements by mature adults in the areas of self-perceived health, social relationships, performance of the activities of daily living, and self-acceptance of aging changes (Ramamurti, Jamuna & Reddy, 1992). Psychotherapeutic goals of trained professionals in formal counselling include self-acceptance, self-awareness, and a sense of personal continuity (Klinger-Vartabedian, 1982). Formal health counselling and group wellness sessions have been rated to be an effective

means of acquiring general knowledge about aging and lifestyle choices (Viverais-Dresler et al., 1995). Coincidentally, there is a rising need for pre-retirement counseling services for the millions of mature adults who are presently approaching retirement (Zuehlsdorff & Baldwin, 1995).

Risks of institutionalization. The physical and psychological health of spousal caregivers may be adversely affected by the protracted burden of taking care of their chronically infirm partners (Kriegsman et al., 1994). Long-term analyses in one spousal caregiver support program (CSP) showed that the level of burden was determined by the recipient's medical condition, functional abilities, and psychological needs, as well as the caregiver's overall capabilities to cope with the situation (Labrecque, Peak & Toseland, 1992). In long-term caregiving situations, using a paid caregiver was associated with an increased risk of institutionalization, whereas informal or spousal supports, generally, did not increase the risk of institutionalization for the disabled or impaired mature adult (Newman, Struyk, Wright & Rice, 1990). Nevertheless, it has been shown that the greater the intensity of the caregivers' burden, the greater the risk for an infirm mature adult to be confronted with the possibility of institutionalization (McFall & Miller, 1992).



The possibility of institutionalization for infirm mature adults is heightened if their spousal caregivers are themselves suffering from a chronic disease or lengthy disability; these unhealthy caregivers are regarded as "unidentified patients" despite the fact that they function at higher levels of autonomy and independence than their infirm partners (Hamilton & Jones, 1986). In light of the fact that caregivers, themselves, can be unidentified patients, formal support for the caregiver may be helpful. For example, in a third example, one formal caregiver support program (CSP) demonstrated significant reductions in the level of subjective burden that spousal caregivers experienced due, in part, to the growth of more realistic and less pessimistic attitudes concerning their spouse's true Health Status (Labrecque et al., 1992).

Comparing methods of success. In formal counselling, successful improvements were achieved when participating mature adults came to value the group's corrective feedback which, in turn, helped them to modify their distorted views concerning spousal relationships, children, and society at large; by gradually accepting more realistic views, they became better adjusted, and more realistic about their life circumstances (Salvendy, 1989). In caring and close-knit informal groups, mature adult members support each participant's efforts to explore their own feelings, grow in understanding, and take appropriate actions. Their caring

and closeness evolved from the time they spent just being together (Dyer & Vriend, 1980).

In both formal and informal groups, mature adult members share their feelings, and their pain with each other, they learn other's in the group have had similar distressing experiences. The participants become aware that their problem are not as unique as they thought they were. Then they may feel more able to understand, and deal with it. In fact, changes in behavior become more probable as trust, and cohesion gradually develops from the group process. In a trusting climate, learning about oneself, and making behavioral changes becomes easier. Genuine trust, in this climate, becomes more like therapy, for it allows and encourages people to look at themselves in new ways (Corey & Corey, 1992). As mature adults gain increased insight into their true make-up, personal growth is encouraged, and they may become more highly motivated to make changes that improve their lives (Pfeiffer & Jones, 1977). In essence, there are mental health benefits from having relationships that not only provide daily support, but also lead to corrective feedback (Holahan, 1987).

#### An Opportunity for Personal Growth

One reason for cultivating more supportive relationships is to build a personal support system, and use it to cope more effectively with everyday frustrations (Wright, 1986; Holahan, 1988). For example, long-term

cancer survival is a stressful ordeal requiring effective coping strategies for the maintenance of equilibrium; long-term cancer survivors, with a mean survival of 13.03 years, found social support, and a mind favorable to helping others to be particularly helpful (Halstead & Fernsler, 1994).

Helping others or doing good for people, often inspires their gratitude and warmth and this warmth can protect mature adults from many everyday stresses of life (Patel, 1991). Accordingly, dealing with life's frustrating moments one day at a time offers mature adults a chance for personal growth through their interpersonal relationships (Mitchell, 1990). Everytime a trivial frustration or a large crisis occurs, it represents a hidden opportunity to grow, that is, move to a higher level. Some mature adults may be able to take advantage of this opportunity depending on how well they can cope (Padus, 1986).

In contrast, in isolation, there may be a tendency to be overinvolved with oneself, and overinvolvement with oneself may precipitate psychological, and eventually physical problems (Padus, 1986). Isolated mature adults seem to cope less effectively and therefore are more prone to illness (Padus, 1986). Illnesses or impairments of some kind, in turn, can further reduce the social support system. Sensory impairments, as a general example, were found to be associated significantly with a lower quality of life in

later adulthood (Carabellese, Appollonio, Rozzini & Bianchetti, 1993). Hearing loss, as a specific example, were found to be related to reduced psychosocial functions (Bess, Logan & Lichtenstein, 1990). Similarly, visual impairments were found to be independent predictors of lower social relationships (Carabellese et al., 1993). Accordingly, a loss of the social support structure can trigger or contribute to the breakdown of the body's immune system (Padus, 1986). An immune system breakdown may be manifested by chronic pain, and often no physical cause of the pain is ever found (Padus, 1986). Hence, in later adulthood, psychosocial well-being may be one of the most important values to strive for (Darnton-Hill, 1995). In fact, sociability of almost any kind appears worth cultivating (Padus, 1986).

#### **Environmental Status**

Environmental Status refers to undue stressful life events (SLEs), and everyday frustrations/hassles, considered together and/or individually, directly originating or indirectly participating in the onset of functional impairments (Holahan, 1987; Jacks, 1981; Rittner & Kirk, 1995). In this context, levels of undue stress and/or daily frustrations are inversely correlated with Functional Independence. For example, freedom from undue stress can be a key factor in promoting an increase in Functional Independence (Jacks, 1981). In contrast, an increase in

undue stressful life events (SLEs) and/or everyday hassles or daily life frustrations can result in a loss of Functional Independence, that is, mature adults affected by (SLEs) and/or everyday hassles develop functional impairments; this "environment-relevant" loss in Functional Independence is associated with the inaccessibility of important environmental resources, and this loss has negative repercussions on mature adults' performance of the basic and instrumental activities of daily living (Starrett, 1985; Laforge et al., 1993; Wahl, 1994; Haga et al., 1991).

#### Examples of Environmental Factors

A loss in Functional Independence due to environmental factors such as undue stressful life events and/or everyday frustrations/hassles may be reversible even in later adulthood (Thomas, 1995). One plausible explanation for this reversibility is that personal physical, psychological, and social assets frequently can be employed to mitigate the adverse effects of stress (Roberts et al., 1994). Combined with a measure of flexibility and adaptability, adequate levels of physical activity, Cognitive Status, and social involvement can enhance Functional Independence in later adulthood (Butin & Heaney, 1991). The achievement of greater Functional Independence in the basic and instrumental activities of daily living depends on first recognizing examples of stressful life events and everyday frustration/hassles.

Stressful life events. Any major change in the environment may be considered stressful (Padus, 1986). For example, problems in the areas of cognition, activities of daily living (ADL), and negative behaviors were found to be determined largely by environmental factors (Vitaliano et al., 1993). Generally, the extent of the environmental stresses mature adults have to cope with can be quantified by using a scale for ranking stressful life events; the higher the total score accumulated over one year, the higher the risk for a serious illness or death to occur over the next year or two (Gazella, 1997; Holmes & Rahe, 1967). Specifically, a majority of the undue stressful life events in later adulthood involved the death or illness of a family member or friend (Holahan, 1987). For example, an over average mortality rate was discovered in widowed mature adults in the first six months immediately following their bereavement; thereafter, the risk for increased mortality was considered unremarkable (Bowling & Windsor, 1995).

Mortality and other quality of life indicators.

Physical activity on a daily basis can prolong life expectancies of mature adults (Simon, 1996). Physically inactive mature adults are mainly characterized by less favorable health (Van Den Hombergh et al., 1995). For example, limitations in ambulatory activity were found to predict correctly an increased risk of heart disease mortality (Tsuji et al., 1994). Consequently, the risk of

dying was found to be higher among mature adults with more upper body limitations (Wolinsky, Callahan, Fitzgerald & Johnson, 1992).

Accompanying regular physical activity, other specific lifestyle factors that promote overall vitality and longevity are healthy body weight levels, and the consumption of nutritional supplements were found to profoundly impact the overall health of mature adults; examples of nutritional supplements that positively affect overall health of mature adults are antioxidants, daily dietary fiber, vitamins, minerals, and proteins (Simon, 1996). With this in mind, mature adults patients at-risk for nutritional deficiencies were found to be highly predisposed to physical disabilities, lowered self-esteem, depression, and a variety of psychological difficulties (Fitzpatrick et al., 1993).

If overall Health Status is not maintained, health problems can escalate. Even nutritional or metabolic disorders were found to lower overall health and functional impairments particularly in mature adult patients with either a low or high BMI (body mass index) (Galanos et al., 1994). Heart disease and cancer, diseases often associated with nutritional deficiencies and metabolic disturbances, are frequently considered to be independent predictors of imminent death (Wolinsky et al., 1992; Shamash, O'Connell, Lowy & Katona, 1992). Another lifestyle factor, cigarette

smoking, was also found to be associated with mortality, as well as higher rates of physical disease, and higher levels of depressive symptoms (Colsher et al., 1990).

Increased numbers of physical illnesses and a decreased sense of control in health matters were found to be common predictors of depressive symptoms (Burnette & Mui, 1994; Mui, 1993). Moreover, mature adults, with both depression and dementia, had a higher mortality rate, and the impact of depression and the mental state of health, in general, was found to be independent of any concurrent physical illness (Shamash et al., 1992). It is not surprising, therefore, that the mortality rate for mature adults with both depression and dementia, following hip surgery, was high, and independent of any physical disability (Shamash et al., 1992).

Mortality is positively associated, and varies directly with impairments in cognitive or mental Health Status (Rozzini et al., 1991). This close relationship between mortality and mental health is supported by Zuccala et al., (1995); they found that the mental perception of health, that is, mature adults' self-perceived Health Status, could be a powerful, independent predictor of survival. As an illustration, self-rated health reports were found to accurately predict cancer mortality, and self-rated ADL disability evaluations were found also to predict a



significant increase in stroke mortality (Tsuji et al., 1994).

A significant inverse relationship was found between mortality and Social Status; supportive social relationships can act as protective factors, that is, shielding mature adults from the impacts of numerous noxious environmental stimuli (Rozzini et al., 1991). Hence, when mature adults have supportive relationships, mortality tends to be low. Generally, social interactions represent an important aspect of health-related quality of life (HRQOL) (Hadorn & Hays, 1991). Specifically, supportive social relationships were able to delay mortality in general and cardiovascular mortality in particular (Olsen et al., 1991). For this purpose, attending church/temple, engaging in activities such as volunteering, visiting friends or neighbors, and talking with other more infirm elders were discovered to be the most ideal life circumstances for establishing supportive relationships capable of reducing mortality (Sabin, 1993).

Mortality was found to be positively associated, and varies directly with impairments in Health Status (Rozzini et al., 1991). For example, long-term illnesses such as arthritis, pulmonary disease and heart attack were the strongest predictors of dissatisfaction with Health Status, and overall quality of life (Dorfman, 1995). In addition, cigarette smoking was also found to be associated with

increased mortality as well as poorer self-perceived Health Status (Colsher et al., 1990).

Mortality and Functional Independence. Mortality was found to be positively associated, and varies directly with impairments in Health Status, functional status, and mental status (Bowling & Windsor, 1995; Rozzini et al., 1991; Reuben et al., 1992). Regarding mental Health Status, when functionally independent mature adults experienced a loss, such as a death, illness, and injury among a close friend and relative, their sense of control, regarding health, was found to decline most (Goldsteen, Counte & Goldsteen, 1995). In addition, this decreased sense of control along with an increase in perceived unmet needs, associated with aging, may be regarded as significant predictors of the onset depression, and a subsequent decline in Functional Independence (Burnette & Mui, 1994).

Regarding functional status, predictors of mortality include determinants found in basic and instrumental activities of daily living, and mobility (Parker et al., 1992; Cohen et al., 1992). Physical activity to maintain mobility in later adulthood deserves special attention to prevent further deterioration of loss of Functional Independence (Van Den Hombergh et al., 1995). Nevertheless, in nursing homes, several circumstances may exist that act as barriers to autonomy; for example, fire regulations mandate heavy doors be installed and because mature adults

were often unable to open heavy doors easily, they became physical barriers, that is, restrictions to their everyday movements and mobility (Cohen-Mansfield, Werner, Weinfield & Braun, 1995).

Regarding physical Health Status, during each period in a thirteen year study, mortality was associated mainly with a decline with poorer functional abilities, and mobility in older age (Bowling & Windsor, 1995). For example, increased functional dependence on assistive devices for mobility and/or on caregivers in later adulthood to accomplish daily activities was found to be predictive of impending mortality and/or future institutionalization (Sonn, 1996). To this end, the Katz Activities of Daily Living score and the 7-item Physical Performance Test (PPT) could be used as independent predictors of more an immediate impending death or an impending institutionalization, such as an in-hospital or nursing home placement, and then later death (Reuben et al., 1992).

It has been estimated that hospitalized mature adults experienced an average of 3.5 negative stressful life events (SLEs) during the 3 years prior to admission to a hospital (Laforge et al., 1993). However, it was found that hospitals do not always offer a good resolution for infirm mature adults because physical restraints commonly used there have been associated with a rise in the in-hospital mortality rate (Sullivan-Marx, 1994). In fact, placement of

impaired mature adults in dwellings or locations other than at home was found to be a significant predictor of early future mortality (Cohen et al., 1992). Moreover, no relationship was found between early future mortality and mature adults who were at home even if they lived alone (Rozzini et al., 1991).

Other stressful life events. In addition to the "death of a close family member" or any significant other, negative or undue stressful life events such as "fired from work," and positive life-changing events like "marriage" or "marital reconciliation" are all high on the "Stress Rating Scale" (Padus, 1986, p. 71; Holmes & Rahe, 1967). Although not always considered as high on the list of stressful life events, mild musculoskeletal injuries can impede mature adults from realizing the full benefits of daily exercise (Simpson, 1986). In like manner, a hip fracture represents a more serious musculoskeletal injury; the consequences of hip fractures due to falls by mature adults include loss of confidence and deterioration in the level of functioning for independent living (FIL) (Allegrante et al., 1991). Other stressful life events perceived to be highly stressful for mature adults include planning for retirement and transportation difficulties, decreased income, decreased strength with age, forgetfulness, and death of a spouse, relatives, and/or friends, (Sijuwade, 1991; Quackenbush & Barnett, 1995).

Mental health repercussions emerging from physical stressful life events often occur. For example, incontinent (ICN) mature adults were more depressed and had significantly lower scores on their MMSE (Mini-Mental Status Examination) than continent (CN) subjects; hence, it was concluded that a correlation existed between cognitive impairment and incontinence (Morris et al., 1992). Cognitively, impairments such as major depression and dementia were the most frequent diagnoses made by mental health care practitioners; coinciding clinical complaints heard most by the mental health professionals included loss of home, possessions, friends, and an ongoing loss of Functional Independence (Rabins et al., 1992). In essence, changes in environment (ENV) and/or routine (RU) may have a profound affect on the clinical state of mature adults who are cognitively impaired (Orrell, Bergman, Elton & O'Brien, 1990).

Everyday frustrations/hassles. In spite of the obvious seriousness of the undue stressful life events, relatively trivial everyday frustrations/hassles, not the occasional major stressful life events, were found to be the primary determinants of daily distress in later adulthood (Holahan, 1987; Low, 1986). For example, subjective well-being was more profoundly influenced by sleeplessness because of worry, family problems, unexplained fears, and depression than by undue stressful life events (Starrett, 1985). In

essence, in a residential environment, the prime determinant of daily morale and life satisfaction levels was found to be everyday frustrations (Golant, 1984). Other sources of everyday stressors include finding creative uses for one's free time, and meeting housing, and daily transportation needs; hence, finding a pleasing residence is essential to achieving freedom from daily frustrations/hassles (Jacks, 1981). For example, in one study, a majority of mature adults were pleased because they felt more at ease living in stair-free homes (Smith, 1994).

Anger can result from mature adults taking average trivialities, that is, daily frustrations/hassles too seriously (Low, 1995). In fact, many homebound mature adults survive at home in constant isolation, and hold much anger inside (Waldman, 1993). Anger is the result of not expressing the accumulated vehemence of everyday frustrations/hassles (Peale, 1978). Examples of potential sources of frustrations/hassles include living in a residential area with (1) a minimum level of competence from local bureaucrats, (2) unreasonably distant shopping facilities, (3) excessive neighborhood crime, (4) scarcity of needed medical care, (5) no easy way to get to work or to a volunteer site, (6) unavailable repairmen for home repairs, (7) irascible or inconsiderate neighbors, (8) inordinate delays on repair services normally available from local utilities, (9) plenty of air pollution, (10) no

cultural and recreation pleasures close enough to attend often, (11) unacceptable climate, and (12) overall, the lack of an enormously fulfilling life (Padus, 1986). In essence, an accumulation of stressful life events and everyday frustrations/hassles can create many perceived unmet needs, and a reduced sense of control of events in life which, in turn, can precipitate a decline in Functional Independence (Burnette & Mui, 1994).

### Coping With Stress

In contrast, building greater Functional Independence in the activities of daily living and gaining greater perceived control over outer events can significantly reduce the adverse effects of undue stress on psychological well-being (Roberts et al., 1994). With this in mind, by anticipating and welcoming change, mature adults can gain more perceived control in daily life by strengthening their inner resolve to move beyond stressful outer events, and their accompanying limitations (Mitchell, 1992). When this is the case, most psychosocial variables, such as stress, are not only highly salient to health, but also potentially modifiable (Thomas, 1995). For example, having choices in life fosters a feeling of personal control in everyday activities, and this feeling of personal control in turn, encourages psychological well-being (Morganti et al., 1990).

Psychological well-being, in turn, was manifested by making a successful adjustment and holding to perceptions of

self-efficacy in dealing with everyday problems and negative stressful life events (Holahan, 1987). A successful adjustment involves achieving significant improvements in mature adults' Functional Independence, and this, in turn, can help effectively cope with the stresses of aging in a healthy way; in essence, good physical health, and psychological well-being can play important supporting roles in the development of effective coping strategies for later adulthood (Smith & Couch, 1990).

### Health, Wealth and Stress

Dealing with undue environmental stressors can create excessive inner distress, can aggravate the current Health Status of mature adults, and approximately 80 percent of this population have at least one chronic health condition (Segal, 1996). Chronic illnesses emanate from long continued stresses to our bodies and immune system due to such environmental stressors as excessive eating and drinking, poor elimination, poor exercise habits, obsessive thinking and other poor habits (Wright, 1992).

Higher levels of stress and strain are highly associated with the repercussion of long-term diseases; specifically, these repercussions include increases in physical dependency, forgetfulness, and inertia (O'Connor et al., 1990). Environmental stressors are definitely highly predictive of Environmental Status and overall health (Thomas, 1995). Many mature adults suffer from the



increased stress associated with chronic illness (Koplan & Livengood, 1994).

Life circumstances such as affluence and family income were found to have some influence the way everyday stress was perceived and dealt with (Wallstein, 1993). Affluence, by itself, was found to have no direct relation with quality of life (Jacks, 1981), and when confronted with declining functional health, it was found that family income had no independent significance either (Zimmerman, Jackson, Longino & Bradsher, 1993). No direct link was found between mortality and income (Rozzini et al., 1991).

It was discovered that making sound financial plans in order to live a healthier lifestyle enabled mature adults to cope better with the stresses and strains of later adulthood (Shahtahmasebi, 1992). More recent surveys suggest that financial security may be one of the most important values to aim for in later adulthood (Darnton-Hill, 1995). A necessity for sound financial planning is demonstrated by a study of low-income retirees who relied on public transportation to gain access to basic and emergency health services; when they didn't have enough money to pay for public transportation services, these retirees reported not receiving any medical care for many of their symptoms (Rittner & Kirk, 1995). In essence, excessively stressful financial circumstances can affect health negatively, and prevent normal access to needed health care services.

### Factors That Can Modify Stress

In addition to stressful financial circumstances, many other life factors such as feelings of personal control, well-being, a network of social relationships, and optimism, are not only highly salient to good health, but also are potentially modifiable (Thomas, 1995).

Positive mental attitudes. Optimism is produced by both physical and mental factors. Physically, it was found that mature adults that engaged in low-intensity exercises in a peer-led program beyond the required 18 weeks, experienced and maintained initial improvements in both functional mobility and optimism despite such serious conditions as arthritis, hypertension, and heart disease (Hickey et al., 1995). Mentally, it was found that a positive mental attitude (PMA) encouraged such beneficial attitudes as optimism, hope, happiness, health and improved relationships (Bruckbauer & Ward, 1993).

A positive mental attitude (PMA) was perceived as so beneficial that 77 percent of the mature adults studied agreed that PMA can prevent illness and 94 percent agreed that PMA can aid in recovery from illness; many mature adults also believed that a positive mental attitude might possibly prevent or aid in a cancer recovery (Bruckbauer & Ward, 1993). The optimism associated with a positive mental attitude, potentially, can modify or possibly alleviate a stress-related illness.

Greater sense of control. When functionally independent mature adults experience a death, illness, and injury among a close friend and relative, they may partially lose a sense of control regarding their own health (Goldsteen et al., 1995). In contrast, recognizing options or choices in life, besides helping to create a sense of psychological and personal well-being, also helps restore a feeling of personal control over stressful life events and everyday frustrations/hassles (Morganti et al., 1990). Greater perceived control over everyday stressful life events significantly reduces the influence of harmful or adverse stress and strain on psychological and physical well-being (Roberts et al., 1994; Zuccala et al., 1995; Idler & Kasl 1995).

Feelings of control and/or perceptions of self-efficacy and confidence in dealing with everyday hassles and undue stressful life events is associated with the achievement of a successful daily life adjustment in later adulthood (Holahan, 1987). Perceptions of self-efficacy and confidence have even been shown to be helpful in the rehabilitation of the many hip fracture injuries suffered by the mature adult population (Allegrante et al., 1991). Moreover, greater perceived control and self-efficacy in daily life has been shown to help mature adults adapt better to the typical increases in fragility and more constrained mobility common to later adulthood; one reason mature adults

adapted better was because they successfully maintained a positive attitude and optimistic mood while pragmatically and gracefully adjusting their aspirations to accept more caregiver help in performing the activities of daily living (ADL) (Rubel, Reinsch, Tobis & Hurrell, 1994). In light of what was just concluded, a positive mental attitude (PMA) and optimistic mood, despite decreasing mobility, increasing fragility and mounting injuries, helps get the daily chores completed.

The value of the hardiness attitudes. In addition to a positive mental attitude, optimism, greater perceived control, and self-efficacy, a commitment to attitudes that reflect happiness, peace, and humor may also help resist excessive or harmful levels of stress in the environment (Padus, 1986). Happy mature adults tend to be healthier, feel better, and are better able to resist stressful life events and/or everyday frustrations/hassles; their immune systems are less likely to break down and may even work better to protect against allergies, arthritis, and possibly cancer (Padus, 1986). Peace of mind achieved through genuine encounters with other mature adults can provide realistic support in coping with daily life circumstances; mature adults specifically consider peace of mind to be an important aspect of health (Nystrom & Segesten, 1995). Mature adults who confronted the stresses and demands of aging with good humor reported that the quality of their

lives was better than anticipated; in addition, they were optimistic about their futures (Holahan, 1987). Indeed, if mature adults with these hardiness attitudes become ill, they have been known to have been able to resist, and even modify, dramatically, the course and conclusion of their disease (Padus, 1986).

### **Health Status**

Health Status is a quality of life indicator that refers to the negative impact of chronic diseases on Functional Independence (Laukkanen et al., 1993; Yu, 1995). Essentially, the number and severity of chronic diseases are inversely related to mature adults' functional level of independent living (FIL), and therefore ought to be considered a major source, and prime augments of functional impairments (Semaan, 1993). It was found that the presence of a chronic illness such as depression or diminished cognition had a significant impact on Functional Independence in the basic and, particularly, the instrumental activities of daily living in later adulthood (Laukkanen et al., 1993; Ruta et al., 1994). Hence, for mature adults, the number of chronic diseases ought to be regarded as one of the few optimal predictors of the level of functioning for independent living (FIL) (Yu, 1995). Chronic diseases, and their resulting disabilities pose a potent threat to successful aging (Rose, 1991).

### Chronic Disease

Approximately 80 percent of mature adults suffer from at least one chronic health condition (Segal, 1996). Generally, seven chronic conditions in later adulthood, diabetes, cancer, arteriosclerosis, stroke, hip fracture, and neurological and lung conditions have been found to have a profound impact on Health Status, and they were found to produce functional impairments in seven basic and ten instrumental activities of daily living; the degree of impact between these health conditions and their resulting functional impairments varied according to the specific impairment and condition involved (Semaan, 1993). You can see this in survivors with angina or long-term coronary disease (CHD) who demonstrated a significant risk for diminished Functional Independence, and possible disability (Nickel & Chirikos, 1990). Both chronic cancer and Alzheimer's disease in later adulthood were found to have a strikingly negative impact on successful aging (Rose, 1991). Long-term illnesses such as arthritis, pulmonary disease and heart attack were the strongest predictors of dissatisfaction with Health Status, and overall quality of life (Dorfman, 1995).

### Multiple Pathologies

Many mature adults suffer from an increased health burden of more than one chronic disease (Koplan & Livengood, 1994). Multiple pathologies are considered key later

adulthood issues (Molaschi et al., 1995; McCarthy, 1996). Regarding mature adults living in nursing homes, 23.7 percent suffered from four pathologies, 18.8 percent had five, and only 4.7 percent had less than 2 pathologies; specifically, 37.6 percent of mature adults were affected by cardiovascular diseases, 29.1 percent by chronic obstructive lung disease, bone fractures were present in 22.1 percent, 43.7 percent had severe impairments in strength and/or motility in at least 2 limbs, 49.2 percent with incontinence, 35.4 percent had severe disturbances in speech and communication, 25.5 percent were afflicted by stroke, and 52.6 percent of mature adults were affected by dementia (Molaschi et al., 1995). In light of the high incidence of chronic diseases common to later adulthood, regaining and maintaining reasonably good health ranks supreme among the most important values to aim for (Darnton-Hill, 1995, Low, 1995).

#### The Power of Perception

Healthy mature adults were found to have a more positive perception of their current Health Status, and regarded themselves as happier, than a nutritionally at-risk group (Fitzpatrick et al., 1993). In like manner, 77 percent of the mature adults participating in a second study agreed that a positive mental attitude (PMA) can prevent illness; in addition, 94 percent agreed that PMA can aid in recovery from illness (Bruckbauer & Ward, 1993). In

essence, it appears that subjective well-being may depend, in part, on a high self-rated Health Status (Starrett, 1985).

Subjective health perceptions, meaningful activities, and outlook on life represent diverse aspects of health-related quality of life (HRQOL) (Hadorn & Hays, 1991). In essence, self-rated Health Status, that is, the subjective health perceptions of mature adults, represent one of several potentially powerful, independent predictors of good health and survival (Zuccala et al., 1995). For example, by analyzing the different causes of death in 2,552 mature adults (aged 65+ years), it was discovered that self-rated health had been an accurate predictor of future cancer mortality (Tsuji et al., 1994). In fact, many mature adults surveyed believe that a high self-rated health that also incorporates a positive mental attitude may help prevent or even aid in a recovery from cancer (Bruckbauer & Ward, 1993). In addition, mature adults who recovered most of their functional abilities after being ill for some time were found to have had a significantly higher probability of recovery, in part, because of better self-rated health (Liu et al., 1995). In essence, besides good health, and a higher quality of life, self-rated health was also found to have a strong correlation with Functional Independence (Idler & Kasl, 1995).



Under nearly opposite circumstances, it was found that self-rated health can also be highly predictive of future levels of functional disability or impairment (Idler & Kasl, 1995). For example, the perceptions of mature adults who were cognitively impaired regarding their abilities to perform the activities of daily living were considered less realistic, that is, not accurate because they differed substantially from the more objective evaluations made by their proxies (Weinberger et al., 1992). In essence, the self-rated health of impaired mature adults besides being inaccurate and unrealistic, did not support good health. In fact, impairments or disabilities in later adulthood, especially in regard to the activities of daily living (ADL), have been found to be significant predictors of future stroke mortality (Tsuji et al., 1994). This predictive relationship between self-rated health and future Health Status suggests the existence of a subtle yet awesome self-fulfilling power, positive or negative, of subjective health perceptions.

#### The Risks of Institutionalization

A decline in Functional Independence and an associated rise in the risk of institutionalization increases markedly in the presence of poor self-rated health (Glazebrook et al., 1994). The risk of institutionalization also was found to rise for mature adults who had fewer social supports (Wolinsky et al., 1992). Moreover, previous and/or recent

admission to a long-term care institution was considered one of the strongest individual predictors of future admissions to an institution (Jette et al., 1992; Wolinsky et al., 1992). In particular, the risk of institutionalization increased with a recent hospital admission particularly if there is an associated decline in the level of functioning for independent living (Glazebrook et al., 1994). In fact, a decline in Functional Independence for any reason greatly increased the likelihood that mature adults might become institutionalized (Worobey & Angel, 1990; Glazebrook et al., 1994).

The sensory risk factors. Hearing impairments alone may account for a decline in Functional Independence (Carabellese et al., 1993). Moreover, hearing impairments alone has been identified as an important and independent predictor of placement in a nursing home or long-term-care facility (Osterweil et al., 1995). However, despite the fact that hearing loss in later adulthood has been associated with poor physical, and psychosocial functioning (Bess et al., 1990), only visual impairments, specifically, have been independently linked to a decline in the development of supportive social relationships (Carabellese et al., 1993).

The consequences of sensory impairments. Sensory impairments/dysfunctions (e.g. visual or auditory), generally, have been significantly and independently linked

with increased risks for depression, decreased supportive social relationships, and decreased levels of functioning in the basic and instrumental activities of daily living (Carabellese et al., 1993). Using such assessment instruments as the basic and instrumental activities of daily living scales, the Center for Epidemiologic Studies Depression Scale, a mobility assessment, and the Mini-Mental State Examination (MMSE), it was discovered that a loss of Functional Independence had a significant correlation with hearing and visual impairments, joint pain, dyspnea, depression, and learning difficulties (Barberger-Gateau et al., 1992).

Learning difficulties may involve one or more of the auditory, visual, and tactual-kinesthetic sensory modalities (Landers, 1986). For example, visual impairments were found to negatively impact on mature adults reading ability; this negative impact, in turn, was found to impede established functional patterns involving unrestricted relaxation, stress reduction, information-gathering, and social intercourse (Smith, 1993). Moreover, visual impairments are not that rare. For example, in one study involving mature adults, visual impairments were found to be a common diagnosis along with hypertension, stomach disease, and arthritis (Yu, 1995). Indeed, the number of blind or severely visually-impaired mature adults aged 65, and over will reach 5.8 million by 2030, and far less than 50 percent

are functionally independent enough to be employable (Augusto, 1992).

Visual impairments can have surprising consequences. Quality of life in later adulthood was found to be significantly linked to the presence of sensory impairments (Carabellese et al., 1993). In particular, visual impairments were linked to much stress and frustration for mature adults living in public housing because a high priority activity for many of them was found to be watching television (Nasar & Farokhpay, 1985). Stress and frustration may also partially account for the significantly poorer life satisfaction reported by visually-challenged mature adults with age-related macular degeneration (Davis, Lovie-Kitchin & Thompson, 1995).

Other visual-challenges involve money management, depression, and dementia. For example, it has been determined that visual impairments partly accounted for the challenges mature adults often encounter with money management tasks (Mann & Russ, 1991). Perhaps a decline in money management skills may account for depressive symptoms which frequently co-occur in mature adults with visual impairments; in fact, depression was found to be the most powerful variable associated with cognitive and functional impairments (adjusted  $R^2 = 0.20$ ;  $P < 0.0001$ ) (Shmueli-Dulitzki et al., 1995). Another health condition prominently associated with daily cognitive functions is

dementia; the Structured Assessment of Independent Living Skills (SAILS) found a significant association among dementia, Functional Independence, visuospatial abilities, and visual memory (Mahurin et al., 1991).

The physical/organic health risks. At their onset, nearly equal numbers of health conditions that may lead to institutionalization are purely physical/organic, totally cognitive/emotional or a combination of the two acting in unison (Peale, 1978). Regarding physical/organic health conditions, restricting ambulatory activity significantly increased the risk factors for heart disease disability and later mortality (Tsuji et al., 1994). In addition, nutritional or metabolic disorders have the potential to increase the risk of functional impairments in the activities of daily living, and therefore also boost the risk of institutionalization (Galanos et al., 1994).

Restricted outside mobility and a resulting less than perfect performance in the activities of daily living (ADL) were also considered among the strongest individual predictors of future admission to a nursing home or a long-term-care facility (Jette et al., 1992; Osterweil et al., 1995). As a result, the risk of institutionalization increased for mature adults who had mobility and lower body limitations which restricted them, in several ways, from fully performing their activities of daily living (Wolinsky et al., 1992). In essence, an increased risk of

institutionalization was associated with a decline in Functional Independence, and a corresponding rise in the activity of daily living impairments (Glazebrook et al., 1994). Because they detect a decline in Functional Independence, the Katz Activities of Daily Living score and the 7-item Physical Performance Test (PPT) have been determined to be independent predictors of future nursing home placement (Reuben et al., 1992).

The mental health risks. Undeniably, a sizable number of mature adults are ill because of the influence of improper mental states (Peale, 1978), and that mental or cognitive dysfunction was also found to be an independent predictor of nursing home placement in a long-term-care facility (Osterweil et al., 1995). In addition, the risk of placement in a nursing home or a temporary hospitalization increased for mature adults who felt they had lost much control over their own health (Wolinsky et al., 1992). For example, mature adults with cognitive impairments (CI) were found to be almost twice as likely to be hospitalized for 6 days or more (Weiler, Lubben & Chi, 1991).

The consequences of cognitive impairments. Cognitive impairments such as depression are often linked to placement in a nursing home. In fact, 61 percent of mature adults living in the nursing homes were depressed as compared with only 36 percent of community-dwelling mature adults living at home (Horiguchi & Inami, 1991). Less sense of control in

everyday life is associated with greater impairments in the performance of the activities of daily living (ADL), and more depressive symptoms (Burnette & Mui, 1994). For example, an association was found between depression and incontinence (ICN); incontinent (ICN) mature adults were found to be more depressed than were continent ones (CN) (Morris et al., 1992).

Impairments such as incontinence were found to be independent predictors for nursing home placement in a long-term-care facility (Osterweil et al., 1995). Typically, impairments such as depression are frequently accompanied by a subtle deterioration in level of functioning in the activities of daily living (Oliveri et al., 1994). However, cognitive impairments, activities of daily living dysfunction, and incontinence may provoke disruptive behaviors in proportion to the severity (Spector & Jackson, 1994).

One attribute associated with sound Cognitive Status and a healthy level of Functional Independence is being without dementia (Burton et al., 1992). Dementia is typically associated with a decline of Functional Independence in the activities of daily living and an increased risk of institutionalization (Glazebrook et al., 1994). Indeed, dementia status is regarded as an independent predictor for nursing home placement in a long-term-care facility (Osterweil et al., 1995). In fact,

three-quarters of mature adults with dementia were found to live in institutions, and the other one-quarter most often lived with a helpful and caring relative because they often required many services (Juva et al., 1992). Hence, dementia usually is not always the decisive factor whether to admit mature adults to nursing homes, hospitals or psychiatric facilities (Bleeker, de-Reus & Duurkoop, 1991). Instead, an increased risk of institutionalization typically was associated with decreased levels of functioning for independent living (FIL) (Glazebrook et al., 1994).

#### Life in an Institution

Although Functional Independence is most often universally advocated, it still may be denied, especially in the hospital setting, because of (1) the staff's judgement that mature adult patients are incompetent which may be bolstered by a lack of effective communication, (2) a multidisciplinary staff behaving like a pressure group, that is, arbitrarily placing professional values over patient's values, and (3) a high degree of mature adult dependence on the staff for the basic and/or instrumental activities of daily living (Loew & Rapin, 1994). All things considered, the overall approach of professionals in long-term care facilities tends to reduce the Functional Independence of mature adults (Hofland & David, 1990).

Mature adults with dementia, upon admission to a nursing home, deteriorate substantially (Hirsch, Davies,



Boatwright & Ochango, 1993). When this is the case, mature adults, such as those with dementia, who may become "wards of the court," but such legal guardianship often leads to further psychological deterioration due to a major loss of decision making powers; also, the assumption that mature adults require full guardianship if they become confused and overwhelmed when coping with business affairs or money issues appears not to be valid (Thomas, 1994).

Unfortunately, in long-term care, Functional Independence and Cognitive Status may be unduly obstructed and/or seriously impaired (Hofland & David, 1990).

Obstructing quality of life. The diverse aspects of health-related quality of life (HRQOL) in a nursing home/institution have been classified as general health perceptions, meaningful activities, outlook on life, physical suffering, self-care activities, and social relationships (Hadorn & Hays, 1991). Instead of supporting these quality of life factors, nursing homes have often presented obstructions to Functional Independence and autonomy; for example, fire regulations called for heavy doors which the elderly were unable to open, thus, becoming physical barriers, in essence, restricting their everyday movements (Cohen-Mansfield et al., 1995). Physical barriers, especially in long-term care facilities, tend to restrict mature adults' freedom of movement as well as their alternatives; choices or options available to the disabled

mature adults have not been increased in a meaningful way, that is, so that it reinforces and expands their sense of self (Hofland & David, 1990). On the contrary, disruptive behaviors in nursing homes have been reported to have increased in proportion to the severity of cognitive impairments, activities of daily living dysfunctions, and incontinence (Spector & Jackson, 1994).

Categorizing disruptive behaviors. In brief, disruptive behaviors can be summarized succinctly into three categories: abusive behavior, wandering, and noisiness (Spector & Jackson, 1994). Noisiness or verbally agitated behaviors such as complaining incessantly, have been associated primarily with a physical diagnoses (Cohen-Mansfield, Billig, Lipson & Rosenthal, 1990). For example, behavioral disorders have been found to be strongly correlated to a history of hypertension, a physical diagnoses, rather than solely to ADL functional impairments (Freels et al., 1992).

Abusive behavior or agitation marked by aggressive behaviors such as hitting and kicking, was found to be related largely to dementia (Cohen-Mansfield et al., 1990). Behavioral disorders have frequently been associated with a dementia diagnoses (Loebel, Borson, Hyde & Donaldson, 1991). For this reason, in the mild phase of dementia, the behavioral disturbances were found to be proportional to the length of duration of the disease, and a decreased capacity

to accomplish the basic activities of daily living (Grafstrom et al., 1994). In contrast, wandering or physically nonaggressive behaviors such as pacing or disrobing inappropriately were found to be linked primarily with cognitive impairments (Cohen-Mansfield et al., 1990). In other words, mature adults with poor Cognitive Status also have a tendency toward poor adaptive behavior in the community (Burton et al., 1992). For the most part, dealing with disruptive behavior in later adulthood remains a major challenge.

Coping with disruptive behaviors. A majority of patients in traditional long-term care institutions experience cognitive deterioration; an insufficient caring situation that, for the most part, has gone unchallenged is one possible cause (Annerstedt, 1993). This insufficient caring tends to evoke frustrating feelings of imprisonment, hopelessness, and powerlessness in mature adults (Nystrom & Segesten, 1994). These frustrating feelings may be further instigated by nursing home staffs that require each confined mature adult to attend all meals irrespective of objective needs or personal desires (Cohen-Mansfield et al., 1995). In addition, fire regulations require that all personal belongings be fire retardant, and this becomes a barrier of frustration for mature adults because it restricts them from bringing many of their personal possessions to the nursing home (Cohen-Mansfield et al., 1995). Recurrently, too many

restrictions may provoke agitated behavior, and nearly every type of this kind of behavior was highly associated with the need for medication (Cohen-Mansfield et al., 1990).

Moreover, whenever frustrated or depressed mature adults were diagnosed to require medication, then discontinuing this required medication, particularly in patients with dementia, was found to evoke a marked increase of verbal and physical aggression (Horwitz, Tariot, Mead & Cox, 1995).

Circumstances which favor the use of restraints for mature adult patients include diagnoses of dementia or delirium, and an increase in severity of this illness which may result in verbal or physical aggression (Sullivan-Marx, 1994). For example, untreated delirium often leads to agitation, the use of medication, and eventually physical restraints (Sullivan-Marx, 1994). However, the use of physical restraints appears to produce complications that reduce the chances of any recovery; in fact, restraining mature adults is associated with longer hospitalizations, and further declines in mobility, and Functional Independence (Sullivan-Marx, 1994). In essence, the use of physical restraints in nursing homes tends to intensify cognitive impairments even among those mature adults residents who have almost no cognitive impairments at admission (Burton et al., 1992).

The vicious cycle in institutional life. A vicious cycle, leading to longer stays in a nursing home, appears to

exist between poor adaptive behaviors and Cognitive Status. For example, longer stays in the nursing home were found to contribute to further declines in Cognitive Status (Burton et al., 1992). In fact, a vicious cycle may develop between a decline in Cognitive Status, and length of days in a nursing home. For example, poor Cognitive Status was found to promote longer periods living in nursing homes partly because of existing impairments in the instrumental activities of daily living (IADL) and repeatedly poor adaptive behaviors; poor adaptive behavior, in turn, contributes further to poor Cognitive Status (Burton et al., 1992).

It appears fortunate that a majority of mature adults live in the community not nursing homes because coping with existing stressors in any nursing home environment is often challenging (Soldo & Agree, 1988). For example, caregivers for institutionalized mature adults were found to experience more stress in the nursing home environment than caregivers assisting noninstitutionalized in-home mature adults in the activities of daily living (Stephens et al., 1991). However, the absence of a caregiver was associated with a decrease in Functional Independence and an increased risk of institutionalization for mature adults (Glazebrook et al., 1994).

## The Benefits of Living at Home

Both placement other than at home and a decline in the level of functioning for independent living (FIL) have been found to be significant predictors of mortality (Cohen et al., 1992). In contrast, placing infirm mature adults at home instead of in an institution has been regarded to have significant benefits. For example, mature adults who, two days after discharge, showed a small but significant decline in self-care and behavior, 14 days later, had returned to their original functional status (Hirsch et al., 1993). This is a key development because self-care activities are considered a pivotal aspect of health-related quality of life (HRQOL) (Hadorn & Hays, 1991). In a second example, palliative chemotherapy administered at home instead of at the hospital was found to be less distressing and more compatible with a better quality of life (Payne, 1992). In a third example, a home care rehabilitation program, 64 percent of the treatment goals were achieved, at a modest marginal cost, for mature adult patients with musculoskeletal disability (Liang, Partridge, Gall & Taylor, 1986). In short, wellness interventions at home can play an important role in maintaining Functional Independence in later adulthood (McCarthy, 1996).

### **Summary of the Literature**

Mature adults around the world are not as physically infirm, and/or mentally incapable of independent functioning

as society generally believes. For example, a study conducted by Liu et al., (1995) concluded that Japanese mature adults, at the age of 60, were expected to spend about 18.7 yrs (81%) in Functional Independence, and about 4.4 yrs (19%) in disability throughout their remaining lifetime; accordingly, 30% of the disabled mature adults studied in 1987 were found to regain their functional abilities in the following 3 years.

### Indicators that Determine Functional Independence

This chapter lays the groundwork for determining Functional Independence in later adulthood. The six quality of life indicators hypothesized to determine Functional Independence in later adulthood included: (1) the capability to perform the Activities of Daily Living (ADL Status); (2) a health-enhancing level of regular physical exercise (Physical Status); (3) an overall good mental health condition (Cognitive Status); (4) the availability of reliable and supportive interpersonal relationships (Social Status); (5) an increased freedom from new challenges/difficulties originating from undue stressful life events (SLEs) and everyday frustrations/hassles (Environmental Status); and (6) a lessening burden from the impact of debilitating chronic diseases (Health Status).

### ADL Status

ADL Status refers to the competency/capabilities of mature adults to perform effectively the basic activities of

daily living (ADL) (Roos et al., 1993). These basic activities can be described as moving from place to place (called transferring), mobility, orientation, walking, cooperation, social roles, sleeping, dressing, hand activities, eating/feeding, caring for personal hygiene (e.g. bathing and toileting/elimination), and home chores (Chiodo et al., 1994; Nagatomo et al., 1987; Freels et al., 1992; Mahurin et al., 1991; Ikegami, 1995; Goodwin-Johansson, 1996; Johansson et al., 1993; Roos et al., 1993; Hickey et al., 1995).

Activities of Daily Living Status (ADLS), in part, relies on other statuses. Mature adults who participated in regular physical activities/exercise (PS) also had less difficulties in performing the basic activities of daily living (Sdroliash et al., 1995). In fact, a significant correlation was found to exist between the motor functions of mature adults, and their overall ability to perform the activities of daily living (Nishimura et al., 1993; Lichtenberg & Nanna, 1994). For mature adults who were already competent in performing the activities of daily living, continued peak performance was found to be the best predictor for sustained Functional Independence (Marsh & Kersel, 1993).

The enhancement of Functional Independence. Enhancing Functional Independence also appears to be directly associated with increased accessibility of important



environmental resources (ES); access to important daily resources can have a positive effect on mature adults' performance of the basic activities of daily living (Starrett, 1985; Laforge et al., 1993; Wahl, 1994; Haga et al., 1991). Raising the available level of social/environmental resources tends to improve the quality of life in later adulthood, and may raise Functional Independence by enhancing ADL (activities of daily living) competence (Haga et al., 1991). Even gaining greater perceived control over daily events can significantly reduce the adverse impact of environmental/social stressors on psychological and physical well-being, and stimulate choices/changes that may enhance functionality (Roberts et al., 1994; Zuccala et al., 1995; Idler & Kasl 1995; Burnette & Mui, 1994; Allegrante et al., 1991; Holahan, 1987; Morganti et al., 1990; Smith & Couch, 1990).

The loss of Functional Independence. In the 1980s and 1990s, the mature adult population largely was beset by an unexpected rise in chronic diseases and lengthy disabilities (HS) (Laukkanen et al., 1993; The Picture of Health, 1987). Chronic diseases such as arthritis, diabetes, cancer, arteriosclerosis that can precipitate angina or long-term coronary disease, stroke, hip fracture, neurological and lung conditions have been found to have a negative impact on the activities of daily living (Semaan, 1993; Nickel & Chirikos, 1990; Rose, 1990; Dorfman, 1995; Laukkanen et al.,

1993; Ruta et al., 1994). Research findings suggest that as mature adult patients progress through the course of a chronic disease their performance in the activities of daily living deteriorates progressively (Venable & Mitchell, 1991).

Progressive deterioration in later adulthood may involve depression, dementia (CS), institutionalization, and impending death. Depressive symptomatology, even in high-functioning mature adults, was found to be associated with a loss of Functional Independence, and an increased risk of disability in the activities of daily living (ADL) (Bruce et al., 1994; Shmueli-Dulitzki et al., 1995; Oliveri et al., 1994). Once dementia progresses to the stage where communication is lost, in a parallel manner, a substantial loss of Functional Independence occurs, and there is a significant decline in the ability of non-communicating mature adults to perform the basic activities of daily living (Birkett, 1994). Consequently, dementia is typically associated with a decline of Functional Independence in the activities of daily living and an increased risk of institutionalization (Glazebrook et al., 1994). Predictors of mortality, and signs of impending death also were found to involve impairments/losses in mobility, and in the capacity to perform the activities of daily living (Cohen et al., 1992; Reuben et al., 1992).

## Physical Status

Physical Status refers to the maintenance of a suitable level of physical activity by engaging in regular exercises that improve strength, flexibility and balance in mobility, and promote a heightened sense of well-being (Mota et al., 1995; Hickey et al., 1995; Ruuskanen & Ruoppila, 1995). Physical activity programs appeared to enhance strength, flexibility, and balance, significantly, challenging past beliefs that motor abilities and capacities routinely deteriorate with advancing age (Mota et al., 1995).

The benefits of physical activity. Poor physical functioning due to strength loss, impaired gait, and postural imbalances are the most common underlying causes for falls (Barry et al., 1993; McClure, 1996) as well as a loss of mobility, flexibility, and a reduced level of self-confidence (Tinetti & Powell, 1993). However, by maintaining and improving endurance, strength, flexibility and balance, supported by strategies that effectively deal with emotional stress, mature adults can improve their quality of life well into the 70s, 80s, and 90s. (Danner & Edwards, 1992). This is supported by the fact that regular physical activity has been shown to delay and slow down age-related physiological deterioration in later adulthood; vigorous physical training can reduce some components of biological aging by as much as 20 years (Shephard, 1987; Prassas et al., 1995; Shephard, 1993; Astrand, 1992).

The enhancement of Functional Independence. Important writers such as Barry et al., (1993) and DiPietro (1996) posit that higher levels of physical activity foster higher levels of functioning for independent living in later adulthood. In fact, the level of daily physical activity appears to enhance the functional level for independent living even among conspicuously sedentary individuals (Tsuji et al., 1994; Yu, 1995; Shephard, 1993; Scholes et al., 1991; Mota et al., 1995; Kavanagh & Shephard, 1990). In light of what was just concluded, physical activity to maintain mobility deserves special attention in order to prevent the deterioration or loss of Functional Independence in later adulthood (Van Den Hombergh et al., 1995; Barry et al., 1993).

#### Cognitive Status

Cognitive status refers to the state of one's mental health or psychological well-being as determined primarily by levels of depression in later adulthood (Rozzini et al., 1991; Shmueli-Dulitzki et al., 1995). High depressive symptomatology, even in high-functioning mature adults, is associated with a decline in Cognitive Status (Osimani & Freedman, 1991), a loss of Functional Independence, and an increased risk of future disability (Bruce et al., 1994; Shmueli-Dulitzki et al., 1995; Nydevik & Eller, 1994; Laukkanen et al., 1993; Ruta et al., 1994; Stallones et al., 1990; Forsell et al., 1994; Horiguchi & Inami, 1991).

The loss of Cognitive Status. In addition to depression, memory loss has been identified as a major determinant of functional decline; memory loss almost always correlates with a significant decline in the ability to perform the instrumental skill levels of daily living (IADL) (Barrows, 1995; Goldstein et al., 1992; Kosloski et al., 1994; Burton et al., 1992; Chiodo et al., 1994). Initially, four IADL items most identified with the onset of cognitive impairment included (1) telephone use, (2) handling finances, (3) using transportation, and (4) taking responsibility for one's own daily medication intake (Barberger-Gateau et al., 1992).

If more severe impairments occur, mature adults may not be able to use such common objects as a spoon or fork to feed themselves or even a toothbrush or comb to groom themselves (Borell et al., 1995). Dementia often involves severe impairments also because it originates from a deterioration of cognitive functions or loss of mental faculties in many areas (Dorlands, 1974). Moreover, functions that normally decline with age in mature adults, are especially altered in Dementia (Oakley et al., 1991; Osimani & Freedman, 1991; Nussbaum et al., 1995). In fact, three-quarters of mature adults with dementia were found to live in institutions (Juva et al., 1992; Glazebrook et al., 1994), most likely because the basic cognitive/intellectual functions lost in Dementia are, for the most part,

irrecoverable (Thomas, 1977; Stedman, 1982; Osimani & Freedman, 1991).

The loss of Functional Independence. Research has shown that significant levels of depression, memory loss, and disruptive behavioral disorders that evolve because of them, individually or in combination, are inversely correlated with levels of functioning for independent living (Yu et al., 1992; Goldstein et al., 1992; Pearson et al., 1989; Zuccala et al., 1995; Barberger-Gateau et al., 1992). In other words, as Cognitive Status diminishes, mature adults' Functional Independence tends to decline; concurrently, a number of impairments can develop in the basic and instrumental levels activities of daily living (Yu et al., 1992; Sonn, 1996; Sandman et al., 1990).

#### Social Status

Social status refers to the level of social integration as it pertains to supportive relationships; supportive relationships are characterized by mature adults' helping one another, promoting self-knowledge, and strengthening coping abilities (Stevens, 1983; Halstead & Fernsler, 1994; Turk-Charles et al., 1996). Key researchers such as Padus (1986) counsel that whenever mature adults attempt to achieve something significant in life, they ought to consider close relationships with others as vital to their highest success.

The benefits of supportive relationships. According to Padus (1986), and Rozzini et al. (1991), mature adults who belonged to a supportive close-knit social network/cohesive community, were found to be happier and healthier, better able to cope with stress, and remarkably resistant to emotional and physical ills; in essence, a good social support system can help mature adults become more stress-resistant by buffering the distress arising from injury or disease. For example, long-term cancer survivors, with a mean survival of 13.03 years, found social support, and a mind favorable to helping others to be particularly helpful in coping with everyday stressors (Halstead & Fernsler, 1994; Patel, 1991). On the whole, social relationships were able to delay mortality in general and cardiovascular mortality in particular (Olsen et al., 1991). In essence, a significant inverse relationship was found between mortality and Social Status (Rozzini et al., 1991).

The spousal relationship is the single most influential relationship in later adulthood (Flanagan, 1982; Ducharme, 1994; Kriegsman et al., 1994). Supportive spousal relationships have been found to have significant correlations with improvements in coping behaviors, and overall physical and psychological well-being (Shek, 1995; Ducharme, 1994). For example, according to Padus (1986) and Shek (1995) love and the recovery of good health seem to go hand in hand; love and caring for others can trigger healthy

physiological reactions, and boost the immune system. Because informal support systems are health-enhancing and often enabling, they are highly valued (Jette et al., 1992); for this reason, formal care systems have been assigned more of a complementary role to informal supports, even when the formal care was relatively well developed (Johansson et al., 1993; Starrett, 1985).

The enhancement of Functional Independence. The level of one's social integration, over the long-term, directly enhances Functional Independence (Haga et al., 1991; Olsen et al., 1991). In fact, going to church, seeing friends and neighbors, volunteering, and talking with other more infirm mature adults tend to reduce mortality and increase functionality in later adulthood (Sabin, 1993; Rodeheaver, 1983). In essence, healthy and supportive relationships have the potential to assist mature adults in coping with difficult circumstances, remaining functionally independent or possibly improving ADL and IADL competence, and rising to higher levels of functioning for independent living (Patel, 1991; O'Connor, 1995; Matheny & Riordan, 1992; Farquhar, 1995).

#### Environmental Status

Environmental status refers to undue stressful life events (SLEs), and everyday frustrations/hassles, considered together and/or individually, directly originating or indirectly participating in the onset of functional



impairments (Holahan, 1987; Jacks, 1981; Rittner & Kirk, 1995).

Stressful life events and everyday hassles. It has been estimated that hospitalized mature adults experienced an average of 3.5 negative stressful life events (SLEs) during the 3 years prior to admission to an institution (Laforge et al., 1993). Surprisingly, this negative impact of environmental stressors can now be quantified by using a "Stress Rating Scale" to rank stressful life events; the higher the total score accumulated over one year, the higher the risk for a serious illness or death to occur over the following year or two (Gazella, 1997, pp. 146-148; Padus, 1986, pp. 69-72). Indeed, a majority of the undue stressful life events (SLEs) in later adulthood involved a serious illness and/or death of a family member or friend (Holahan, 1987; Holmes & Rahe, 1967). Signs of impending death include the loss of basic and instrumental activities of daily living, and mobility (Parker et al., 1992; Cohen et al., 1992). Padus (1986) posits that a major change in the environment may be regarded as potentially stressful. However, despite the obvious seriousness of the undue stressful life events, relatively trivial everyday frustrations/hassles, not the occasional major stressful life events, were found to be the primary determinants of levels of daily distress in later adulthood (Holahan, 1987; Low, 1986; Low, 1995).

The loss of Functional Independence. Whether its everyday frustrations/hassles or undue stressful life events, a reduced sense of control of events in life can precipitate a decline in Functional Independence (Burnette & Mui, 1994; Goldsteen et al., 1995). In particular, a feeling of loss of control regarding health appears to negatively impact mature adults' level of functioning in the basic and instrumental activities of daily living (Starrett, 1985; Laforge et al., 1993; Wahl, 1994; Haga et al., 1991). Nevertheless, regaining greater perceived control over outer events, and enhancing functionality in the activities of daily living can significantly reduce the negative impact of environmental stressors on psychological and physical well-being in the mature adult population (Roberts et al., 1994; Zuccala et al., 1995; Idler & Kasl 1995; Burnette & Mui, 1994; Allegrante et al., 1991; Holahan, 1987; Morganti, Nehrke & Hulicka, 1990; Smith & Couch, 1990). In fact, the negative impact of environmental stressors may be reversible even in later adulthood (Thomas, 1995).

#### Health Status

Health Status is a quality of life indicator that refers to the negative impact of chronic diseases/conditions on Functional Independence (Laukkanen et al., 1993; Yu, 1995; Semaan, 1993).

The prevalence of chronic conditions. Approximately 80 percent of the mature adult population have at least one

chronic health condition (Koplan & Livengood, 1994; Thomas, 1995; Segal, 1996). For example, chronic diseases such as arthritis, diabetes, cancer, arteriosclerosis that may result in angina or long-term coronary disease, stroke, hip fracture, and neurological and lung conditions have been found to have a profound impact on Health Status, and they were found to produce functional impairments in at least seven basic and ten instrumental activities of daily living (Semaan, 1993; Nickel & Chirikos, 1990; Rose, 1990; Dorfman, 1995). Moreover, many mature adults suffer from an increased health burden of multiple pathologies, that is, more than one chronic disease (Koplan & Livengood, 1994; Molaschi et al., 1995; McCarthy, 1996).

Chronic conditions and their resulting disabilities pose a potent threat to successful aging (Rose, 1991), and, in many cases, could be grounds for admission to an institution such as a hospital or nursing home (Jette et al., 1992; Osterweil et al., 1995; Wolinsky et al., 1992). However, placement of impaired mature adults in dwellings or locations other than at home was found to be a significant predictor of early future mortality (Cohen et al., 1992). In contrast, no relationship was found between early future mortality and mature adults who were at home even if they lived alone (Rozzini et al., 1991; Cohen et al., 1992; Payne, 1992; Liang et al., 1986).

The enhancement of Functional Independence. Chronic illnesses and disabilities are not inescapably linked to the aging process (Stump, 1991; Bland & Williams, 1988). Despite the impact of chronic diseases, and disabilities associated with later adulthood, mature adults living a healthy lifestyle can stay mostly free of disabling diseases and injuries until the end of life (Leigh & Fries, 1994). Although diseases and/or disabilities may be inexorably tied to advancing age, Newton et al., (1984) avows that "illnesses afflicting the elderly are treatable, possibly preventable, and probably retardable" (p. 272).

The enhancement of Functional Independence in later adulthood can be achieved. For example, a positive mental attitude (PMA) was perceived as so beneficial that 77 percent of the mature adults studied agreed that PMA can prevent illness and 94 percent agreed that PMA can aid in recovery from illness (Bruckbauer & Ward, 1993). In fact, mature adults who recovered most of their functional abilities after being ill for some time were found to have had a significantly higher probability of recovery, in part, because of better self-rated health (Liu et al., 1995). Indeed, mature adults can alter their lives by first altering their attitudes of mind (Peale, 1978; Padus, 1986; Bruckbauer & Ward, 1993; Tsuji et al., 1994). Moreover, it was found that positive self-rated health had a high

positive correlation with the enhancement of Functional Independence (Idler & Kasl, 1995; Glazebrook et al., 1994).

**CHAPTER III**  
**RESEARCH DESIGN AND METHODOLOGY**

**Introduction**

Because the nature of old age is relevant to the functioning of our entire society, the methodology in Chapter III was designed to help policy makers and health care providers gain additional knowledge about the Functional Independence of mature adults. Additional knowledge about Functional Independence will enable mature adults, health care providers, and policy makers to better address the issues of later adulthood, make more knowledgeable decisions, and formulate more enlightened and effective policies and practices. For this purpose, the following sections in this chapter describe (1) the development of an appropriate survey questionnaire, (2) the use of this new questionnaire to perform the data collection process, and (3) the subsequent psychometric testing.

To facilitate mature adults becoming more functionally independent, policy makers, and health care providers might consider learning more about quality of life in later adulthood in order to rethink their ideas about aging. Learning more about aging entails studying Functional Independence, and the following quality of life indicators proposed in this study: Activities of Daily Living, Physical, Cognitive, Social, Environmental, and Health Statuses. Consequently, this chapter describes in detail

the methodology employed, and the four stages of the research design.

### **The Research Design**

In the first stage, after accumulating data from numerous databases such as ChiroLars (at chiropractic colleges), Medline, PsychLit, ERIC, Nursing and Social Work (at San Diego State University) Indices, highlighting the most relevant research studies in Chapter II, a 32-question survey was created. In total, a three-part survey package was assembled to collect data for this research; it consisted of a one-page Consent to Act as a Research Subject Form, a six-page 32-question survey, and a one-page Demographic Data Information Sheet.

In the second stage, after deciding to study the mature adult population, administrators at five senior citizen centers in San Diego County were contacted to make arrangements to administer the survey questionnaire. It was explained that the survey questionnaire would be given to senior citizen subjects who were at least 55 years old, and who could be conveniently recruited at their senior centers. Also it was explained that appropriate steps would be taken to protect the confidentiality and privacy of all subjects. All five administrators were receptive, and wrote letters permitting the researcher access to the population at the senior centers.

In the third stage, the data collection process was initiated. After specifying the population, number of subjects, site location, and protection of subjects criteria, the three-part survey was administered to a pilot sample consisting of 12 mature adult subjects. Corrective feedback was both solicited and offered voluntarily as completed questionnaires were received.

Also in the third stage, the three-part survey package was administered to a considerably larger convenience sample of senior citizens/mature adult subjects. On separate occasions, data was collected from the Mira Mesa, Clairemont, La Mesa, Lemon Grove, and Wells Senior Citizen Centers; all subjects surveyed at these senior citizen centers were only required by the criteria in the study to be at least 55 years old. In total, 160 mature adult subjects completed, and returned the survey package for analysis.

In the fourth stage, a data analysis was computed; this analysis can be described in seven steps. In Step One, the demographic data was examined. In Step Two, the factor and reliability analyses were enumerated in detail. In Step Three, in evaluating the survey answers for the six quality of life indicators, the range of the arithmetic answer means, and their respective standard deviations were calculated. In Step Four, after revealing all possible



pairings for the study's six quality of life indicators, 15 pairwise correlation coefficients were computed.

After computing the 15 correlation coefficients, Steps Five through Seven were performed. In Step Five, prior to running an ANOVA (Analysis of Variance), a Homogeneity of Variance (Levene) Test was performed. In Step Six, ANOVAs were used to screen for significant differences/disparities among the six quality of life indicators in regard to each of the study's five demographic variables. In Step Seven, to pinpoint disparities found in any ANOVAs, a Tukey Post Hoc Test was performed.

### **Stage One: Instrument Development**

The preliminary work to develop a new instrument/questionnaire was completed in order to collect the sample data (Appendix C).

#### **The Plan of Action**

The plan of action to create a new questionnaire involved acquiring research data organized according to a process called Retroductive Triangulation. This process consisted of (1) studying different style formats used in questions on existing/past questionnaires uncovered during the review of literature, (2) gathering research data from Chirolars (a chiropractic database), Medline, Psych Lit, ERIC, Nursing, InfoTrac, and Social Work Indices, and by (3) meticulously reviewing for pertinent information in Chapter II.

## Fundamental Research for Instrument Development

After reviewing the above, the instrument development identified six major variables: (1) Activities of Daily Living, (2) Physical Status, (3) Cognitive Status, (4) Social Status, (5) Environmental Status, and (6) Health Status. In the resulting 32-question survey, the research basis underpinning each of the 32 questions was considered fundamental; therefore, it was necessary to identify the basis for the seven questions that related to the Activities of Daily living, and the five questions (total of 25) that related to each of the Physical, Cognitive, Social, Environmental, and Health Statuses.

Activities of Daily Living questions. There were seven questions that related to the Activities of Daily Living; they included questions #1, 3, 4, 5, 8, 9, and 19. These seven questions in the survey questionnaire were the following (Appendix D):

1. When it comes to feeding myself or eating at meals, I:
3. When it comes to selecting my clothes, and dressing daily, I:
4. When it comes to everyday elimination activities such as going to the bathroom or toileting, I:
5. When it comes to formulating plans, making decisions, taking action, and adapting to resistive environmental circumstances, I:

8. According to your doctor, are you physically or mentally impaired or disabled, and, if so, to what degree do you rely on others on a daily basis?
9. How would you rate your **overall** ability to perform daily chores such as dusting, washing dishes or clothes, vacuuming, gardening, shopping in town, and more?
19. On a regular basis, are you committed to an active position in your community, for example, a paying job or any volunteer activity?

Questions #1, 3, and 4 were developed because the performance of the activities of daily living was found to be the best indicator of present, and continued Functional Independence (Marsh & Kersel, 1993). Feeding oneself, selecting clothes in order to dress oneself, and toileting activities, in particular, have been categorized as important activities of daily living by many researchers (Chiodo et al., 1994; Nagatomo et al., 1987; Freels et al., 1992; Mahurin et al., 1991).

Question #5 was developed because mature adults may need to consider formulating more plans, making more decisions, learning how to adapt to resistive environmental circumstances in order to take action steps to reach desired goals, and in the process, effectively transforming their daily activities from free leisure time into more socially useful time (Expert Consultation on, 1989). In essence,

leisure time does not necessarily refer to the freedom from needing to work in order to survive; instead, in the contemporary sense, it can refer to transforming this new free time into a personal form of self-expression (Allen & Chin-sang, 1990). Some researchers anticipate that future interventions designed and driven by the personal goals, aspirations, interests, and strengths of mature adults themselves, most likely will also promote a higher level of functioning for independent living (FIL) (Sullivan & Fisher, 1994). In this way, mature adults in the future may become more of a resource, that is, contribute more back to the society.

Question #8 was developed because impairments, disabilities, and declines in functioning may produce increases in unmet needs that eventually exceed the capacity of some informal networks (Stoller & Pugliesi, 1991), and this, in turn, has been associated with placement in an institution, and mortality (Bowling & Windsor, 1995; Glazebrook et al., 1994; Sonn, 1996). In short, a decline in the level of functioning for independent living (FIL) has been found to be a significant predictor of mortality (Cohen et al., 1992; Rozzini et al., 1991; Reuben et al., 1992).

Question #9 was developed based on both cognitive and physical considerations. Cognitively speaking, mature adults, in many instances, can be highly motivated, well organized, and hardworking in performing the activities of

daily living (Clennell, 1990; Marsh & Kersel, 1993). Physically speaking, a significant correlation exists between the motor functions of mature adults, and their overall ability to perform the activities of daily living (Nishimura et al., 1993).

Question #19 was developed because active mature adults may be quite able to continue in an independent role in the community as an employee, volunteer or in some other productive position of their choosing (Petersen, 1983; Neugarten, 1983; Swensen, 1983). Encouraging is the fact that 80 percent of working mature adults believed that having a job, and making contact with other people contributed something valuable to the general community (Voeks & Drinka, 1990). One reason is that mature adults often discover large blocks of discretionary time available so that they can pursue their chosen activities (Belnap, 1981). Many mature adults now retire earlier from their employment to become more active than ever (Shephard, 1987). Accordingly, rates of participation in most physical, cultural, educational, and volunteer activities, during the 1980s, sharply increased (Delisle, 1993; Expert Consultation on, 1989).

Physical Status questions. There were five questions that related to Physical Status; they included questions #10, 14, 15, 18, and 20. These five survey questions for

Physical Status as they appeared in the survey questionnaire were the following (Appendix E):

10. How would you rate your mobility and flexibility, that is, your ability to walk or move around smoothly on a daily basis?
14. On average, at least three times per week, how often do you engage in 20 minutes of non-stop physical exercise?
15. Do you avoid the excessive use of such foods as coffee, refined flour, sugar and salt products?
18. In performing daily activities, how often do you have to make adaptations or restrict yourself because of dizziness and/or fear of losing your balance or falling down?
20. Do you avoid harmful health habits such as smoking, occasional use of potentially dangerous drugs, and/or drinking immoderate quantities of alcohol?

Question #10 was developed because adequate levels of physical activity can enhance Functional Independence in later adulthood (Butin & Heaney, 1991). The greatest impact on Functional Independence comes from physiologic changes that affect mobility (Barry et al., 1993). The cause of falls during relatively nonhazardous activities can arise from a loss of mobility and flexibility (Tinetti and Powell, 1993). Restricted activity days (RADs) in later adulthood were more strongly correlated with physical disabilities

(PD) (Scholes et al., 1991). Hence, Physical status refers to the level of physical activity as it pertains to exercises that improve flexibility and balance in mobility, and promote a heightened sense of well-being (Hickey et al., 1995; Ruuskanen & Ruoppila, 1995).

Question #14 was developed because a positive association exists between higher levels of physical activity, and higher functional levels for independent living (DiPietro, 1996). Regular physical activity, and routine training may both preserve and produce profound improvements in the Functional Independence of mature adults (Astrand, 1992; Butin & Heaney, 1991). Indubitably, the promotion of regular daily exercise in order to enhance Functional Independence can offer mature adults a unique opportunity to have a fuller, richer, and more productive life experience (O'Brien & Vertinsky, 1991; DiPietro et al., 1993). Regarding the circulatory system, regular physical activity was associated with a clinically significant lowering of diastolic blood pressure (Rauramaa et al., 1995). Regarding the neuromusculoskeletal system, it was found that mature adults who engaged in regular walking, flexibility, and strength training exercises can prevent the muscle weaknesses, impaired gait, postural imbalances, and losses of coordination that routinely occur with advancing age (Mota et al., 1995; Barry et al., 1993; Meush, 1984).

Question #15 was developed because along with regular physical activity, other lifestyle factors that can enhance overall vitality and longevity include dietary habits that promote healthy body weight levels, and the consumption of nutritional supplements (Simon, 1996). Particular attention, in later adulthood, needs to be paid to the beneficial role of physical activity promotion, tobacco use cessation, and good nutrition for mature adults (Koplan & Livengood, 1994; Walker, 1994; Fitzpatrick et al., 1993; Martin, 1995; McCarthy, 1996). For example, mature adult patients at-risk for nutritional deficiencies were found to be highly predisposed to physical disabilities, lowered self-esteem, depression, and a variety of psychological difficulties (Fitzpatrick et al., 1993).

Question #18 was developed because the cause of falls during relatively nonhazardous activities can arise from a loss of mobility and flexibility (Tinetti and Powell, 1993). Chronic dizziness was strongly correlated to fear of falling in almost half (47%) of the mature adults studied in comparison to only 3 percent of the controls (Burker et al., 1995).

Question #20 was developed because another lifestyle factor, cigarette smoking, was also found to be highly associated with higher rates of physical disease, and mortality; it is a chronic health burden, and public health challenge among mature adults (Colsher et al., 1990; Koplan



& Livengood, 1994; Walker, 1994). Moreover, current smokers were more likely to consume alcohol than mature adults that never smoked (Colsher et al., 1990).

Cognitive Status questions. There were five questions that related to Cognitive Status; they included questions #2, 6, 16, 21, and 22. These five survey questions for Cognitive Status as they appeared in the survey questionnaire were the following (Appendix F):

2. When it comes to handling my own finances, I:
6. When it comes to using such familiar objects as a spoon or fork to feed myself, and/or a toothbrush or comb to groom myself, I:
16. Do you feel down, in a blue mood or sad all the time (can be mild or severe) that won't go away?
21. Do you take control/charge over the overall course of your life, and feel in control/charge of most situations?
22. Do you have any trouble remembering present and/or past significant and/or familiar events, people, places, or objects?

Question #2 was developed because there is often a significant decline in the handling of finances associated with the onset of cognitive impairments in the everyday performance of the instrumental activities of daily living (IADL) (Barberger-Gateau et al., 1992; Mahurin et al., 1991). Any comprehensive functional assessment of mature

adults with dementia most often will include tests to measure the daily activities that require money, and a minimum level of self-care (Stern et al., 1990; Caradoc-Davies & Dixon, 1991; Loewenstein et al., 1992).

Question #6 was developed because in severe cases of dementia, the level of self-care, memory, and daily functioning criteria become impaired (Wind, Schellevis, Van-Staveren & Hooijer, 1995). For example, severe impairments in Cognitive Status may be manifested, in mature adults, by impairments in the use of such common objects as a spoon or fork to feed themselves or even a toothbrush or comb to groom themselves; when this deep an impairment occurs, mature adults are rated to have suffered a complex cognitive loss (Borell et al., 1995). Basic self-care is an important factor in retaining some level of Functional Independence in mature adults with dementia and probable Alzheimer's disease (AD) (Stern et al., 1990; Caradoc-Davies & Dixon, 1991). In contrast, a high enough level of Cognitive Status can enhance Functional Independence in later adulthood (Butin & Heaney, 1991).

Question #16 was developed because high depressive symptomatology, even in high-functioning mature adults, has been associated with a decline in Cognitive Status, a loss of Functional Independence, and an increased risk of disability in the activities of daily living (ADL) (Bruce et al., 1994; Shmuelly-Dulitzki et al., 1995; Oliveri et al.,

1994). Cognitive Status in later adulthood has been found to be determined primarily by levels of depression (Rozzini et al., 1991; Shmueli-Dulitzki et al., 1995; Osimani & Freedman, 1991). Studies show that major depression and dementia were the most frequent diagnoses made by mental health care practitioners; coinciding clinical complaints heard most by the mental health professionals included loss of home, possessions, friends, and an ongoing loss of Functional Independence (Rabins et al., 1992; Shmueli-Dulitzki et al., 1995).

Question #21 was developed because building greater Functional Independence in the activities of daily living, and gaining greater perceived control of daily events can motivate mature adults to make choices/changes to reduce significantly the adverse effects of stress (Roberts et al., 1994; Zuccala et al., 1995; Idler & Kasl, 1995). Exercising one's choices in daily life can foster a feeling of personal control in everyday activities, and this feeling of personal control in turn, augments psychological well-being (Morganti et al., 1990). Hence, as mature adults gain more psychological insights, they can become more encouraged to take charge, and make changes to improve their daily lives (Pfeiffer & Jones, 1977).

Question #22 was developed because memory loss has been identified as one of the determinants of Cognitive Status, a decline in Cognitive Status can precipitate a functional

decline in the instrumental activities of daily living (IADL) (Sonn, 1996; Yu et al., 1992; Wind et al., 1995). The intensity of any resulting functional problems was found to vary directly according to the grade or severity of any accompanying dementia (O'Connor et al., 1990). Hence, with a decline in memory, there may be a rise in the number of instrumental activities of daily living (IADL) limitations (McFall & Miller, 1992).

Social Status questions. There were five questions that related to Social Status; they included questions #17, 23, 26, 27, and 28. These five survey questions for Social Status as they appeared in the survey questionnaire were the following (Appendix G):

17. Overall, do you feel that you have close/intimate relationships with your spouse (if any), lifelong friends, children, and significant others?
23. How often do you travel outside your residence to visit friends, volunteer/work in the community, talk to other mature adults or go to church?
26. On a daily basis, do you feel in tune with the people most frequently around you; you can understand each other, and turn or talk to one another in a confidential way?
27. Do you feel that its always possible to get sufficient help from family, friends and/or

significant others if a big problem and/or crises arises?

28. Do you feel that you and your circle of friends generally trust one another, communicate your feelings openly, and understand one another well?

Question #17 was developed because whenever mature adults have significant personal self-knowledge, the additional influence of lifelong, intimate friends, relatives or a supportive spouse can strengthen coping abilities, and potentially offer significant protection from illness (Turk-Charles et al., 1996; Padus, 1986; Matheny & Riordan, 1992; Ducharme, 1994; Flanagan, 1982; Kriegsman et al., 1994). A high quality spousal relationship appears to be especially closely related to recovering, and maintaining overall psychological well-being, and Physical Health Status (Shek, 1995). In contrast, it was found that mature adults who didn't have spouses, had more disabilities (Sands & Kozleski, 1994).

Question #23 was developed because going to church, seeing friends and neighbors, volunteering, and talking with other more infirm mature adults are examples of social relationships that can augment functionality (Sabin, 1993; Allen & Chin-sang, 1990). Adequate levels of social involvement can enhance Functional Independence in later adulthood (Butin & Heaney, 1991). In fact, self-esteem was

found to be highest among elderly people with the greatest amount of religious commitment (Krause, 1995).

Question #26 was developed because open communication frequently relieves conflict and stress (Nathan, 1990). Feelings, once openly shared, most often lend themselves to matter-of-fact discussion and calm appraisal (Low, 1986). Once relevant issues and behaviors have been identified through open communication, it becomes easier for mature adults to see and explore alternative behaviors and solutions (Wicks, 1979).

Question #27 was developed because a good social support system can buffer the impact of stress from injury or disease; this buffering effect occurs, in part, because mature adults who confide in one another tend to become more stress-resistant (Padus, 1986). Friends developing from such relationships tend to support each other in the direction of their choice, and help each other grow stronger (Seashore, 1980). Supportive relationships can help mature adults transcend disabilities, and meeting traditional aging challenges by learning to cope in healthier ways (Mitchell, 1990; Smith & Couch, 1990; Thompson, 1993).

Question #28 was developed because open communication is often thought of as an essential activity of daily living (Nydevik & Eller, 1994). Feelings, once openly shared, most often lend themselves to matter-of-fact discussion and calm appraisal (Low, 1986). Positive relationships tend to

promote efficacy-enhancing attitudes such as open communication, genuine trust, and mutual understanding which may all be helpful in stressful situations (Allegrante et al., 1991; Heidrich, 1994).

Environmental Status questions. There were five questions that related to Environmental Status; they included questions #7, 13, 24, 25, and 29. These five survey questions for Environmental Status as they appeared in the survey questionnaire were the following (Appendix H):

7. When it comes to transportation such as going to the doctors, shopping or driving to work, volunteer positions or other activities at a distance, I:
13. Financially, can you afford both the cost of a healthy lifestyle, and a satisfying environment at home?
24. Are you currently distressed or grieving about the recent or past death/injury/illness of significant others such as close friends, your spouse, or other family members?
25. To what degree are you distressed when your daily routine gets repeatedly changed and/or if small everyday frustrations continuously upset your day?
29. In the midst of a major stressful life event or minor everyday hassle/frustration, I normally feel inside:

Question #7 was developed because serious functional limitations from cognitive impairments can occur in such instrumental activities of daily living (IADL) as shopping and transportation (Sonn, 1996; Sijuwade, 1991). Loss in Functional Independence is associated with the inaccessibility of important environmental resources, and this loss has negative repercussions on mature adults' performance of the basic and instrumental activities of daily living (Starrett, 1985; Laforge et al., 1993; Wahl, 1994; Haga et al., 1991). One result was that mature adult drivers were found to be more functionally independent in both the physical and instrumental activities of daily living than nondrivers (Carr et al., 1990). Non-drivers lacked flexibility in scheduling their time and could not always participate in many activities at neighborhood senior citizen centers (Belnap, 1981).

Question #13 was developed because having the finances necessary to meet housing, and daily transportation needs; finding a pleasing residence is essential to achieving freedom from daily frustrations/hassles (Jacks, 1981). Stressful life events included planning for retirement, decreased income, forgetfulness, and decreased strength with age (Sijuwade, 1991; Quackenbush & Barnett, 1995). Making sound financial plans in order to live a healthier lifestyle enabled mature adults to cope better with the stresses and



strains of later adulthood (Shahtahmasebi, 1992; Rittner & Kirk, 1995).

Question #24 was developed because any major change in the environment may be considered stressful (Padus, 1986, p. 70). Generally, hospitalized mature adults experienced an average of 3.5 negative stressful life events (SLEs) during the 3 years prior to admission to a hospital (Laforge et al., 1993). In particular, it was found that if functionally independent mature adults experienced a stressful life event such as a personal illness/injury or a death/illness/injury to a close friend, relative, spouse or child, they may partially lose a sense of control regarding their own health (Goldsteen et al., 1995; Quackenbush & Barnett, 1995). This decreased sense of control along with an increase in perceived unmet needs, associated with aging, may be regarded as significant predictors of the onset depression, and a subsequent decline in Functional Independence (Burnette & Mui, 1994; Mui, 1993; Shamash et al., 1992; Rabins et al., 1992).

Question #25 was developed because the prime determinant of daily morale and life satisfaction was found to be everyday frustrations (Golant, 1984). Everyday changes in environment and/or routine may have an even more profound affect on the clinical state of mature adults who already are cognitively impaired (Orrell et al., 1990). Moreover, everyday frustrations/hassles, more than major

stressful life events, were found to be the primary determinants of personal distress in later adulthood (Holahan, 1987; Starrett, 1985; Low, 1995). An accumulation of frustrations/hassles, on a daily basis, has the potential to create many perceived unmet needs, and a reduced sense of control of events in life which, in turn, can precipitate a decline in Functional Independence (Burnette & Mui, 1994).

Question #29 was developed because astutely recognizing that there are choices/options in life fosters a feeling of personal control over stressful life events, and in everyday frustrations/hassles; this feeling of personal control in turn, encourages psychological well-being (Morganti et al., 1990; Low, 1986). Gaining greater perceived control of events can significantly reduce the adverse effects of stress on psychological well-being (Roberts et al., 1994; Zuccala et al., 1995; Idler & Kasl, 1995). The risk of placement in a nursing home or suffering a temporary hospitalization, for mature adults, increased the feeling that they had lost much control over their own health (Wolinsky et al., 1992).

Health Status questions. There were five questions that related to Health Status; they included questions #11, 12, 30, 31, and 32. These five survey questions for Health Status as they appeared in the survey questionnaire were the following (Appendix I):

11. How often do you think of yourself as basically healthy?
12. How often do you feel any mental/physical discomfort or pain?
30. Have you **previously** or **presently** lived in a nursing home or long-term care facility?
31. According to your doctor, do you have cancer, diabetes, arthritis, heart disease, stroke, muscle strength or nerve loss, hip fracture, lung conditions or any other illness?
32. Are you presently suffering from a hearing or vision loss/impairment of any kind?

Question #11 was developed because self-rated health was also found to have a strong correlation with Functional Independence (Idler & Kasl, 1995). For example, a decline in Functional Independence was found to be highly predictive of an associated rise in disabilities, the risk of institutionalization, and future mortality with the presence of poor self-rated health (Glazebrook et al., 1994; Idler & Kasl, 1995; Tsuji et al., 1994). In contrast, it appears that good health, and subjective well-being also may depend, in part, on a high self-rated Health Status (Starrett, 1985; Zuccala et al., 1995). For example, 77 percent of the mature adults participating in one study agreed that a positive mental attitude can prevent illness, and after being ill for some time were found to have had a

significantly higher probability of recovery, in large part, because of better self-rated health (Bruckbauer & Ward, 1993; Liu et al., 1995).

Question #12 was developed because functionally independent mature adults need not suffer or be afflicted with multiple pathologies nor do they have to suffer from any functional disabilities or impairments regarding the basic (ADL) or instrumental (IADL) activities of daily living until very near the end of life (Molaschi et al., 1995; Nydevik & Eller, 1994). Nevertheless, approximately 80 percent of mature adults were found to suffer from at least one chronic health condition (Segal, 1996; Koplan & Livengood, 1994). Moreover, pain and suffering from multiple pathologies also have been found to be highly correlated with conditions in later adulthood (Molaschi et al., 1995; McCarthy, 1996).

Question #30 was developed because previous admission to a long-term care institution was considered one of the strongest individual predictors of future admissions to an institution particularly if there is an associated decline in the level of functioning for independent living (Jette et al., 1992; Glazebrook et al., 1994; Hirsch et al., 1993; Burton et al., 1992). In fact, a decline in Functional Independence was found to be a significant predictor of mortality (Cohen et al., 1992; Rozzini et al., 1991; Bowling & Windsor, 1995). In contrast, no relationship was found

between early future mortality and mature adults who were at home even if they lived alone (Rozzini et al., 1991; Liang et al., 1986; Hirsch et al., 1993; Payne, 1992; Cohen et al., 1992). The approach of professionals in long-term care facilities may reduce the Functional Independence of mature adults (Hofland & David, 1990; Annerstedt, 1993; Nystrom & Segesten, 1994; Cohen-Mansfield et al., 1995; Cohen-Mansfield et al., 1990; Sullivan-Marx, 1994).

Question #31 was developed because the number and severity of chronic diseases are inversely related to mature adults' functional level of independent living (FIL), and therefore ought to be considered a major source, and prime augments of functional impairments (Semaan, 1993; Yu, 1995). Multiple pathologies are considered common later adulthood issues (Molaschi et al., 1995; McCarthy, 1996). In particular, cancer, arthritis, stroke, heart attack, hypertension, sensory impairments, stomach, and pulmonary disease were some of the diseases that were found to have a profound impact on Health Status, and were also shown to present a significant risk for diminished Functional Independence, and possible disability (Koplan & Livengood, 1994; Laukkanen et al., 1993; Yu, 1995; Dorfman, 1995; Ruta et al., 1994; Nickel & Chirikos, 1990; Semaan, 1993; Molaschi et al., 1995).

Question #32 was developed because diminished quality of life in later adulthood was found to be significantly

linked to the presence of sensory impairments/dysfunctions, and these, in turn, were linked with increased risks for depression, decreased supportive social relationships, and decreased Functional Independence (Carabellese et al., 1993). In particular, a loss of Functional Independence has been found to have a significant correlation with hearing and visual impairments, and learning difficulties (Barberger-Gateau et al., 1992). Hearing impairments alone may account for a decline in Functional Independence, and the placement of mature adults in a nursing home (Osterweil et al., 1995; Carabellese et al., 1993). Visual impairments were linked to reduced reading capacity, and impeded established functional patterns involving full relaxation, stress reduction, information-gathering, and social intercourse (Smith, 1993; Mahurin, et al., 1991). The number of blind or severely visually-impaired mature adults aged 65, and over will reach 5.8 million by 2030, and far less than 50 percent are functionally independent enough to be employable (Augusto, 1992; Yu, 1995).

Scoring. The new Confidential Survey Questionnaire For Mature Adults utilized a five-point likert scale, and was scored by instructing the SPSS computer program to add together the answer values for each of the five statuses (Physical, Cognitive, Social, Environmental, and Health) which consisted of five questions each, and the one

Activities of Daily Living (ADL Status) variable which consisted of seven questions.

Timing. It was anticipated that it would take an entire group of mature adults between 12-30 minutes to complete it. Beyond 30 minutes, it was anticipated that many mature adult participants could get fatigued, and/or get up to leave. In creating this questionnaire, to avoid physical fatigue or mental loss of concentration, it was necessary to strike a balance between the number of questions asked in order to collect the best possible data, and the time limitations set forth by the participants. To help decide if this balance was reached, the pilot survey was administered prior to administering the questionnaire to the entire convenience sample.

#### Constructing a Demographic Data Sheet

The format of the entire handout featured the Consent to Act as a Research Subject Form (Appendix J) as the cover page, the 32-question survey, and then the Demographic Information Data Sheet as the final page (Appendix K). To properly structure the demographic sheet, an inquiry was made at a local high school to discover how they categorized/classified students. The principal's secretary was asked "what categories or classifications does your district use to break out ethnicity?" She informed me that her district did not routinely ask about ethnicity or race except for the annual state-mandated California Basic

Educational Data System (CBEDS) Test which calls for someone to check off whether students are:

- \_\_\_\_\_ Hispanic
- \_\_\_\_\_ Caucasian/White but not of Hispanic Origin
- \_\_\_\_\_ African-American/Black but not of Hispanic Origin
- \_\_\_\_\_ American Indian or Alaskan Native
- \_\_\_\_\_ Filipino
- \_\_\_\_\_ Asian
- \_\_\_\_\_ Pacific Islander

Consequently, this study's Demographic Information Data Sheet features a check off page with the above ethnic, and race classifications. Beside Ethnicity and race, the Demographic Information Data Sheet includes other categories such as Gender, Age, Current Marital Status, and Academic Background. The Gender category consists of the male or female choices. The Age category consists of choices as below 55, 55-65, 66-75, 76-85, and over 85. The Current Marital Status category consists of choices of single, divorced, married or spouse deceased. The Academic Background category consists of choices did not complete high school, high school diploma completed, college degree completed, and graduate degree completed.

#### Validity and Reliability

The creation of a feasible, valid, and reliable survey instrument/questionnaire was fundamental to the success of this study. As has been noted, the researcher assumed that



Functional Independence could most likely be determined by (1) a sufficient competency in performing essential daily tasks (Activities of Daily Living Status), (2) a healthy level of physical activity (Physical Status), (3) Cognitive Status (good mental health), (4) supportive social relationships (Social Status), (5) freedom from undue stressful life events and everyday frustrations/hassles (Environmental Status), and (6) the absence or mitigation of debilitating chronic diseases (Health Status).

Assessing validity. If questions had been used from published tests for this survey questionnaire, then their validity and reliability would have already been known. Several questions may be asked that relate to the validity of a preliminary construction of the new questionnaire. For example, does the survey's questions accurately measure Functional Independence in later adulthood (Huck & Cormier, 1996)?

To determine the validity of the underlying dimensions in the Confidential Survey Questionnaire For Mature Adults, a factor analysis was conducted using a principal axis solution with varimax rotation. For the initial solution, only Eigenvalues greater than a 1.0 criterion were considered in order to determine the underlying number of factors in the solution, and to compute the percentage of variance in the dependent variable that was explained by the factors; to determine salient loadings, two criteria were

utilized to assign each item/question to a factor: (1) a minimum primary factor loading of .50 was required for each item/question; and (2) at least a .15 difference was required between the primary loading, and any other secondary factor loadings, if any (Lynn, 1995).

Regarding external validity, three additional questions were asked. First, would there be similar results if the new questionnaire was utilized at other sites? The more researchers attempt to control for external validity, the harder it often becomes to transport the questionnaire to another site, and get consistent results. "The subjects used by a researcher and the conditions under which measurements are collected must be similar to the subjects and conditions involved in the validation studies before you should accept the researcher's claim that the research data are valid" (Huck & Cormier, 1996, p. 95). Second, would my results correlate favorably with the results of other valid questionnaires regarding the assessment of functionality in later adulthood? For example, "RADS [a psychological test for depression] was found to correlate with other self-report depression measures such as the Beck Depression Inventory... with coefficients ranging from .68 to .76 ( $p < .0001$ )" (Huck & Cormier, 1996, p. 92). Third, would the actual act of participating in this study, by itself, significantly affect or change any answers given by mature adult subjects on the questionnaire?

Assessing reliability. According to Huck and Cormier (1996), reliability refers to multiple administrations of a survey questionnaire whereby the same score or same data is consistently or repeatedly collected on a desired characteristic or quality being measured. Because reliability refers to consistency, the only way that it would be possible to test the reliability would be if the questionnaire were administered more than once to the same population. However, because of this study's time constraints, this was not feasible. If there had been enough time to give the new questionnaire a second time, then it would have been possible to measure its reliability; this might have accounted for variations that emerged based on the time between the administration of the two tests (Huck & Cormier, 1996).

Regarding internal consistency, it may be possible to cross-check different questions that relate to the same subject matter so as to verify that the participants' answers were consistent for that particular subject category. There was a high degree of internal consistency across the different sections of this survey questionnaire; answers to different questions that pertain to the same subject matter, did not clash with one another. The fundamental assumption is that different questions pertaining to the same subject matter, whether odd-numbered and/or even-numbered, when considered together, must be

answered in a consistent way (Huck & Cormier, 1996). This study's questionnaire exhibited internal consistency because answers given to different questions that pertained to the same subject category were consistent/compatible with one another (Huck & Cormier, 1996).

In general, if three questions relate to cognitive functioning, and one mature adult subject answers the first question such that their cognitive functioning appears terrific or excellent, but on the second question it appears that their cognitive function is poor, and then on the third question, it appears again that it is terrific or excellent, then serious questions as to the internal consistency reliability of the questionnaire ought to be raised. In other words, three questions pertaining to the same subject category, answers of excellent, poor and excellent again for the same subset indicate that there is not cognitive functioning and the other two are indicating that there is cognitive functioning, in effect, give the appearance of serious discrepancies.

More specifically, if three answers from one mature adult subject indicate that they are excellent in their cognitive functions, but three other answers indicate this same mature adult subject is poor in their cognitive functions, then there is something wrong with those questions. A mature adult has either excellent cognitive functioning or he/she has poor cognitive functioning, and

therefore no in-between state. If this was the case, then the questionnaire should be reexamined. For example, if it has six individual questions that when calculated together have a mean result that says the subject is average or in the middle of the field, but the field is composed of such divergent answers as excellent and poor. In another example, if three questions relate to physical activity, and a mature adult subject answers question one in a way that it appears that his/her level of physical activity is excellent, but on the second answer it appears that level of physical activity is poor, and then on the third question, it appears that its excellent again, it may be assumed that the researcher is not receiving consistent answers for what he/she is aiming to test. In other words, excellent, poor, and excellent again for the same category are not consistent answers. The subject can have either an excellent level of physical activity or he/she can have poor, but the analysis should not conclude that the three questions when mixed together demonstrate that mature adult subject comes out to be average. The preliminary development of the survey questionnaire was done with these considerations in mind, and the data needed to complete the research study then was collected.

### **Stage Two: First Contact**

In December, 1996, administrators at the Mira Mesa, Clairemont, and La Mesa Senior Citizen Centers were

contacted to arrange to collect research data at their centers. A brief explanation was offered regarding how quality of life and Functional Independence issues were being researched in later adulthood. A brief explanation was offered on how a survey questionnaire would be administered to collect the data required from the mature adult subjects that frequented their centers. Lastly, a support letter reflecting their approval of this research was requested. They cooperated and immediately wrote the requested letters (Appendix B).

In June, 1997, the same administrators were recontacted to make final arrangements to administer the survey questionnaire during the usual business hours at their facilities. At that time, administrators from the Mesa Valley Grove Senior Programs in Lemon Grove, and the City of El Cajon Department of Recreation were also contacted; written permission to administer the survey at their centers was obtained from them (Appendix B).

### **Stage Three: Data Collection**

In order to do any analysis, researchers must collect the required data in order to build a database. The protocol for collecting the data involved (1) gaining entry to the population to be investigated, (2) selecting supportive/available facilities, (3) recruiting the required number of suitable mature adult subjects, (4) using adequate safeguards to protect subjects' rights, and (5)

administering the three-part survey package to the mature adults that were available, and could be conveniently available at the collection sites.

#### Entry to the Population

A population is a group (usually of people) about whom researchers want to draw conclusions (Babbie, 1992). Since the goal was to find a mature adult subject/senior citizen sample, several sites were canvassed where mature adults congregate. In fact, several phone calls were made to administrators at senior citizen centers because mature adults/senior citizens there are generally thought to be more functionally independent than mature adults confined to nursing homes or in a hospital. Because of prevailing circumstances at the senior centers, my data collection was restricted to whomever happened to be attending, could most conveniently be recruited to participate, and were mentally competent enough to answer my survey questionnaire (Huck & Cormier, 1996).

Finding supportive facilities. Opportunities to administer the newly created survey questionnaire were offered by five senior centers. These senior centers were located in (1) Mira Mesa, (2) Clairemont, (3) La Mesa, (4) El Cajon, and (5) Lemon Grove. The facility coordinators/administrators at each of these centers played a supportive role in ensuring my success at their site. All the administrators encouraged the attending mature adults to

answer the questionnaire. Also, upon questioning, one administrator advised that the best days to come, and administer a short questionnaire were when they were celebrating a birthday or a special occasion, such as the fourth of July, because then they, most likely, would have their largest groups.

The initial 1996 communications. Entry was gained initially to the mature adult population in December, 1996 when the researcher contacted the facility coordinators/administrators of the Mira Mesa Senior Center Board of Governors, the Clairemont Friendship Senior Center, and from the La Mesa Community Services. The primary purpose was to request their permission, and make initial arrangements to administer the newly created survey questionnaire at their center. Great care was used in detailing the kind of research that was being done. For example, each facility was sent a copy of the dissertation proposal abstract along with a short cover letter explaining the plan of action at their site, and what was expected of the administrators in-charge there.

In June, 1997, qualifying information such as (1) letters of support from the Dissertation Director, Dr. Kujawa, (2) a copy of the approval letter from the Committee on the Protection of Human Subjects, and (3) a copy of the survey questionnaire was submitted to the Executive Director of Recreation. Final approval was received within a short



time to administer the survey questionnaire at the Wells Senior Center in El Cajon in July, 1997.

The final 1997 contacts. Because of their supportive letters, when the final draft of the survey questionnaire was completed at the end of June, 1997, each of the four facility coordinators/administrators were contacted to make final arrangements. The research study was described in detail to each acting administrator. Besides giving a copy of the survey questionnaire to each administrator, the nature of the study was described in more detail, the steps involved, that is, what would be done, and said in front of the mature adult group at their center prior to beginning the actual data collection.

The only problem encountered was when the data collection process began in July, 1997. It was time for seniors to go on their summer vacations, and consequently attendance was low at a time when large numbers of mature adult subjects were needed. As a result, the researcher was referred to the Mesa Valley Grove Senior Programs. Their program served a large group of mature adults at their Lemon Grove location. The administrator of the Mesa Valley Grove Senior Programs was contacted in order to arrange to administer the survey to her group of mature adults. After the executive director approved the request, the survey questionnaire was administered at the senior center on Mount Vernon Street in Lemon Grove, California.

### Recruiting An Appropriate Sample

A newly created survey instrument/questionnaire was administered to an appropriate sample of mature adults in order to collect data on Functional Independence and quality of life that would be generalizable to the entire mature adult population. In inferential statistics, researchers are almost never able to study all the members of a population that interests them (Babbie, 1992). Instead, they customarily make "generalizations about a population by studying a sample from that population" (Hinkle et al., 1994, p. 17).

The importance of representativeness. Generalizations cannot be reasonably accurate "unless a representative or at least a random sample has been drawn" (Guba & Lincoln, 1989, p. 169). "The most important characteristic of a sample is representativeness" (Hopkins & Glass, 1978, p. 207). Although representativeness is important, for the purpose of this study, the researcher had to go to convenient locations (senior centers) where mature adults congregate. Thus, a convenience sample was selected; mature adults from five distinctly different senior centers were surveyed in an effort to avoid doing measurements on a skewed or asymmetric distribution (Hale, 1990).

Determining sample size. In order for the sample distribution to be considered more representative of the entire population, the researcher must select a sufficiently

large enough sample. "How large a sample should be taken... [is a most] difficult question" (Hanke & Reitsch, 1991). In this study, a "representative sample of [at least] 100 is generally preferable" (Hopkins & Glass, 1978, p. 183). However, "because so many factors are involved, no definite answer exists" (Hinkle et al., 1994, p. 281). In fact, "only in exceptional cases is it possible to make assertions about the population with complete certainty" (Stuart & Ord, 1994, p. 318).

In research investigations, estimating an appropriate sample size is crucial. If the sample size is too large, then the researcher has a "high probability of rejecting  $H_0$  [the null hypothesis] even if the null was 'off' by a small margin (Huck & Cormier, 1996, p. 193). This concept is based, in part, on the theory that as the sample size increases, the standard error of the sample means decreases as the distribution of the growing sample approaches the norm of the entire population (Hinkle et al., 1994). On the other hand, the researcher does not want to use too small a sample because it increases the probability that Type II error will be made, and it can "make the probability of rejecting a grossly false  $H_0$  too low" (Huck & Cormier, 1996, p. 193).

Using convenience samples. A statistic that is derived through research conducted on a subject sample may only be considered as an unbiased estimator if it approximates or

precisely equals that population's parameter (Hale, 1990). To this end, instead of tracking down individual population members, groups of mature adult subjects who could be most conveniently recruited were selected at the Clairemont, La Mesa, Mira Mesa, El Cajon, and the Lemon Grove Senior Centers. Data-providing groups such as these, when they serve as a basis for inferential statements, are termed "convenience samples" (Huck & Cormier, 1996, p. 109).

Inclusion criteria. In order to help recruit appropriate individuals at the senior centers for the subject sample in this study, a mature adult subject was defined as follows: a senior citizen, man or woman, at least 55 years of age, physically able to travel to a senior center, and mentally competent enough to fill out, independently (or most nearly so), the survey questionnaire used in this study (Offer and Sabshin, 1984). They had to possess sufficient self-knowledge, and be literate enough to read, and sufficiently comprehend all 32 survey questions in order to be able complete the entire questionnaire. This study was open to all mature adults from any race, religion, culture, nationality or socioeconomic status willing to participate.

#### Research Benefits/Risks

Because the rights of any participants include freedom from undue mental or physical distress, participants were fully prepared by this researcher, mentally and emotionally,

to take the survey questionnaire. To this end, a five-minute explanation was offered to the participants prior to administering the questionnaire.

Because this researcher has been a Doctor of Chiropractic for nearly twenty years, and because he has earned a Masters Equivalent in Counseling (a 1996 letter written by Sue Zgliczynski, Ph.D.), it is possible to corroborate with a certain degree of authority that the risks involved in answering this study's 32-question survey did not exceed the average daily risk encountered by mature adults in their periodic physical examinations or a routine psychological examination. In addition, great care was taken to prepare a research proposal for full review by the Committee for the Protection of Human Subjects (CPHS) prior to administering the questionnaire to the subject sample.

Nevertheless, the mature adult subjects in the research samples would still be considered "subjects at risk." In this study, this might be interpreted to mean that a remote possibility exists that participants could be exposed to some physical, psychological, or social injury as a consequence of their participation in the research. Therefore, in the next section, the potential physiological, psychological, and/or social benefits and risks of the methodology used in this research study will be identified.

Potential research benefits. Mature adults offer society "a tremendous resource that we cannot afford to

ignore" (Carstensen, 1996, p. B3). In order to utilize this resource health care leaders must gain additional knowledge about quality of life indicators so that they will formulate more progressive social policies, and implement more effective health care practices. As has been noted, society often thinks of later adulthood as a time of debilitation (Schuster & Ashburn, 1980; Hall, 1995). This research study could serve to make society more aware of the potential of mature adults to be functionally independent. Future research has the potential to get policy makers, and health care leaders thinking more seriously about raising the level of functioning for independent living (FIL) for mature adults.

One outcome of a higher Functional Independence could be the reintegration of mature adults back into several aspects of society (Swensen, 1983). Mature adults could become more active, and productive than ever before (Neugarten, 1983). This is why it is in everyone's best interests to seek out information on how to determine, and enhance the Functional Independence of our oldest and wisest citizens. Therefore, this study makes a serious attempt to offer policy makers, health care providers, and mature adults an opportunity to enhance their understanding about quality of life and help mature adults become more functionally independent (FI) in later adulthood. In the

long run, the "golden years" may someday emerge as a source of enlightenment, and progress for our entire society.

Potential research risks. The benefits of a better quality of life, enhanced Functional Independence, and increased contributions to society ought to be considered monumental compared to the remote risks that exist. Nevertheless, since "aged" participants are classified as a protected group, they must be treated as "subjects at risk" because, potentially, they can be exposed to some unexpected physical, psychological, or social injury.

Examples of potential risks, even if only remotely possible, are numerous. First, there may be some discomfort derived from fears that unanticipated publicity might lead to the loss of confidentiality, and privacy. Second, participants may experience some minor fatigue from the length of the survey or because of an existing mental or physical impairment. Third, some of the survey questions may raise a small amount of anxiety or create temporary discomfort in participants who are not accustomed to answering personal questions or who are very private people or possibly introverted personalities. In-depth questions on the topic of stress or coping, in particular, constitute "risk" and must be well thought out, and have a solid psychological back-up. Nevertheless, it was expected that the potential for harm to mature adult subjects would be

minimal, in large part, because of the extensive risk management procedures that were employed in this study.

### Risk Management

Every means at the disposal of this researcher was used to protect the rights and welfare of the participants as well as the interests of the University of San Diego. With this in mind, an attempt was made to anticipate, identify, and guard against any foreseeable physiological, physical, psychological, or social discomforts that might present even a temporary risk to participants. For example, the short duration of the 32-question survey, most likely, substantially minimized any possible fatigue. Moreover, to assure further that the participants were adequately protected while this research was being conducted, several additional risk management procedures were employed to minimize possible risks to mature adult participants.

Consent form protections. A comprehensive and effective consent form is an important risk management procedure. Therefore, a consent form was designed that describes the duration of participation, confirms the strict confidentiality of subject records, assures anonymity of the participants' identities, respects privacy rights, indicates notification of participants of the study's findings as well as its potential risk/benefits, emphasizes voluntary participation and the right to withdraw or quit at any time without penalty, notifies them of their privilege to ask



questions at any time, states that the researcher foresees little risk or discomfort to participants, and clarifies the purpose of the research project.

Other safeguards in the Consent To Act As A Research Subject Form included preserving confidentiality, respecting privacy rights, and allowing subjects the right to withdraw their consent, and discontinue their participation at any time. The consent form also explained that there were no costs or cryptic expenses to the subjects for their participation. In addition, the consent form contains no exculpatory language by which participants subtly waive or clandestinely release the University of San Diego, and/or this researcher from liability during this research.

Other examples of risk management. Participants might experience some discomfort concerning undesirable public exposure or unwanted publicity if the results of this research are published. To minimize this discomfort, it was helpful to explain the potential uses of the data to be collected from them. Also, the subjects' anonymity was protected by describing to them, ahead of time, how the confidentiality of their data would be preserved. First, it was explained that their individual identities would not be disclosed to anyone. Second, their confidentiality would be respected by analyzing the data, and presenting the research results in such a way that individual participants could not be identified even by transcribers hired to type up the

research notes, by research assistants, by people hired to proofread my study or by anyone else without the expressed consent of all participants as required by law.

Third, the names of the participants were masked by using code numbers only, and by group data analysis, interpretation, and dissemination. In addition, participants' rights were rigorously respected as to freedom from being observed or recorded without their knowledge or consent. There was little chance of undesirable public exposure or unwanted publicity merely by participating in this confidential survey questionnaire. Fourth, the privacy rights of the participants were observed/respected by limiting the survey questions to quality of life and Functional Independence issues only.

As has been noted, the survey questionnaire was originally administered, and participants were prepared, mentally and emotionally, to take the survey. To emphasize that it was worth participating, prior to signing the consent form, participants were given the opportunity to ask any questions they had about the study. All questions were answered, the researcher's phone number was placed on the consent form, and a copy was provided to each participant in the event they had any further questions or research-related problems. It was communicated to them that this researcher was readily available, and dedicated to answering all questions. The establishment and maintenance of an

acceptable ethical practice remains the primary responsibility of all individual investigators.

#### Survey Administration

After specifying the population, the number of subjects, the site location, the protection of subjects criteria, a three-part package/handout was administered to 183 senior citizens/mature adult subjects. The three-part package consisted of a Consent To Act As A Research Subject Form on the cover page, followed by the 32-question survey on the next six pages, and the Demographic Data Information Sheet as the concluding page.

The final draft of the survey questionnaire was administered for the first time in July, 1997 during the La Mesa Senior Center Independence Day Festivities. The plan of action was basically to keep it as simple as possible. This entailed delivering a brief five-minute or less standardized talk for the purpose of building a good rapport, an egalitarian relationship, with potential subjects by explaining why their participation was valuable to the study.

The five-minute talk. During the brief five-minute talk, care was taken not to give them any misleading information that would inadvertently contaminate their response or program them to answer the survey questions based on what was told to them instead of what was true for them. The talk lasted slightly shorter than five minutes so

as not to turn them off before giving them the questionnaire to fill out. For example, it was emphasized that they sign the Consent to Act as a Research Subject Form prior to their completing the confidential survey questionnaire, and the attached Demographic Data Information Sheet.

Signing the consent form. The Consent To Act As A Research Subject Form was first identified as the top sheet/cover page of the handout they were going to receive. It was requested that each member of the group read their consent form first, and then sign the form before filling out the rest of the questionnaire. They were also informed that a phone number was provided on each sheet for each participant in the event they had any additional questions or research-related problems at some later time. The purpose was to convey the notion that this researcher was readily available, and dedicated to answering all questions. If they hesitated, and did not sign the Consent to Act as a Research Subject form at that time, the survey was not taken away from them right away because it was possible that they may have missed a direction or misinterpreted something that was mentioned to them. However, their participation was ended, and the survey questionnaire was taken away if they did not eventually cooperate, and sign the consent form.

The participants were advised that their confidential data would be held only for as long as it was important to the research. During that time, their confidential

information would be protected because the intention was to combine all the data together in a group, and used as group data only; no individual names would be released to the general public, and no confidential information would be available to anybody but me.

Instead of reporting that John Doe is a Catholic and 72 years old, what would be reported was that there were "120 people between the ages of 66 and 75, 25 people between the ages of 76 and 85, and that this many mature adults were males, and this many females. As another example, it was reported that "Five percent of the people studied graduated from college, 70% graduated from high school, and 25% never graduated from high school." Their data would only be shared with other researchers, colleagues in the chiropractic profession, policy makers, and/or other health care providers to let them know the different age categories, the general level of education, and the proportion of males, and females that were involved in the research study. In this manner, it was hoped that it would be conveyed to them, in a very open and broad-minded sense, that their participation was valuable to the study.

Other inclusion and exclusion criteria. Sometimes, being willing to participate is not enough. Subjects have to be able to meet the criteria stipulated by the needs of the study itself. Hence, to select an appropriate subject

sample, the researcher formulated a more complete set of criteria for the inclusion or exclusion in the study.

It was expected that some mature adults, functionally, would not be able to complete the survey questionnaire without some help. It was speculated that these mature adults probably were driven to the Senior Citizen Center, assisted in sitting down, and that they would not be as capable as would be desired in terms of filling out the questionnaire. If these mature adults complained that they could not complete the questionnaire without some personal help, and time and circumstances permitted, that is, subjects did not get up to leave, and the administrators of the center did not feel that the research process was getting in their way, then the researcher was prepared to sit down, and work with these mature adults if they did not require too great an amount of assistance.

The mature adults that needed assistance first must demonstrate an ability to answer a majority of the questions on their own. For example, for some mature adults, it was possible to just break the question down into smaller segments, and then they were okay. Sometimes, it was either length of the questionnaire that overwhelmed them, the way a question was written or it was not at their current reading level.

In contrast to the relatively independent senior citizens who could fill out the questionnaire reasonably

quickly or with just a minimum of help, it was noted that other equally earnest mature adults just sat there getting increasingly frustrated because they could not fill out what appeared to be a relatively simple questionnaire. Some of these mature adults had some basic and/or instrumental skill impairments/disabilities, for example, problems with reading and/or interpreting questions.

Many mentally-impaired and physically-disabled mature adults live with another person eighty years old or more. They come to the Senior Citizen Center once a week, get wheeled in, and participate to a limited degree. They were in and out mentally in regard to the rest of the people at their table; they did not appear too talkative, and their mood was somewhat sullen. All of a sudden they were stuck with the questionnaire in front of them because all the mature adults in the room, and at their table received one. They may have felt obliged to fill it out, but they had no idea what to do with it. At that moment, they may have hoped or wanted someone to just wheel them out of there. Therefore, when any mature adult subject proved unable to complete the test, their unfinished questionnaire were promptly collected, and with a forgiving smile, they were thanked by the researcher for attempting to be helpful.

There also were certain mature adults who were either utterly unable or just upset enough that specific day to not be able to write and/or think without considerable

difficulty. Under such circumstances, an unequivocal decision was made to exclude all mature adults who were functionally (e.g. poor instrumental skills) unable to fill out the questionnaire without considerable help.

#### Pilot Sample Administration

As a trial run, and to get corrective feedback, after specifying the population, number of subjects, site location, and protection of subjects criteria, the completed survey questionnaire was administered to a pilot sample of mature adult subjects. The completed draft consisted of a Consent to Act as a Research Subject Form as its cover sheet, the completed 32-question survey questionnaire, and a Demographic Information Data Sheet on the last page.

The plan of action. The completed survey was administered to a pilot subgroup consisting of 12 mature adults attending the La Mesa Senior Center at the July, 1997 Independence Day festivities. The plan of action was to try out the survey on one group first, and use this pilot group to fine tune the method of administering the questionnaire, and adjust the questionnaire itself if necessary. The opinions/critique of the pilot subjects served as a preparation for the administration of the same questionnaire to the much larger groups convenience sample. Therefore, it was explained to the pilot participants, at the start, that some brief feedback would be requested, and they would be



asked a few questions after they finished answering their questionnaire.

Obtaining corrective feedback. At the end of the pilot questionnaire, corrective feedback was both solicited, and offered voluntarily upon collection of the completed questionnaires. The researcher then asked the pilot sample subjects if they had any opinions or observations about the survey, positive or negative, they might be willing to share? The intention was to eliminate or modify (e.g. reword or shorten) any survey questions that were too difficult to comprehend, too hard to answer or created some discomfort.

Several subjects responded that it would be best to avoid such choices among the answer selections as "almost never" or "almost always." These disputed choices promptly were changed to "never" and "always" respectively. Other feedback received from three different subjects were that certain questions clearly were not applicable to them whatsoever; certainly they were able to feed themselves, dress themselves, and go to the bathroom without relying on others. These subjects were assured that their answers were needed to balance other less positive answers from those less fortunate. This balancing helped make an analysis of all the answers more representative of the whole population.

Two strong negative opinions regarding the eighth, ninth, and eighteenth questions were received, and changes

were made to all three questions. Although the answers remained the same on questions eight and nine, that is, always, frequently, sometimes, rarely or never rely on others, the following changes were eventually made to their stems:

Original version of question #8: According to your doctor, to what degree are you physically or mentally impaired or disabled from any disease/injury/accident?

Final version of question #8: According to your doctor, are you physically or mentally impaired or disabled, and, if so, to what degree do you rely on others on a daily basis?

Original version of question #9: How would you rate your ability to perform daily chores such as dusting, washing dishes or clothes, vacuuming, gardening, shopping in town, and more?

Final version of question #9: How would you rate your **overall** ability to perform daily chores such as dusting, washing dishes or clothes, vacuuming, gardening, shopping in town, and more?

The questionnaire was ready/set to administer to a considerably larger sample of mature adults once the following changes were made to the stem of question #18:

Original version of question #18: How often do you restrict yourself in the performance of your daily

activities because of dizziness and/or fear of losing your balance and falling down?

Final version of question #18: In performing daily activities, how often do you have to make adaptations or restrict yourself because of dizziness and/or fear of losing your balance or falling down?

There was time enough to answer all questions, and nobody left early in frustration. A majority of mature adult subjects assured the researcher that the questions were easy enough to comprehend, and nearly every one of them answered every question.

#### Convenience Sample Administration

The survey questionnaire was administered in July, 1997 to a total of 183 mature adult subjects; 23 questionnaires were not completed, and not included in the subsequent data analysis. As a result, 160 questionnaires were completed at the following centers: (1) 53 subjects from the La Mesa Senior Center; (2) 25 subjects from the Clairemont Friendship Senior Center; (3) 28 subjects from the Mira Mesa Senior Center; (4) 29 subjects from the Lemon Grove Senior Center under the auspices of the Mesa Valley Grove Senior Programs; and (5) 25 subjects from the El Cajon Wells Senior Center.

The advertising display board. To facilitate the collection process, the researcher assembled three white

large-lettered advertising signs, and attached them to a big three-sided black project display board. The first large-lettered advertisement urged the following:

PLEASE PARTICIPATE IN OUR SURVEY

WE ARE COLLECTING DATA TO IMPROVE SENIOR'S QUALITY OF LIFE

The second large-lettered advertisement urged the following:

PLEASE JOIN OUR SURVEY

WE ARE GATHERING INFORMATION TO IMPROVE THE DAILY

FUNCTIONING OF SENIORS FOR INDEPENDENT LIVING

The third large-lettered advertisement urged the following:

PLEASE PARTICIPATE IN OUR SURVEY

WE ARE COLLECTING VALUABLE DATA ABOUT LATER ADULTHOOD

The five-minute talk. While the survey was being handed out to each mature adult subject by a volunteer, the group was given specific directions concerning what they were required to do. It was briefly explained that information was being gathered on such diverse aspects of their life as their daily interests, where they live, and their current health. The researcher then delivered the following brief five-minute talk over the facility's public address system (Appendix L).

#### **Stage Four: Data Analysis**

A survey package consisting of a Consent to Act as a Research Subject Form, a 32-question survey still in its preliminary stages of development, and a Demographic Data Information Sheet were attached/stapled together, and handed

out to 183 mature adult subjects at five senior citizen centers in San Diego County. In total, 160 subjects completed, and returned the survey for analysis of the six constructs included in the questionnaire. These six constructs represented each of the following indicators: (1) Activities of Daily Living (ADLS); (2) Physical Status (PS); (3) Cognitive Status (CS); (4) Social Status (SS); (5) Environmental Status (ES); and (6) Health Status (HS).

Prior to performing any statistical computation, it was necessary that the survey questions that utilized a likert answer scale valued at 5-1 rather than 1-5 be recoded for consistency; the answer scales that needed recoding were for questions 12, 16, 18, 22, 24, 25, 30, 31, and 32. Once the recoding was complete, the SPSS program was employed to perform the computations for the study's seven variables; Functional Independence (FI), and the six quality of life indicators/constructs (ADLS, PS, CS, SS, ES, and HS) alluded to in the previous paragraph.

#### Method of Analysis

After organizing the research data collected into a functional database, several steps were identified in order to perform reliable data analysis. The method of analyzing the data was outlined/presented in seven steps. In Step One, the demographic data accumulated from the responses of 160 mature adult subjects were reviewed. In Step Two, the results of the factor analysis were evaluated thoroughly,

and the key items in the confidential questionnaire were subjected to internal consistency reliability testing. In Step Three, in order to assess the variability of the subjects' responses, other descriptive statistics such as the arithmetic means, and standard deviations were computed. In Step Four, to determine the extent to which the six proposed quality of life indicators were related to each other, 15 null hypotheses were proposed, and the pairwise correlation coefficients were computed.

After computing the 15 correlation coefficients, in order to more fully assess the variability of the subjects' responses, and more deeply investigate the relationships among this study's seven variables (FI, ADLS, PS, CS, SS, ES, and HS), Steps Five through Seven were performed. Step Five, run prior to running ANOVAs, involved performing the Homogeneity of Variance Test for the purpose of ascertaining that the variability among the group was homogenous.

Step Six involved performing Analysis of Variance (ANOVAs) of subjects' answers for each of this study's six quality of life variables (ADLS, PS, CS, SS, ES, and HS) in order to search for significant differences in regard to such demographic variables as age, current marital status, and academic background; differences also were sought by comparing the subject's answers for each of the six variables in order to search/screen for significant differences among the five senior centers. Step Seven

involved following up whenever differences in the ANOVA were found by performing the multiple-comparison Tukey Post Hoc Test; with increased precision, the Tukey Post Hoc Test can identify the pairs of means that differ significantly (Huck & Cormier, 1996; Hinkle et al., 1994). For all seven steps in this data analysis, tables were created in Chapter IV to report, and evaluate the statistical results of the data analyzed.

#### Step One: The Demographic Data

Each completed survey package that was returned provided subject information regarding their gender, race/ethnicity, age, current marital status, and academic background. To begin the analysis, all the data collected from the 160 completed survey questionnaires was organized/entered into the SPSS (Statistical Package for the Social Sciences) program.

The specific demographic statistics that were collected and entered into the SPSS program included such categories as gender, race/ethnicity, age, marital status, and academic background. The Gender category consisted of two choices, that is, male or female. The Race/Ethnicity category consisted of eight choices which were: (1) Hispanic; (2) Caucasian/White but not of Hispanic Origin; (3) African-American/Black but not of Hispanic Origin; (4) American Indian or Alaskan Native; (5) Filipino; (6) Asian-American; (7) Pacific Islander; and (8) Other. The Age category

consisted of five choices which were: (1) below 55; (2) 55-65; (3) 66-75; (4) 76-85; and (5) over 85. The Current Marital Status category consisted of four choices which were: (1) single; (2) divorced; (3) married; and (4) spouse deceased. The Academic Background category consisted of four choices which were: (1) did not complete high school; (2) high school diploma completed; (3) college degree completed; and (4) graduate degree completed. In the data analysis in Chapter IV, computations were performed to detect any variations in any of the six indicators that might be mediated by the above demographic categories.

#### Step Two: Validity and Reliability

The protocol for psychometric evaluation consisted of a principal axis factor analysis with varimax rotation, and a reliability estimation using Cronbach's coefficient alpha (Lynn, 1995). "Coefficient alpha was used to assess the internal consistency of the total scale and factored subscales" (Klakovich, 1995, p. 137). Inter-item, and item-total alpha computations were performed to estimate reliability for the six constructs in the questionnaire, and Functional Independence.

The factor analysis needed to be the first analysis that was run to ascertain the construct validity of the survey questionnaire; validity means that the questions in the survey accurately measure what they "purport to measure" (Huck & Cormier, 1996, p. 88). Prior to performing the



validity and reliability analyses, all five Health Status questions and question 29 from Environmental Status construct were eliminated from the analyses because their scales were different, and did not conform to the answer scales of the other 26 survey questions.

Validity. In this study's 32-question survey, an underlying series of six constructs was developed; one construct was formulated for each of the six quality of life indicator variables studied. The six constructs included Activities of Daily Living Status (ADLS), Physical Status (PS), Cognitive Status (CS), Social Status (SS), Environmental Status (ES), and Health Status (HS). The purpose of the factor analysis was to verify that the questions that loaded into each factor coincided precisely with the questions in the corresponding construct (ADLS, PS, CS, SS, ES, and HS) in the survey; in this way, it could be ascertained that the questions in the survey were measuring the exact construct that the researcher claimed they were measuring (Brown & Alexander, 1991).

In assessing the results, care must be taken to note the questions that loaded acceptably under certain factors, and the total number of factors distinguished in the factor analysis. Construct validity would be demonstrated if each component/factor in the factor analysis was composed of questions from just one construct in the survey. Hence, it was hoped that the factor analysis would reveal five

factors/variables (PS, CS, SS, ES, and HS) with five questions each, and one factor/variable (ADLS) with seven questions; if this was not the case, then the intention was to identify, and evaluate the commonalities characteristic of the new cluster of questions that loaded together on an individual factor.

Reliability. In this study, estimates of internal consistency were computed by using Cronbach's coefficient alpha. For the purpose of this initial instrument development study, the researcher felt strongly that a .80 overall alpha would be an adequate starting point; with future development of the instrument, an overall alpha of .85 or better would be the goal that researchers would strive for (Aiken, 1988).

Internal consistency in this study was measured in seven steps. First, Cronbach's coefficient alpha was run for all five subscales, and their individual contributions to the overall alpha for Functional Independence were assessed. Second, the overall coefficient alpha for Functional Independence was calculated again, but this calculation was based on the overall reliability of the survey's 26 questions assessed individually. Third, computations were performed to calculate the inter-item reliabilities for each of the seven questions in the Activities of Daily Living Status construct; then the overall coefficient alpha for the Activities of Daily Living

Status subscale was computed. Fourth, computations were performed to calculate the inter-item reliabilities for each of the five questions in the Physical Status construct; then the overall coefficient alpha for Physical Status subscale was computed.

Fifth, computations were performed to calculate the inter-item reliabilities for each of the five questions in the Cognitive Status construct; then the overall coefficient alpha for Cognitive Status subscale was computed. Sixth, computations were performed to calculate the inter-item reliabilities for each of the five questions in the Social Status construct; then the overall coefficient alpha for Social Status subscale was computed. Seventh, computations were performed to calculate the inter-item reliabilities for each of the five questions in the Environmental Status construct; then the overall coefficient alpha for Environmental Status subscale was computed. Tables/matrices were employed to report the computer results for each of the above reliability estimates.

### Step Three: The Descriptive Statistics

In Chapter IV, for the purpose of evaluating the sample of 160 mature adult subjects, the mean and standard deviation were computed for six groups of answers that represented each of the six quality of life indicators in the study.

#### Step Four: The Correlation Coefficients

Using 15 null hypotheses, correlations among the six indicators were calculated to determine the degree of association between each pair of quality of life variables.

The guiding research question. As has been noted in Chapter I, the guiding research question was "To what degree do each of the six (ADLS, PS, CS, SS, ES, and HS) quality of life indicators in this study measure/determine the Functional Independence of mature adults?" Researchers want each of the six indicator variables ("x") validly and reliably measured the dependent FI variable ("y"), and at the same time, "have low correlations among themselves" (Hinkle et al., 1994, pp. 464, 477).

The 15 null hypotheses. In this study, the key/primary null hypotheses of no relationship between ADL Status, and the other five quality of life indicators, considered individually, were the following:

Hypothesis 1: There was no significant correlation between the Physical Status quality of life variable, and the ADLS variable.

Hypothesis 2: There was no significant correlation between the Cognitive Status quality of life variable, and the ADLS variable.

Hypothesis 3: There was no significant correlation between the Social Status quality of life variable, and the ADLS variable.

Hypothesis 4: There was no significant correlation between the Environmental Status quality of life variable, and the ADLS variable.

Hypothesis 5: There was no significant correlation between the Health Status quality of life variable, and the ADLS variable.

In an ideal world. In addition to the five null hypotheses stated above, the following ten null hypotheses were designed to test for the existence of statistically significant correlations/relationships among the other quality of life indicators:

Hypothesis 6: There is no significant correlation between the Physical Status quality of life variable, and the Mental Status quality of life variable.

Hypothesis 7: There is no significant correlation between the Physical Status quality of life variable, and the Social Status quality of life variable.

Hypothesis 8: There is no significant correlation between the Physical Status quality of life variable, and the Environmental Status quality of life variable.

Hypothesis 9: There is no significant correlation between Physical Status quality of life variable, and Health Status quality of life variable.

Hypothesis 10: There is no significant correlation between the Cognitive Status quality of life variable, and the Social Status quality of life variable.

Hypothesis 11: There is no significant correlation between the Cognitive Status quality of life variable, and the Environmental Status quality of life variable.

Hypothesis 12: There is no significant correlation between the Cognitive Status quality of life variable, and the Health Status quality of life variable.

Hypothesis 13: There is no significant correlation between the Social Status quality of life variable, and the Environmental Status quality of life variable.

Hypothesis 14: There is no significant correlation between the Social Status quality of life variable, and the Health Status quality of life variable.

Hypothesis 15: There is no significant correlation between the Environmental Status quality of life variable, and the Health Status quality of life variable.

### Three-Step Follow-up to the Correlations

A three-step follow-up analysis was performed to more precisely examine/explain some unanticipated variances among

the study's six quality of life variables (ADLS, PS, CS, SS, ES, and, HS) in relation to demographic variables such as Race/Ethnicity, Age, Current Marital Status, and Academic Background. The three steps required to perform this deeper statistical investigation include running the Levene Test, running the ANOVA, and lastly, running the Tukey Post Hoc Test.

Step Five: The Levene Test. Mature adult subjects from the different senior centers might actually respond so differently to the same questions that they warrant not being collapsed into one large group (n = 160) for analysis. This would halt or prevent the running of the appropriate statistical computations needed to do the data analysis. Therefore, the requirement of nonsignificance ( $p > .05$ ) for all variables must be met in the Levene (Homogeneity of Variance) Test prior to running an ANOVA or the variables in question could not be statistically analyzed together.

Step Six: The ANOVAs. In this study, when the answers for the marital status demographic were separated into different categories, different categories could be distinguished for the answers received/collected for that particular quality of life indicator. Based on these different demographic categories, distinctly different groups of mature adults subjects might be distinguished for the same quality of life indicator. With this in mind, cautious researchers, statistically speaking, cannot blindly

lump two or more dissimilar groups together. To determine in what way the groups in question differ, the researcher must investigate the means for each group.

Step Seven: The Tukey Post Hoc Test. In this study, as will be revealed in Chapter IV, Social Status scores for divorced ( $p = .032$ ), and/or spouse deceased ( $p = .05$ ) current marital status demographic groups were significant ( $p < .05$ ).

### **Summary**

The identification of the precise quality of life variables that measure/determine Functional Independence is essential to relieve the onerous responsibilities presented by the increases in longer living in later adulthood, and make later adulthood more liveable for mature adults. To this end, Chapter III has presented in-depth discussions concerning the usefulness of the methodology, the research design, instrument development, and the step-by-step details on the necessary protocols required to perform the survey's data collection and analysis.

Chapter IV answers such key questions as to whether significant correlations ( $R$ ) were found among the six proposed quality of life indicators in this study, and if these six indicators might validly and reliably measure/determine the Functional Independence of mature adults (Franzen & Martin, 1996); Chapter IV also reports the findings from the demographic data, and computes the means,



and standard deviations of the answers received from the mature adult subjects surveyed. However, because of the large volume of analytical data, only the statistically significant findings will be discussed, and explained in detail in Chapter IV.

## CHAPTER IV

### PRESENTATION AND EXPLANATION OF THE FINDINGS

#### Introduction

The findings of this research study are presented and explained in seven steps in Chapter IV. The first step presented/explained demographic data accumulated through the responses of 160 mature adult subjects encountered at five senior citizens centers in San Diego County. The second step presented/explained the results of the validity and reliability analyses. The internal consistency reliability was measured by "Cronbach's alpha" (Crocker & Algina, 1986, p. 138); the validity was measured by a factor analysis which included a seven-factor solution, the factor loadings for individual questions, and the identification of certain commonalities in the questions that grouped together under the same factor. The third step presented the computations of the means and standard deviations for the answer scores representing the six groups of questions representing the six quality of life indicators in the study. The fourth step presented the results of the hypotheses testing completed for each of the fifteen null hypotheses mentioned previously in the Data Analysis section in Chapter III.

Steps Five through Seven required the performance of a deeper statistical investigation. The fifth step rendered prior to running an ANOVA, involved a Homogeneity of Variance Test for the purpose of ascertaining that the

variables in question were not too independent or so different from one another that they could not be compared. The sixth step involved running ANOVAs in order to compare the means of the subjects' answers with such demographic variables as Age, Current Marital Status, and Academic Background. If significant differences were discovered in an ANOVA then a Tukey Post Hoc Test, the seventh step, was performed in order to specify the precise pairs of means that differed significantly.

The next section focuses on the Health Status indicator in presenting an explanation of the key limitation in this study. The final section of Chapter IV concludes with a summary highlighting the key research findings discovered in this study. As has been noted, a confidence level (alpha) of .05 was applied to all the SPSS (Statistical Package for the Social Sciences) computations performed to analyze the significance of the sample data. In addition, the numerical results in Chapter IV were presented in twenty tables in order to help identify the significance of each of the relevant variables computed. Because of the large volume of materials resulting from the seven steps of the data analysis, only the statistically significant findings were highlighted in these tables.

#### **Step One: Demographics of the Subject Population**

As has been noted, the Consent to Act as a Research Subject Forms, a survey questionnaire developed specifically

for this study, and the Demographic Data Information Sheet were attached/stapled together, and dispensed to 183 mature adult subjects from five senior citizen centers in San Diego County. From this subject sample, a total of 160 questionnaires were totally filled out, and handed back to me; this resulted in a return rate of 87%. Each completed survey package that was returned, and totally filled out provided subject information regarding mature adults' gender, race/ethnicity, age, current marital status, and academic background.

The Frequency Distribution for Gender

Table #1 below reports the frequency distribution regarding the gender of 160 mature adult subjects for all in the senior centers combined, and considered as a unit.

**Table 1: The Frequency Distribution for Gender**

Bar:   Element:                                   Count:                                   Percent:

1	MALE	62	38.75%
2	FEMALE	98	61.25%

The Frequency Distribution for Race/Ethnicity

Table #2 below reports the frequency distribution regarding the race/ethnicity of 160 mature adult subjects for all senior centers combined, and considered as a unit.

**Table 2: The Frequency Distribution for Race/Ethnicity**  
 Bar: Element: Count: Percent:

1	Hispanic	11	6.875%
2	Caucasian	134	83.750%
3	African-American	2	1.250%
4	American Indian	2	1.250%
5	Filipino	5	3.125%
6	Asian-American	1	0.006%
7	Pacific Islander	0	0
8	Other	5	3.125%

The Frequency Distribution for Age

Table #3 below reports the frequency distribution regarding the age of 160 mature adult subjects for all senior centers combined, and considered as a unit.

**Table 3: The Frequency Distribution for Age**  
 Bar: Element: Count: Percent:

1	Below 55	0	0
2	55-65	30	18.750%
3	66-75	65	40.625%
4	76-85	54	33.750%
5	Over 85	11	6.875%

The Frequency Distribution for Current Marital Status

Table #4 reports the frequency distribution regarding the current marital status of 160 mature adult subjects for all senior centers combined, and considered as a unit.

**Table 4: The Frequency Distribution for Marital Status**  
 Bar: Element: Count: Percent:

Bar:	Element:	Count:	Percent:
1	Single	12	7.500%
2	Divorced	26	16.250%
3	Married	61	38.125%
4	Spouse Deceased	61	38.125%

The Frequency Distribution for Academic Background

Table #5 reports the frequency distribution regarding the academic background of 160 mature adult subjects for all senior centers combined, and considered as a unit.

**Table 5: The Distribution for Academic Background**  
 Bar: Element: Count: Percent:

Bar:	Element:	Count:	Percent:
1	High School Incomplete	13	8.125%
2	High School Completed	92	57.500%
3	College Degree Completed	39	24.375%
4	Graduate Degree Completed	16	10.000%

**Step Two: Validity and Reliability**

A description of instrument quality typically embraces two measurement-related concepts - reliability and validity. In this study, internal consistency reliability was measured by Cronbach's alpha, and construct validity was assessed accurately by performing a factor analysis. Noteworthy was the fact that all five questions (11, 12, 30, 31, 32) in the Health Status subscale, and question 29 in the Environmental Status subscale were eliminated from the validity and reliability analyses because their underlying answer scales

were not worded the same, and thus not conforming to the other questions in the survey; however, these six questions are still important for future study, and researchers should find a way to integrate them into future data analysis. In this study, factor, and reliability analyses were performed for the remaining five scales (ADLS, PS, CS, SS, and ES).

#### Validity: Explanation of the Factor Analysis

The purpose of the factor analysis was to assess the validity of the six constructs, and their individual questions in the 32-question survey from the errors which are uncorrelated (Anderson, 1988). As has been noted, the six constructs were Activities of Daily Living Status (ADLS), Physical Status (PS), Cognitive Status (CS), Social Status (SS), Environmental Status (ES), and Health Status (HS).

The Activities of Daily Living Status construct, the first of six quality of life constructs in the survey questionnaire, was coded as ADLS in the SPSS computer program, and consisted of questions 1, 3, 4, 5, 8, 9, and 19. The second of the six quality of life indicator variables, represented as the Physical Status construct in the survey questionnaire, and coded as PS in the SPSS computer program, consisted of questions 10, 14, 15, 18, and 20. The third of six quality of life indicator variables, represented as the Cognitive Status construct in the survey

questionnaire, and coded as CS in the SPSS computer program, consisted of questions 2, 6, 16, 21, and 22.

The fourth of six quality of life indicator variables, represented as the Social Status construct, and coded as SS, consisted of questions 17, 23, 26, 27, and 28. The fifth of six quality of life indicator variables, represented as the Environmental Status construct, and coded as ES, consisted of questions 7, 13, 24, 25, and 29. The sixth of the six quality of life indicator variables, represented as the Health Status construct, and coded as HS, consisted of questions 11, 12, 30, 31, and 32. As noted earlier, the HS construct was not included in the factor analysis or in reliability computations. Also, noteworthy was the fact that the individual factors uncovered in the factor analysis were anticipated to be comparable with or identical to the above constructs created in the 32-question survey.

Results of the factor analysis. It was expected that the factor analysis would show that the individual questions in the five remaining constructs accurately measured the specific construct that the researcher claimed they were measuring. To verify this, a Principal Component Analysis with a Varimax Rotation was utilized; this form of factor analysis would discover which questions actually loaded best, and on which specific factors. All factor loadings can be seen in Table #6 on the next page. Also, instead of five, there were seven factors, and the resulting seven-



factor structure explained 62.1% of the variance. In most tables that follow, several important numerical values will be represented in bold in an effort to promote clarity.

**Table 6: Factor Analysis Matrix For 26 Survey Questions**

		Seven Components/Factors						
		I	II	III	IV	V	VI	VII
1.	Feed myself	.651						
2.	Handle finances	.607						
3.	Dress daily	.742						
4.	Go to bathroom	.768						
6.	Using objects	.895						
7.	Going to places		.679					
8.	Degree disabled		.718					
9.	Daily chores		.724					
10.	Rating mobility		.796					
14.	Weekly exercise					.687		
15.	Food excesses						.926	
17.	Overall intimacy			.648				
18.	Self-restrictions		.577					
19.	Active position			.488				
20.	Harmful habits							.784
21.	Taking control		.554					
22.	Memory troubles				.644			
24.	Current grief				.730			
25.	Daily upsets				.738			
26.	Feeling in tune			.745				
27.	Getting help			.713				
28.	Close friends			.766				
** Four questions, that is, questions 5, 13, 16, and 23 did not meet the .5 criteria, and were omitted								
Variance Percentages		23.7	12.8	6.7	5.6	4.9	4.5	3.9
Total Variance		<b>62.1%</b>						

Explaining the factor loadings. Do the questions in this survey measure what they were designed to measure, that is, do they have sufficient construct validity? According to the Factor Analysis Matrix in Table #6 above, significant factor loadings were listed for 22 questions from the total of 26 survey questions evaluated. The weakest factor

loading, perhaps the least valid question of the 22 questions, was question 19 (.488); it was borderline acceptable, and at its best, would be regarded as a weak factor loading.

Question five was not parsimonious because it loaded on three different factors, none of them very highly, and therefore it was concluded that question five was a weak question, and therefore it was not included in the factor loading matrix. In a second illustration, question 13 was also not included in the matrix because it loaded acceptably on Factor One (.525), but it also loaded on Factor Five (.460); statistically speaking, this would not be considered a parsimonious loading. Moreover, question 23, similar to question 13, was not parsimonious because the loading on Factor One (.561) was offset by a second loading on Factor Five (.516).

Describing a seven-factor solution. According to Table #6 above and Table #7 on the next page, instead of the survey questions loading on five factors (ADLS, PS, CS, SS, and ES), based on a minimum Eigenvalue criterion of 1.0 as a statistical cut off point, the factor analysis came up with a seven-factor solution. The seven factors were broken down to seven individual levels of variability (23.7, 12.8, 6.7, 5.6, 4.9, 4.5, and 3.9); this listing of variance percentages for each factor (I-VII) accounted for 62.027% of the total variability of Functional Independence. Something

else, as yet unknown and not investigated in this study, accounted for the remaining 37.973%.

**Table 7: Total Variances Explained**

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.262	23.696	23.896
2	3.322	12.775	36.472
3	1.745	6.710	43.182
4	1.460	5.615	48.797
5	1.263	4.860	53.657
6	1.165	4.482	58.139
7	<b>1.011</b>	3.888	<b>62.027</b>

The seven factors that emerged were better than discovering that the survey just measured two factors or finding out that all the survey questions were measuring the same thing; indeed, the existence of seven factors demonstrated that the survey did have questions that were measuring different constructs.

Comparing the survey questionnaire and factor analysis.

One construct in the survey was supposed to be measured by one component/factor in the factor analysis. In addition, each component/factor in the factor analysis was supposed to be composed of questions claiming to measure one construct from the 32-question survey. If the survey was completely valid, then the findings in the factor analysis would have

had five factors, not seven; questions corresponding to each of the five constructs in the survey would have loaded on to the corresponding factors shown in the factor analysis. In the factor analysis, five questions for each of the four (PS, CS, SS, and ES) quality of life indicators measured, and seven questions for Activities of Daily Living Status (ADLS) were expected, in an ideal scenario, to load together, and exclusively in factors that corresponded precisely to the constructs in the survey questionnaire.

The Activities of Daily Living Status construct consisted of questions 1, 3, 4, 5, 8, 9, and 19; in an ideal scenario, one of the factors distinguished by the factor analysis should have loaded exclusively with these seven questions. The Physical Status construct consisted of questions 10, 14, 15, 18, and 20; in an ideal scenario, one of the factors distinguished by the factor analysis should have loaded exclusively with these five questions. The Cognitive Status construct consisted of questions 2, 6, 16, 21, and 22; ideally, one of the factors distinguished by the factor analysis should have loaded exclusively with these five questions. The Social Status construct consisted of questions 17, 23, 26, 27, and 28; ideally, one of the factors distinguished by the factor analysis should have loaded exclusively with these five questions. The Environmental Status construct consisted of questions 7, 13, 24, 25, and 29. As has been noted, question 29 was not

included in the factor analysis; ideally, the factor for Environmental Status should have loaded exclusively with questions 7, 13, 24, and 25 only. Similar to question 29, the entire Health Status construct consisting of questions 11, 12, 30, 31, and 32 was also excluded from the factor analysis. In essence, it was expected that there be an equal number of factors/components in the factor analysis as there were constructs included from the survey questionnaire.

In actuality, according to the factor analysis, Component/Factor I actually consisted of questions 1, 2, 3, 4, and 6. Questions 1, 3 and 4 corresponded to the Activities of Daily Living Status, but questions 2 and 6 represented Cognitive Status. Component/Factor II consisted of questions 7, 8, 9, 10, 18, and 21. Questions 10 and 18 corresponded to the Physical Status construct, but questions 8 and 9 represented Activities of Daily Living Status; question 7 referred to Environmental Status, and question 21 referred to Cognitive Status. Component/Factor III consisted of questions 17, 19, 26, 27, and 28. Questions 17, 26, 27, and 28 corresponded to Social Status, but question 19 represented Activities of Daily Living Status. Component/Factor IV consisted of questions 22, 24, and 25. Questions 24 and 25 corresponded to Environmental Status, but question 22 represented Cognitive Status. There was only one question in the 5th, 6th, and 7th factor

categories, and each of these three questions focused on Physical Status.

Reliability: Explanation of Cronbach's Coefficient Alpha

Internal consistency reliability, using Cronbach's alpha, was measured in seven steps. In the first step, Cronbach's alpha was calculated for all five subscales (ADLS, PS, CS, SS, and ES), and their individual contributions to the overall alpha for Functional Independence were reported. In each of the reliability computations that follow, for the purpose of this initial instrument development study, a .80 overall alpha would be considered an adequate overall alpha; with future development of the instrument, an overall alpha of .85 or better would be a goal that researchers would strive for (Aiken, 1988). In each of the tables that follow, the key computations have been explained in the narrative, and darkened in the table for emphasis. Table 8 below displays the subscale, number (N) of questions per subscale, item-total correlations, and alpha if item deleted for five inter-item subscales.

**Table 8: Reliability Analysis of Functional Independence Based on the Inter-Item Subscales**

Subscale	N	Corrected Item-Total Correlations	Alpha if Item Deleted
ADLS	7	.6321	<b>.7100</b>
PS	5	.4693	<b>.7615</b>
CS	5	.6649	<b>.7150</b>
SS	5	.3970	<b>.7879</b>
ES	5	.6711	<b>.6952</b>

Number of Subjects/Cases = 160  
 Cronbach's Alpha for Functional Independence  
 Based on the Five Subscales = **.7771**

Regarding Table 8, based on the five subscales, it was found that the overall alpha for Functional Independence (FI) was .7771. The overall alpha for FI would drop to .71 (.7100) if the ADLS subscale were deleted. The overall alpha would drop to .76 (.7615) if the PS scale were deleted, to .72 (.7150) if the CS scale were deleted, and to .70 (.6952) if the ES scale were deleted. In contrast, the overall alpha would rise to .79 (.7879) if the SS scale were deleted.

In the second step, Cronbach's alpha was measured for Functional Independence based on the 26 questions, appraised individually, in the survey questionnaire. Table 9 below displays the means (arithmetic averages), standard deviations, item-total correlations, and alpha if item deleted categories for 26 inter-item questions.

**Table 9: Reliability Analysis of Functional Independence Based on the Inter-Item Questions**

26 Items	Mean Difference	Standard Deviation	Corrected Item-Total Correlations	Alpha if Item Deleted
Q1	4.7000	.8453	.4617	.8195
Q2	4.5500	.8817	.4203	.8208
Q3	4.7313	.7069	.3651	.8232
Q4	4.8875	.5717	.4712	.8216
Q5	4.5000	.7931	.4208	.8212
Q6	4.9250	.4698	.3830	.8244
Q7	4.3625	1.2208	.4679	.8180
Q8	4.4875	.9041	.4438	.8198
Q9	4.4813	.9840	.5907	.8137
Q10	4.6188	.8458	.4979	.8183
Q13	4.1438	1.0512	.4274	.8200
Q14	3.6188	1.3867	.2178	<b>.8316</b>
Q15	3.7313	1.1801	.1131	<b>.8342</b>
Q16	4.1063	.8802	.4622	.8193
Q17	4.2813	.9054	.3838	.8220
Q18	4.2750	.9774	.4559	.8191
Q19	2.8688	1.6335	.2805	<b>.8312</b>
Q20	4.4000	1.2649	.1153	<b>.8352</b>
Q21	4.6063	.6922	.5559	.8181
Q22	3.6250	.9632	.2522	.8268
Q23	4.2563	.9921	.3709	.8224
Q24	3.9313	1.1110	.3680	.8225



Q25	3.8750	.9566	.3976	.8214
Q26	4.3188	.8346	.5028	.8182
Q27	4.1500	1.0593	.3150	.8247
Q28	4.2500	.7770	.3155	.8245

Number of Subjects/Cases = 160  
Cronbach's Alpha for Functional Independence  
Based on the Original 26 Questions = **.8285**

Regarding Table 9, based on the 26 questions, it was found that the overall alpha for Functional Independence (FI) was .8285. The overall alpha for FI would drop only slightly if any of these questions were deleted except for a mild rise in alpha attributed to questions 14, 15, 19, and 20 exclusively. In essence, the overall alpha for FI would rise to .8316 for question 14, .8342 for question 15, .8312 for question 19, and .8352 for question 20 exclusively.

In the third step, Cronbach's alpha was measured for ADLS based on the seven questions in that subscale, and then individual computations were performed to calculate the reliability for each of the seven questions, appraised individually, in the subscale. Table 10 below displays the means (arithmetic averages), standard deviations, item-total correlations, and alpha if item deleted categories for seven inter-item questions.

**Table 10: Reliability Analysis of ADLS**

7 Items	Mean Difference	Standard Deviation	Corrected Item-Total Correlations	Alpha if Item Deleted
Q1	4.7000	.8453	.4761	<b>.5940</b>
Q3	4.7313	.7069	.4901	<b>.5999</b>
Q4	4.8875	.5717	.5107	<b>.6077</b>
Q5	4.5000	.7931	.4662	<b>.5996</b>
Q8	4.4875	.9041	.4356	<b>.6026</b>
Q9	4.4813	.9840	.6067	<b>.5449</b>
Q19	2.8688	1.6335	.0657	<b>.7966</b>

Cronbach's Alpha for ADLS Subscale = **.6573**

Regarding Table 10, based on the seven questions, it was found that the overall alpha for the ADLS Subscale was .6573. The overall alpha for ADLS would drop to .59 (.5940) if question 1 were deleted, and the overall alpha for ADLS would drop to .60 if question 3 were deleted. In addition, the overall alpha would drop to .61, .60, .60, and .54 respectively, if questions 4, 5, 8, and 9 were deleted. In contrast, the overall alpha would rise to .80 (.7966) if question 19 were deleted.

In the fourth step, Cronbach's alpha was measured for PS based on the five questions in that subscale, and then individual computations were performed to calculate the reliability for each of the five questions, appraised individually, in the subscale. Table 11 below displays the means (arithmetic averages), standard deviations, item-total

correlations, and alpha if item deleted categories for five inter-item questions.

**Table 11: Reliability Analysis of PS**

5 Items	Mean Difference	Standard Deviation	Corrected Item-Total Correlations	Alpha if Item Deleted
Q10	4.6188	.8458	.2187	<b>.2357</b>
Q14	3.6188	1.3867	.2199	<b>.1994</b>
Q15	3.7313	1.1801	.0382	<b>.3715</b>
Q18	4.2750	.9774	.2549	<b>.1956</b>
Q20	4.4000	1.2649	.0854	<b>.3375</b>

Overall Alpha for PS Subscale = **.3181**

Regarding Table 11, based on the five questions, it was found that the overall alpha for the ADLS Subscale was .3181. The overall alpha for PS would drop to .24 (.2357) if question 10 were deleted. In addition, the overall alpha for PS would drop to .1994, and .1956 respectively if questions 14, and 18 were deleted. In contrast, the overall alpha would rise to .37, and .34 respectively if questions 15, and 20 were deleted.

In the fifth step, Cronbach's alpha was measured for CS based on the five questions in that subscale, and then individual computations were performed to calculate the reliability for each of the five questions, appraised individually, in the subscale. Table 12 below displays the means (arithmetic averages), standard deviations, item-total

correlations, and alpha if item deleted categories for five inter-item questions.

**Table 12: Reliability Analysis of CS**

5 Items	Mean Difference	Standard Deviation	Corrected Item-Total Correlations	Alpha if Item Deleted
Q2	4.5500	.8817	.4051	<b>.4123</b>
Q6	4.9250	.4698	.3249	<b>.4946</b>
Q16	4.1063	.8802	.3266	<b>.4680</b>
Q21	4.6063	.6922	.3740	<b>.4473</b>
Q22	3.6250	.9632	.1741	<b>.5807</b>

Overall Alpha for the CS Subscale = **.5386**

Regarding Table 12, based on the five questions, it was found that the overall alpha for the CS Subscale was .5386. The overall alpha for CS would drop to .41 (.4123) if question 2 were deleted. In addition, the overall alpha for CS would drop to .49, .47, and .45 respectively if questions 6, 16, and 21 were deleted. In contrast, the overall alpha would rise to .58 if question 22 were deleted.

In the sixth step, Cronbach's alpha was measured for SS based on the five questions in that subscale, and then individual computations were performed to calculate the reliability for each of the five questions, appraised individually, in the subscale. Table 13 below displays the means (arithmetic averages), standard deviations, item-total correlations, and alpha if item deleted categories for five inter-item questions.

**Table 13: Reliability Analysis of SS**

5 Items	Mean Difference	Standard Deviation	Corrected Item-Total Correlations	Alpha if Item Deleted
Q17	4.2813	.9054	.5248	<b>.7171</b>
Q23	4.2563	.9921	.4375	<b>.7509</b>
Q26	4.3188	.8346	.6173	<b>.6879</b>
Q27	4.1500	1.0593	.5211	<b>.7224</b>
Q28	4.2500	.7770	.5776	<b>.7044</b>

Overall Alpha for SS Subscale = **.7595**

Regarding Table 13, based on the five questions, it was found that the overall alpha for the SS Subscale was .7595. The overall alpha for SS would drop to .72 (.7171) if question 17 were deleted. In addition, the overall alpha for SS would drop to .75, .69, .72, and .70 respectively if questions 23, 26, 27, and 28 were deleted.

In the seventh step, Cronbach's alpha was measured for ES based on the four questions in that subscale, and then individual computations were performed to calculate the reliability for each of the four questions, appraised individually, in the subscale. Table 14 below displays the means (arithmetic averages), standard deviations, item-total correlations, and alpha if item deleted categories for four inter-item questions.

**Table 14: Reliability Analysis of ES**

4 Items	Mean Difference	Standard Deviation	Corrected Item-Total Correlations	Alpha if Item Deleted
Q7	4.3625	1.2208	.2628	<b>.4673</b>
Q13	4.1438	1.0512	.2498	<b>.4696</b>
Q24	3.9313	1.1110	.3570	<b>.3712</b>
Q25	3.8750	.9566	.3226	<b>.4118</b>

Overall Alpha for the ES Subscale = **.5023**

Regarding Table 14, based on the four questions, it was found that the overall alpha for the ES Subscale was .5023. The overall alpha for ES would drop to .47 (.4673) if question 7 were deleted. In addition, the overall alpha for ES would drop to .47, .37, and .41 respectively if questions 13, 24, and 25 were deleted.

**Step Three: The Means and Standard Deviations**

For the purpose of evaluating the sample of 160 mature adult subjects, the means and standard deviations were computed for the answer totals or aggregate scores from the specific groups of questions for each of the six quality of life variables in the study, and displayed in Table 15 below.

**Table 15: Intercorrelation Matrix of Descriptive Statistics**

	Mean	Std. Deviation	N
ADLS	30.6563	3.8949	160
PS	20.6375	2.9726	160
CS	21.8063	2.3646	160
ES	20.6125	3.0674	160
HS	20.3000	2.4101	160
SS	21.2563	3.2818	160

Because all the above standard deviation scores were markedly high, it was concluded that each of the six measured variables exhibited a high variability in the responses given by mature adult subjects to the questions in the survey. For example, the highest standard deviation score, 3.8949, was for the ADLS indicator: this demonstrates a wide variability of almost four points in just a 5-point likert-scale. Similarly, in the case of SS, a 3.2818 variability in just a 5-point likert scale, also suggests a high variability of more than three points.

**Step Four: Correlations Among the Six Indicators**

The correlation coefficients were then computed for the six quality of life indicator variables that have been proposed to measure Functional Independence in later adulthood. The pairwise correlations for all sets possible among the six indicators have been presented in Table 16 below.

**Table 16: Intercorrelation Matrix For All Six Indicators**

	ADLS	PS	CS	ES	HS	SS
ADLS	1.000	<b>.404**</b>	<b>.607**</b>	<b>.616**</b>	<b>.308**</b>	<b>.279**</b>
PS	<b>.404**</b>	1.000	<b>.342**</b>	<b>.396**</b>	<b>.391**</b>	<b>.301**</b>
CS	<b>.607**</b>	<b>.342**</b>	1.000	<b>.624**</b>	<b>.314**</b>	<b>.363**</b>
ES	<b>.616**</b>	<b>.396**</b>	<b>.624**</b>	1.000	<b>.330**</b>	<b>.339**</b>
HS	<b>.308**</b>	<b>.391**</b>	<b>.314**</b>	<b>.330**</b>	1.000	<b>.210**</b>
SS	<b>.279**</b>	<b>.301**</b>	<b>.363**</b>	<b>.339**</b>	<b>.210**</b>	1.000

\*\* Indicates a significant correlation

In Chapter III, it was postulated that the correlations between each of the pairs of variables listed in Table 16 would not be significantly different from zero. According to the "rule of thumb for interpreting the size of a correlation coefficient... little if any correlation" (Hinkle et al., 1994, p. 119) exists when a correlation (R) is at approximately .30 or below. However, in this study, this was not the case.

All fifteen of the null hypotheses of no relationship listed in Chapter III individually were rejected in favor of their alternative hypotheses. The alternative hypotheses postulated that the correlations between each pair of the variables tested would be significantly different from zero. In fact, the results of hypotheses testing demonstrated that significant relationships/correlations existed among every pair of quality of life variables tested in this study.



### Physical Status Correlations

Let us consider Physical Status (PS). Its null hypotheses of no relationships, in effect, conjecture that no correlation exists between Physical Status, and each of the other five variables. However, a correlation of .404\*\* was found between Activities of Daily Living Status, and Physical Status, and this was evaluated by the SPSS computer program to be significantly different from zero. Therefore, a significant correlation was found to exist between Functional Independence and Physical Status. In addition, a relationship was found to exist between Physical Status, and each of the four other variables (CS, HS, SS, and ES) in question because their correlation coefficients also were found to be statistically significant from zero.

### Cognitive Status Correlations

Let us next consider Cognitive Status (CS). The null hypothesis of no relationship or zero, in effect, conjectures that no correlation exists between Cognitive Status, and Activities of Daily Living Status. However, a correlation of .607\*\* was found, and this correlation was significantly different from zero. Therefore, this null hypothesis was rejected because there must be a significant correlation between Activities of Daily Living Status, and Cognitive Status. Significant correlations were also noted between Cognitive Status, and each of the four variables (PS, SS, HS, and ES).

### Social Status Correlations

Let us next consider Social Status (SS). Its null hypothesis of no relationships or zero, in effect, conjecture that no correlation exists between Social Status, and the other five variables. However, the correlation between Activities of Daily Living Status, and Social Status was .279\*\* and this correlation was significantly different from zero. Therefore, there must be a significant correlation between Activities of Daily Living Status, and Social Status. Moreover, significant correlations were also noted between Social Status, and each of the other four variables (CS, PS, HS, and ES).

### Environmental Status Correlations

Let us also consider Environmental Status (ES). Its null hypothesis of no relationships or zero, in effect, conjecture that no correlation exists between Environmental Status, and each of the other five variables. However, the .616\*\* correlation between Environmental Status, and the Activities of Daily Living Status was significantly different from zero. Therefore, there must be a significant correlation between the Activities of Daily Living Status, and Environmental Status. Moreover, significant correlations were also noted between Environmental Status, and each of the four other variables (CS, SS, HS, and PS).

### Health Status Correlations

Let us consider Health Status (HS). The null hypothesis of no relationship or zero, in effect, conjectures that no correlation exists between Health Status, and Activities of Daily Living Status. However, the .308\*\* correlation found between Health Status, and the Activities of Daily Living Status was evaluated as being significantly different from zero. Therefore, there must be a significant correlation between the Activities of Daily Living Status, and Health Status. Moreover, significant correlations were also noted between Health Status, and each of the other four variables (CS, SS, PS, and ES).

### All Variables Considered

To sum up, all five independent quality of life variables, PS, CS, SS, ES, HS, individually, were found to have significant correlations with each other. In fact, all correlations calculated for each of the first five primary, and all of the ten secondary null hypotheses listed in Chapter III, were significantly different from zero.

### **Steps Five Through Seven: The Social Status Indicator**

According to factor analysis, and Cronbach's Alpha computations, of the six quality of life variables proposed in this study, Social Status (SS) was found to be the most valid and reliable indicator of Functional Independence. However, despite its relatively high validity in the factor analysis, and moderately high internal consistency

reliability, certain limitations exist that may explain why SS was not as fully valid, and reliable a determinant of Functional Independence as it might have been.

#### Social Status: Statistical Explanations

While Physical, Cognitive, Environmental, and Activities of Daily Living Statuses showed no statistically significant findings with regard to the demographic data, this was not the case with the Social Status data. A three-step analysis was performed in order to secure a more complete explanation of SS in relation to the Current Marital Status demographic variable. These three steps included performing the Levene Test, running the ANOVA, and then completing the Tukey Post Hoc Test.

Step Five: Running a Levene Test. First, prior to computing the ANOVA, the requirement of nonsignificance ( $p > .05$ ) for the means of all groups/variables must be met in the Homogeneity of Variance (Levene) Test; in this case, the Significance (Sig.) column in Table #17 on the next page ( $p = .388$ ) came out nonsignificant ( $p > .05$ ).

**Table 17: Test of Homogeneity of Variances**

	<b>Levene Statistic</b>	df1	df2	Sig.
HS	1.469	3	156	<b>.225</b>
SS	1.015	3	156	<b>.388</b>
CS	.272	3	156	.846
ES	.602	3	156	.615
ADLS	.734	3	156	.533
PS	1.970	3	156	.121

Step Six: Running an ANOVA. Second, six ANOVAS were performed with current marital status as the independent variable; Table #18 below shows that the marital status demographic has a statistical role ( $p < .05$ ) in more fully explaining the Social Status answers ( $p = .046$ ).

**Table 18: An ANOVA on Marital Status In Regard to SS**

	<b>Marital Status</b>	<b>Sum of Squares</b>	<b>F</b>	<b>Sig.</b>
SS	Between Groups	85,160	2.721	<b>.046**</b>
	Within Groups	1627.334		

When marital status was divided into smaller categories (e.g. divorce, single, etc.) based on the answers to the Social Status questions, distinctly different groups of mature adults were distinguished. These different marital status groups responded significantly different from one another enough to posit that a subset group #1, and a subset

group #2 do, in fact, exist; in essence, in this study (n = 160), cautious researchers, statistically speaking, cannot blindly lump two or more dissimilar groups together.

In essence, based on marital status, in my sample (n = 160), mature adults in one group responded differently from mature adults in another group. Specifically, Table 19 shows significant differences in the means between SS and current marital status.

**Table 19: Descriptive Statistics for SS and Marital Status**

SS	Marital Status	N	Mean	Std. Deviation
	Single	12	<b>18.9167</b>	3.9648
	Divorced	26	<b>22.0000</b>	2.9257
	Married	60	21.1333	3.4615
	Spouse Deceased	62	<b>21.2563</b>	2.9573

Regarding Marital Status, to determine in what way the above listed groups differ, the researcher must investigate the means for each group. Particularly noteworthy was the difference between the means of the single's group (18.9167) and the divorced group (22.0000).

Step Seven: Running a Tukey Post Hoc Test. Third, in this study, after running an ANOVA, the Tukey Post Hoc Test was performed. The criteria was set at the .05 level. The resulting statistical data showed that there was a honestly significant difference (HSD) between current marital status, and the scores for SS. In particular, based on the Tukey

Analysis, single mature adults were found to be significantly different from the divorced or spouse deceased mature adults.

**Table 20: Tukey Analysis HSD for SS and Marital Status**

SS	Marital Status	Mean Difference	Std. Error	Sig.
Single	Divorced	-3.0833	1.127	<b>.032**</b>
	Married	-2.2167	1.021	.132
	Spouse Deceased	-2.5995	1.019	<b>.052**</b>

Especially significant ( $p < .05$ ) were the scores for divorced ( $p = .032$ ), and/or spouse deceased ( $p = .052$ ) groups. Possibly, divorced ( $p = .032$ ), and spouse deceased ( $p = .052$ ) mature adults relied more on social relationships than their counterparts who were single. As has been noted in Chapter II, the major effects suffered from the death of a spouse occurs mainly in the following first six months after the occurrence (Bowling & Windsor, 1995). Hence, in future questionnaires, with respect to Social Status in particular, researchers of Functional Independence might consider developing questions emphasizing qualities more applicable to spouse deceased, and/or divorced mature adults, and deemphasizing aspects of social relationships that focus on mature adults who remain single through out their lifetime.

### Social Status: Rational Explanations

Social Status (SS) was found to be the most valid factor in the factor analysis (Component/Factor III in Table 6); in the reliability computations, the SS Subscale (Table 13) featured the highest overall Cronbach's Alpha (.7595). However, several rational arguments can be offered to explain why the SS Inter-item Subscale was not a better determinant of Functional Independence (alpha if item deleted = .7879) in the reliability computations from Table 8. First, possibly five Social Status questions were not enough for this construct. Second, more sensitive questions might have been constructed. Third, the questions asked may not have been concrete enough or were too abstract for mature adults who did not regularly socialize with other people on a daily basis. If, in fact, mature adults do not interact with people who are really significant in their lives on a daily basis, then Social Status could be for most mature adult subjects a very limited, decidedly abstract, and intangible concept.

#### **Limitations In This Study: The Health Status Indicator**

Three Health Status (HS) limitations represent the chief limitations of this study. These three HS limitations include (1) significant differences in the HS answers received from the Wells, Lemon Grove, and La Mesa Senior Centers, (2) significant differences regarding HS and current marital status, and (3) the construct issue which



was characterized by the nonconforming answer scales used for three of the five HS questions, and a mid-scale reversal of the answer scales near the middle of the questionnaire.

#### HS Limitations Among Individual Senior Centers

The first limitation was the unexpected discovery of significantly different answers for HS given by mature adult subjects at three of the five different senior centers. To more fully explain the effects of this limitation, a three-step statistical analysis of HS was performed for the mean scores of the answers collected from five individual senior centers. The three steps included performing the test for the Homogeneity of Variance, running an ANOVA, and then completing the Tukey Post Hoc Test.

Step Five: Running a Levene Test. Second, prior to running an ANOVA, in order to determine the variability of HS with regard to the different senior centers, a Homogeneity of Variances (Levene) Test was performed. The Levene Test answers the question as to whether the variability of the HS mean scores among the Lemon Grove, Wells, Clairemont, Mira Mesa, and La Mesa Senior Centers was independent enough to warrant performing further statistical computations; researchers do not want the Levene Test to be significant ( $p < .05$ ) because this indicates that the variability between the groups too independent/different to be analyzed together.

**Table 21: Test of Homogeneity of Variances**

	Levene Statistic	df1	df2	Sig.
HS	1.568	4	158	.185

The Levene Test ( $p = .185$ ) was nonsignificant ( $p > .05$ ). Once the researcher has ascertained that the two groups are nonsignificant in regards to their variability, then the ANOVA can be run.

Step Six: Running an ANOVA. Third, in Table 22 below, an Analysis of Variance was run to compare means, and to discover if there were any significant differences among them.

**Table 22: ANOVA of the Dependent Variable: HS**

		Sum of Squares	F	Sig.
HS	Between Groups	75.537	3.451	.010**
	Within Groups	848.063		
	Total	923.600		

According to the ANOVA, mature adults from different centers were significantly different ( $p = .010^{**}$ ) in their answers on HS. Because the alpha or level of significance was set at .05 for the ANOVA, it was assumed that one or more of the senior center groups was significantly different from the other senior centers. The F value (3.451) assumes, and demonstrates the significance ( $p = .010$ ) of group

differences (Garbin & Teng, 1988, p. 4). Because significant differences were found in the ANOVA, this required a further investigation into the data, and a Tukey Post Hoc Test was performed.

Step Seven: Running a Tukey Post Hoc Test. Fourth, in Table 23 below, a Tukey Post Hoc Test or Tukey HSD (Honestly Significant difference) was performed.

**Table 23: Tukey HSD  
Dependent Variable: HS**

Center	Center	Mean Difference	Standard Error	Sig.
Wells	Claremont	1.0400	.662	.515
	Mira Mesa	1.5414	.644	.117
	Lemon Grove	1.9269*	.638	.021**
	La Mesa	1.9275*	.568	.006**

\* The mean difference is significant at the .05 level

Significant differences were found in the subject pool regarding (1) the Wells and Lemon Grove ( $p = .021$ ), and (2) the Wells and La Mesa Senior Centers ( $p = .006$ ). Because both the Lemon Grove, and La Mesa Senior Centers were significantly different from the Wells Center, they cannot be analyzed together as a single mature adult group ( $n = 160$ ). Mature adults responded so differently to the HS survey questions that they could not be compared together (Tabachnick & Fidell, 1996, p. 38). With this in mind, it is possible that the Health Status (HS) quality of life

indicator could be regarded as an invalid measure in this study.

The benefits of confidence intervals. The exact senior centers that differed in their HS answers can also be identified by calculating confidence intervals. In calculating confidence intervals, researchers most often regard a 0.05 confidence interval as standard for the social sciences. This study, also adopted/set a 0.05 confidence interval as an acceptable range to measure/judge a statistic for significance; this means placing 2 1/2% at one end of the range, and 2 1/2% at the other end.

**Table 24: Descriptives For The Dependent Variable: HS**

Center	Mean	Standard Deviation	N	95% Confidence Interval for Mean	
				Lower	Upper
HS Claremont	20.6800	2.1741	25	19.7828	21.5774
Mira Mesa	20.1786	2.5684	28	19.1827	21.1745
Lemon Grove	19.7931	2.3204	29	<b>18.9105</b>	<b>20.6757</b>
La Mesa	19.7925	2.5143	53	<b>19.0994</b>	<b>20.4855</b>
Wells	21.7200	1.7916	25	<b>20.9804</b>	<b>22.4596</b>

Researchers want the confidence intervals to overlap because they do not want groups which are to be analyzed together to be too independent of each other. In other words, if they don't overlap, then this indicates that the two groups cannot be analyzed as a unit. Data was collected from five senior centers with the intention that, as a unit,

it would serve as a representative sample (n = 160) of the entire mature adult population. Also noteworthy was the fact that the Lemon Grove Senior Center was found to rate HS significantly lower than either the Wells or La Mesa Senior Centers.

The range or confidence interval for the answers given by mature adults at the Wells Center did not overlap with the range of answers given by mature adults at either the Lemon Grove or La Mesa Senior Centers. Specifically, there were significant differences in the range of HS answers given on the questionnaire between the Wells (20.9804 - 22.4596), and Lemon Grove Centers (18.9105 - 20.6757) on the one hand, and the Wells and La Mesa Senior Centers (19.0994 - 20.4855) on the other. In essence, these two sets of senior citizen groups were too independent or too different from each other when it came to the range/variability of their respective answers. As a result, statistically speaking, the HS survey answers from these two sets of senior citizen centers cannot be analyzed together accurately as one unified group (n = 160) of mature adults.

#### HS Limitations In Regard To Current Marital Status

A second limitation in this study can be identified by the significant correlation ( $p = .011$ ) between the Current Marital Status demographic in regard to the HS answers as shown in Table 25 below.

**Table 25: An ANOVA on Marital Status In Regard to HS**

	Marital Status	Sum of Squares	F	Sig.
HS	Between Groups	63,354	3.830	.011**
	Within Groups	860,246		

The above Table 25 supports the idea that whenever different parts of the same population answer questions differently, it is possible to distinguish at least two groups within that particular sample. In other words, from the diverse answers given on the Demographic Data Information Sheet for Current Marital Status, significantly ( $p < .05$ ) different groups of mature adults were distinguished ( $p = .011$ ). The specific relationship between the Health Status (HS) Quality of Life indicator, and the Current Marital Status demographic variable is reported below in Table 26.

**Table 26: Matrix of Descriptives: HS and Marital Status**

HS	Marital Status	N	Mean	Std. Deviation
	Single	12	18.5000	2.0671
	Divorced	26	21.1154	1.9865
	Married	60	20.5500	2.3752
	Spouse Deceased	62	20.0645	2.5016

Noteworthy was the fact that the mean of the answers to the Health Status (HS) questions were lower for single

mature adults (18.5000) than that for married (20.5500) or divorced mature adults (21.1154). These distinctly different marital status groups responded significantly different from one another; these groups are so diverse that they cannot be lumped together, and tested as one unified group (n = 160).

As has been noted in Chapter II, spousal support often makes a significantly positive impact on quality of life and Functional Independence in later adulthood (Lieberman & Lieberman, 1981; Stevens, 1983; Padus, 1986; Gilden, Hendryx, Casia & Singh, 1989; Shek, 1995; Ducharme, 1994; Krain, 1995). Therefore, if mature adults had been married or were currently married, he/she typically reported himself/herself to be in better shape/health than single mature adults. The results of the Tukey Post Hoc Test in Table 27 below, regarding HS and current marital status, also demonstrate that (1) single and divorced (p = .008\*\*) as well as (2) single and married mature (p = .029\*\*) adults, answered the HS questions in a significantly different way.

**Table 27: Tukey Analysis for HS and Marital Status**

HS	Marital Status	Mean Difference	Std. Error	Sig.
Single	Divorced	-2.6154	.820	.008**
	Married	-2.0500	.743	.029**
	Spouse Deceased	-1.5645	.741	.149

In essence, single mature adults were found to be significantly different from divorced ( $p = .008$ ), and single subjects were found to be significantly different from married ( $p = .029$ ). In fact, single mature adults rated their HS significantly lower than divorced or married mature adults. This was supported in the literature review; specifically, the literature review for Chapter II reported that having a spouse was found to be an important help in starting a second career, and in remaining functionally independent during later adulthood (Patel, 1991; Krain, 1995; Kerka, 1991; Ashman et al., 1995; Lieberman & Lieberman, 1981). Thus, the data from this study helps to confirm that single mature adults answered significantly different from divorced ones; single subjects also answered significantly different from married ones.

#### The Construct Issue

A third limitation, and possible explanation of why Health Status was not as effective a determinant of FI as it potentially could have been was that (1) the underlying answer construct for the five HS questions was weak, and (2) a mid-scale reversal of the answer scales was not conducive to collecting the most highly valid and reliable data from the survey questionnaire.

#### Underlying disparities in the answer construct.

Researchers need to read the statistics concerning HS with caution because the majority of the questions in the HS



construct had a different 5-point likert scale. For example, although the HS subscale was made up of questions 11, 12, 30, 31, and 32, the likert answer scales for the last three questions, #30, 31, and 32, did not blend well with #11 and 12 HS questions or, in fact, with each other; the HS subscale did not conform to the other answer subscales in the 32-question survey. As a result, the five nonconforming questions rendered the HS subscale unacceptable for factor analysis, and other statistical analyses (e.g. Cronbach's Alpha). Disparities in answer subscales, potentially, can reduce the validity, and reliability of any survey questionnaire.

The nonconforming likert scale answers in the HS subscale created separate constructs within that same subscale. Although nonconforming answers scales are not automatically wrong, they are considered wrong if the analysis depends chiefly on statistical computations. Without any question, statistical computations (e.g. SPSS) mandate the same likert scales in order to run the required calculations accurately. To perform quantitative computations (e.g. factor analysis), researchers must create questionnaires with conforming likert scales, that is, each question uses the same answer key, and most appropriately, employs the exact same words for each anchor. Because the likert answer scales for three of the five HS questions were not the same, all five HS questions were judged to be

inconsistent, and this created a limitation concerning the validity of the entire HS subscale.

Mid-scale survey reversal in the answer scale. Another underlying disparity in the answer scales was the mid-survey reversal or sudden change that occurred in the direction of the answers. For example, at question 11, the answers changed from always, frequently, sometimes, rarely, and never rely on others to never, rarely, sometimes, usually, always; this type of recoding can be difficult for mature adult subjects to adjust to, and could also be considered a limitation to the study. Therefore, researchers, in constructing a survey, rarely, if ever want to switch their scale around in the middle of a survey; it undercuts the validity of the study because, often, they don't know exactly what they are getting in the subjects' responses. In other words, it is possible if someone is filling this out, and not paying attention fully, that they could go along, and not notice the change in the answer scales. Despite the obvious existence of this limitation, mature adults in this study's pilot and convenience groups never brought this to my attention as a problem or potential problem.

#### Other Limiting Factors

In a more ideal world, researchers want each subgroup, for example, the five different senior citizen centers, to be each contributing equal numbers of subjects in the sample

group. Equal subgroups, 32 mature adults from each of the five senior centers, would be most desirable for the research; regarding Race/Ethnicity, there would have been 20 Caucasian subjects, 20 Hispanic, 20 African-American, 20 Asian-American, 20 Alaskan Native, 20 Filipino, 20 Pacific Islander, and 20 other, and so on. However, the number of mature adults from the five senior centers, 28, 25, 29, 25, and 53 was not equal; this was another limitation for this study.

In a more ideal world, researchers might require that the individual quality of life variables not be as significantly correlated with each other as they are in this study. The ten secondary null hypotheses presented in Chapter III theorized that there would be no significant difference in the correlations among the five quality of life indicator variables; however, all six indicators did have statistically significant correlation coefficients with each other (although most were relatively low) as well as with Functional Independence. All these above statistical limitations tend to make the HS measure in the 32-question survey appear like an invalid measure.

### **Summary**

In general, "all mathematical models are approximations to reality... [and errors or] violations of the assumptions [fundamental to statistical analysis] are inevitable" (Stevens, 1992, p. 237); statistical and theoretical models

serve only as "devices that augment but cannot substitute for the judgment of the investigator in reason about scientific [and social] problems" (Estes, 1993, p. 16). In fact, many mathematicians posit that "objective knowledge may not be more than well-argued beliefs... [that is, generalizations] accepted on the basis of intersubjective agreement" (Brenner-Golomb, 1996, pp. 305-6).

Specifically, it is a real possibility that if the HS answer subscales had been uniformly constructed for all five HS answers, then Health Status possibly might have been more supportive/helpful in measuring/determining Functional Independence. The purpose of this research has been to do the preliminary work required to develop an instrument to help discover which quality of life indicators best determine the Functional Independence of mature adults. Functional Independence has been defined as the ability of mature adults to function for themselves, and contribute to society, despite the fact that they were growing older, and late in life, typically not in the best of condition/health. In the future, by enhancing the Functional Independence of mature adults, most likely, they will be empowered to serve themselves better, and become more active contributors to the advancement of our society. With this goal in mind, in Chapter V, emerging trends, conclusions and recommendations for future research on Functional Independence will be discussed in detail.

## **CHAPTER V**

### **DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS**

#### **Introduction**

The purpose of this study has been to do the preliminary work required to develop an instrument to help discover if the six proposed quality of life indicators measure/determine the Functional Independence (FI) of mature adults. In Chapter IV, demographic data was analyzed, factor and reliability analyses performed, and correlation coefficients calculated for all six indicator variables in this study.

In order to understand the relationships determined by the data analysis, first, the research findings in Chapter IV will be discussed, and where applicable, related to relevant research cited in the literature review in Chapter II. Second, the conclusions of this research study will be summarized. Third, recommendations will be made to point the way for future research studies. Fourth, the researcher explores his personal hopes for the future concerning how people view mature adults, and their potential to be useful to society based on the research findings in this study.

#### **Discussion of the Research Findings**

In discussing the research findings, first, the demographic data accumulated from the responses of 160 mature adult subjects were reviewed. Second, the implications of the factor and reliability analyses were

discussed. Third, the strengths and weaknesses of the correlation coefficients for each of the six quality of life indicators were discussed.

#### The Demographic Data

It was assumed by this researcher that this group of subjects (n = 160), their answers to the survey questions, and the information entered on the Demographic Data Information Sheets, represented a true cross-section of the total mature adult population. However, some dominant trends appeared in this particular sample from the five senior centers surveyed. For example, the large majority of the mature adult subjects were female (98); it was not an evenly divided group. In addition, a vast majority of respondents from all five senior centers were Caucasian (134). Moreover, the age groups were composed of mature adults most of whom were over 66 (130), and 1/3 of the total surveyed were over 76. Also, the vast majority (122) of mature adults were either in the married or spouse deceased categories. Lastly, more than 1/3 of the mature adults surveyed had completed college, and the vast majority (147) had completed high school. Hence, the dominant trends included a large number of mature adults who were female, Caucasian, over 66, married (at least once), and high school graduates. While my subject sample may still be representative of the total mature adult population, this high number of dominant demographic trends, most assuredly,

should not be completely ignored. Future studies might consider achieving more diversity in their research samples by making a conscious effort to get other ethnic, and cultural groups involved.

### The Factor Analysis

Prior to beginning the computational analysis of the subject data, a factor analysis was performed in order to check the construct validity of the answers received on the survey questionnaire. A "factor analysis refers to a variety of statistical techniques whose common objective is to represent a set of variables in terms of a smaller number of hypothetical variables" (Kim & Mueller, 1978, p. 9). In the 32-question survey, an underlying series of six constructs were developed, that is, one construct for each of six variables studied. These six constructs included the Activities of Daily Living Status (ADLS), Physical Status (PS), Cognitive Status (CS), Social Status (SS), Environmental Status (ES), and Health Status (HS). The purpose of the factor analysis was to show that the questions in these six constructs genuinely were measuring ADLS, PS, CS, SS, ES, and HS, and to what degree these six constructs accounted for the variance in Functional Independence of mature adults. Regarding the survey questions measuring the same six constructs that the researcher claimed they would measure, certain problems arose concerning the answer scales.

Depiction of an ideal world. Ideally, each component/factor of the factor analysis was supposed to be composed of questions from just one construct in my survey. In other words, if the survey were to be completely valid, one construct of the survey would be measured by one corresponding component/factor in the factor analysis. In addition, the five questions in each of the four remaining quality of life indicators/constructs as well as seven questions in the Activities of Daily Living Status construct were expected to load together on their respective, and separate factors in the factor analysis computations. In other words, ideally, every question in each of the five remaining survey constructs should have loaded up with its fellow questions in their specific construct, and as a unit, ordered/assembled themselves into one factor/component computed in the factor analysis. To sum up, it was hoped that the factor analysis would have five factors, four (PS, CS, SS, ES) consisting of five questions each, and one (ADLS) with seven questions.

The actual results were notably different. Instead of the expected five factors (one for each survey construct), a seven-factor solution was found. The results of the factor analysis showed that here were four good factors consisting of several questions each. Moreover, the fifth factor, which came from the survey's Physical Status construct, contained only one question; this question had a very high



factor loading of .926. The remaining two factors also contained only one question each; although not as high a factor loading, each question in these remaining factors also came from the survey's Physical Status construct.

Strengths of the factor analysis. There were several strengths in the survey revealed by the factor analysis. First, although there were seven not five factors, and this was evaluated to be better than discovering that the survey just measured two factors or discovering that all the survey questions were measuring the same thing (just one factor). In essence, the existence of seven factors demonstrated that the survey did have questions that were definitely measuring different underlying things/constructs. "Factor analysis is based on the fundamental assumption that some underlying factors, which are smaller in number than the number of observed variables, are responsible for the covariation among the observed variables" (Kim & Mueller, 1978, p. 12).

A second strength of the factor analysis was that its matrix revealed significant factor loadings for 22 of the 26 survey questions. Factor loadings are expressed as coefficients. A factor loading coefficient represents a correlation between a variable/question and its factor; the variable/question explains a certain percentage of the total variance of that factor. Researchers seek valid questions that load exclusively, and high enough (approximately .5 and above) on a single factor only; factor loading criteria

would be regarded most desirable if it were between .60 and 1.00 (Lynn, 1995).

The highest factor loading scores are regarded to be the most valid scores in a factor analysis. In an ideal scenario, each of the questions would load high enough (approximately .5 and above), and exclusively, that is, on a single factor only. Indeed, the highest factor loading scores identified the most valid questions in the survey questionnaire. Basically, a factor loading would be regarded most desirable if it were between .60 and 1.00; 18 of my 22 factor loadings were .644 or better. In addition, three of my factors loadings were judged by the researcher to be acceptable at .607, .577, and .554 while one was borderline at .488.

A third strength of the factor analysis was that it accounted for slightly more than 62% of the total variance of Functional Independence. However, in accounting for 62% of the variability of Functional Independence, the researcher is alerted/enlightened to the fact that something else, as yet unknown, and not investigated in this study, accounted for the other 38% of the variability.

A fourth strength of the factor analysis was that questions #17, 19, 26, 27, and 28 in Factor III were closely associated with the Social Status construct. Questions #17, 26, 27, and 28 actually were represented in the survey questionnaire as part of Social Status construct. Question

#19 was the only Functional Independence construct question in the Social Status factor; it asked mature adults whether or not they worked or volunteered their time on a regular basis. Apparently, the way question #19 was answered, working/volunteering related significantly to their level of involvement with others in American society; research has shown that strengthening supportive relationships can optimize Functional Independence (Wells & Singer, 1988).

In the past, according to traditional social mores, the cessation of work in later adulthood was based mostly on the arrival at a particular chronological retirement age. This discrimination tied to age, and social mores/customs, as a process, may be reversed as the mature adult generation grows larger, and registers a respectable work performance (Mitchell & LeClair, 1994). As mature adults demonstrate that they can be a valuable work/volunteer force in society, there may be continuation of employment beyond what has been the rule in previous years. In fact, LeBlanc (1987) reported that mature adults who maintained a consistent level of integrity and emotional health, did not consider themselves old, and saw no reason to retire from life. In fact, mature adults, 65-74 years of age, remained so busy that they were ready, willing, and able to participate regularly in leadership programs (Allen, 1991). In light of what was just deduced, the active work role for mature adults, most likely, can extend well into the 70's (Mitchell

& LeClair, 1994). As a result, more human risk management services might be needed to help dispel old myths, and to better understand the new realities concerning functionally independent mature adult workers (Parker, Bergmark & Dell, 1994).

Weaknesses of the factor analysis. If researchers claim to be measuring something specifically, then the factor analysis should support this claim. In other words, one sign that the survey is valid is that the questions representing a specific indicator/construct in the survey should also cluster together in a single factor in the factor analysis; clustering of the same questions from a construct (from the survey) into one factor (in the factor analysis) shows that all the questions in that construct measure the same thing.

Optimistically, it was hoped that there would be a clustering for all questions for each of the five survey constructs into a corresponding total of five factors in the factor analysis. In other words, each construct in the survey questionnaire was supposed to be measured by one corresponding component/factor in the factor analysis; each component/factor of the factor analysis were supposed to be composed of questions from one construct in the survey. Ideally, if this would have happened then it would have validated that all the questions in my survey constructs measured the same thing. In essence, proper loadings of all

the questions from the one survey construct into one exclusive factor in the factor analysis would have validated that particular construct.

According to the factor analysis only, Factor I actually consisted of questions 1, 2, 3, 4, and 6. Questions 1, 3 and 4 corresponded to the Activities of Daily Living Status construct in the survey questionnaire, but questions 2 and 6 represented Cognitive Status construct. Factor II consisted of questions 7, 8, 9, 10, 18, and 21. Questions 10 and 18 corresponded to the Physical Status construct in the survey questionnaire, but questions 8 and 9 represented the Activities of Daily Living Status construct; question 7 referred to the Environmental Status construct, and question 21 referred to the Cognitive Status construct.

Factor III consisted of questions 17, 19, 26, 27, and 28. Questions 17, 26, 27, and 28 corresponded to the Social Status construct in the survey questionnaire, but question 19 represented the Activities of Daily Living Status construct. Factor IV consisted of questions 22, 24, and 25. Questions 24 and 25 corresponded to the Environmental Status construct in the survey questionnaire, but question 22 represented the Cognitive Status construct. According to the factor analysis, there was only one question in the 5th, 6th, and 7th factors; each of these three questions focused uniquely on the Physical Status construct in the survey questionnaire.

One reason for the overlapping of constructs revealed by the factor analysis might be that after these questions were developed, changes were made to mold them into a common answer scale. It was no accident that twenty-six questions had the same answer scale. They were molded to fit the same answer scale after they were developed in order to make easier for mature adults to provide their answers. In the process, to some degree, they were changed slightly, and while they still fit into the same questionnaire, unknowingly, they could have inadvertently flipped-flopped into an associated but different factor in the factor analysis. This may partially account for why the questions from the survey's construct did not fit together into separate but distinct factors in the factor analysis.

Nonconforming answer scales. Unfortunately, HS had been created with different answer scales from what was created for the other five indicators. As a result, the Health Status answer scales were not compatible with the other five indicator variables. Hence, in the factor analysis, the customary computations for HS could not be computed with the other five indicator variables on the SPSS (Statistical Package for the Social Sciences) program. Fortunately, in the 32-question survey, only 4 questions did not have the same answer scale as the earlier 29. Of these four questions, three questions were from the HS construct, and one was in the ES construct. Although only 3 questions

for HS had nonconforming answers, it was concluded that these three questions disqualified the entire HS subscale. As a result, all five Health Status questions had to be excluded from the factor analysis.

After the entire five questions for Health Status construct were pulled out, the only incompatible answer scale that remained was the one question (#29) from the Environmental Status construct. Instead of removing the entire Environmental Status construct, question #29 only was pulled out for the factor analysis. The remaining twenty-six questions all used the exact same answer scale. In total, a factor analysis was performed using 26 questions, with compatible answer scales, out of the 32 questions originally in the survey; these 26 questions represented the five remaining constructs (ADLS, PS, CS, SS, and ES).

Commonalities within each factor. "Factor analysis assumes that the observed (measured) variables are linear combinations of some underlying source variables (or factors)" (Kim & Mueller, 1978, pp. 7-8). Specific commonalities in the questions that grouped together under the same factor could be identified. For example, Factor I appear to be most closely aligned with the Cognitive Status construct in the questionnaire. This is because of such commonalities as maintaining the presence of mind to feed oneself (question #1), handling one's own finances (question #2), dressing oneself (question #3), performing daily toilet

activities (question #4), and utilizing such objects as a spoon or toothbrush (question #6); all these functions require a minimal level of cognitive capability.

As mature adults age, their Cognitive Status routinely diminishes, and as a result, their level of functioning for independent living (FIL) tends to decline (Yu et al., 1992). At the onset, cognitive impairments in the instrumental activities of daily living (IADL) would be manifested, in particular, by such impairments as utilizing the telephone or transportation effectively, and handling finances prudently (Barberger-Gateau, Commenges, Gagnon & Letenneur, 1992). In particular, it was discovered that making sound financial plans in order to live a healthier lifestyle enabled mature adults to cope better with the stresses and strains of later adulthood (Shahtahmasebi, 1992; Darnton-Hill, 1995).

Deepening levels of cognitive impairments can more deeply affect everyday functioning in areas such as the personal safety, and self-care, for example, toileting or taking responsibility for one's own hygiene needs (Nadler et al., 1993). On the other hand, a more complex cognitive loss would be manifested by a severely impaired ability to use such common objects as a spoon or fork for eating or feeding oneself, and a toothbrush or comb for grooming (Borell et al., 1995). Whenever complex or severe impairments develop, an associated loss of Functional



Independence is demonstrated by a multitude of cognitive impairments in the instrumental activities of daily living (IADL) (Sandman, Norberg, Adolfsson & Eriksson, 1990).

It appears that questions #7, 8, 9, 10, 18, and 21 in Factor II can be most closely aligned with the Activities of Daily Living Status construct. Driving a car or having enough access to transportation on a daily basis (question #7), not being too impaired or disabled (question #8), being able to perform daily chores adequately (question #9), possessing flexibility and mobility (question #10), not being restricted in ones' daily activities (question #18), and being in control/charge of ones' life (question #21) are all typically regarded to be aspects of mature adults' level of functioning for independent living (FIL). For example, on question #7 regarding transportation resources, the inaccessibility of important environmental resources can have profound, and adverse repercussions on the performance of mature adults in the basic and instrumental activities of daily living (Rittner & Kirk, 1995; Starrett, 1985; Laforge et al., 1993; Wahl, 1994; Haga et al., 1991). Any loss in Functional Independence associated with the inaccessibility of important environmental resources can have negative repercussions on mature adults' performance of the activities of daily living (Starrett, 1985; Laforge et al., 1993; Wahl, 1994; Haga et al., 1991).

Important aspects of each of questions #22, 24, and 25 in Factor IV appear to be closely aligned with the Environmental Status construct. Environmental Status refers to undue stressful life events (SLEs), and everyday frustrations/hassles, considered together and/or individually, directly originating or indirectly participating in the onset of functional impairments (Holahan, 1987; Jaks, 1981; Rittner & Kirk, 1995). For example, remembering familiar events, people, places, and things (question 22); by being very involved or becoming distressed over a past death, injury or illness that strikes a significant other (question 24); and/or by an unwanted frustration or unexpected disruption in ones' daily routine (question 25) represent events or people in ones' immediate environment; noteworthy was the fact that one Environmental Status question (question #29) was unsuitable for the factor analysis because it had a different answer scale.

#### Reliability Analysis

After the demographic and factor analyses were performed, a computation was initiated to calculate internal consistency reliability (Trickett & Moos, 1995). Internal consistency reliability can be measured in several ways, and this study uses Cronbach's alpha. For the purposes of this initial instrument development study, an .80 overall alpha was considered an adequate starting point; with future development of the instrument, an overall alpha of .85 or

better would be a goal that researchers would strive for (Aiken, 1988). With an alpha of .85 or better, researchers probably would not want to delete any questions; instead, they might add one or more questions for the purpose of raising the overall reliability of the survey questionnaire. Indeed, many researchers would like Cronbach's alpha to be in the .9 range or better (Nunnally, 1978; Salvia & Ysseldyke, 1988; Guilford, 1956).

"Reliability coefficients are an index of a test's utility; unreliable tests include a substantial amount of error which in turn will produce a certain fickleness or inconsistency in the test's results" (Brown & Alexander, 1991, p. 31). An overall alpha of .8, although still regarded as good, was employed as a cut-off (Salvia & Ysseldyke, 1988; Hammill, Brown & Bryant, 1989; Boersma & Chapman, 1992). Whenever researchers compute an overall alpha below .80, they have to be cautious as to its reliability. No one would use a scale if it had a reliability of .50. Regarding a moderately high .65, most researchers would be cautious, and use another scale if they could find one. With these criteria in mind, the overall alpha computed for FI, the five subscales (ADLS, PS, CS, SS, and ES), and the twenty-six questions in this study ranged from .31 which is unreliable all the way up to .83 which is good. This section of the Chapter V examines the overall alpha for the five subscales that have been hypothesized to

measure Functional Independence (FI), the particular questions that form these five subscales, and the select questions in the survey that have been found to demonstrate both validity and reliability.

The five subscales that measure FI. Cronbach's alpha was calculated for all five subscales (ADLS, PS, CS, SS, and ES), and each subscale's contribution to the overall alpha for Functional Independence was reported. The overall alpha for Functional Independence (FI) was .7771. The most reliable subscales were ES, ADLS, CS, and PS because without these subscales, the overall alpha for FI would drop to .70, .71, .72, and .76 respectively. According to these computations, none of the five subscales should be removed because the overall Alpha is higher with all of them included; researchers would not want to drop any subscale if it might reduce the overall alpha for FI. Of the five subscales, ES is the strongest measure of FI because its removal lowers the overall alpha more than any of the other four subscales. In contrast, SS was evaluated to be the weakest of the five subscales because if it was deleted, the overall alpha for FI would rise minimally from .78 to .79.

The questions that form the five subscales. Internal consistency reliabilities were calculated for each of the five subscales (ADLS, PS, CS, SS, and ES) using Cronbach's alpha; the overall alpha for the five subscales ranged from .31 for PS, an unreliable measure, all the way up to .75 for

SS, a more reliable measure. Regarding the ADLS subscale, composed of seven questions (Q1, Q3, Q4, Q5, Q8, Q9, Q19) a moderately high overall alpha of .67 was computed. If a single question such as Q1, Q3, Q4, Q5 or Q8 was deleted, the overall alpha for the ADLS subscale, respectively, would drop to .59, .60, .61, .60 or .60. In particular, because the overall alpha dropped to .54 when Q9 was deleted, Q9 was evaluated to be the most reliable question in the ADLS subscale. In sharp contrast, because the overall alpha rose to .80 (.7966) when Q19 was deleted, Q19 was evaluated to be the least reliable question in the ADLS subscale, and probably should be removed or at least, rewritten on a future questionnaire.

Regarding the PS subscale, composed of five questions (Q10, Q14, Q15, Q18, Q20), an unreliably low overall alpha of .32 was computed. If a single question such as Q10, Q14, or Q18 was deleted, the overall alpha for the PS subscale would drop to .24, .20 (.1994), or .20 (.1956) respectively. In particular, because the overall alpha dropped to .20 (.1994), and .20 (.1956) if Q14 and Q18 were deleted, these two questions were evaluated to be the most reliable questions in the PS subscale. In contrast, because the overall alpha rose to .37, and .34. respectively, if Q15, and Q20 were deleted, these two questions were evaluated to be the least reliable questions in the PS subscale. At the

very minimum, Q15 and Q20 should be removed or at least, rewritten on a future questionnaire.

Regarding the CS subscale, and its five questions (Q2, Q6, Q16, Q21, Q22), a moderately low overall alpha of .54 was computed. If a single question such as Q2, Q6, Q16, or Q21 was deleted, the overall alpha for the CS subscale, respectively, would drop to .41, .49, .47 or .45. In particular, because the overall alpha dropped to .41 when Q2 was deleted, Q2 was evaluated to be the most reliable question in the CS subscale. In contrast, because the overall alpha rose to .58 when Q22 was deleted, Q22 was evaluated to be the least reliable question in the CS subscale, and probably should be removed or at least, rewritten on a future questionnaire.

Regarding the SS subscale, composed of five questions (Q17, Q23, Q26, Q27, Q28), a moderately high overall alpha of .76 was computed. If a single question such as Q17, Q23, Q26, Q27 or Q28 was deleted, the overall alpha for the SS subscale, respectively, would drop to .72, .75, .69, .72 or .70. In particular, because the overall alpha dropped to .69 when Q26 was deleted, Q26 was evaluated to be the most reliable question in the SS subscale. Adding more questions to the SS subscale could be a practical way of boosting the overall alpha for SS in a future survey questionnaire.

Regarding the ES subscale, composed of four questions (Q7, Q13, Q24, Q25), a moderately high overall alpha of .50

was computed. If a single question such as Q7, Q13, Q24 or Q25 was deleted, the overall alpha for the ES subscale, respectively, would drop to .47 (.4673), .47 (.4696), .37 or .41. In particular, because the overall alpha dropped to .37 when Q24 was deleted, Q24 was evaluated to be the most reliable question in the ES subscale. Adding more questions to the ES subscale could be a practical way of boosting the overall alpha for ES in a future survey questionnaire.

The most valid and reliable questions. A reliable question that is not valid cannot accurately inform a researcher about what he/she is studying; validity is critical to the success of any research study. As researchers increase the validity of the constructs in their survey questionnaires, they simultaneously tend to increase the reliability of the questions. In essence, a valid questionnaire usually generates more highly reliable questions. Therefore, validity, of necessity, usually is the first consideration.

A factor analysis was run to establish construct validity. If a question has been found not to have any construct validity, then it becomes essentially irrelevant as to whether or not it demonstrates reliability. Therefore, questions where no evidence was found to show construct validity will not be discussed further. Only questions with acceptable (at least .6 and above), and parsimonious (at least a .15 difference between the primary

loading, and any secondary loadings) factor loadings will be discussed (Lynn, 1995). The 19 questions that were parsimonious, and exhibited acceptable factor loadings included Q1, Q2, Q3, Q4, Q6, Q7, Q8, Q9, Q10, Q14, Q15, Q17, Q20, Q22, Q24, Q25, Q26, Q27, and Q28.

Once a set of survey questions have been found to be valid, then their reliability becomes the central issue. Therefore, Cronbach's alpha, a measure of internal consistency reliability, was computed. A good overall alpha .83 (.8285) was found when FI was measured by the 26 questions, considered individually. In Table 28 below, Cronbach's alpha for FI has been listed for each of 19 questions (alpha if the item is deleted) with acceptable and parsimonious factor loadings. The 19 questions with acceptable, and parsimonious loadings include Q1, Q2, Q3, Q4, Q6, Q7, Q8, Q9, Q10, Q14, Q15, Q17, Q20, Q22, Q24, Q25, Q26, Q27, and Q28; an overall alpha greater than .80 (alpha = .8285) shows that these 19 questions also happen to be reliable.



**Table 28: Reliable Inter-Item Questions That Also Have Acceptable and Parsimonious Factor Loadings**

26 Items	Mean Difference	Standard Deviation	Corrected Item-Total Correlations	Alpha if Item Deleted
Q1	4.7000	.8453	.4617	.8195
Q2	4.5500	.8817	.4203	.8208
Q3	4.7313	.7069	.3651	.8232
Q4	4.8875	.5717	.4712	.8216
Q6	4.9250	.4698	.3830	.8244
Q7	4.3625	1.2208	.4679	.8180
Q8	4.4875	.9041	.4438	.8198
Q9	4.4813	.9840	.5907	.8137
Q10	4.6188	.8458	.4979	.8183
Q14	3.6188	1.3867	.2178	<b>.8316</b>
Q15	3.7313	1.1801	.1131	<b>.8342</b>
Q17	4.2813	.9054	.3838	.8220
Q20	4.4000	1.2649	.1153	<b>.8352</b>
Q22	3.6250	.9632	.2522	.8268
Q24	3.9313	1.1110	.3680	.8225
Q25	3.8750	.9566	.3976	.8214
Q26	4.3188	.8346	.5028	.8182
Q27	4.1500	1.0593	.3150	.8247
Q28	4.2500	.7770	.3155	.8245

Number of Subjects/Cases = 160  
 Cronbach's Alpha for Functional Independence  
 Based on the Original 26 Questions = **.8285**

Noteworthy was the fact that the overall alpha for FI would drop only slightly if any of Q1, Q2, Q3, Q4, Q6, Q7, Q8, Q9, Q10, Q17, Q22, Q24, Q25, Q26, Q27, and Q28 were deleted. A mild rise in alpha attributed to questions 14, 15, and 20 exclusively. In essence, the overall alpha for FI would rise to .8316 for question 14, .8342 for question 15, and .8352 for question 20; questions such as these that account for a rise in FI when deleted are classified as less reliable.

To have construct validity, questions that have acceptable and parsimonious factor loadings must also load on the proper factor, that is, the factor that corresponds to the same/correct construct in the survey. For example, the SS indicator/construct in the survey consisted of questions 17, 23, 26, 27, and 28; the SS factor in the factor analysis consisted of questions 17, 19, 27, 28, and 29. Thus, questions 17, 27, and 28 have construct validity because these questions in the SS construct in the survey also are in the SS factor in the factor analysis. In addition, each one of these questions also must demonstrate an acceptable, and parsimonious factor loading. In total, the most valid and reliable questions in the survey include: (1) Q8 and Q9 from the ADLS construct; (2) Q15 from the PS construct; (3) Q2 and Q6 from the CS construct; (4) Q17, Q26, Q27, and Q28 from the SS construct; and (5) Q24, and Q25 from the ES construct. As Table 29 demonstrates, these

11 questions loaded on the proper factor in an acceptable, and parsimonious way, and simultaneously demonstrated a good internal consistency reliability coefficient ( $\alpha > .80$ ).

**Table 29: 11 Valid and Reliable Survey Questions**

		Components/Factors					Alpha If
		I	II	III	IV	VI	Item Deleted
Q2	Handle finances	.607					.8208
Q6	Using objects	.895					.8244
Q8	Degree disabled		.718				.8198
Q9	Daily chores		.724				.8137
Q15	Food excesses					.926	.8342
Q17	Overall intimacy			.648			.8220
Q24	Current grief				.730		.8225
Q25	Daily upsets				.738		.8214
Q26	Feeling in tune			.745			.8281
Q27	Getting help			.713			.8247
Q28	Close friends			.766			.8245

Cronbach's Alpha for Functional Independence  
 Based on the Original 26 Questions = .8285  
 Total Variance = 62.1%

Noteworthy was the fact that 10 out of the 11 valid questions in Table 29 would lower the overall alpha for FI if they were deleted. Question 15 is the only question that would raise the overall alpha of FI, but this increase would barely be less than one percentage point. Without a doubt, the most valid questions also tend to be most reliable.

#### The Correlation Coefficients

Correlation coefficients individually were computed for each of the six quality of life "x" variables (ADLS, PS, CS, SS, ES, HS) proposed to determine/measure Functional Independence. Each of these computations revealed significant correlations among all "x" variables; hence, the

null hypotheses were rejected for each of the first five primary hypotheses, and all ten secondary hypotheses listed in Chapter III.

Rejecting null hypotheses. The statistical analyses of the data required calculating/computing correlation coefficients to answer each of the first five primary hypotheses, and all ten of the secondary hypotheses. For this purpose, if the correlations between the variables in question were found to be significantly different from zero, then relationships would be assumed to exist between any "x" and "y" variables being tested, and the corresponding null hypotheses of no relationship or zero would be rejected. If a null hypothesis were rejected, this would be equivalent to asserting that the alternative hypotheses was true.

To reject the null hypothesis for a correlation indicates, statistically speaking, that the correlation between the variables in question must be significantly different from zero; this also indicates that the alternative hypothesis must be true because a significant correlation, in fact, was found to exist between each pair of variables tested.

Accepting alternative hypotheses. The alternative hypothesis ( $H_a$ ), "considered the research hypothesis, can be supported only by rejecting the null hypothesis" (Hinkle et al., 1994, p. 168). If the alternative hypothesis ( $H_a$ ) were accepted, then it would become the new focus. Generally,

the alternative hypothesis ( $H_a$ ) posits the existence of something other than that specified by the null hypothesis (Hinkle et al., 1994). Specifically, in this study, the alternative hypotheses stated/contended that the correlation coefficients between each pair of variables would be significantly different from the null hypotheses of zero. To sum up, if any null hypothesis were rejected, and its alternative ( $H_a$ ) accepted, then significant correlations would be assumed to exist between that pair of variables tested.

All six proposed quality of life indicator "x" variables, ADLS, PS, CS, SS, ES, HS, individually, were found to have significant correlations with each other. One cause of the extensive correlations could be related to the high variability in the answer totals for all six variables (see Table #8). For example, the highest standard deviation score was for ADLS; the 3.8949 score for ADLS represented nearly four points of variability on the survey questionnaire's five-point likert-scale. Also, the 3.2818 score for SS represented more than three points of variability on the survey's five-point likert-scale.

It may be reasonable to expect that all indicators would have some correlation/relationship with each other. Human beings are functioning organisms with interrelated parts, and all human systems tend to overlap, and correlate at least to some degree. For example, as has been noted in

Chapter II, mortality was found to be positively associated, and vary directly with impairments in all six quality of life indicators and Functional Independence (Bowling & Windsor, 1995; Rozzini et al., 1991; Reuben et al., 1992; Goldstein, Counte & Goldstein, 1995; Burnette & Mui, 1994; Parker et al., 1992; Cohen et al., 1992; Van Den Hombergh et al., 1995; Sabin, 1993; Sonn, 1996).

In an ideal world, researchers do not want individual indicator variables to be as significantly correlated with each other as they are in this study (Hinkle et al., 1994, pp. 464, 477). However, a weakness in the correlation findings was that most of the indicators correlated significantly at approximately .3-.4, and there were three moderately high correlations calculated ( $R > .60$ ) among Cognitive Status (CS), Environmental Status (ES), and Activities of Daily Living Status (ADLS).

The ADLS link to ES and CS. A moderately high correlation .607\*\* was found between the Activities of Daily Living, and Cognitive Statuses. Hence, the null hypothesis of no relationship postulated earlier was rejected in favor of its alternative hypothesis that contended that a significant correlation actually existed between the Activities of Daily Living, and Cognitive Statuses.

A null hypothesis of no relationship or zero also had been made for the Activities of Daily Living, and Environmental Statuses. However, the .616\*\* correlation

found between the Activities of Daily Living, and Environmental Statuses also was significantly different from zero. This correlation between the Activities of Daily Living, and Environmental Statuses was supported by Starrett (1985) who suggested that subjective well-being, and life satisfaction could be measured in terms of the number of distressing daily events experienced; a gradual decline in distressing events or complete freedom from undue stress can promote Functional Independence (Jacks, 1981). In contrast, an increase in undue stressful life events (SLEs) and/or everyday hassles/frustrations can result in a loss of Functional Independence; this "environment-relevant" loss in Functional Independence is associated with the inaccessibility of important environmental resources which, in turn, may have negative repercussions on the performance of mature adults in the activities of daily living (Starrett, 1985; Laforge et al., 1993; Wahl, 1994; Haga et al., 1991).

The link between CS and ES. A moderately high correlation (.624\*\*) also was found between Cognitive, and Environmental Statuses. This high correlation was attributed, conceptually, to the explanation that inner thought patterns can influence, and, at times, shape outer life in a global environment. Every human being's "consciousness is a causal reality" (Harman, 1990, p. 25) laying a foundation for future events. When this is the

case, "always the innermost becomes the outermost [in life]" (Emerson, 1926, p. 31). "Life is a within-outward flow" (Butterworth, 1989, p. 83). In essence, there is evidence of the existence of a strong link between individuals' innermost psychologies, and outermost global conditions. A real connection may exist between our deepest, most meaningful attitudes in the innermost mind, and the outer environment/world around us.

A positive mental attitude (PMA) was perceived as so beneficial to health that 77 percent of the mature adults studied agreed that PMA can prevent illness and 94 percent agreed that PMA can aid in recovery from illness; many mature adults also believed that a positive mental attitude might possibly prevent or aid in a cancer recovery (Bruckbauer & Ward, 1993). This awesome mental power was evidenced by the many "instances of dramatic healing [where] patients told that a plain sugar pill had curative powers experienced a remission in the symptoms of their illness (the placebo effect)" (Harman, 1990, p. 13). It is not the outer stress in the environment that matters, but a person's inner attitude toward that stress that counts most (Low, 1995; Low, 1986; Ellis & Harper, 1975).

What happens in the outer environment most certainly evokes an inner mental response, large or small, from most people. According to Vitaliano et al., (1993), symptoms in the areas of cognition, activities of daily living (ADL),



and negative behaviors were found to be determined largely by environmental factors. In contrast, thoughts repeatedly held in the mind can also affect changes in the outer environment (Low, 1995); mature adults can alter their lives by first altering their attitudes of mind (Peale, 1978). Self-perceived Health Status was found to be a powerful, independent predictor of survival (Zuccala et al., 1995; Rozzini et al., 1991).

Subjective health perceptions of mature adults, represents one of several potentially powerful, independent predictors of good health and survival (Starrett, 1985, Zuccala et al., 1995, and Tsuji et al., 1994; Liu et al., 1995; Bruckbauer & Ward, 1993). Self-rated health reports were found to accurately predict cancer mortality, and self-rated ADL disability evaluations were found to predict a significant increase in stroke mortality (Tsuji et al., 1994). Indeed, poor self-rated health and/or fewer social supports were linked to a high risk for institutionalization along with an associated decline in Functional Independence (Glazebrook et al., 1994; Worobey & Angel, 1990; Glazebrook et al., 1994; Wolinsky et al., 1992; Idler & Kasl, 1995).

The link between CS and PS. Regarding Physical and Cognitive Statuses, epidemiological studies have suggested that regular physical activity was not only essential to maintain physical health, but also helped accomplish many higher-order tasks or goal-orient functions (DiPietro,

1996). Moreover, physical activity was found to promote feelings of psychological well-being (Ruuskanen & Ruoppila, 1995). Indeed, a significant correlation was found to exist between higher prevalence of depression and no regular physical exercise (Ruuskanen & Ruoppila, 1995). The benefits of exercise for mature adults include stress reduction, better sleep, muscle relaxation, positive mood, and improved perceptions of the self (O'Brien & Vertinsky, 1991; Meush, 1984). In like manner, a common predictor of depressive or cognitive symptoms was found to be an increase in physical illnesses (Burnette & Mui, 1994; Mui, 1993).

Healthy cognition, in turn, was found to be an important precursor of ambulation, and the successful execution of the activities of daily living (ADL) in later adulthood (Lichtenberg & Nanna, 1994). According to separate studies conducted by Laukkanen et al. (1993) and Sonn (1996), cognitive functions, along with a number of chronic diseases and depressive symptoms, have a significant association with daily physical functions. Undeniably, a sizable number of mature adults are physically ill because of the influence of improper mental states (Peale, 1978).

#### Limitations in The Health Status Indicator

Three statistical limitations/difficulties were discovered in the answers to the five survey questions in the Health Status (HS) Indicator. These limitations include significant differences regarding the (1) Current Marital

Status demographic, (2) the answers received from the Wells, Lemon Grove, and La Mesa Senior Centers, and (3) the nonconforming answer scales for three of the HS questions; because of the nonconforming answer scales in the three of the five HS questions, Health Status was dropped from the factor, and reliability analyses.

The marital status limitation. The first statistical limitation centered on the Current Marital Status demographic. From the answers on the Demographic Data Information Sheet, ANOVAs, and Tukey Post Hoc Tests were performed. ANOVAs are performed whenever different parts of the same population answer questions differently, and it is possible to distinguish two groups within a particular sample. It is an analytical procedure that allows researchers to compare differences in estimated variances among all group scores (Tabachnick & Fidell, 1996); pairs of scores can be expressed as deviations around the group means, and adjusted for group mean differences (Garbin & Teng, 1988).

The Tukey Post Hoc Test is best performed after running an ANOVA, where group sizes are unequal, and whenever researchers have been able to distinguish more than two groups (Hinkle et al., 1994). With the criterion set at the .05 level, the Tukey Post Hoc Test can show a honestly significant difference (HSD) between groups. For example, in this study, a significant was distinguished between a

demographic variable such as the current marital status demographic, and the answer scores for the Health Status quality of life variable.

It was found that the Current Marital Status demographic could be separated ( $p < .05$ ) into different categories. In fact, based on the different demographic categories, significantly ( $p = .011^{**}$ ) different groups of mature adults were distinguished regarding the answers received for the Health Status questions. In essence, whenever different parts of the same population answer questions differently, it is possible to distinguish at least two groups within that particular sample. The groups involved were the single, and divorced mature adults as well as the single and married mature adults; the mean of the answers to the Health Status (HS) questions were lower for single mature adults (18.5000) than that for married (20.5500) or divorced mature adults (21.1154).

The results of the Tukey Post Hoc Test, regarding HS and current marital status, confirmed ( $p < .05$ ) that (1) single and divorced ( $p = .008^{**}$ ) as well as (2) single and married ( $p = .029^{**}$ ) mature adults, answered in a significantly different way. Clearly ( $p < .05$ ), these marital status groups responded significantly different from one another enough to posit that there is a subgroup #1, and a subgroup #2; hence in this study, duly cautious

researchers, statistically speaking, cannot blindly lump these subgroups together (n = 160).

One possible explanation for this separation into subgroups might be that the divorced (n = 26), and spouse deceased (n = 62) mature adults, because of their marital experience, were in the habit of relying more on social relationships than their counterparts who were always single (n = 12). This was supported by the literature review which reported a research group of 34 married couples where one partner was diagnosed as demented, but lived at home; incredibly, 40 percent of these infirm partners were being cared for primarily by their husbands or wives, most of whom were themselves over the age of 75 (Pollit, Anderson & O'Connor, 1991). Further, having a spouse appears to be an important stimulus in starting a second career, and in remaining functionally independent during later adulthood (Patel, 1991; Krain, 1995, Kerka, 1991; Ashman et al., 1995; Lieberman & Lieberman, 1981). In essence, spousal support definitely can make a significantly positive impact on quality of life and Functional Independence in later adulthood (Lieberman & Lieberman, 1981; Stevens, 1983; Padus, 1986; Gilden, Hendryx, Casia & Singh, 1989; Shek, 1995; Ducharme, 1994; Krain, 1995).

The senior center limitation. The second statistical limitation centered on significantly ( $p < .05$ ) different confidence level (alpha) ranges. Confidence intervals

represents a range for judging whether or not an error is acceptable. Upon examining the confidence intervals for the five senior centers in this study, according to Table 24, it was demonstrated that the range of answers received from mature adults at three of the five senior centers in the subject pool failed to overlap. This failure to overlap could foretell what might show up as significant when the ANOVAs were performed.

Although confidence intervals, mathematically speaking, have been regarded as a less sophisticated statistic when compared to the ANOVA, and Tukey Post Hoc Test, the exact senior centers that differed significantly in their HS answers can still be accurately identified. For example, it was found that the confidence levels for the Health Status answers given by the mature adults from the Wells Center (20.9804 - 22.4596) did not overlap either with those of the Lemon Grove (18.9105 - 20.6757), and La Mesa (19.0994 - 20.4855) Centers.

To verify the incompatibility of these three centers, and to more fully evaluate HS, a three-step statistical analysis of the HS answers for all five senior centers was performed. The three steps included running the test for the Homogeneity of Variance, running an ANOVA, and lastly, running the Tukey Post Hoc Test.

First, prior to running an ANOVA, in order to determine the variability of HS with regard to the different senior

centers, a Test of Homogeneity of Variances was performed. If subjects from the different senior centers responded too differently to the same questions, then the means of the two groups responses could be significant ( $p < .05$ ). This significance would indicate that the variabilities of the two groups were too independent or too different to warrant being collapsed into one large group or single population ( $n = 160$ ).

If two groups were too independent, they could be regarded to belong to different populations or different studies. Hence, the "Sig." in the Levene Test must be found to be nonsignificant ( $p > .05$ ); if the Levene Test came out significant ( $p < .05$ ), this would indicate that the variables in question might have very different constructs or were too independent in their variability, and thus belonged in different studies because they were part of separate groups/constructs that were too different from each other, and could not be statistically analyzed/computed together.

In this study, the Levene Test answered the question as to whether the variability of the HS scores among the Lemon Grove, Wells, Clairemont, Mira Mesa, and La Mesa Senior Centers was nonsignificant ( $p > .05$ ) enough so that further statistics could be performed.

Researchers do not want the Levene Test to be significant ( $p < .05$ ) because this indicates that the

variability between the groups is too significantly different to be analyzed together. In essence, the variabilities of the groups (Lemon Grove, Wells, Clairemont, Mira Mesa, and La Mesa Senior Centers) being tested must be homogeneous, that is, similar or close enough in their variabilities to be compared. In analyzing the variability of HS answers among all five senior centers, it was found that the Levene Test was nonsignificant ( $p = .185$ ).

Second, after meeting such prerequisites ( $p > .05$ ) as the Levene Test, the ANOVA was run. The means, and standard deviations were calculated for the demographics concerning each of the variables; estimates of the means within and between groups, in part, were the focus. According to the ANOVA, mature adults from different centers were significantly different ( $p = .010^{**}$ ) in their answers on HS. Because alpha or the level of significance was set at .05, it was assumed that one or more in the group of senior centers was significantly different from other senior centers.

Third, because it was found that a significant difference existed in the ANOVA, this led to a further analysis of the data. A Tukey Post Hoc Test for honestly significant differences (HSD) was performed. Initially, it was hoped that all five senior centers would be homogeneous enough to lump them together, and test them as a single group ( $n = 160$ ). However, in this study, all five centers



were not homogeneous; they were, in fact, significantly different. Indeed, significant ( $p < .05$ ) differences were found in the subject pool between (1) the Wells and Lemon Grove ( $p = .021$ ), and (2) the Wells and La Mesa Senior Centers ( $p = .006$ ). Because the Wells Center was significantly different from two other senior centers, these three centers could not be pooled together, compared, and analyzed as a single unit ( $n = 160$ ) in regard to the HS variable (Tabachnick & Fidell, 1996, p. 38).

Survey data has been collected from five senior centers with the intention that, as a unit, these mature adults would serve as a representative sample ( $n = 160$ ) of the entire mature adult population. Because the confidence levels did not overlap, this indicates that the Wells' answers were not compatible in their variability with the answers collected from Lemon Grove or La Mesa Centers. A significant difference in the variability between Wells and Lemon Grove, and Wells and La Mesa strongly suggested that these two sets of Centers could not be compared, that is, analyzed as one group. In other words, statistical studies on variables that were too different could not be statistically analyzed together. In essence, these groups are too independent or too different when it comes to the range of their variability; hence, statistically speaking, the HS answers from these three subgroups cannot be analyzed together as one group of mature adults.

Several reasons could account for the disparities among senior centers. First, these disparities may arise because the mature adults at three different centers may have interpreted the questions in a significantly different way. Second, these differences in interpretation originated partly because the Wells Center catered, on a daily basis, to a different type of mature adult than the other two centers; the Wells Center offered such activities as ongoing community group meetings, and numerous physical exercise groups whereas the other two centers focused solely on serving inexpensive lunches on a daily basis. Third, these disparities in HS may have also emerged from the fact that three out of the five HS questions had nonconforming answer scales.

The answer scale limitation. The third statistical limitation was that the answer scales for Health Status did not conform with each other or with the rest of the survey's answer scales. In truth, the HS answer scales were never created with the intention in mind of fitting them neatly into the program format required for SPSS computations. Consequently, the five survey HS questions devised may not have measured Health Status precisely; it is impossible to determine this for sure in light of the fact that the SPSS program was chosen to perform the computations. Therefore, researchers need to read the statistics concerning HS with realistic caution, in part, because most of the individual

questions in HS had a nonconforming 5-point likert answer scale.

The likert answer scales for the last three questions #30, #31, and #32 did not blend well with the two (#11 and #12), or in fact, with each other. Because the likert scale for certain HS questions in the survey was not conforming to the answer scales in the rest of the questionnaire, the results of the analysis were inconsistent, and this created a limitation concerning the validity of the entire HS subscale. The resulting level of incompatibility in the five answer scales in the HS construct created, to a corresponding degree, a separate construct within that same subscale. The resulting nonconforming HS subscale was incompatible with the SPSS program in computing the factor analysis. In light of what was just argued, the numerous computational difficulties regarding HS, when considered in total, tend to make the five questions for the HS construct, statistically speaking, appear like an invalid measure. Therefore, in order to perform the most reliable quantitative computations (e.g. multiple regression) in the future, researchers might consider creating questionnaires that use conforming likert scales; indeed, future surveys that utilize the exact same answer scale for each question will be the most amenable to successful evaluation.

Health Status as a future indicator. Despite the limitations in the Health Status indicator in this study,

it is possible that the Health Status indicator may someday prove to be a significant determinant of Functional Independence. According to Yu (1995), the number of chronic diseases are regarded as one of the few optimal predictors of the level of functioning for independent living (FIL) (Yu, 1995). Chronic conditions and their resulting disabilities pose a potent threat to successful aging (Rose, 1991), and, in many cases, could be the basis for admission to an institution such as a hospital or nursing home (Jette et al., 1992; Osterweil et al., 1995; Wolinsky et al., 1992). A majority of patients in traditional long-term care institutions experience cognitive deterioration accompanied by feelings of imprisonment, hopelessness, and powerlessness in mature adults (Nystrom & Segesten, 1994; Annerstedt, 1993).

Seven chronic conditions in later adulthood, diabetes, cancer, arteriosclerosis, stroke, hip fracture, and neurological and lung conditions, have been reported to have a profound impact on Health Status, and this impact, in turn, was found to produce functional impairments in seven basic and ten instrumental activities of daily living; noteworthy is the fact that the degree of impact between these health conditions and their resulting functional impairments varied according to the specific impairment and condition involved (Semaan, 1993). In another study, long-term illnesses such as arthritis, pulmonary disease and

heart attack were also found to be strong predictors of dissatisfaction with Health Status, and with overall quality of life (Dorfman, 1995). Many mature adults suffer from more than one chronic disease (Koplan & Livengood, 1994; Molaschi et al., 1995). Accordingly, multiple pathologies are considered key later adulthood issues (McCarthy, 1996).

Health Status may never become a particularly large determinant of Functional Independence for the general mature adult population. However, On an individual basis, chronic diseases, and their resulting disabilities can present a formidable obstacle to successful aging; mature adults with a specific chronic disease may be affected greatly (Rose, 1991). The resulting functional impairments associated with the diseases of later adulthood are particularly important in light of the fact that approximately 80 percent of mature adults suffer from at least one chronic health condition (Segal, 1996). As has been noted previously, Golant (1984) hypothesized that individual differences and environmental experiences, together, explain nearly half of the statistical variation in mature adults' life satisfaction levels.

#### Social Status as a Future Indicator

At any age, sociability of almost any kind may be worth cultivating (Padus, 1986). As has been noted previously, Maguire (1983) emphasized social supports were associated with life satisfaction levels in later adulthood.

Therefore, it is conceivable that as mature adults who work, volunteer, relate with others, begin to cultivate more social relationships, their Functional Independence conceivably, would also begin to rise. Hence, mature adults might consider their social contacts, and especially their spousal relationships, to be precious parts of their quality of life, and important determinants of their level of Functional Independence (Farquhar, 1995).

Even in later life, Social Status has the potential to be an important factor because as has been noted, mature adults who lived alone reported a greater number of psychological symptoms than other mature adults (Burnette & Mui, 1994). Therefore, mature adults may need more formal and informal support systems to maintain a high functional level for independent living (FIL). Subjective well-being is best achieved by the use of informal mental health support systems followed by the use of formal support systems (Starrett, 1985). Although formal health counselling and group wellness sessions are effective means of acquiring knowledge about aging and lifestyle choices (Viverais-Dresler et al., 1995; Zuehlsdorff & Baldwin, 1995), formal care has been shown to play more of a complementary role to informal support, even when formal care is relatively well developed (Johansson et al., 1993; Miner, 1995).

In order to explain how Social Status might reemerge as an important indicator of Functional Independence; it could be helpful to examine this indicator in more depth. Statistically speaking, it was illustrated, by running the ANOVA, that the marital status demographic in regards to Social Status (SS), has an important role ( $p = .046^{**}$ ) in more fully explaining Social Status. To explain this role, the marital status answers were analyzed, separately, one senior center at a time. It was found that different answers were given to the Social Status questions by mature adults at the different senior centers; based on marital status, mature adults at one center responded differently from mature adults at a different center. In fact, the answers were significantly ( $p < .05$ ) different enough so that distinctly different groups of mature adults could be distinguished within the Social Status construct.

In an ideal world, researchers want each subgroup, for example, the five different senior citizen centers, to be each contributing equal numbers (e.g. 32 from each center) of subjects. However, the number of mature adults from the various senior centers, 28, 25, 29, 25, and 53, was not equal. Therefore, according to criteria set forth by Hinkle et al., (1994), because the senior center group sizes were unequal, and because there was more than two groups distinguished after running the marital status ANOVA, it was necessary to run a Post Hoc Test (Hinkle et al., 1994).

Hence, the Tukey Post Hoc Test was run, and the alpha criterion was set at the .05 level. The results of this analysis showed that there was a honestly significant difference (HSD) between the answers given for the Social Status questions by singles subgroup as compared separately to the answers given by the divorced ( $p = .032^{**}$ ), and spouse deceased ( $p = .052$ ) subgroups. Particularly noteworthy, statistically speaking, was the significant ( $p = .032^{**}$ ) difference between the means of the single's group (18.9167), and the divorced group (22.0000).

All things considered, these marital status groups responded significantly different from one another enough to posit that there is subgroup #1, and a subgroup #2; hence in this study, duly cautious researchers, statistically speaking, cannot blindly lump these subgroups together ( $n = 160$ ). One possible explanation for this statistical separation into subgroups might be that the divorced ( $n = 26$ ), and spouse deceased ( $n = 62$ ) mature adults, because of their marital experience, were in the habit of relying more on social relationships than their counterparts who were always single ( $n = 12$ ). This was supported by the literature review in Chapter II which noted that having a spouse in later life played an important role in keeping mature adults functionally independent (Patel, 1991; Krain, 1995; Kerka, 1991; Ashman et al., 1995; Lieberman & Lieberman, 1981).



Nevertheless, Flanagan (1982) hypothesized that relationships with spouse, work and Health Status, amount of socializing and active recreation were among the factors that most nearly governed overall quality of life in later adulthood. Lifelong and intimate friends as well as significant self-knowledge were found to delay mortality in general, and strengthened the coping abilities of mature adults (Turk-Charles et al., 1996; Olsen et al., 1991). Since this is the case, it is conceivable that the questions asked may not have been concrete enough or were too abstract for those mature adults in the subject sample who did not regularly socialize with other people on a daily or regular basis.

#### Conquering the Social Stigma

According to predominant social thinking, mature adults' future usefulness to themselves, and society remains limited (Hall, 1995; Annerstedt, 1993; Makrides et al., 1995; Koplan & Livengood, 1994; Rose, 1991; Rogers, 1990; The Picture of Health, 1987; Annual Report, 1985; Robbert, 1981). However, more effective social institutions, and less prejudicial thinking about later adulthood may eventually be brought about by the "joint achievements of individual ego development [culminating with wisdom,] and of the social process" (Erikson, 1959, p. 154-155). To this end, as has been noted in Chapter II, Swensen (1983) suggested changes that could potentially reintegrate mature

adults back into all aspects of society. Raising the level of social integration is directly related to, and often enhances Functional Independence (Olsen et al., 1991; Haga et al., 1991).

Historically, "the really fundamental changes in societies have come about... [from] people changing their minds- sometimes only a little bit" (Harman, 1990, p. 155). In essence, the first change in society occurs within the individual, then the family, followed by the community, the city, the nation, and finally the world. Effective social change, therefore, can be demonstrated through the cumulative actions expressed by its individuals. The total contribution of any nation to the global environment is a result of the inmost mental attitudes of its citizenry. In light of what was just argued, members of society ought to consider accepting the fact that mature adults can more actively participate in areas where they can still contribute something valuable.

Active social resources in later adulthood, most often, are measured by the size of the social network, and the frequency of social interaction (Roberts et al., 1994). Consequently, an increased level of social integration in a cohesive, close-knit network of mature adults has been found to be empowering, and immediately related to the enhancement of mature adults' level of functioning for independent living (FIL) (Olsen, Olsen, Svensson, Waldstrom, 1991; Haga

et al., 1991). Moreover, over the long-term, a good support system can help cope with stressors that involve change even under difficult circumstances, and gradually help mature adults enjoy a higher quality of life as well as attain higher levels of functioning (Matheny & Riordan, 1992; Patel, 1991; O'Connor, 1995; Smith & Couch, 1990; Butin & Heaney, 1991).

A good support system can provide a sense of involvement, and a sense of control in the frustrations/hassles of daily life (Baum, 1981; Elliott & Barris, 1987; Thomas, 1995). Caring and close-knit informal groups can evolve from the time they spent just being together (Dyer & Vriend, 1980). In addition, strong trusting relationships can evolve from learning how to get along with people, that is, winning the trust of friends, and influencing other mature adults in positive ways (Giblin, 1956). Friends developing from close-knit, trusting relationships tend to support each other in the direction of their choice and help each other grow stronger (Seashore, 1980). In this way, people develop esteem for each other as well as for themselves, and they, most likely, will be better able to build a more lasting community together. For example, mature adults who belonged to a supportive close-knit social network/cohesive community were better able to cope with stress, and remarkably resistant to emotional and physical ills (Padus, 1986; Burton et al.,

1992; Olsen et al., 1991; Hadorn & Hays, 1991). Types of social relationships in the community that are particularly beneficial to reduce mortality and increase functionality are going to church, seeing friends and neighbors, volunteering, and talking with other more infirm mature adults (Sabin, 1993). In essence, good relationships, once they develop, can provide a starting off point in achieving other worthwhile goals (Matheny & Riordan, 1992).

A good social support system can buffer the impact of stress from injury or disease, that is, become more stress-resistant, and have a large impact on the rehabilitative process (Padus, 1986). For example, one study found that 30 percent of disabled mature adults regained their functioning abilities within three years, in part, because of interpersonal help provided to them by their social support system (Liu et al., 1995; Heidrich, 1994). In essence, mature adults who relied on mutual aid from supportive relationships while recovering from a hip fracture were found to have higher levels of physical functioning than those recovering without such social support (Roberto & Bartmann, 1993; Allegrante et al., 1991; Sullivan & Fisher, 1994). Noteworthy was the fact that each person in the support system plays a vital role in influencing the outcomes of a variety of situations (Matheny & Riordan, 1992).

Sociability of almost any kind appears worth cultivating (Padus, 1986). In fact, a decline in social relationships in later adulthood was found to be associated with a loss of one's "ability to cope with adversity" (Rosel, 1988, p. 20). In fact, a loss of one's social support structure can trigger a breakdown of the body's immune system; this breakdown may be manifested by chronic pain, but because the cause may be social in origin, no physical cause of the pain is ever found (Padus, 1986). Fortunately, most psychosocial variables, especially the ones found in stressful situations, appear to be not only highly salient to overall health, but also potentially modifiable (Thomas, 1995). Thus, psychosocial well-being may be one of the most important values to strive for (Darnton-Hill, 1995; Low, 1995).

#### The Case Against Social Status

The findings in this study suggest that Social Status may not be as large a determinant of Functional Independence as might be expected. Two reasons why Social Status did not live up to previous expectations involve the fear of impending death, and age-related vision and hearing capabilities.

The first reason is that there may occur a psychological disintegration "signified by... [an] unconscious fear of death" (Erikson, 1959, p. 98). This includes a feeling of disgust/disdain masked by "bitterness,

misanthropy, or single-focused contempt" (Rosel, 1988, p. 12) that may be outwardly expressed by "fear, anxiety or dread" (Erikson, 1978, p. 26). Continued psychological disintegration may necessitate an "overcoming or reworking of crippled psychosocial functioning" (Fowler, 1981, p. 114). If this reworking fails to occur, then continued psychological disintegration often includes "autonomy weakened, initiative lost, intimacy missed, generativity neglected- not to speak of the identity potentials bypassed" (Erikson, 1982, p. 63). In the end, a continuing state of helplessness and confusion may keep feelings of disgust/disdain active.

The second reason why Social Status was not a large determinant of Functional Independence is that hearing and visual impairments could cause a significant loss of Functional Independence (Barberger-Gateau et al., 1992). For example, perhaps as mature adults' vision and/or hearing declines significantly, they may become so embarrassed or shy that some mature adults actually try to distance themselves from other people. In essence, their particular sensory deficit makes them more insecure about themselves, and less social with others. In fact, sensory impairments were found to be associated significantly with a lower quality of life in later adulthood (Carabellese, Appollonio, Rozzini & Bianchetti, 1993).

Hearing loss, besides being identified as an important and independent predictor of placement in a nursing home or long-term-care facility (Osterweil et al., 1995), was found to be related to reduced psychosocial functions (Bess, Logan & Lichtenstein, 1990). Visual impairments, even more than hearing loss, also was found to be an independent predictor of a decline in the development of supportive social relationships and poorer life satisfaction (Davis, Lovie-Kitchin & Thompson, 1995; Carabellese et al., 1993). In addition, visual impairments are not rare. For example, in one study involving mature adults, visual impairments were found to be a common diagnosis along with hypertension, stomach disease, and arthritis (Yu, 1995). Indeed, the number of blind or severely visually-impaired mature adults aged 65, and over will reach 5.8 million by 2030, and far less than 50 percent are expected to be functionally independent enough to be employable (Augusto, 1992).

#### **Conclusions of this Research Study**

Functional Independence, as noted in Chapter II, has been depicted as a broad concept that encompasses the abilities of mature adults to function for themselves, mentally and physically, and contribute to society (Mosqueda, 1996); Laukkanen et al., 1993; Ruta, Garratt, Leng, Russell and McDonald, 1994); it refers to the abilities of mature adults first to serve themselves, and

then later to serve others in society (Mota et al., 1995; Lurie, 1983; Allegrante et al., 1991).

The purpose of this study was to do the work necessary to begin to develop a survey questionnaire/instrument to discover which quality of life indicators best measure/determine the Functional Independence of mature adults. Because the work on this instrument is in its developmental stages, no psychometric properties existed which could support the notion that this new instrument could be considered reliable and valid. Therefore, questions were written, data collected at five senior centers in San Diego County, and then a factor analysis, and Cronbach's Alpha, respectively, were computed to discover if the questions accurately measured what they were hypothesized to measure, and if they did so on a consistent basis. Based on the previous discussions concerning the demographic data, factor analysis, additional psychometric properties such as reliability analysis, and correlation coefficients, several conclusions can be drawn.

#### Demographic Data Conclusions

Based on the demographic statistics, the dominant demographic trends in the subject sample included a large number of mature adults who were female, Caucasian, over 66, married (at least once), and high school graduates. While the subject sample may still be representative of the total mature adult population, a high number of demographic trends



should be considered in evaluating the findings, and hence, not completely ignored.

#### Factor Analysis Conclusions

The purpose of the factor analysis was to show that the six constructs in the 32-question survey, Activities of Daily Living Status (ADLS), Physical Status (PS), Cognitive Status (CS), Social Status (SS), Environmental Status (ES), and Health Status (HS), validly measured what they claimed to be measuring. However, several problems arose.

One survey instrument consisting of six constructs (ADLS, PS, CS, SS, ES, and HS) was developed to measure Functional Independence. However, in completing the preliminary work of instrument development, four incompatible answer scales (three in the HS subscale and one in the ES subscale) were utilized, and as a result, before a factor analysis could be computed accurately, the entire five questions in Health Status construct, and one question (#29) in the Environmental Status construct had to be removed. Fortunately, the remaining 26 questions all used the exact same answer scale, a prerequisite required by the SPSS computer program, prior to performing any calculations.

A factor analysis was performed on the 26 questions involved in the data analysis; it accounted for slightly more than 62% of the total variance of Functional Independence. According to the factor analysis matrix, significant factor loadings were found for 22 of the 26

survey questions. Ideally, the questionnaire would be regarded to be most valid if each of the questions loaded high enough (approximately .5 and above), and exclusively on one factor only. The results obtained showed that 18 of the 22 factor loadings were .644 or better. Of the remaining four questions, three of the factors loadings were evaluated to be borderline acceptable at .607, .577, and .554, and one remaining factor loading was regarded as barely borderline at .488. The other four questions that were found to be invalid and/or unreliable definitely should be rewritten or eliminated.

Although it was anticipated that the factor analysis computations would reveal five factors, one for each construct in the survey, it revealed a seven-factor solution instead. Factors One through Four consisted of five, six, five, and three questions respectively. However, a sixth factor, which came from the survey's Physical Status construct, contained only question 15; this question had a very high factor loading of .926. Factors Five and Seven also contained only one question each; although not as high a factor loading, each question in these remaining factors also came from the Physical Status construct.

It additionally was anticipated that each of the factors revealed in the factor analysis would consist of questions exclusively from one of the constructs in the survey questionnaire. This did not happen. Factor I

derived from the factor analysis consisted of questions 1, 2, 3, 4, and 6; questions 1, 3 and 4 corresponded to the Activities of Daily Living Status construct in the survey, but questions 2 and 6 represented the Cognitive Status construct. Factor II consisted of questions 7, 8, 9, 10, 18, and 21; questions 10 and 18 corresponded to the Physical Status construct, but questions 8 and 9 represented the Activities of Daily Living Status construct; question 7 referred to the Environmental Status construct, and question 21 referred to the Cognitive Status construct.

Factor III consisted of questions 17, 19, 26, 27, and 28; questions 17, 26, 27, and 28 corresponded to the Social Status construct, but question 19 represented the Activities of Daily Living Status construct. Factor IV consisted of questions 22, 24, and 25; questions 24 and 25 corresponded to the Environmental Status construct, but question 22 represented the Cognitive Status construct. There was only one question in each of the 5th, 6th, and 7th factor categories, and each of these three questions focused separately on the Physical Status construct. Because questions from the same construct did not load exclusively on one factor in the factors, researchers may not be able to jump to any definite conclusions based on data collected from the new survey questionnaire.

### Additional Psychometric Conclusions

Despite several good statistical findings in this study, many researchers might consider not using this new survey questionnaire because it has not been proven over time. Consequently, researchers, as yet, cannot be completely confident that the survey questionnaire measures what it has been purported to measure on a consistent basis.

The choice questions. Based on all 26 questions analyzed individually for internal consistency, a good overall alpha (.83) was found for FI. It was found that 11 questions, in particular, demonstrated good construct validity, and simultaneously exhibited good internal consistency reliability. These 11 most consistent, and highly accurate questions included: (1) Q8 and Q9 from the ADLS construct; (2) Q15 from the PS construct; (3) Q2 and Q6 from the CS construct; (4) Q17, Q26, Q27, and Q28 from the SS construct; and (5) Q24, and Q25 from the ES construct. Questions demonstrating good construct validity, and internal consistency reliability ( $\alpha > .80$ ) as well should be kept in the survey.

The individual subscales. Based on all five subscales, the overall alpha for Functional Independence (FI) was .78. The most reliable subscales appeared to be ES, ADLS, CS, and PS; without these subscales, the overall alpha for FI dropped to .70, .71, .72, and .76 respectively. ES was the strongest measure of FI because its removal lowered the

overall alpha more than any of the other four subscales. Despite being the strongest of the five subscales that measured FI (overall alpha for FI = .78; alpha if item deleted = .70), the ES subscale was evaluated to be a weak subscale because it had only two questions from the ES construct in the survey loading on the corresponding ES factor in the factor analysis; in and of itself, the ES subscale also had weak overall alpha = .50.

The SS subscale, in and of itself, was the strongest subscale because it had four questions loading acceptably on it in the factor analysis, and the internal consistency for SS, its overall alpha was moderately high at .76, but when its combined with other subscales used to measure FI, then it was turned out to be the weakest determinant of the five subscales. In contrast, according to these psychometric findings (alpha = .32, and only one question loading acceptably), it appears that the PS subscale needs to be reworked/rewritten at the very least or removed at the extreme; it may be necessary to go out, collect more data, and change/refocus the content of many of the PS questions.

#### Correlation Coefficient Conclusions

All correlation coefficient findings reported in this section were supported robustly by the research outlined in Chapter II. Hence, in this preliminary study, researchers would reject the five primary, and the ten secondary null hypotheses presented in Chapter III because all correlations

computed for each of these null hypotheses were found to be significantly different from zero. If the correlations in Table 16 were found to be significantly different from zero, this would indicate that no relationship existed between each pair of quality of life variables tests, and it would give legitimacy to the survey instrument developed in this study.

The fact that this study's findings are supported by the literature reviewed in Chapter II, suggests that this research has gone through the preliminary stages, and that researchers might consider future studies to more definitively identify the precise aspects of the factors that were found to best measure/determine Functional Independence.

#### **Recommendations for Future Research**

The importance of this kind of research is that it may serve to enlighten policy makers, health care providers, mature adults, and society to the fact that mature adults can be a resource who are potentially capable of contributing something valuable back to themselves, and also to society. To discover and explore other avenues of enlightenment that may offer additional knowledge, and deeper understandings, future researchers might consider one or more of the following suggestions.

1. To develop more insightful questions on Functional Independence (FI), ask mature adults directly: What do you

believe makes you an independent person? Define Functional Independence for me, and propose ten things that you think would represent Functional Independence? Creating future survey questions could be based on overall responses to these questions.

2. Adding more questions to the Social Status (SS) subscale could be a practical way of raising the overall alpha for the SS subscale, and the overall alpha for FI; the challenge is that the additional SS questions must also be valid. Future SS questions could look further into the strengths, and weaknesses of the spousal relationship in later adulthood.

3. Because of findings in the ANOVAs and Tukey Post Hoc Tests, additional subcategories in the Current Marital Status demographic may be needed. For example, "Living Together, but not Married" could be one additional subcategory that yield some valuable information. In addition, a significant difference might exist between subjects recently married compared to those with long-term marriages. Therefore, a "Married Over 25 Years" category or "Married Five Years or Less" might be important to discover if short or long-term relationship makes a difference in FI. Also, more demographic categories than just Current Marital Status may be needed. Researchers could ask about Past Marital Status; possible subcategories include asking subjects if they were married more than once, divorced more

than once, and more than once spouse deceased may prove to be meaningful. There might be a difference between spouse deceased three times compared to spouse deceased once.

4. A subcategory "Attended college" might be added to identify subjects that attended college, but did not receive a college degree. Similarly, a category "Attended graduate school" could be added to identify subjects who attended graduate school, but did not get a graduate degree. A subcategory that asks "How many years ago did you get your last degree or how long ago did last attend school/college?" may also be important to accurately measuring FI.

5. This study was able to account for 62% of the variance of Functional Independence; future research studies might be initiated to search for, and explain the remaining 38% of the variance of FI. For example, exploring the existence/impact of other indicators (e.g. spirituality and/or nutritional science) that might determine Functional Independence also would be appropriate.

6. It will be necessary to rewrite most of the Physical Status questions with the goal of developing new questions in this subscale that possess sufficiently high psychometric properties. Future survey questions might examine aspects of strength, flexibility, endurance, posture, and mobility in an effort to spotlight the specific exercises that determine/foster FI for mature adults.



7. Factor analysis can be used as a guide for future surveys to decide which questions would best be eliminated, and to assure researchers that the new questions developed really measure what they have been purported to measure.

8. Every future survey question answer scale must conform to the likert scale used by all other questions in the survey; care also must be taken in the future to avoid any mid-survey reversal in the answer scales.

9. Researchers might consider comparing the results of the survey questionnaire developed in this study against already existing/established standardized instruments; this comparison could be crucial to establishing the validity of this study's survey questionnaire. The validation process could involve administering a section (e.g. one of the six indicators) in this study's questionnaire to the mature adults at the senior center lunch tables, and then immediately administering a second existing/established scale or instrument on the same subject. The purpose would be to see if their findings of an established instrument support/match the research findings in this study. If the findings from the two questionnaires came out, and showed the same thing, this would validate the findings of this survey's questionnaire.

10. With a goal of expanding the ethnic/cultural base of the sample studied, a future research study might seek to reproduce the results of this study by administering the

survey questionnaire at different senior centers or at various nursing homes, and doing a comparational analysis.

11. Conducting a deeper analysis of the common diseases of later adulthood in order to design Functional Independence questions that are limited to asking about one disease (instead of many) per question. To this end, a select number of medical experts that work with the geriatric population could gather together to create some new survey questions.

### **Health Care in the New Millennium**

From the beginning of the 20th century, as has been noted, mature adults have benefited from numerous gains in longevity; an increasing percentage of the United States population is now aged 65 and older, and this trend is expected to continue for at least the next 50 years. Especially significant is the large increases in the old-old age (over 85) group (Campion, 1994). Because of these increases, there are still many unmet needs among mature adults in contemporary society (Raphael et al., 1995). For mature adults to age better in the 21st century, a paradigm shift as to what constitutes successful and productive aging, must take place; the magnitude of this shift has the potential to substantially undermine the traditional idea of aging in the life course (Zapotocky, 1998).

### New Health Trends

A global trend/paradigm shift is in the making, and it is propelling millions of people away from traditional allopathic solutions toward prevention, wellness and holism; a major health, fitness, and nutritional transformation is in process. This transformation is being fueled by the aging baby boomers who dread the possibility of years of dependency as patients confined to nursing homes with impairments/disabilities due to a variety of chronic illnesses or unforeseen injuries. For this reason, it is expected that this baby boomer generation will spend significant amounts of money attempting to maintain, and improve their health. Consequently, the health trend toward wellness, and holism, over the long-term, could be dramatic.

Alternatives in health care. The Chiropractic profession is an important branch of healing that offers a much-needed alternative health service to the public; the profession is positioned on the leading edge of a new millennium in health care. Because of its patient-centered paradigm, and its philosophy of wellness over a patient's lifetime, the Chiropractic profession appears to be riding high on the crest of this new wave of interest in alternative medicine.

The term "alternative medicine," as has been noted, encompasses a broad scope of unconventional diagnostic methods, treatments, and therapies that appear not to

conform to traditional medical practices, and are not generally taught at accredited medical schools. While other health care professionals are just now beginning to investigate preventive/alternative health care, chiropractors have been at the forefront, educating their patients, and practicing alternative health care since 1895.

The impact of chiropractic care. The brightest future today belongs to those health professionals who can identify the emerging trends, and adjust their methods to meet the new consumer demands in health care. For example, of all the chronic conditions experienced by mature adults, back problems may well be the most functionally debilitating, and rated highest in physical pain; quality of life scores for mature adults with back problems also were reduced by nearly 50% (Kempon, Ormel, Britman & Relyveld, 1997). Any major traumatic blow to the body can cause damage, even long after the pain is gone. Minor repetitive motion injuries, over time, can lead to disabilities. Even "micro-traumas" caused by poor posture subtly contribute to chronic spinal misalignments, and degenerative lesions/conditions. Hence, chiropractors may be the best health care professionals to care for an aging population; however, the profession has not yet to ideally position itself to care for this burgeoning population (Zapotocky, 1998).

Many policy makers and health care providers have not yet considered the extent of the impact chiropractic care

could have on the lives of millions in terms of the maintenance of Functional Independence, the potential to keep mature adults in their own homes as long as possible, and the significant impact on the American economy in terms of health care dollars saved. For the Chiropractic profession to benefit fully from the current transformation in health consciousness, and the resulting global movement toward alternative health care, they may have to broaden their area of expertise. The time has come for chiropractors to expand, and seize the opportunity to become the wellness doctors of the new millennium.

#### The New Millennium Chiropractor

In the new millennium, the range of services offered may be the ultimate key to the success of the Chiropractic profession success. The new millennium health program practiced by chiropractors could include (1) good nutrition, (2) living in a high quality environment that avoids/eliminates exposure to toxic substances, (3) maintaining proper posture by avoiding trauma and engaging in regular exercise, (4) maintaining emotional balance along with adequate rest and sleep, and (5) properly compensating for heredity and congenital problems.

A window of opportunity is opening for chiropractors to become more aggressive in helping all people who seek professional guidance on how to lose or gain weight, what to eat, and which supplements to take. The physical body needs

high quality fuel/food, high quality nutritional supplementation, and short fasts, periodically, to function optimally. More than ever, as mature adults get even older, their continued health and energy levels become increasingly dependent on what they eat and drink on a daily basis.

Life extension, one of the most important global trends in the new millennium, can be an important emerging market for chiropractors. Life extension incorporates such alternative therapies as a balanced diet, regular exercise, stress reduction, and the proper use of non-prescription nutritional, and herbal supplements. As trained physicians, chiropractors legally/advantageously can diagnose as well as treat patients; they also can order laboratory tests when needed.

Chiropractors are educators. Chiropractors educate their patients on the universal principles of health and healing. The principles embodied in the philosophy of chiropractic can empower mature adults with the magnificence and magic of their own being. Accordingly, chiropractors teach that optimal health comes from maintaining all of the body's systems in the best possible working order. Once infused with the knowledge and understanding of the magnificence of the power within, the shackles of dependency, ignorance, and disease can be cut loose. In essence, chiropractors help to make a difference by healing,

preserving, and teaching their patients to cherish a healthy life.

To most people, being in the best of health merely refers to the absence of disease. In actuality, the best of health or optimal health is manifested only when all of our body's systems are functioning at their highest potential. To function at optimal health means that food digests properly, posture and hormones are in balance, and muscles allow individuals to move freely and without pain. At higher levels of well-being and Functional Independence, mature adults will tend to feel at their best, possess more energy, enjoy life more, and become most resistant to chronic disease and traumatic injury. If disease or injury happen to occur, then mature adult patients will heal faster and more completely because prior to the health problem they were at their best. This is why a multidimensional approach is required for the management of chronic illness and age-related changes in health status during later adulthood. Hence, mature adults in particular might consider learning more about regaining and maintaining optimal health in order to bring forth their best innate talents during later adulthood.

Chiropractors are facilitators. Chiropractic adjustments has the potential to save lives because they facilitate the flow of life energy/vitality within the human nervous system linking the brain and body. The cause of

disease is the chiropractor's primary concern; past research has shown that a well-adjusted human body can be a self-regulating, and self-healing mechanism, not just for spinal conditions, but for any progressive health condition. When patient, doctor, and logic agree, many chronic, progressive health conditions have the potential of being reversed.

Another way to reverse chronic health conditions is to detect, and release toxic/impure substances from the body. Toxins in the environment can make people (especially mature adults) of all generations feel ill, and may precipitate such diseases as cancer or asthma. Toxins that are best avoided include smoke/cigarettes, allergens/air pollution, alcohol, drugs (prescribed or illegal), household chemicals, and "junk food." As has been noted, cigarette smoking has been associated with mortality as well as increases in physical disease, and depressive symptoms (Colsher et al., 1990). In contrast, clean air, water, and food followed by the free-flowing purity of the nervous system are vital to the maintenance of optimal health.

A change in attitude can be another way to maintain optimal health or assist in reversing chronic health conditions. A positive daily outlook can help mature adults maintain their emotional balance, and frequently, enhance their ability to handle stress, and improve physical health. In contrast, depression/depressive attitudes can lead to lack of sleep, and poor nutritional habits. Helpful



cognitive remedies may include progressive relaxation training, daily meditation sessions, practice of biofeedback, and cognitive-behavioral stress management classes/training. Alternative health practitioners might consider counseling their patients to get more sleep, and make sure that they get sufficient rest particularly during periods of high stress.

Chiropractors are providers. As the mature adults population grows, the market for alternative/natural health care providers, most likely, will grow dramatically in the foreseeable future. Chiropractic health care providers, in particular, can help rehabilitate mature adults patients by manipulating/adjusting their spines and prescribing exercises designed to promote increases in flexibility, mobility, endurance, and strength. Regular exercise improves posture/spinal alignment, stimulates a sluggish metabolism, and fosters a sense of well being.

Chiropractors also can recommend more rest to promote regeneration and encourage adequate sleep habits whenever a health challenge occurs. More rest and additional sleep can augment the healing process and aid in preventing further health challenges. Other physical treatments/therapies provided by chiropractors for mature adults with postural or health challenges include mobilization/physical therapy, nutritional/biochemical consultations, and acupuncture/acupressure. Additionally, chiropractors can

identify congenital weaknesses that may predispose their patients to heart disease, scoliosis, or a weakened immune system. Informed patients can take action to compensate for and often prevent future health problems.

Health providers are policy makers. To survive politically, health providers must be continually vigilant about all issues concerning their scope of practice. Continued professional success depends, to a great extent, on health providers' broad involvement in politics. Major health legislation has the potential to shape good policies, and change the balance between the provider and the consumer. To propose, pass, and implement favorable legislation that promotes more effective policies for mature adults, health care providers must make an additional commitment to stay informed on salient issues and pending legislation. In addition, the mature adult population might consider assuming a more active role in protecting their inherent freedom to choose their own doctor in order to exercise their right to seek out quality health care.

The health of a multitude of mature adult patients relies on their having the choice of alternative health care options; readily accessible chiropractic care is especially important to the mature adult population. However, recent cost containment issues, not quality health assurance, has been the focus of successful managed care organizations (MCOs); by keeping a tight hold on consumers' access and

panelists' freedom, health care costs have been lowered at the expense, in some cases, of quality care. To reassert the public's best interests and maintain the highest quality health care available, all branches of the health profession might consider working out a compromise that allows our national organizations to address the most serious challenges facing mature adults. In the future, alternative and traditional practitioners should make more of an united effort to work in collaboration; in unison, they can provide mature adults with the highest quality health care possible.

### **Hope for the Future**

According to Levinson, sixty years old begins "late adulthood" (Fowler, 1981, p. 112). This is a time when a person's youthful energies are most frequently "characterized by decline" (Hareven, 1978, p. 201). This decline can be described as one of "sheer exhaustion of using up one's seemingly fixed amount of energy" (Rosel, 1988, p. 21). As has been noted in Chapter I, this is why social thinking routinely views later adulthood as an end point; therefore, mature adults' future usefulness to society has customarily been thought to be severely limited (Robbert, 1981; Mitchell & LeClair, 1994). However, this decline is not inevitable if a growth of wisdom happens at the same time. Once policy makers and health care providers learn more about living conditions in later adulthood, they

may be able to formulate a more coherent set of policies and practices for them.

#### A New Perspective on Aging

Potentially, mature adults possess the wisdom, and capability to contribute much more to American society than they presently do. Research studies have shown that mature adults retain the capacity to learn throughout later adulthood (Peterson, 1983). In addition, Shephard (1987) concluded that vigorous training can reduce some components of biological age by as much as 20 years.

Still capable after all these years. Mature adults are not as physically infirm and/or mentally incapable of independent functioning as society generally believes. Diseases or disabilities are not inexorably tied to aging. On the contrary, Newton et al., (1984) concluded that "illnesses afflicting the elderly are treatable, possibly preventable, and probably retardable" (p. 272). In support of this view, research findings have shown that physical activity delays or slows age-related physiological deterioration (Prassas, Rominger, & Barber, 1995). As an illustration, a study conducted by Liu et al., (1995) found that Japanese mature adults at the age of 60, were expected to spend about 18.7 yrs (81%) in Functional Independence, and about 4.4 yrs (19%) in disability throughout their remaining lifetime; 30% of mature adults who were disabled

in 1987, regained their functional ability in the following 3 years.

Functionally independent mature adults, most likely, do not have to be afflicted with multiple pathologies nor do they have to suffer from any functional disabilities or impairments in their basic (ADL) or instrumental (IADL) activities of daily living until very near the end of life (Molaschi et al., 1995; Nydevik & Eller, 1994). Therefore, in the United States, a primary goal for studies on successful aging could be to identify the modifiable factors that can help maintain the independence of mature adults in their everyday functioning (DiPietro, 1996). By enhancing their Functional Independence, mature adults can be empowered to serve themselves better and become more active contributors to the advancement of society.

More opportunities than ever. As mature adults adopt healthier daily lifestyles, they could learn to live relatively free of disabling diseases, and injuries until near the end of life (Leigh & Fries, 1994; Molaschi et al., 1995; Nydevik & Eller, 1994). Conditions conducive to acquiring healthier lifestyles and more active living in later adulthood include: (1) developing a positive attitude toward aging, retirement, and life; (2) maintaining good health through proper diet, regular activity, and sufficient rest; (3) gaining a knowledge of the aging process; and (4) accepting aging as a natural part of life (Wright, 1986).

Today, leisure has become a fundamental part of the mature adults' lifestyle (Delisle, 1993). With the advancement of technological resources and time-saving devices, available time for leisure and recreation has increased substantially (Zak & Sullivan, 1992). As a result, mature adults have large blocks of discretionary/leisure time available to pursue chosen activities, and use their free time more meaningfully (Zak & Sullivan, 1992; Mobily, Lemke & Gisin, 1991; Belnap, 1981).

#### New Policy Initiatives

Although mature adults face growing limitations from physical impairments and diminishing opportunities, they also have an increased opportunity to experience new freedoms related to discovery, learning, changing values, and unencumbered self-direction (Mitchell, 1992). To facilitate the emergence of more advanced policies designed to create/encourage new freedoms in later adulthood, fresh initiatives may be required in such retirement areas as employment/volunteerism, leisure education, aspects of alternative therapies, geriatric research, and intergenerational relationships. The policy recommendations below could serve as guideposts for groups interested in making life more meaningful for older people.

The new work role. Major transformations in progress regarding corporate design and strategy for mature adults in the workplace could include (1) basing retirement decisions

on worker fitness instead of an arbitrary/fixed age limit, (2) extending the work life of mature adult workers, and (3) making work available to as many mature adults as possible. These policy initiatives appear necessary in light of the research in Chapter II which noted that production appears to peak after sixty years, and accordingly, mature adult workers can maintain employment well into their 70s (Taranto, 1989; Mitchell and LeClair, 1994). The potential to remain employed exists because the biological clock can be turned back by as much as twenty years (Shepherd, 1987), and a majority of mature adults may be able to live mostly free of disabling diseases and injuries until very near the end of life (Leigh & Fries, 1994; Molaschi et al., 1995; Nydevik & Eller, 1994). Accordingly, in the future, American society needs to support/propose new policy initiatives that increase the opportunities for more mature adults to be integrated back into nearly every aspect of society including some of the most productive sectors of the American economy (Neugarten, 1983; Swensen, 1983),

The rise of volunteerism. Accompanying the above mentioned economic and ideological changes, volunteerism also has been increasing in momentum; the rates of voluntary participation have been steadily increasing in most physical, cultural, educational, and volunteer activities (Delisle, 1993; Brazil & Thomas, 1995; Expert Consultation, 1989). Volunteerism, a form of vocational productivity,

social responsibility, and civic involvement, has "long been a thread of the American fabric" (Jean, 1997, p. 7). The new popularity of volunteerism among mature adults may be an indication that retired mature adults are ready as a group to embrace/shoulder a variety of new roles in their communities. Mature adult volunteers can serve society as a source of information and stability to families, a teacher of basic life skills, a role model to children, and a parental model to parents (Rural Family Friends, 1991; Matters, 1990). Without any question, volunteer programs can be a positive experience for the giver and receiver.

Regarding the mature adult givers, 90 percent of the seniors who participated in a work therapy program reported an increase in self-esteem as a result of having a job, and making contact with other people; 80 percent of these mature adults believed their work contributed something valuable to the general community (Voeks & Drinka, 1990). Mature adults, who were still actively working reported a consistent pattern of less symptoms, enjoyed life more, and lived a higher quality of life than mature adults who had retired or were currently out of work (Bendtsen & Hornquist, 1992). Therefore, more mature adults need to be encouraged to continue with their present employment or if already retired, to pursue a new work role in later adulthood. Meaningful work has been shown to encourage more job



involvement and provide more personal job satisfaction (Lambert, 1991).

Regarding the more youthful receivers, mature adult workers/volunteers have been valued by employers/supervisors for their reliability, rich experience, high work ethic, general excellence as employees, being attentive to detail, having fewer absences, and displaying greater enthusiasm toward work; flexibility in tasks performed and willingness to adapt to new technologies are two more important attributes of mature adult volunteers (Employers' Views, 1991). Mature adult can be highly motivated, well organized, hardworking, and capable of adapting when needed (Clennell, 1990). In essence, mature adults can do more for themselves, and contribute more to society than they presently do. Future policy initiatives that encourage these existing trends should be welcomed.

The new education paradigm. A future paradigm shift may feature new policy initiatives that seek to make leisure-oriented education more accessible to larger numbers of mature adult learners, and to develop more effective teaching methods to insure active participation by more mature adults in the learning process (Krain, 1995). Future policy initiatives could seek to design more beneficial leisure-oriented education for the gerontology population.

Regarding 64 percent of Canadians aged 55-69 experiencing some degree of trouble with everyday reading

material, more literate mature adults have taken the initiative to develop literacy education for the less literate; a 3-year start-up plan consisting of informal adult literacy classes along with visits to care centers to share stories and discuss current events has been implemented in an effort to eliminate the low literacy barrier to full participation in senior activities (Learning, 1990). One positive impact of leisure education is that it can foster a sense of psychological well-being, and promote Functional Independence (Searle, Mahon, Iso-Ahola & Sdrolias, 1995; Searle & Mahon, 1991).

New options/choices in health care. The more mature adults learn about the noninvasive, low-cost alternative health care options available, the better equipped they will be to make informed choices about who to see for trustworthy, professional advice on weight management, exercise, and lifestyle counseling. Nutritional deficiencies/metabolic disorders have the potential to increase the risk of functional impairments/disabilities in the activities of daily living, and predispose mature adults to depression, and other psychological difficulties (Fitzpatrick et al., 1993; Galanos et al., 1994).

Because mature adults are a nutritionally at-risk group, effective new policy initiatives are necessary to encourage health care providers to pay more attention to the daily eating habits and consumption of vitamin/mineral

supplements by their older patients. New research has discovered a relationship between Body Mass Index (BMI) (a long-term consequence of personal nutritional habits), and the functional capabilities of mature adults; the greater the extreme of BMI (low or high), the greater the risk to mature adults for functional impairment (Galanos et al., 1994). Therefore, in the future, policy makers might consider designing new policy initiatives that encourage more nutritional screenings by health care providers. Hopefully, assessing the nutritional status of mature adult patients will become more routine for all health care providers.

Another future health care option involves the formation of a semi-formal weekly support group. This type of support group could include a sharing circle (of wisdom), with a flexible schedule, an open attendance, a paid staff member (to be phased out gradually), and a pool of volunteers; the group's general format could consist of socialization during lunch, followed by a group discussion, and group activities that include storytelling, crafts, bingo, sewing, and round dances (Carlson-Hoggan, Donovan, 1992). Typical group goals might include encouraging more enlightened social attitudes toward aging, stimulating more self-efficacy beliefs, cultivating more positive mental attitudes (PMA), and creating more open communication. In this manner, more enriched relationships, increased

happiness, and improved health could be achieved for the members of the group. Group relationships such as these have been found to be effective in reducing mortality and increasing functionality (Sabin, 1993).

Another health care policy initiative could involve encouraging more religious involvement. Because devout religiousness, especially in later life, has been found to enhance health and well-being and protect against anxiety and depression, health care providers may wish to encourage mature adult patients to integrate religion into their therapeutic interventions; meeting spiritual needs has been found to help mature adults cope better with daily frustrations/stresses (Koenig, 1993).

New research in health care. To stimulate more thought about critical issues in later adulthood, well-designed, good quality empirical research is needed to evaluate the potential benefits of alternative therapies. More published manuscripts are required to more thoroughly document the effects of alternative treatments. To accomplish this task, new initiatives are required to establish policies that help to fund scholarly research aimed at informing and improving mature adult health practices; relevant later adulthood research could be funded by a combination of interested private, health care, government, and educational organizations. To further bridge the gap between research and practice, new training materials for health care

providers could be designed based on valid and reliable research directly relevant to practitioners. In this way, practice and research, could be joined together in a cooperative effort to enhance the effectiveness of health care in later adulthood.

New social initiatives. The lifetime of mature adults can be portrayed better as an "intricately connected net, rather than [merely] an accumulation of years" (Coles, 1970, p. 275). Interdependence among all generations appears to stimulate intergenerational transfers at all stages of the life course (Soldo & Agree, 1988). Social interdependence is an aspect of Functional Independence that refers to the intergenerational relationships highlighted by beneficial transfers that reflect the wisdom, knowledge, and experience of each generation, and thereby offers new opportunities that serve to increase the well-being of each generation (Levitt, Guacci & Weber, 1992; Mitchell, 1992; Yamada, 1994). Rewarding opportunities between generations include making new friendships, sharing new knowledge, reminiscing about past experiences to enhance self-understanding, and learning new skills (Baines, 1986; Farley, 1995; Quackenbush & Barnett, 1995; Webster, 1994).

In later adulthood, there is a tendency for the life cycle to turn back to its beginnings (Erikson (1982). Younger people can be "made thoughtful in a specific way by encounters with old people" (Erikson, 1982, p. 64; Levitt et

al., 1992). Because intergenerational programs have been associated with increases in well-being for each generation, policy makers might consider new social initiatives that encourage a collaborative intergenerational contract that also could serve to bind society closer together.

#### Concluding Remarks

Much of the literature researched for Chapter II suggested that mature adults possess the potential/capability to be more functionally independent, and contribute more to American society than they presently do (Smith & Baltes, 1990). Without any question, "aging is not a process of irreversible psychological and physiological decline" (Langer, Chanowitz, Palmerino, Jacobs, Rhodes & Thayer, 1990, p. 114) especially if accompanied by the simultaneous growth of wisdom. Wisdom may be "understood as a new kind of strength... [that is] an alternative to paths toward alienation or despair" (Salk, 1973, p. 124). Partly because of this new legacy of wisdom, the future of mankind may be viewed/anticipated to be "virtually limitless with respect to its potential expressions" (Langer et al., 1990, p. 115).

If overall productivity, potentially, can peak after 60 years of age, if mature adults living a healthy lifestyle can turn back the biological clock, and live mostly free of disabling diseases, and injuries in later adulthood, then the active work of mature adults indeed could be extended

well into their 70's. Conceptually, the potentiality of humankind is awesome; as more of the functional potentialities of mature adults is realized, mankind's collective future could become increasingly more rewarding, and individually more productive.

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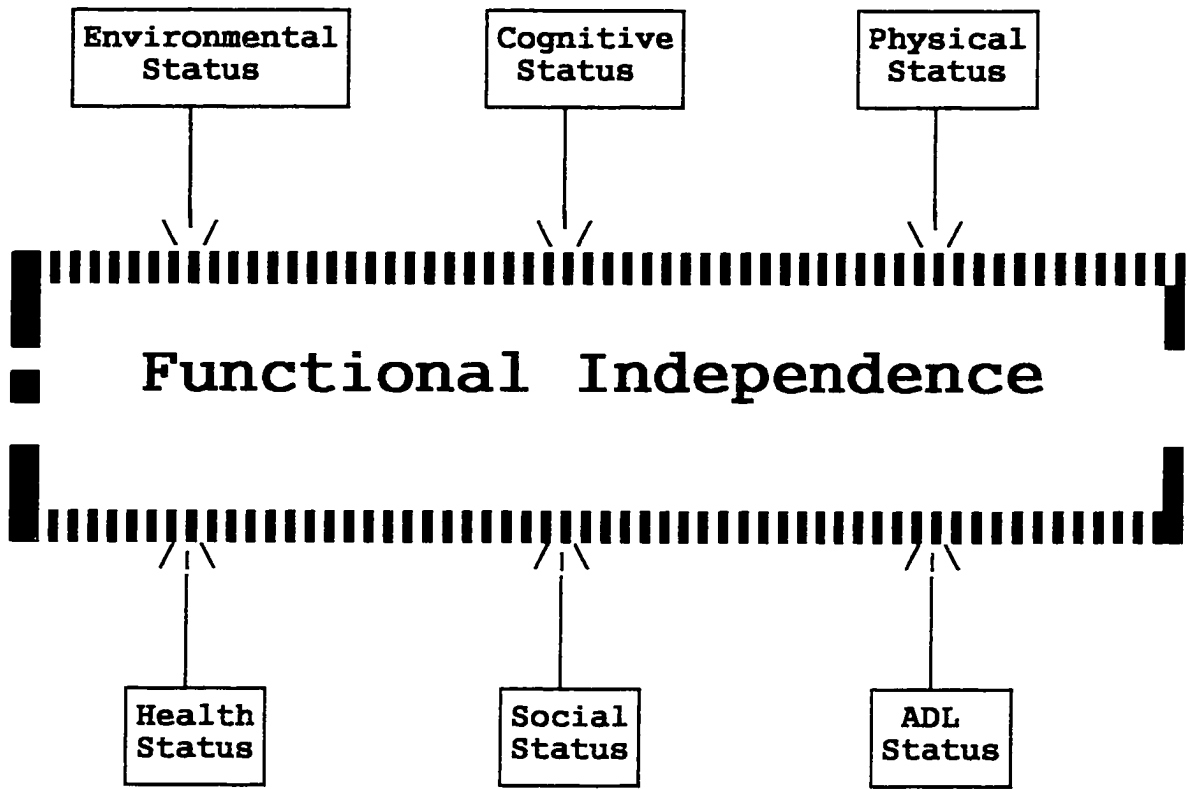
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## **APPENDICES**

**APPENDIX A**  
QUALITY OF LIFE INDICATORS PROPOSED  
AS DETERMINANTS OF FUNCTIONAL INDEPENDENCE



**APPENDIX B**  
**ADMINISTRATORS' PERMISSION LETTERS**



# Clairemont Friendship Senior Center

A MULTISERVICE CENTER FOR OLDER ADULTS

December 4, 1996

Dr. Richard N. Ashden, D.C.  
P. O. Box 310237  
Guatay, CA 91931

Dear Dr. Ashden,

The Clairemont Friendship Senior Center looks forward to you presenting your short survey to our participants, as part of your dissertation proposal. I understand the survey will take approximately thirty minutes to administer.

Our hours are 7:30AM TO 5:00PM with activities all day long. We serve a hot lunch weekdays from 11:30AM TO 12:30PM to approximately 100 people. We find that the folks are cooperative when approached before and after the meal, so you may want to arrive mid morning.

Thank you for your interest in the quality of life of the senior population.

Sincerely,

CATHY HOPPER  
EXECUTIVE DIRECTOR



December 4, 1996

Richard Ashden, D.C.  
P.O. Box 310237  
Guatay, CA 91931  
(619) 473-8750, (FAX) 473-8750

Dear Dr. Ashden:

After reviewing your dissertation abstract and other information you sent me, I believe that I can assist you with the data collection efforts you are making for your dissertation. I believe that I can support your efforts providing that it is understood that your research will be conducted during regular business hours at this center and within the necessary limits I outlined to you during our phone conversation earlier today.

Once you have designed and are ready to administer your survey instrument and received approval you need from your dissertation committee, the Committee for the Protection of Human Subjects, please feel free to contact me and I will be happy to do whatever I can to assist you in completing the data collection phase of your dissertation.

Sincerely,

Jeff Nimeshein, Human Services Manager  
La Mesa Senior Adult Center  
8450 La Mesa Boulevard  
La Mesa, California 91941  
(619) 464-0505 (FAX) 464-3761



**MIRA MESA SENIOR CENTER  
BOARD OF GOVERNORS**

8460 Mira Mesa Blvd.  
San Diego, CA 92126  
578-7325

Richard Ashden, D.C.  
P.O. BOX 310237  
Guatay, CA. 91931

December 6, 1996

Dear Dr. Ashden,

After reviewing your dissertation abstract, and other information you sent, I believe that I can assist you with the data collection efforts you are making for your dissertation. I understand that your research will be conducted during regular business hours at this center, and within the necessary limits I outlined to you during our phone conversation, I believe that I can support your efforts.

Once you have designed, and are ready to administer your survey instrument, received approval you need from your dissertation committee, please feel free to contact me, and I will be happy to do whatever I can to assist you.

Sincerely,

VERNE GOODWIN  
MIRA MESA SENIOR CENTER  
8460 MIRA MESA BLVD.  
SAN DIEGO, CA, 92126  
(619) 578-7325





CITY OF EL CAJON

July 7, 1997

Mr. Richard Ashden  
P.O. Box 310237  
Guatay, CA 91931

Dear Mr. Ashden,

This letter is to confirm the El Cajon Recreation Department's approval for you to conduct the Senior Citizen Survey submitted for my review at Wells Senior Center. This decision is based on the understanding that this survey is part of your work at University of San Diego as a student for the Committee for the Protection of Human Subjects.

Please contact Susie Cole, supervisor at Wells Center to make arrangements. If there are not enough interested seniors to participate in the survey at Wells, Susie may be able to refer you to another agency in El Cajon.

Best of luck in your studies.

Lori M. Beliveau  
Director of Recreation

cc: Susie Cole



MESA  
VALLEY  
GROVE

Senior Programs

Adult Day Health Care  
Home Delivered Meals  
Senior Nutrition Program  
Senior Day Program

Administrative Office  
8235 Mount Vernon Street  
Lemon Grove, CA 91945-3323  
Phone: 619/460-0430  
Fax: 619/460-9707

July 10, 1997

TO: Dr. Richard Ashden, D.C.

RE: Survey of Seniors

The survey given by Dr. Richard Ashden, D.C. was coordinated by our Nutrition Project Director, Patty Hardt and was authorized by our Executive Director, Lourdes S. Contreras.

Our Site Coordinator, Anita Ditges assisted in implementing the survey.

Our seniors were very cooperative and seemed very pleased with the survey conducted.

It was our pleasure to take part in this survey and we are hopeful that the results will benefit seniors in general.

Sincerely,

Anita Ditges  
Site Coordinator

/lh



**APPENDIX C**  
CONFIDENTIAL SURVEY QUESTIONNAIRE  
FOR MATURE ADULTS

**CONFIDENTIAL SURVEY QUESTIONNAIRE FOR MATURE ADULTS**

Instructions: Circle the answer that **best applies** to you. Your most accurate answers will make this study more successful and meaningful.

1. When it comes to feeding myself or eating at meals, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

2. When it comes to handling my own finances, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

3. When it comes to selecting my clothes, and dressing daily, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

4. When it comes to everyday elimination activities such as going to the bathroom or toileting, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

5. When it comes to formulating plans, making decisions, taking action, and adapting to resistive environmental circumstances, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

6. When it comes to using such familiar objects as a spoon or fork to feed myself, and/or a toothbrush or comb to groom myself, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

7. When it comes to transportation such as going to the doctors, shopping or driving to work, volunteer positions or other activities at a distance, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

8. According to your doctor, are you physically or mentally impaired or disabled, and, if so, to what degree do you rely on others on a daily basis?

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

9. How would you rate your overall ability to perform daily chores such as dusting, washing dishes or clothes, vacuuming, gardening, shopping in town, and more?

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

10. How would you rate your mobility and flexibility, that is, your ability to walk or move around smoothly on a daily basis?

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others
because				because
I am				I am fully
<b>immobile</b>				<b>mobile</b>

11. How often do you think of yourself as basically healthy?  
1            2            3            4            5  
Never      Rarely      Sometimes      Usually      Always

12. How often do you feel any mental/physical discomfort or pain?  
1            2            3            4            5  
Never      Rarely      Sometimes      Usually      Always

13. Financially, can you afford both the cost of a healthy lifestyle, and a satisfying environment at home?  
1            2            3            4            5  
Never      Rarely      Sometimes      Usually      Always

14. On average, at least three times per week, how often do you engage in 20 minutes of non-stop physical exercise?  
1            2            3            4            5  
Never      Rarely      Sometimes      Usually      Always

15. Do you avoid the excessive use of such foods as coffee, refined flour, sugar and salt products?  
1            2            3            4            5  
Never      Rarely      Sometimes      Usually      Always

16. Do you feel down, in a blue mood or sad all the time (can be mild or severe) that won't go away?  
1            2            3            4            5  
Never      Rarely      Sometimes      Usually      Always

17. Overall, do you feel that you have close/intimate relationships with your spouse (if any), lifelong friends, children, and significant others?  
1            2            3            4            5  
Never      Rarely      Sometimes      Usually      Always

18. In performing daily activities, how often do you have to make adaptations or restrict yourself because of dizziness and/or fear of losing your balance or falling down?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

19. On a regular basis, are you committed to an active position in your community, for example, a paying job or any volunteer activity?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

20. Do you avoid harmful health habits such as smoking, occasional use of potentially dangerous drugs, and/or drinking immoderate quantities of alcohol?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

21. Do you take control/charge over the overall course of your life, and feel in control/charge of most situations?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

22. Do you have any trouble remembering present and/or past significant and/or familiar events, people, places, or objects?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

23. How often do you travel outside your residence to visit friends, volunteer/work in the community, talk to other mature adults or go to church?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

24. Are you currently distressed or grieving about the recent or past death/injury/illness of significant others such as close friends, your spouse, or other family members?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

25. To what degree are you distressed when your daily routine gets repeatedly changed and/or if small everyday frustrations continuously upset your day?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

26. On a daily basis, do you feel in tune with the people most frequently around you; you can understand each other, and turn or talk to one another in a confidential way?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

27. Do you feel that its always possible to get sufficient help from family, friends and/or significant others if a big problem and/or crises arises?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

28. Do you feel that you and your circle of friends generally trust one another, communicate your feelings openly, and understand one another well?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

29. In the midst of a major stressful life event or minor everyday hassle/frustration, I normally feel inside:

1	2	3	4	5
Completely <b>pessimistic</b> as if there was no hope	Rarely <b>optimistic</b>	Sometimes <b>optimistic</b>	Usually <b>optimistic</b>	I Will definitely overcome it

30. Have you **previously** or **presently** lived in a nursing home or long-term care facility?

1	2	3	4	5
<b>Never</b>	Rarely or <b>only</b> <b>once</b> before	Sometimes or <b>more</b> <b>than once</b> before	Usually or <b>most</b> of the time now	<b>Always</b> or all the time now



31. According to your doctor, do you have cancer, diabetes, arthritis, heart disease, stroke, muscle strength or nerve loss, hip fracture, lung conditions or any other illness?

1	2	3	4	5
<b>None</b>	I have	<b>More Than</b>	<b>Many Of</b>	<b>Almost All</b>
at	<b>one</b> of	<b>one</b> of	these	of these
all	these	these	diseases	diseases
	diseases	diseases		

32. Are you presently suffering from a hearing or vision loss/impairment of any kind?

1	2	3	4	5
<b>None</b>	<u>Mildly,</u>	<u>Moderately,</u>	<u>Severely,</u>	I Have
at	from	from	from	<b>both</b> of
all	<b>only one</b>	<b>only one</b>	<b>only one</b>	these losses
	loss	loss	loss	to some degree

**APPENDIX D**  
SEVEN SURVEY QUESTIONS FOR THE  
ACTIVITIES OF DAILY LIVING STATUS

**SEVEN SURVEY QUESTIONS FOR ACTIVITIES OF DAILY LIVING STATUS**

1. When it comes to feeding myself or eating at meals, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

3. When it comes to selecting my clothes, and dressing daily, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

4. When it comes to everyday elimination activities such as going to the bathroom or toileting, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

5. When it comes to formulating plans, making decisions, taking action, and adapting to resistive environmental circumstances, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

8. According to your doctor, are you physically or mentally impaired or disabled, and, if so, to what degree do you rely on others on a daily basis?

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

9. How would you rate your **overall** ability to perform daily chores such as dusting, washing dishes or clothes, vacuuming, gardening, shopping in town, and more?

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

19. On a regular basis, are you committed to an active position in your community, for example, a paying job or any volunteer activity?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

**APPENDIX E**  
FIVE SURVEY QUESTIONS FOR PHYSICAL STATUS

**FIVE SURVEY QUESTIONS FOR PHYSICAL STATUS**

10. How would you rate your mobility and flexibility, that is, your ability to walk or move around smoothly on a daily basis?

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others
because				because
I am				I am fully
<b>immobile</b>				<b>mobile</b>

14. On average, at least three times per week, how often do you engage in 20 minutes of non-stop physical exercise?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

15. Do you avoid the excessive use of such foods as coffee, refined flour, sugar and salt products?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

18. In performing daily activities, how often do you have to make adaptations or restrict yourself because of dizziness and/or fear of losing your balance or falling down?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

20. Do you avoid harmful health habits such as smoking, occasional use of potentially dangerous drugs, and/or drinking immoderate quantities of alcohol?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

**APPENDIX F**  
FIVE SURVEY QUESTIONS FOR COGNITIVE STATUS

**FIVE SURVEY QUESTIONS FOR COGNITIVE STATUS**

2. When it comes to handling my own finances, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

6. When it comes to using such familiar objects as a spoon or fork to feed myself, and/or a toothbrush or comb to groom myself, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

16. Do you feel down, in a blue mood or sad all the time (can be mild or severe) that won't go away?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

21. Do you take control/charge over the overall course of your life, and feel in control/charge of most situations?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

22. Do you have any trouble remembering present and/or past significant and/or familiar events, people, places, or objects?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always



**APPENDIX G**  
FIVE SURVEY QUESTIONS FOR SOCIAL STATUS

## FIVE SURVEY QUESTIONS FOR SOCIAL STATUS

17. Overall, do you feel that you have close/intimate relationships with your spouse (if any), lifelong friends, children, and significant others?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

23. How often do you travel outside your residence to visit friends, volunteer/work in the community, talk to other mature adults or go to church?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

26. On a daily basis, do you feel in tune with the people most frequently around you; you can understand each other, and turn or talk to one another in a confidential way?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

27. Do you feel that its always possible to get sufficient help from family, friends and/or significant others if a big problem and/or crises arises?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

28. Do you feel that you and your circle of friends generally trust one another, communicate your feelings openly, and understand one another well?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

**APPENDIX H**  
FIVE SURVEY QUESTIONS FOR ENVIRONMENTAL STATUS

FIVE SURVEY QUESTIONS FOR ENVIRONMENTAL STATUS

7. When it comes to transportation such as going to the doctors, shopping or driving to work, volunteer positions or other activities at a distance, I:

1	2	3	4	5
ALWAYS	FREQUENTLY	SOMETIMES	RARELY	NEVER
rely on	rely on	rely on	rely on	rely on
others	others	others	others	others

13. Financially, can you afford both the cost of a healthy lifestyle, and a satisfying environment at home?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

24. Are you currently distressed or grieving about the recent or past death/injury/illness of significant others such as close friends, your spouse, or other family members?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

25. To what degree are you distressed when your daily routine gets repeatedly changed and/or if small everyday frustrations continuously upset your day?

1	2	3	4	5
Never	Rarely	Sometimes	Usually	Always

29. In the midst of a major stressful life event or minor everyday hassle/frustration, I normally feel inside:

1	2	3	4	5
Completely	Rarely	Sometimes	Usually	I Will
<b>pessimistic</b>	<b>optimistic</b>	<b>optimistic</b>	<b>optimistic</b>	definitely
as if there				overcome it
was no				
hope				

**APPENDIX I**  
**FIVE SURVEY QUESTIONS FOR HEALTH STATUS**

**FIVE SURVEY QUESTIONS FOR HEALTH STATUS**

11. How often do you think of yourself as basically healthy?  
 1                      2                      3                      4                      5  
 Never              Rarely              Sometimes              Usually              Always

12. How often do you feel any mental/physical discomfort or pain?  
 1                      2                      3                      4                      5  
 Never              Rarely              Sometimes              Usually              Always

30. Have you **previously** or **presently** lived in a nursing home or long-term care facility?  
 1                      2                      3                      4                      5  
**Never**              Rarely              Sometimes              Usually              **Always**  
                          or **only**              or **more**              or **most**              or all  
                          **once**              **than once**              of the              the time  
                          before              before              time now              now

31. According to your doctor, do you have cancer, diabetes, arthritis, heart disease, stroke, muscle strength or nerve loss, hip fracture, lung conditions or any other illness?  
 1                      2                      3                      4                      5  
**None**              I have              **More Than**              **Many Of**              **Almost All**  
 at              **one of**              **one of**              these              of these  
 all              these              these              diseases              diseases  
                          diseases              diseases

32. Are you presently suffering from a hearing or vision loss/impairment of any kind?  
 1                      2                      3                      4                      5  
**None**              Mildly,              Moderately,              Severely,              I Have  
 at              from              from              from              **both** of  
 all              **only one**              **only one**              **only one**              these losses  
                          loss              loss              loss              loss              to some degree

**APPENDIX J**  
CONSENT TO ACT AS A RESEARCH SUBJECT FORM

### Consent To Act As A Research Subject

Dr. Richard N. Ashden, D.C., a doctoral student from the School of Education at the University of San Diego, is conducting a research study on quality of life indicators, and their relationship to Functional Independence in later adulthood. He has explained his study to me, answered all my questions, and I also understand that I may phone Dr. Ashden at (619) 473-8750 concerning further questions and research-related problems.

I give official permission for Dr. Ashden to administer his survey, and transcribe notes. I realize that data collection will take only 15 to 30 minutes, and there are no costs to me for my participation. Also, my research records will be kept confidential, my privacy honored, and my identity not revealed to anyone without my expressed consent as required by law.

My voluntary participation will not involve any added risks or discomforts to me except for possible minor fatigue. Also, I may refuse to participate or withdraw at any time without jeopardizing social status, employment or the health care I receive. Also, Dr. Ashden will notify me of his research results, and share any of its benefits with me.

I, the undersigned, understand the above explanations, hereby give my consent, and state that no agreement exists, written or verbal beyond that expressed in this consent form.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address of Participant

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
Signature of Researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Location



**APPENDIX K**  
DEMOGRAPHIC DATA INFORMATION SHEET

## Demographic Data Information Sheet

Instructions: Check off the answer that **best applies** to you. Your most accurate answers will make this study more successful and meaningful.

### Gender

\_\_\_\_\_ Male  
\_\_\_\_\_ Female

### Race/Ethnicity

\_\_\_\_\_ Hispanic  
\_\_\_\_\_ Caucasian/White but not of Hispanic Origin  
\_\_\_\_\_ African-American/Black but not of Hispanic Origin  
\_\_\_\_\_ American Indian or Alaskan Native  
\_\_\_\_\_ Filipino  
\_\_\_\_\_ Asian-American  
\_\_\_\_\_ Pacific Islander  
\_\_\_\_\_ Other

### Age

\_\_\_\_\_ Below 55  
\_\_\_\_\_ 55-65  
\_\_\_\_\_ 66-75  
\_\_\_\_\_ 76-85  
\_\_\_\_\_ Over 85

### Current Marital Status

\_\_\_\_\_ Single  
\_\_\_\_\_ Divorced  
\_\_\_\_\_ Married  
\_\_\_\_\_ Spouse Deceased

### Academic Background (check your highest grade level)

\_\_\_\_\_ Did not complete High School  
\_\_\_\_\_ High School Diploma Completed  
\_\_\_\_\_ College Degree Completed  
\_\_\_\_\_ Graduate Degree Completed

**APPENDIX L**  
FIVE-MINUTE TALK GIVEN AT THE SENIOR CENTERS

## **The Five-Minute Talk to Prospective Subjects**

Hello, my name is Richard Ashden. I am completing my Doctorate in Educational Leadership/Administration at the University of San Diego. I am also a Licensed Doctor of Chiropractic in California, Arizona, Oregon, and New York. This is my research questionnaire that you may fill out if you are at least 55 years of age. I just want to know how you feel about your life. The research study is for policy makers (or law makers), and health care providers such as myself, and other health professionals who want to make life better for people 55 years of age or over especially.

Therefore, I invite you to participate, and I believe you can contribute something very valuable to the research. First, the University of San Diego Committee on the Protection of Human Subjects requires that each participant sign the Consent to Act as a Research Subject Form which is the very top sheet of your handout. However, I want you to know that your name will not be seen by anyone except me, and I will only report this data as group information. For example, "24 people between the ages of 55 and 65 completed the questionnaire, and 70% of those who filled out the questionnaire were High School graduates."

I am offering this group information to other researchers, policy makers, and health care practitioners, and if you are at least 55 years of age, I value and appreciate your kind participation in filling out this short questionnaire. Besides thanking you for your participation, I have a gift of gratitude for each participant. These gifts are information sheets on topics such as sciatica, low back pain, depression, and the doctoral program I am taking at the University of San Diego. You may take these home to read when you hand in your completed questionnaire. Also, if there are any questions, now or later, I will be happy to answer them. Please hand in your questionnaire to me when you complete it, and thank you.