Successful Aging: A Quantitative Study of Resiliency and Adaptability as Mediating Factors in the Successful Aging of Older Adults

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SUCCESSFUL AGING: A QUANTITATIVE STUDY OF RESILIENCY AND ADAPTABILITY AS MEDIATING FACTORS IN THE SUCCESSFUL AGING OF OLDER ADULTS

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Keywords: Successful, Aging, Resiliency, Positive Adaptation
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To Jagger, my foot warmer and companion for the last nine years.
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We all have the same beginning—birth—and we all have the same ending—death. So how different can we be? — Mitch Albom

It matters if you just don’t give up. — Stephen Hawking

**INTRODUCTION**

The idea that old age can be an enjoyable stage of life is not a new one and for millennia has run parallel to a more negative view of aging (Blazer, 2006). Despite this, for much of its short history, gerontologists have reinforced a “decline and loss” paradigm and theorists have depicted later life as a series of losses to which the individual (and society) must adapt and adjust (Phillipson, 1998). The term ‘success’ in gerontology has generally been tied to the ability of health care providers to treat illness and disease and restore functioning. The notion of successful aging, as a potentially inherent quality of old age, is a relatively new concept (Blazer, 2006). Terming aging ‘successful’ has proven a challenging venture as researchers have different ideas of what it means to age successfully. In the case of successful aging, the human intuitive “I know it when I see it” seems to apply—however successful aging as a construct has hardly been simple to translate into quantifiable terms.

The most popular model of successful aging was developed by Rowe and Kahn (1997, 1998), who define successful aging as a high degree of physical and cognitive function, active engagement and the absence of disease. Researchers using the model have noted significant numbers of subjects who rate themselves as aging successfully, but
do not meet criteria for optimal physical functioning and absence of disease and hence are not considered to be aging successfully by researchers. This consistent lack of agreement between subjective and objective ratings prompted researchers to reassess what it means to age successfully and solicit the opinions of older adults about what factors they consider to be important for aging well. Investigators of these studies report that, in addition to Rowe and Kahn’s criteria, psychosocial variables appear to play an important role in how older adults view successful aging, and perhaps mediate the importance of variables such as medical illness and/or the physical declines associated with aging. Investigators suggest that psychosocial variables be explored more thoroughly and potentially incorporated into the development of a more universally accepted operational definition of successful aging.

Despite a lack of consensus about what should be included in an operational definition of successful aging, what is clear is the paramount importance of better understanding the ever-growing population of aging adults. Identifying the characteristics of persons who retain high quality of life and well being over the longevity of their lives may lead to effective interventions and real life changes for others. This is not merely a quality of life issue, but a highly relevant societal concern as health care costs for older adults are oftentimes considerable and lead to financial burdens for individuals, families and society. This author aims to contribute to the successful aging research literature by examining the role of the psychosocial variables of resiliency and positive adaptation when taking functional impairments into account. The following sections of this introduction include: theoretical and historical background, a statement of the problem, the rationale for the current study and the definitions of essential terms.
Theoretical and Historical Background

Throughout history, the aging human figure and experience has been represented and depicted in a multitude of ways. The hieroglyphic for “old” in ancient Egypt (2800 B.C.) was a bent person leaning on a staff, and Hippocrates has been credited with describing old age as “cold and wet.” The term “geriatrics” coined by Leo Nascher in 1914, was derived from the geronte, a group of men over 60 years, who ran the legislative council (gerousia) of Athens. Just as the associations and perceptions of later life have shifted from prehistory to ancient Greece to Hippocrates; the modern study of aging has taken on various foci and forms. One model of the more recent history was presented by Blazer (2006), who describes the study of gerontology as having passed through at least four conceptual phases over the past one hundred years. Blazer claims that although these phases overlap, they fashion a sequence that informs the current interest in successful aging- an interest that is reflected in a growing body of literature.

In the first phase, aging was largely considered to be an inevitable and natural decline and humans occupied themselves with anti-aging remedies. In the second phase, the term, “geriatrics” was coined and research devoted itself to diseases common with advancing age, such as osteoporosis and Alzheimer’s disease. In the third phase, researchers indicated that decline in function did not occur at nearly the rate that clinicians and the general public assumed and a new representation of “normal” aging was established. The fourth phase was characterized by efforts to develop a conceptual basis of the positive aspects of aging, and to clarify the genetic, biomedical, behavioral, and social factors contributing to the maintenance and promotion of function in later life (Blazer, 2006). Though other groups worked simultaneously on developing this new
paradigm, the main contributor was the MacArthur study, led by researchers Rowe and Kahn.

Statement of the Problem

In 1998, Rowe and Kahn proposed three characteristics of successful aging: low probability of disease and disease-related disability, high cognitive and physical functioning and active engagement with life. Since its inception, the model has become the most popular model for studying successful aging, but has also attracted considerable scrutiny (Minkler and Fadam, 2002; Aldwin, Spiro & Park, 2006; Steverink, Lindenberg & Ormel, 1998; and Heckhausen & Schulz, 1996). A number of researchers have criticized Rowe and Kahn’s model as overly exclusive due the expectations of high physical function and absence of disease/medical illness. These concerns have been substantiated by a significant number of older adults who see themselves as aging successfully, but do not meet researcher-defined criteria for successful aging. (Strawbridge, Wallhagen & Cohen, 2002; Knight & Ricciardelli, 2003; Montross & Depp, 2006; Depp & Jeste, 2006; and Reichstadt, Depp, Palinkas & Jeste, 2007).

In an effort to examine the correlates of subjective ratings of successful aging, Montross et al. (2006) determined that greater resiliency, as well as the number of close friends, better everyday functioning, and health related quality of life was significantly associated with subjective ratings of successful aging. In 2007, Reichstadt et al (2007) ran focus groups to elicit the opinions of older adults on successful aging and subjects indicated four major themes: attitude/adaptation, security/stability, health/wellness, and engagement/stimulation as being important. While Rowe and Kahn identify health/wellness and engagement/stimulation as criteria, they do not incorporate
attitude/adaptation and security/stability into their operational definition of successful aging.

Rationale for the Current Study

Investigators of quantitative and qualitative research (Montross et al., 2006; Reichstadt et al., 2007) have established a significant relationship between resiliency, positive adaptation and successful aging; however, research into these variables is limited. Some theorists have incorporated positive adaptation into their definitions of successful aging (Butt & Beisier, 1987; Baltes & Baltes, 1991), but neither resiliency nor positive adaptation has been assessed for its predictive ability for successful aging. Investigators of predictors of successful aging identify physical activity (Palmore, 1979; Rowe & Kahn, 1997; Strawbridge, 1996), social engagement (Palmore; Rowe & Kahn; Strawbridge; Roos & Havens, 1991), and freedom from chronic illness (Strawbridge; Roos & Havens) as predictors with some regularity (Phelan, 2002). High self-efficacy and high educational level (Rowe & Kahn) have also been identified as predictors of successful aging. Given the apparent relationship between positive adaptation and resiliency and managing the changes associated with aging, further investigation into the predictive ability of these variables is warranted.

Better understanding the potential role of resiliency and positive adaptation in how older adults view their aging is important for the general discussion of what it means to age successfully, how successful aging is operationalized and increasing the level of agreement between researchers and older adults about what it means to age successfully. The primary investigator aims to make a unique contribution to the successful aging literature by examining, when functional impairments are controlled for, if resiliency and
positive adaptation significantly predict older adults’ self-ratings of successful aging and partially explain the observed differences between objective and subjective ratings of successful aging.

Definitions of Essential Terms

Resiliency

Richardson et al. (1990) and Richardson (2002) proposed the concept of the “metatheory of resilience and resiliency”, or three waves of resiliency inquiry. The first wave identified characteristics of people who effectively cope with and grow through disruptions. The second examined the process in which people acquire these characteristics. The third was the recognition of innate resilience and the capacity to grow and develop. From this line of research, resilience was conceptualized as, “a force within everyone that drives them to seek self-actualization, altruism, wisdom, and be in harmony with a spiritual force of strength” (p. 313, Richardson, 2002).

A basic assumption of this theory is the idea of a biopsychospiritual balance, which allows humans to adapt to current life circumstances. Stressors, adverse events and other expected and unexpected life events alter this balance, or homeostasis. The ability to adapt and cope with such events is influenced by resilient qualities and resilient reintegration. The interaction between daily stresses and protective factors determines whether serious disruptions will impact the individual chronically. The reintegration process leads to one of four outcomes: 1) adaptation leads to a higher level of homeostasis, 2) return to baseline in an effort to move past the disruption, 3) recovery with loss, establishing a lower homeostasis, or 4) a dysfunctional state, where maladaptive behaviors are used to cope with the stressor. Thus, according to Richardson
(1990, 2002) resilience may be viewed as an outcome of successful coping abilities.

Connor and Davidson (2003) note, “resiliency embodies the personal qualities that enable one to thrive in the face of adversity” (p. 1, Connor & Davidson, 2003). The authors’ note that researchers over the past 20 years have demonstrated that resilience is a multidimensional characteristic that varies with context, time, age, gender, cultural origin, as well as within an individual subjected to different life circumstances (Garmezy, 1985; Garmezy & Rutter, 1985; Rutter et al., 1985; Seligman & Csikzentimihalyi, 2000; Werner & Smith, 1992).

The operational definition of resiliency utilized by the current investigator is that of Connor & Davidson (2003), who define resiliency as the ability to adapt well and overcome adversity. The CD-RISC (Connor & Davidson, 2003) was used as a measure of resiliency, and sample items include “I am able to adapt to change,” “I tend to bounce back after illness or hardship,” and “I am not easily discouraged by failure.” See the Methods section for additional information regarding the CD-RISC.

Adaptability

Butt and Beisier (1987) note that much of the literature on aging deals with the problems of aging, including physical and mental decline, isolation and loneliness. The authors note that comparing the process of aging in a variety of cultures, researchers have found that the role and the values attached to aging determine adaptation as much as does biological change. The classic contributions of Jung (1933) and Erikson (1963) offered life-span developmental theories and included dynamic frameworks for the interaction of success and failure. Jung associated adjustment with personal equilibrium as opposed to disequilibrium, in expressing human potential. Erikson conceptualized life development
as a constant interplay between success and failure, ending in possible feelings of despair tempered into confidence and integrity through broadened sociocultural identity (Butt & Beisier).

Adaptation across the life span has been researched through two different models. Persons utilizing the cognitive appraisal model (Lazarus, 1966) focus on how well the individual copes with stressful situations, whereas those employing the subjective well-being model (Andrews & Withey, 1976; Campbell, Converse & Rogers, 1976; Campbell, 1980) focus on how satisfied the individual is with personal and social resources and experiences. Whitbourne (1985) summarized the preceding models by suggesting that there are two traditions of research on adult adaptation that can be seen through research of subjective well-being. Investigators of the first tradition attempt to predict well-being through variables such as social status, health, and activity level; and investigators of the second tradition examine subjective ratings as being of prime importance in predicting well-being (Butt & Beisier, 1987).

Adaptability has been incorporated in the Butt & Beisier (1987) and Baltes & Baltes (1991) definitions of successful aging, and identified by Phelan and Larson (2002) as a major element of researcher defined criteria. Montross et al. (2006) operationally defined positive adaptation as reporting “often true” or “true nearly all the time” on the CD-RISC (Connor-Davidson Resilience Scale) items “I am able to adapt to change” and “I try to bounce back after illness or hardship”.
REVIEW OF THE LITERATURE

The literature review includes an overview of the study of aging over the last century, Rowe and Kahn’s model of successful aging, reactions to this popular aging paradigm, alternative models of successful aging, studies of successful aging and a critique of the reviewed literature. The empirical research section is organized chronologically as each study builds on the prior study’s findings. The critical literature review was conducted using the key words: “Older adult”, “successful aging”, “geropsychology” and “aging” in the search engines PsychoInfo and PubMed. As the MacArthur Aging Study, which commenced in 1984, is generally considered to be the main contributor to introducing successful aging as a meaningful construct and field of empirical study in North America (Blazer, 2006), the literature publication dates range from 1984 through 2008. Next, “related articles” function on the PubMed web site was used to examine reference lists from published articles to obtain additional papers.

The term “successful aging” has been widely used in the literature, sometimes with no specific definition offered, and often the meaning is merely implied. “Successful aging,” according to Rowe and Kahn, is defined as having minimal or no physiological and cognitive loss and being actively engaged in life. Additional meanings emerging from the literature include positive functioning or psychological well-being (Morgan, et al., 1991; Ryff, 1989a; Sullivan & Fisher, 1994), physical and mental health (Meeks & Murrell, 2001; Wong & Watt, 1991), cognitive growth potential (Baltes, 1993; Stern & Cartensen, 2000), high quality of life (Yoon, 1996), high life satisfaction (Butt & Beiser,
1987; Caspi & Elder, 1986; Meeks & Murrell, 2001), adaptation to life changes (Abraham & Hansson, 1995; Reichstadt et al., 2007), and social integration (Moen, Dempster-McClain & Williams, 1992; Seeman et al., 1995).

For clarification’s sake, it should be noted that the authors of the reviewed articles not only have differing opinions on what it means to age successfully, they employ different terms. Some of the reviewed articles refer to aging well or optimal aging, when examining the concept more commonly described as successful aging. As these terms are used in reference to Rowe and Kahn’s original model of successful aging, the variance in terminology is assumed to reflect progressive efforts within the field to develop an operational definition that is more inclusive and reflective of the heterogeneity of older adults. In respect of this objective and for the purposes of accurate representation, this author will use the specific terms employed by individual authors when reviewing their respective papers. It is the current author’s opinion that a comprehensive literature review can only be accomplished through the inclusion of papers which use the more popularized term successful aging, as well as papers that employ like terms with the intention of improving on the current conceptual model. Until operational definitions that outline distinct differences between these terms are developed or a uniform definition is agreed upon, the reader can assume the terms successful aging, aging well, and optimal aging to be synonymous and differences can be attributed to an issue of semantics.

Aging in the Last Century

In the article “Successful Aging” published in The American Journal of Geriatric Psychology (Blazer, 2006), Blazer describes gerontologists, geriatricians, and geriatric psychiatrists as having progressed through at least four conceptual phases of aging over
the past one hundred years. Blazer claims that although these phases overlap, they
fashion a sequence that informs the current interest in successful aging- an interest that is
reflected in a growing body of literature. As a frame for the theoretical and historical
overview of successful aging, the following section is divided into the phases identified
by Blazer (2006) and supplemented with information from additional resources to
support the outlined conceptual phases.

Phase I: The Fountain of Youth and The Inevitable Decline

At the start of the 20th century, aging was largely considered an inevitable and
natural decline. For centuries humans have occupied themselves with anti-aging potions
and remedies- and just as products continue to emerge in today’s market as potential
cures for a wide variety of age-related disorders, hormone extracts were advanced as anti-
aging drugs (Busse & Blazer, 2004). C.E. Brown-Sequard’s claim in 1878 that he had
successfully rejuvenated himself with the extracts of animal sexual glands is not a far cry
from the broad marketing of Gerovital-H3 during the middle of the 20th century through
the 1970s. Although agents, like Testosterone, have gained considerable attention as
possible anti-aging remedies, none have proven to be broadly therapeutic and many carry
potential risks (Liverman & Blazer, 2004). Blazer (2006) comments that on a more
positive note, parallel to the eternal quest for an anti-aging drug, empirical studies have
documented a continuing association of successful aging with healthy living- physical
and moral (Cole, 1992).

Phase II: Diseases of Old Age

In 1909 Nascher introduced the term geriatrics and the focus upon specific
diseases of aging arrived in 1914 with the publication of his famous textbook, The
Diseases of Old Age and Their Treatment (Nascher, 1914). Considerable research has and continues to be devoted to diseases that are common with advancing age, such as osteoporosis, prostate cancer, and Alzheimer’s disease. Blazer (2006) argues that although attention to the treatment of diseases of late life did nothing to offset the belief that old age was beset with inevitable declines in function, operationalizing the maladies of later life and the initiation of empirical studies of causation and intervention remain the cornerstones of geriatrics and geriatric psychiatry.

Phase III: Redefining Normal

Researchers’ increasing interest in the medical problems of older persons and the aging process demonstrated the importance of separating pathologic changes from those that could be attributed to aging per se. In the mid-1950s a number of groups decided to take a closer look at normal aging. The Duke Longitudinal Study of Aging (1970) followed a cohort of 265 older adults over the course of 20 years to examine the changes that would occur (and the associated rates of change) between the ages of 65 (young old) and 85+ (advanced age). The findings were surprising as previous cross-sectional studies of the elderly indicated that old age was associated with inevitable decline in function. Investigators found that decline in function (health, cognitive function, sexual function, etc.) did not occur at nearly the rate that clinicians and the general public assumed. Once older adults were viewed over longer periods of time, snapshot assumptions proved false and age associated cognitive and physiologic deficits were no longer seen as age-determined (The Duke Longitudinal Study of Aging, 1970). Identification of significant cohort effects and contamination by specific disease processes in cross-sectional
comparisons of different age groups established a new perspective on the population and a new representation of “normal” aging.

Rowe and Kahn (1987) noted that theorists have served aging research well with their conceptualizations of normality, whether explicit or implied. Over the past thirty years the researchers of numerous cross-sectional and longitudinal studies carefully screened participants for disease and demonstrated the major effects of age on hearing, vision, renal function, glucose tolerance, systolic blood pressure, bone density, pulmonary function, immune function, sympathetic nervous system activity, and characteristic changes in cognitive and behavioral functions. The authors note that these non-pathological changes are important reflections on the aging process, as well as potential precursors of pathology, the influence of age on the subsequent presentation of disease, response to treatment, and the likelihood of complications (Rowe & Kahn, 1987).

In the 1980s, it became increasingly clear that the division of populations into ‘diseased’ versus ‘normal’ had serious limitations. First, the model was insufficient in depicting the broad heterogeneity of older persons in the non-diseased group; second, the emphasis on normality implicated harmlessness or lack of risk; and third, the belief that normal is somehow natural implied that age associated declines were beyond modification (Rowe & Kahn, 1987; Blazer, 2006)). In Rowe & Kahn’s landmark article, Human Aging: Usual and Successful, the authors observed, “The emphasis on ‘normal’ aging focused attention on learning what most older people do and do not do, and what physiologic and psychologic states are typical.” The authors argued, “This tends to create a gerontology of the usual” (p. 143, Rowe & Kahn, 1987). Rowe and Kahn
hypothesized that theorists’ categorical division of diseased versus non-diseased not only neglected the substantial heterogeneity within age groups, differences among individuals were attributed to genetic endowment. Associations between age-related declines and life style, habits, diets and psychosocial factors extrinsic to the aging process were observed, stimulating substantial growth in physiologic, psychologic and sociologic research on aging in human populations.

*Phase IV: Successful Aging*

In 1984 a multidisciplinary group of scholars (Minkler & Fadem, 2002) were assembled by the John D. and Catherine MacArthur Foundation to develop a conceptual basis of the positive aspects of aging and to clarify the genetic, biomedical, behavioral, and social factors contributing to the maintenance and promotion of function in later life (Blazer, 2006). Though other groups worked simultaneously on this new paradigm, the $10 million, 10-year MacArthur study research team, led by Rowe and Kahn, was the main contributor to introducing ‘successful aging’ as a meaningful construct and a field of empirical study in North America (Blazer, 2006). Rowe and Kahn (1987) first described successful aging solely in reference to the absence of disease and disability. In 1997, they distinguished between usual aging in which extrinsic factors heighten the effects of aging alone, and successful aging in which extrinsic factors play a neutral or positive role. In 1998, Rowe and Kahn proposed three characteristics of successful aging: low probability of disease and disease-related disability, high cognitive and physical functioning, and active engagement with life.
Rowe and Kahn’s Model of Successful Aging

Rowe and Kahn developed their successful aging paradigm in response to longitudinal research findings in which investigators emphasized the heterogeneity of older persons and the modifying effects of diet, exercise, personal habits, and psychosocial variables. In the article, *Human Aging: Usual and Successful*, Rowe and Kahn (1987) draw distinctions within the “normal aging” group between older adults experiencing average decline with age and others who present with minimal or no physiologic loss. Calling for the addition of a successful aging category, Rowe and Kahn (1987) present evidence in the areas of carbohydrate metabolism, osteoporosis, and cognitive function to demonstrate individuals exhibiting minimal or no age associated physiologic declines. Rowe and Kahn (1987) reference autonomy/control and social support/connectedness as well-researched examples of psychosocial factors that influence the aging process and call for future research identifying extrinsic psychosocial properties that influence the well-being of older men and women.

Rowe and Kahn (1987) argue that most gerontology researchers concentrate on average tendencies within different age groups and present a convincing rationale for a third distinct category. The central theme of the article is the distinction between usual and successful aging and the consequent need for interdisciplinary studies of the factors that determine the trajectory of function with advancing age. Rowe and Kahn make three recommendations in this paper. First, gerontologists should incorporate the distinction between usual and successful aging. Second, gerontological research should concentrate on understanding transitions in later life, especially transitions that have functional
significance. Third, extrinsic factors that influence successful aging should be studied in
interdependent combinations, as well as singly.

Rowe and Kahn move beyond the proposed distinction between usual and
successful aging in their follow-up article “Successful Aging” (1997). Rowe and Kahn
write, “the substantial increases in the relative and absolute number of older persons in
our society pose a challenge for biology, social, and behavioral science, and medicine”
(p.1). They define successful aging as multidimensional, encompassing: 1) the avoidance
of disease and disability, 2) the maintenance of high physical and cognitive function, and
3) sustained engagement in social and productive activities. Rowe and Kahn note that
successful aging is more than absence of disease, and more than the maintenance of
functional capacities- it is their combination with active engagement with life that
represents the concept of successful aging most fully.

Reactions to a hierarchical aging paradigm

Rowe and Kahn ignited a general discussion about what it means to age
successfully, what should be included in a model of successful aging, and how successful
aging should be measured. A common critique of Rowe and Kahn’s model is the inherent
exclusivity of the criteria when applied to individuals who experience functional
limitations. Critics argue that Rowe and Kahn’s criteria automatically exclude individuals
with lifelong, acquired disabilities, and those experiencing the increased functional
impairments associated with the aging process. Minkler and Fadem (2002) reviewed the
three characteristics of Rowe and Kahn’s model of successful aging – low probability of
disease and disease-related disability, high cognitive and physical functioning, and active
engagement with life- to explore their relevance and limitations when applied to people
with disabilities. The authors argue that this popular perspective assumes that many of
the health and related problems associated with “normal aging” are in fact not normal,
but are a result of lifestyle and other factors that put people at a high risk for disease and
disability in later life. Minkler and Fadem note that the overemphasis on the role of
individual choices and behaviors in determining the probability of disease and disease-
related disability is problematic because not all functional limitations are a result of
lifestyle or place individuals at an increased risk for disease.

To prevent the further stigmatization and marginalization of people who are aging
with disabilities and may not meet criteria for aging successfully, Minkler and Fadem
(2002) point out that persons with a disability should no longer be viewed as someone
who cannot function because of impairment, but rather as someone who needs an
accommodation in order to function. The authors claim that research of optimal aging is
also needed for those who are growing older with developmental disabilities, as many of
the issues and concerns discussed with regard to successful aging and physical disabilities
should also be raised with respect to aging and developmental disabilities. Minkler and
Fadem call for alternative conceptualizations in which ‘optimal’ versus ‘successful aging’
is emphasized to better reflect success as it pertains to the individual and call for the
further development of theoretical approaches that move beyond dichotomous notions of
successful/unsuccesful aging and old age.

Aldwin, Spiro & Park (2006) argue that a single hierarchical definition of
successful aging may be too limited and proposed a life span developmental perspective
toward optimal aging. Aldwin et al. note that health is characterized by
multidimensionality, as defined by the World Health Organization in 1948 as “a state of
complete physical, mental and social well-being and not merely the absence of disease or 
infirmity.” Aldwin at al. argue that although debate continues on the precise definition of 
health, a definition of successful aging that relies too heavily on the maintenance of 
typical functioning in midlife ignores what may be qualitative shifts in late life in the 
valuation of life and its meaning. Aldwin et al. also remark that there are always gains 
and losses in development and suggest that researchers integrate positive as well as 
negative outcomes. Aldwin et al. contend that most theorists focus on the prevention of 
loss rather than what may be gained in optimal aging.

Rowe and Kahn have also been criticized for paying insufficient attention to aging 
over the life course; race, class, and gender inequities; and the realities and importance of 
losses as well as gains in later life (M. Baltes & Cartensen, 1996; Riley, 1998; Scheidt, 
Humphreys, & Yorgason, 1999; Schulz & Heckhausen, 1996). Aldwin et al. (2006) 
address these concerns stating that an optimal aging model should consider: 1) health is a 
life-long process, 2) health is characterized by multidimensionality, 3) the study of health 
is inherently multidimensional, 4) there are always gains and losses in development, and 
5) health occurs and is constrained by its sociohistorical context.

Alternative models of successful aging

One of the leading alternative models of successful aging is the life-span model, 
Selective Optimization with Compensation (SOC) model, developed by Baltes and Baltes 
(1990) who believe that aging may be best characterized as a heterogeneous process with 
many different pathways and (successful) outcomes. The SOC model authors were 
among the first to describe the processes of successful aging instead of solely defining the 
end points. From the viewpoint of the SOC model, people select life domains that are
important to them, optimize the resources and aids that facilitate success in these
domains, and compensate for losses in these domains in order to adapt to biological,
psychological, and socio-economic changes throughout their lives and to create an
environment for lifelong successful development. Since stressors, such as declining
health, may multiply whereas resources decrease in later life, selection, optimization and
compensation processes become increasingly important during aging to maintain a
positive balance between gains and losses (Baltes, 1997; Baltes and Cartensen, 1996;
Freund and Baltes, 2000; Freund et al., 1999; and Marsiske et al., 1995). The SOC
processes are aimed at maximizing gains and minimizing losses while striving for
personal goals. SOC is considered a universal mechanism, but its expression depends on
the individual and his/her environment since personal goals vary from person to person,
as well as according to culture and period (Baltes & Cartensen, 1996; Baltes, 2004). The
SOC definition of successful aging allows for non-normative, individual trajectories of
successful development in older age.

This is contrary to the successful aging paradigm proposed by Steverink,
Lindenberg & Ormel (1998) who argue that a model of successful aging should include
what goals people must achieve in order to identify success objectively. Based on the
social production function theory, Steverink et al. claim that physical well-being and
social well-being are the two universal goals. Realization of these two goals depends on
the achievement of first-order, instrumental goals: to attain physical well being, comfort
and stimulation are needed, while affection, behavioral confirmation, and status are
necessary in order to achieve social well-being (Steverink et al.). The model leaves some
room for more individual goals in order to attain the instrumental goals, however, the
question remains as to what extent the proposed higher-level goals, particularly the instrumental goals, are universal and not influenced by cultural norms.

Heckhausen and Schulz (1995, 1996) also emphasize the importance of accepting losses and disengaging from goals that can no longer be pursued in old age. Heckhausen and Schulz argue that a common feature of successful aging models is the focus on broad measurable domains of functioning or performance that can be applied to any stage of the life course, and for which there exists broad societal consensus that the higher the level of functioning or performance, the more successful the individual. The authors propose a variation of this approach using the same outcome measures but view them through a relativist filter. Schulz & Heckhausen (p. 708, 1996) provide the rationale for such an approach with the following example: “an individual with polio may be very limited in physical functioning when viewed through the lens of absolute or normative standards, but may be exceptional when other standards (e.g. compared with persons afflicted with polio) are applied. The same type of analysis could be applied to a very old person.”

Contrary to the criticism that successful aging models focus on performance-based criteria rather than the subjective psychological experience of the individual, Schulz & Heckhausen (1996) argue that using highly individualized and subjective criteria as gauges for successful development are problematic because: 1) they open the door for any indicator to meet the criteria of success because the criteria are individually determined, 2) they are subject to the rationalization biases characteristic of individuals when they evaluate their own experiences and accomplishments and 3) this perspective fails to take advantage of the fact that all cultures are characterized by considerable consensus regarding what constitutes success (Schulz & Heckhausen). The authors argue
for a focus on criteria of success that are externally measurable and include physical functioning; cognitive, intellectual, affective, and creative functioning; and social relations.

Studies on Successful Aging

In 2002 Strawbridge, Wallhagen and Cohen evaluated the utility of two different definitions of successful aging and assessed the definitions of a) self-rating and b) Rowe and Kahn’s (1987, 1997) data criteria of absence of disease, disability, and risk factors; maintaining physical and mental functioning; and active engagement with life. The study made associations with well being for each definition using data from 867 participants aged 65-99. Although absence of chronic conditions and maintaining functioning were positively associated with successful aging for both definitions, many participants with chronic conditions and with functional difficulties still rated themselves as aging successfully. Results indicated that 50.3% of participants (ages 65-99 years old) rated themselves as aging successfully compared to 18.8% classified according to Rowe and Kahn’s criteria. None of the participants with chronic conditions and with functional disabilities who rated themselves as aging successfully were classified as such according to Rowe and Kahn’s criteria. Strawbridge et al. concluded that understanding the criteria used by older persons to assess their own successful aging should enhance the conceptualization and measurement of the “elusive concept” of successful aging.

In their 2003 Australian study, Knight & Ricciardelli employed content analysis to investigate older adults’ perceptions of successful aging and the relationship of these perceptions to definitions given in the literature. Investigators found that the 18 male and 42 female participants between the ages of 70 and 101 years, only mentioned 1 or 2
criteria of successful aging if asked for a definition; however, when prompted, they rated almost all the criteria emerging from the literature as highly important. Overall, investigators concluded that older adults’ perceptions of successful aging were similar to aspects identified in the literature, however not all aspects were seen as important by all participants, and only low correlations were found between some characteristics of successful aging (Knight & Ricciardelli). Similarly, Strawbridge et al. (2002) concluded that various aspects such as health, physical and cognitive functioning are important to older adults, however, these variables do not fully represent the construct of successful aging. Participants rated the importance of criteria of successful aging emerging from the literature on a 10-point Likert scale ranging from “not at all important” to “extremely important”. Those seen as most important were health, happiness, and mental capacity. These were followed by life satisfaction, adjustment to life changes, physical activity, and close personal relationships. Other aspects were social activity and having a sense of purpose in life. The only aspect of successful aging that was not seen as important was withdrawal from activities (with a mean rating of 4.8).

In 2006, Montross et al. conducted a study of 205 community dwelling adults over 60 to determine the correlates of self-rated successful aging, as well as its correspondence with major researcher-defined criteria. The investigators found that 92% of the participants rated themselves as aging successfully and a majority of the participants met criteria for independent living, mastery/growth, positive adaptation, life satisfaction/emotional well-being, and active engagement with life. Of the self-selected sample with a mean age of 80.4 years, 96% were white, 76% earned a bachelor’s degree or higher, and 89% lived independently. Fifteen percent met criteria for absence of
physical illness and 28% reported absence of any limitations in basic physical activities. General health (MOS-SF-36) scores were significantly higher than those of a normative “healthy” sample of older adults. Despite 92% of participants rating themselves as aging successfully, only 5% of the sample met all three criteria for successful aging proposed by Rowe and Kahn. These results are consistent with Strawbridge et al.’s (2002) findings of a significant difference between subjective and researcher-defined criteria scores of successful aging. When Montross et al. examined the correlates of subjectively rated successful aging with a community dwelling sample of older adults, they found subjective ratings to be significantly associated with higher scores on health-related quality of life, resilience, greater activity, and number of close friends.

Depp and Jeste (2006) conducted a literature search for published English-language peer-reviewed reports of data based studies of adults over age 60 that included an operationalized definition of successful aging. The authors identified 29 different definitions of successful aging in 28 studies that met criteria for inclusion and found that most investigations used large samples of community-dwelling older adults, the mean proportion of successful agers was 35.8%, and 26 of 29 definitions included disability/physical functioning. The most frequent significant correlates of the various definitions of successful aging were age (young-old), nonsmoking, and the absence of disability, arthritis, and diabetes. Moderate support was found for greater physical activity, more social contact, better self-rated health, absence of depression and cognitive impairment, and fewer medical conditions. Gender, income, education, and marital status generally did not relate to successful aging. Conclusions drawn by Depp et al. were, despite variability among definitions, approximately one-third of elderly individuals were
classified as aging successfully, and the majority of definitions were based on the absence of disability with lesser inclusion of psychosocial variables.

Building on the findings by Depp and Jeste (2006), researchers at University of California at San Diego (Reichstadt, Depp, Palinkas, Folsom, and Jeste, 2006) ran focus groups with relatively healthy, community dwelling older adults to solicit opinions about the factors related to successful aging. Results indicated 33 identified factors that were grouped into four major themes: attitude/adaptation, security/stability, health/wellness, and engagement/stimulation. Every focus group emphasized the need for a positive attitude, realistic perspective, and the ability to adapt to change. Opinions on the necessity for general physical health and wellness were mixed; however, the impact of disability and illness on successful aging were perceived to be mitigated by environment, finances, and social support. Overall, investigators concluded that older adults place greater emphasis on psychosocial factors as being key to successful aging and place less emphasis on factors such as longevity, genetics, and absence of disease/disability, function, and independence.

Among those aged 70 years or older living in the community, 20% report a problem with functioning (Krammarow, Lentzner, Rooks, Weeks, & Saydah, 1999). Limitations in overall functioning have been found to significantly predict the number of physician and hospital visits (Mor, Wilcox, Rakowski & Hiris, 1994; Stump, Johnson, & Wolinsky, 1995), nursing home admissions (Branch & Lu, 1989), and mortality (Inouye et al., 1998). It is estimated that from 1985 to 2020 the population of elderly individuals with disabilities will triple because of the growing number of older persons and their increased life expectancy (Manton, Stallard, & Corder, 1998). Levy, Slade, and Kasl
(2002) conducted a longitudinal study with a sample of 433 community based individuals, 50 years and older to determine if, over an 18-year period, those with more positive self-perceptions of aging report better functional health than do those with more negative self-perceptions of aging. Levy et al. found that when controlling for baseline measures of functional health, self-rated health, age, gender, race, and socioeconomic status those with more positive self-perceptions of aging in 1975 reported better functional health from 1977 to 1995. The authors note that there is a benefit to conceptualizing age as more than a risk factor, and argue that researchers, health care professionals, and older adults may benefit from viewing old age as a stage of life during which self-perceptions of aging have important consequences. These results can be interpreted as meaning that the way in which individuals view their own aging affects their functional health.

Critique of the Literature

When reviewing Rowe and Kahn’s model of successful aging, several factors should be taken into consideration. Given that a majority of even the healthiest adults will experience functional limitations, disease, and reduced activity as they near the end of their lives, the number of adults 85 years and older who meet criteria for successful aging will be considerably smaller than the number of young-old adults. From a statistical perspective, that the number of successful agers is age dependent discredits the model as a valid measure of successful aging because one would expect a normal distribution of successful agers from the ‘young-old’ to the ‘very-old’. The inclusion of three operational criteria of successful aging suggests that only these factors are indicative of success in later life, and individuals are aging successfully only if they avoid disease and
disability, maintain high physical and cognitive function, and sustain engagement in social and productive activities. When considering that with Rowe and Kahn’s model, the imminent scientist Stephen Hawking or former president Franklin D. Roosevelt would not be considered to have aged successfully- its validity as a tool for judging “success” in the real world is questionable.

Rowe and Kahn (1987,1997) make a convincing argument for the importance of extrinsic factors on the prevention of disease and increased functional capacity; however, it is unclear if a model that focuses on disease prevention and good health practices can be translated into a model for successful aging. The model relies entirely on the modifiability of the aging process, which by Rowe and Kahn’s own statements regarding the importance of genetics is incomplete. To some degree, Rowe and Kahn’s model appears to reflect their earlier observations about the challenges posed to society by the substantial increases in the relative and absolute number of older persons. Their model appears to reflect less the realities of the aging process and the heterogeneity of older adults, and is more indicative of which individuals are the least likely to be a financial burden on society as they age. As the term “success” is not used to describe any other developmental stage, its application to the aging process may reflect the tremendous logistical and financial concerns of caring for society’s elders. Rowe and Kahn’s model of success appears to be driven by such concerns and their findings may be better suited as a guide for disease prevention and healthy living, rather than as a measure of successful aging.

Rowe and Kahn make a strong case that there is much to be learned from the significant population of older adults who are resistant to many of the average age-
associated declines of old age. However, the essence of Rowe and Kahn’s second and third recommendations is an emphasis on functional capacity and modifiable physiologic processes. Although an appreciation of modifiable variables is warranted, the examples provided by Rowe and Kahn (e.g. carbohydrate metabolism, osteoporosis, and cognitive function) minimize or entirely neglect the influence of intrinsic variables on the aging process and the etiology of numerous impairments which affect functional capacity.

In defense of Rowe and Kahn’s model, hierarchical standards are by definition exclusive. During a period in aging research when older adults were categorized as either diseased or non-diseased, Rowe and Kahn noted the neglect of the heterogeneity among older adults in the non-diseased group with respect to many physiologic and cognitive characteristics and attempted to separate out usual agers (those that show average decline with age) from successful agers (older persons with minimal physiologic loss, or none at all). That one group presented with less problems is easily translated into having done better, or being more successful. That said, a hierarchical model of success is value laden and a singular definition that excludes a substantial number of older adults who see themselves as aging well, or who regardless of effort are unable to achieve the standardized measure of success, is likely to stir up considerably controversy- particularly within the healthcare community.

Rowe and Kahn’s definitions of successful aging had important positive consequences: no longer could all age-related deficits be dismissed as inevitable declines of old age, environmental and lifestyle factors that could improve well-being in old age were encouraged and there was a shift in focus from those who were doing poorly to those who were doing well. However, the suggestion that life style changes could ward
off most chronic conditions is inaccurate. The application of the label “successful” being limited to those meeting Rowe and Kahn’s criteria is problematic because most gerontologists are not ready to call someone unsuccessful because he or she is disabled or diagnosed with diabetes. Rowe and Kahn recognized the heterogeneity among older adults pooled in the broad category of aging normally, and the subsequent importance of studying the subset of older adults placed in this category who exhibit minimal or no functional limitations. It would be helpful for researchers to have a method for distinguishing between those who are experiencing positive outcomes in old age across a variety of dimensions and those who are not.

Minkler and Fadem (2002) make valid points that Rowe and Kahn’s model is imperfect and the criteria inherently exclude a substantial number of older adults with functional impairments from being considered to be aging successfully. However, when theorists attempt to describe human experience in broad strokes, operational definitions are less sensitive to individual differences. Minkler and Fadem make a persuasive argument that in the case of Rowe and Kahn’s criteria for aging successfully, the substantial number of older adults automatically excluded from being considered as such renders the model inadequate at best. However, beyond the concrete suggestion that the term successful aging be replaced with optimal aging, the authors do not offer an improved model that would incorporate their suggestions for the purposes of the future research which they so adamantly call for.

Schulz and Heckhausen (1996) point to the difference between evaluating performance and functioning at a given point in an individual’s development and evaluating the totality of an individual’s life. Defining successful aging in terms of
functioning in one or several domains at a specific temporal point may not take into account the totality of an individual’s life history or all of the relevant domains by which one might be evaluated (Schulz & Heckhausen). The complaint of snapshot glimpses into the aging process is common among life developmental models. The argument that the aging process is better understood through the life course holds weight—the findings of the longitudinal Duke Aging Study are a relevant backdrop for such an argument. Pragmatically, considering functioning in multiple domains over long periods of time is complex. One could argue that preliminary research and the development of an operational definition should simplify data collection beyond the alternative described by Schulz & Heckhausen and other life developmental models.

The intent of Strawbridge et al.’s (2002) study was to determine the utility of Rowe and Kahn’s criteria and self-rating. While discrepancies were found between objective and subjective ratings of successful aging, this difference does not necessarily indicate that a subjective model is superior to an objective model (as argued earlier by Schulz and Heckhausen, 1996) or that physical health and functioning are unimportant components of successful aging. These findings do suggest the absence of disease, disability, risk factors; maintaining physical and mental functioning and active engagement in life are not the whole story. In fact, Strawbridge et al. found that not only do significant numbers of persons living with disease and disability still rate themselves as aging successfully, significant numbers of persons lacking such conditions rate themselves as not aging successfully.

Researchers support concerns of the inherent exclusivity of major researcher-defined criteria for “aging successfully”, as many older adults who see themselves as
aging well fail to be categorized as such due to the presence of chronic diseases and disabilities. The consistent discrepancy between objective and subjective ratings of successful aging not only reflects the need to define the factors that contribute to successful aging (such as research by Montross et al. 2006) and the importance of incorporating the opinions of older adults (Knight and Ricciardelli, 2003), but also reflects the complexity of obtaining a unified phenotype of successful aging that can be operationalized and studied. Relevant to the noted discrepancy between objective and subjective ratings of successful aging, Knight and Ricciardelli point out that there is a need to ensure that we are not simply saying that successful aging is what the culture and politics of the time is expecting of our older adults’ behavior (Sullivan & Fisher, 1994).

Reichstadt et al.’s (2006) solicited the opinions of older adults in an effort to contribute to a consensual definition of successful aging. Noted limitations of the study were the relative health of the study volunteers recruited through convenience sampling and investigators did not collect quantitative data from participants and therefore demographic or other factors that may have contributed to the variability in responses could not be examined. Investigators recommended that future researchers employ mixed-method approaches to examine whether older adults who have limitations in physical functioning view successful aging differently from those who are free of disability. Reichstadt et al. suggest that, according to older adults, psychosocial factors are integral to successful aging, particularly in the psychological adaptation to the physical and environmental stressors of aging. Indicators of adaptive or attitudinal factors have rarely been included in studies of successful aging, and Reichstadt et al. propose that these psychosocial factors may contribute to the discrepancy between the
high proportion of older adults who view themselves as “aging well,” compared to the low proportion of persons who are rated so by researchers using objective criteria. Understanding the adaptive processes by which older adults with functional losses preserve well-being would inform preventative interventions and may lead to a more inclusive phenotype of successful aging (i.e. people who experience disability/chronic illness, but maintain cognitive functioning, life satisfaction, and social engagement).

The mean percentage of successful agers (35.8%) identified in the meta-analysis conducted by Depp and Jeste (2006) is encouraging in view of arguments that popular definitions are inherently exclusive, however these results should be interpreted with caution. The standard deviation for the proportion of successful agers was 19.8, and varied widely (interquartile range of 31%). The majority of sampled populations were community dwelling older adults, who would be more likely to be higher functioning and more independent. The most significant correlates are limited to those identified by Rowe and Kahn (1997), and reflect a decreased interest in psychosocial variables. Findings that gender, income, education and marital status did not relate to successful aging is surprising given that these variables are often associated with health, social activity, and access to resources and activities (all criteria of popular aging paradigms). To some degree, the notion that successful aging is witnessed across gender, education and income lines is encouraging and would certainly be the optimal outcome. However, such findings should be interpreted with caution. In a comprehensive review of larger quantitative studies, Depp et al. noted that in a majority of the reviewed papers successful agers are defined as older adults whose health status is similar to that of younger people or functionally ideal aging (“escapers” of physical illness and disability). Relevant to
Depp et al.’s findings are Knight & Ricciardelli’s (2003) concerns that seeing successful aging in terms of others’ expectations is ignoring that it is likely to represent different criteria for different people.

The findings of Levy, Slade and Kasl (2002) that older adults who have positive self-perceptions of aging report better functional health is important when considering gerontologists influence on older adults’ views of aging and the potentials dangers of labeling an individual as not aging successfully. If successful aging labels are internalized and, as a consequence, negatively alter perceptions of the self, the manner in which researchers define successful aging may in fact contribute to the very problems such a paradigm aims to prevent and/or reduce. These findings support the importance of positive self-perceptions to successful aging, particularly as defined by models based on functional health. Ironically, if positive self-perceptions have a strong influence on health behaviors, hierarchical definitions of successful aging may negatively affect the self-perceptions of older adults who are not categorized as aging successfully. If older adults internalize less favorable aging labels, which impact their self-perceptions, they may be less likely to participate in preventative health behaviors.

This author has highlighted many of the concerns and complexities of popular successful aging paradigms. Levy and Myers (2004) also highlight the importance and original intentions of Rowe and Kahn (1997) and other research on successful aging- to draw attention to the modifiable aspects of the aging process and to develop meaningful interventions that improve the quality of life of older adults. Despite disagreement about what it means to age successfully, the importance of preventative health care and the idea that declines in aging are not inevitable remains. Given the ever increasing population of
older adults and the considerable benefits of preventative health care, future research contributing to a model of successful aging that both reflects the experience of older adults and informs health care providers is warranted.
SUMMARY AND HYPOTHESES

Summary

As Blazer notes in his article “Successful Aging” (Blazer, 2006, p.4), a review of the literature begs the question, “Is aging a ‘state of mind’ or is it good objective function physically, cognitively, and socially?” In practice, investigators of successful aging have leaned toward objective measures, and Rowe and Kahn’s model of successful aging (low probability of disease and disease-related disability, high cognitive and physical functioning and active engagement with life) has become the most popular operational definition. Critics argue that a model reliant on high physical, cognitive and social functioning excludes numerous seniors who see themselves as aging successfully (Minkler and Fadam, 2002; Aldwin, Spiro & Park, 2006; Steverink, Lindenberg & Ormel, 1998; and Heckhausen & Schulz, 1996) and researchers have consistently demonstrated a significant lack of agreement between researcher defined and subjective ratings of successful aging (Strawbridge, Wallhagen & Cohen, 2002; Knight & Ricciardelli, 2003; Montross & Depp, 2006; Depp & Jeste, 2006; and Reichstadt, Depp, Palinkas & Jeste, 2006).

Criticism of Rowe and Kahn’s model of successful aging and the observed discrepancy between objective and subjective ratings of successful aging have culminated in an increased interest in how older adults viewed successful aging. Subjective ratings are significantly associated with higher scores on health-related quality of life, resilience, greater activity, and number of close friends (Montross, et al., 2006); and older adults
indicate the themes of attitude/adaptation, security/stability, health/wellness, and engagement/stimulation as being important to aging successfully (Reichstadt et al, 2006). Although researchers have found relationships between resiliency, adaptation and subjective ratings of successful aging in both qualitative and quantitative studies, investigation into these variables is limited. Specifically, researchers have yet to examine if resiliency and positive adaptation influence how older adults view themselves as aging.

The hope of the investigator is to address a current gap in the research by examining if resiliency and positive adaptation partially explain the observed differences between objective and subjective ratings of successful aging, particularly among older adults with functional impairment. Prior research on the variables of resiliency and positive adaptation utilized a community dwelling sample whose general health was potentially better than the general population of older adults. The aim of the current study is to examine older adults living in a senior living facility, who likely experience a broad range of functional health impairments.

Hypotheses

General hypotheses of the proposed study are: 1) a significant discrepancy exists between objective and subjective ratings of successful aging, particularly for adults experiencing disabilities; 2) scores of daily functioning will positively correlate with scores of adaptability and attitude; 3) higher scores on resiliency and adaptability will add to the prediction of higher scores on subjective ratings of successful aging after controlling for the effect of having a disability.
METHOD

The following method section includes participant characteristics, research procedures and design, and measures.

Participants

Residents at Calaroga Terrace senior living center in Portland, Oregon participated in the Successful Aging Study (N = 61). Participants varied in terms of living independence as some adults resided in their own apartments and some adults lived in assisted living units, receiving varying degrees of personal assistance with activities of daily living.

Procedures

Residents at Calaroga Terrace volunteered to participate in this study. Data collection involved a one-time administration of written questionnaires to Calaroga Terrace residents to measure the variables of interest: activities, everyday functioning and health related quality of life, subjective ratings of successful aging, resiliency, adaptability and rates of physical illness. On December 17, 2007 the primary investigator presented the study to approximately 80 residents at the community meeting “Ten on the Terrace”. In addition to the meeting attendees, the presentation was fed live into all resident’s rooms and looped on the Calaroga Terrace TV channel throughout the week. A sign-up list was posted in the Calaroga Terrace Activities book and additional sign-up sheets were posted on the three assisted living floors to recruit residents medically unable to regularly leave their floor.
Data collection occurred over the course of six days, between the months of January and June 2008. The primary investigator, Serena Meyer, and research assistants, Laura Krause, Megan Phillips and Viva Wheaton, were identified by the Calaroga Terrace staff or self-identified, and distributed questionnaires in the main lobby and in residents’ apartments. The purpose of the study, the objectives of the project, the possible risks and benefits, and the measures used to gather data were explained to the participants (See Appendix A for the Informed Consent). The investigators were available for questions and comments at all times that the residents were reviewing and/or completing informed consents and questionnaires. Although the font of the questionnaire was large in anticipation of visual impairments, in three cases, severe visual impairments required that the investigator read the questionnaire to the participants and fill in their responses.

Exclusion criteria included being under the age of 60, active psychosis or delusions, inability or unwillingness to complete the informed consent, and inability to comprehend the informed consent or questionnaires due to language barriers. Any resident choosing not to participate was dismissed from the study without penalty of any kind. Investigators reminded all clients that they could withdraw from the study at any time, without penalty. During the course of the study seven residents declined to participate, one resident returned a survey after reviewing the informed consent, and five residents reported a preference to complete his/her questionnaire at home and leave the completed copy in a secure envelope at the front desk. All of the residents returned the completed copies to the front desk. All volunteer residents were offered a small token of appreciation for their participation, not exceeding $3.00 in value (e.g. coupon organizer, puzzle, travel game, packet of seeds). For purposes of this study, all participants were
assigned a code number and identifying information was separated from participant responses when the questionnaires were turned in to the investigator.

**Measures**

In an effort to replicate the Montross et al. study (2006) for comparison purposes, the current researcher utilized identical measures for activities, everyday functioning and health related quality of life (MOS-SF-36), subjective ratings of successful aging, resilience (CD-RISC), and rates of physical illness.

**Demographic Characteristics**

Demographic data, including age, gender, race, ethnicity, current marital status, education level, frequency attending religious services and annual income were collected from participants (See Appendix B for the Demographic Characteristics measure).

**Activities**

Identical to the list of activities used by Montross et al. (2006) and similar to Menec (2003), participants were given a list of social and individual activities and asked, “How many days per week do you engage in the following activities?” These activities included reading, completing crossword puzzles, attending classes/lectures, watching TV, writing, engaging in sports activities/exercise, completing artwork, attending religious activities, engaging in computer-related activities, playing cards (e.g., bridge), listening to the radio, visiting friends, and visiting family. According to Menec, these activities were selected due their being conceptually grouped into categories of social activities (e.g., visiting family or relatives), more solitary activities (e.g., crossword puzzles, reading), and productive activities (e.g., writing, completing artwork). The overall number of activities completed in a week were added together, with the number of times per week
each activity was completed having a value of 1 (See Appendix C for the Activities Questionnaire).

*Everyday Functioning and Health-Related Quality of Life*

The Medical Outcomes Study 36-item Short Form (MOS-SF-36) scale, also known as the RAND 36-item Health Survey, was administered as a general indicator of physical and mental health functioning. The survey covered eight concepts: physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to personal or emotional problems, emotional well-being, social functioning, energy/fatigue, and general health perceptions. It also included a single item that provided an indication of perceived change in health. The 36-item Short Form was adapted from longer instruments completed by patients participating in the Medical Outcomes Study (MOS), an observational study of variation in clinical practice styles and patient outcomes in different systems of health care delivery (Hays & Shapiro, 1992; Stewart, Sherbourne, Hays, et al., 1992)

Scoring the MOS-SF-36 was a two-step process. First, pre-coded numeric values were recoded per the scoring key. All items were scored so that a high score defined a more favorable health state. In addition, each item was scored on a 0 to 100 point scale so that the lowest and highest scores were set at 0 and 100 respectively. Scores represented the percentage of total possible scores achieved. In step two, items that factor into the scales for physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to personal or emotional problems, emotional well-being, social functioning, energy/fatigue, and general health perceptions are added together and then divided by the number of items for scaled scores. Items that
were missing were not averaged into the total when the scaled scores were calculated. Hence scaled scores represented the average for all items in the scale that the respondent answered.

Andresen at al. (1996) have published normative MOS SF-36 data on a sample of 253 community-dwelling adults over the age of 65. The latter sample was comprised of primary care patients who had at least one office visit over the course of two years and who were considered to be, “on average, in relatively good health.” The Andresen et al. sample had a general health mean score of 59, and was similar to the Montross et al. and the current study participants with regard to age (M = 76.5), gender (63% female) and ethnicity (93% white). In the Montross et al. study participants’ general health mean score of 71 was higher (SD = 16.3, range = 25-100), however no comparative statistical analyses were performed by Montross et al. because the researchers did not have access to the raw data from the Andresen et al. study. Both the Andresen et al. and Montross et al. sample scores were used for comparison purposes for the current study (See Appendix D for The Medical Outcomes study Short-Form (MOS-SF-36) measure).

**Subjective Rating of Successful Aging**

Using the measure employed by Montross et al. (2006), participants were asked to rate their own degree of successful aging on a scale from one to 10 (1 = least successful, 10 = most successful). Participants were additionally asked in a separate portion of the questionnaire to indicate their agreement with the statement “I am aging well” using a four-point Likert scale (4 = definitely true, 3 = mostly true, 2 = mostly false, 1 = definitely false). Montross et al. reported the reliability of this subjective rating of successful aging was bolstered by its significant correlation with the separate “I am aging
well” item (r = 0.41, N = 187, p = 0.000). Participants who circled “definitely true” or “mostly true” to the item “I am aging well” were considered to rate themselves as aging successfully (See Appendix E for the subjective ratings of successful aging items).

Resilience and Positive Adaptation

Respondents’ ability to adapt well and overcome adversity was assessed using the Connor-Davidson Resilience Scale, or CD-RISC, a 25-item scale developed using general population, outpatient, and psychiatric samples (Connor & Davidson, 2003). Participants received a score from 0-100, with higher scores indicating greater resilience. Sample items included “I am able to adapt to change,” “I tend to bounce back after illness or hardship,” and “I am not easily discouraged by failure.” Each item was scored on a five-point Likert scale ranging from zero (not true at all) to five (true nearly all of the time).

Positive adaptation, an aspect of resiliency, has been outlined by Phelan and Larson as a major aspect of researcher defined successful aging (Baltes & Baltes; Butt & Beisier). The current study replicated Montross et al.’s (2006) operational definition of positive adaptation: reporting “often true” or “true nearly all of the time” on the CD-RISC items “I am able to adapt to change” and “I tend to bounce back after illness or hardship.” This operational definition was adopted from Baltes & Baltes SOC model of selection, optimization and compensation. Compensation refers to the effectiveness of behavioral transactions between the self and the environment, and “positive” adaptation maximizes gains over losses in functioning (Bloom, 1977; Rowe & Kahn, 1987; White, 1959; Wine & Smye, 1981).

The CD-RISC has been tested in the general population (N=577), as well as
clinical samples, and demonstrates good internal consistency (Cronbach’s alpha = .89) and test-retest reliability (intraclass correlation coefficient = .87). The scale exhibits validity relative to other measures of stress and hardiness and reflects different levels of resilience in populations that are thought to be differentiated by their degree of resilience (e.g., general population vs. patients with anxiety disorders). This scale has been administered to over 1,000 normal participants in the community, primary-care outpatients, psychiatric inpatients, and generalized anxiety disorder patients.

Connor and Davidson (2003) calculated mean scores by demographic grouping, and no differences were observed in the characteristics evaluated. A gender comparison revealed a mean score of 77.1 for women and 77.2 for men. Mean CD-RISC scores by racial group were as follows: white subjects, 77.4 and non-white subjects, 76.7. The mean age of the full sample was 43.8 years and no correlation was found between age and CD-RISC score (Pearson r = .06, n.s.), indicating that the normative figures are an acceptable comparison for the current sample of older adults. Scores for the general population (N=577), with a mean of 80.4 and a standard deviation of 12.8, were used for purposes of comparison (See Appendix F for the CD-RISC measure).

Rates of Physical Illness

As in the Montross et al. (2006) and Waltzer-Ginzberg (2002) studies, the occurrence of physical illness was assessed by asking: “Do you suffer from or has a physician ever told you that you have any of the following?” The conditions included cancer, diabetes, high blood pressure, cataracts, heart attack, other heart disease, stroke, osteoporosis, Parkinson’s disease, and respiratory disease. Neither Montross nor Walter-Ginzberg specified why these particular syndromes/medical conditions were selected,
however, it is assumed that these conditions were included as they are associated with lifestyle and are common in old age (See Appendix G for the rates of physical illness questionnaire).

**Researcher Defined Successful Aging**

This study used the model outlined by Phelan and Larson (2002) and employed by Montross et al. (2006) to operationally define successful aging. The one exception was the criteria of “Active Engagement” whereby the current study used the criteria of answering, “Often true” or “True nearly all of the time” to the question, “I have close and secure relationships.” Montross et al. required that respondents report 3 or more close friends to meet criteria. The criteria are outlined below.

1. **Independent living (Roos & Havens, 1991):** Living independently in own home or retirement community; not residing in a skilled nursing facility.

2. **Positive adaptation (Freund & Baltes, 1999):** Reporting “often true” or “true nearly all of the time” on the CD-RISC items “I am able to adapt to change” and “I tend to bounce back after illness or hardship” (Connor & Davidson, 2003).

3. **Active engagement with life (Rowe & Kahn, 1987):** Visiting friends or family at least one day a week (see “Activities” section) and answering “Often true” or “true nearly all of the time” to the question “I have close and secure relationships.”

4. **Mastery/growth (Schulz & Heckhausen, 1996):** Reporting “often true” or “true nearly all of the time” on CD-RISC items “I am in control of my life” and “I can deal with whatever comes my way.” (Connor & Davidson, 2003)
5. Life satisfaction/well-being (Havighurst, 1961; Valiant & Mukamal, 2001): A score of at least 73 on the MOS SF-36 Emotional Health/Well-being scale, the mean score reported in a normative sample of healthy, older adults (Andersen et al., 1996). The scale combines five items measuring peacefulness/calmness, happiness, freedom from depression (e.g. feeling blue and feeling down in the dumps) and nervousness.

6. Freedom from disability (Rowe & Kahn, 1987, Fries, 1980): MOS-SF-36 scores of “no limitation” in the ability to lift or carry groceries, climb one flight of stairs, bend/kneel/stoop, walk one block, or bathe/dress oneself (Strawbridge et al., 2002).

RESULTS

The following section includes descriptive statistics and statistical analyses of the hypotheses. Descriptive statistics and statistical analyses were conducted using Statistical Package for the Social Sciences (SPSS). Prior to analyses, the data set was checked for errors, specifically, outliers or values that fell significantly above or below other scores. The number of valid cases and the mean scores were checked for ‘out of range’ responses. Descriptive statistics were run to examine the characteristics of the sample, check violations of the assumptions and to address specific research questions.

Descriptive Statistics

The participants ranged in age from 62 to 101 years old, with a mean age of 85 years old (N=61). Seventy-five percent of participants lived independently and twenty-five percent of respondents lived on assisted living floors staffed with on-duty attendants and skilled nurses. The sample was predominantly female, Caucasian, widowed, had achieved an undergraduate degree or higher, attended religious services once a week, and identified as a parent. Data on financial resources were incomplete as 32% of respondents declined to provide information related to household income. See Table 1. for the results of the sample’s demographic data.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>M</th>
<th>SD</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>85</td>
<td>7.6</td>
<td>Min. 62 - Max. 101</td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Male</td>
<td>8</td>
<td>11.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Female</td>
<td>53</td>
<td>86.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Caucasian</td>
<td>51</td>
<td>83.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- African-American</td>
<td>4</td>
<td>6.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Asian-American</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Native American</td>
<td>4</td>
<td>6.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pacific Islander</td>
<td>1</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Missing</td>
<td>1</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Some high school</td>
<td>1</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- High school graduate/GED</td>
<td>6</td>
<td>9.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Some additional training</td>
<td>14</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Undergraduate college degree</td>
<td>20</td>
<td>32.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Graduate degree</td>
<td>19</td>
<td>31.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Missing</td>
<td>1</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Attend religious services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Once a week</td>
<td>36</td>
<td>59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- About once a month</td>
<td>5</td>
<td>8.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Only on religious holidays</td>
<td>4</td>
<td>6.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Never</td>
<td>14</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Missing</td>
<td>2</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Single</td>
<td>7</td>
<td>11.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Steady Relationship</td>
<td>2</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Married</td>
<td>7</td>
<td>11.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Divorced</td>
<td>4</td>
<td>6.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Widowed</td>
<td>41</td>
<td>67.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Have children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Yes</td>
<td>49</td>
<td>80.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- No</td>
<td>11</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Missing</td>
<td>1</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current household income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Less than $12,000 per year</td>
<td>7</td>
<td>11.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- $12,000-$24,000 per year</td>
<td>10</td>
<td>16.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- $24,000-$40,000 per year</td>
<td>13</td>
<td>21.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- $40,000-$60,000 per year</td>
<td>6</td>
<td>9.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- $60,000-$100,000 per year</td>
<td>3</td>
<td>4.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Over $100,000 per year</td>
<td>2</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Missing/Declined to respond</td>
<td>20</td>
<td>32.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
On average respondents participated in 5 activities per day, or 35 activities per week ($M = 34.7$, $SD = 12.9$). Watching TV, reading and visiting friends were the most frequently reported activities. Making artwork, attending lectures, and using the computer were the least frequently endorsed activities (Table 2.).

Table 2. 
*Activity Participation (N=61)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>5.7</td>
<td>2.3</td>
</tr>
<tr>
<td>Completing crossword puzzles</td>
<td>2.2</td>
<td>2.7</td>
</tr>
<tr>
<td>Attending classes lectures</td>
<td>1.1</td>
<td>1.5</td>
</tr>
<tr>
<td>Watching TV</td>
<td>6.1</td>
<td>1.8</td>
</tr>
<tr>
<td>Writing</td>
<td>2.3</td>
<td>2.4</td>
</tr>
<tr>
<td>Playing sports/exercising</td>
<td>3.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Making artwork</td>
<td>0.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Using the computer</td>
<td>1.8</td>
<td>2.9</td>
</tr>
<tr>
<td>Playing cards</td>
<td>0.9</td>
<td>1.7</td>
</tr>
<tr>
<td>Listening to the radio</td>
<td>3.3</td>
<td>3.2</td>
</tr>
<tr>
<td>Visiting friends</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Visiting family</td>
<td>2.1</td>
<td>2</td>
</tr>
<tr>
<td>Number of hobbies per week</td>
<td>34.7</td>
<td>12.9</td>
</tr>
</tbody>
</table>

The majority of scores on the MOS-SF-36 General Health scale fell between 40 and 80, and the sample demonstrated a mean overall general health score of 61.7 ($SD = 19.1$, range = 25-95) (Table 3.). Scores on the MOS-SF-36 General Health scores ($M = 61.7$, $SD = 19.1$) were similar to Andresen’s published normative data of a sample of 253 community-dwelling adults over the age of 65 ($M = 59$). The sample’s mean subscale scores on physical functioning, role limitations due to physical health, role limitations due to emotional health, energy/fatigue, emotional well-being, social functioning and pain also fell within a standard deviation of the normative data provided by Andresen et
al. (1996). With the exception of a single score of 0 due to missing data, scores ranged from 25 to 95 and are normally distributed (Figure 1.).

Table 3. 
MOS-SF-36 Health Survey (N=61)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Health</td>
<td>61.7</td>
<td>19.1</td>
<td>Min. 0 - Max. 95</td>
</tr>
<tr>
<td>Physical Functioning</td>
<td>43.8</td>
<td>30.8</td>
<td>Min. 0 – Max. 95</td>
</tr>
<tr>
<td>Role Limitations Due To Physical Health</td>
<td>33.9</td>
<td>36.1</td>
<td>Min. 0 – Max. 100</td>
</tr>
<tr>
<td>Role Limitations Due To Emotional Health</td>
<td>70.2</td>
<td>37.9</td>
<td>Min. 0 – Max. 100</td>
</tr>
<tr>
<td>Energy/Fatigue</td>
<td>54</td>
<td>18.8</td>
<td>Min. 0 – Max. 90</td>
</tr>
<tr>
<td>Emotional Well-Being</td>
<td>76.3</td>
<td>14.2</td>
<td>Min. 44 – Max. 96</td>
</tr>
<tr>
<td>Social Functioning</td>
<td>73.5</td>
<td>26.6</td>
<td>Min. 12.5- Max 100</td>
</tr>
<tr>
<td>Pain</td>
<td>76</td>
<td>23.9</td>
<td>Min. 20 - Max 100</td>
</tr>
</tbody>
</table>

Figure 1. General Health Scores MOS-SF-36
Ninety-three percent of participants responded “Definitely True” which has a corresponding score of 4, or “Mostly True”, a corresponding score of 3, when asked if they were aging well ($M = 3.3$, $SD = .55$). Seventy-four percent of the sample rated themselves 7 or higher (on a Likert scale of 1 to 10, where 1=very poorly and 10=very well) when asked how well they considered themselves to be aging ($M = 7.53$, $SD = 1.81$) (Table 4.).

Table 4.  
Subjective Ratings of Successful Aging ($N=61$)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>$M$</th>
<th>$SD$</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>“How Successfully You’re Aging”</td>
<td>7.53</td>
<td>1.81</td>
<td>Min. 2 – Max. 10</td>
<td></td>
</tr>
<tr>
<td>Ratings of 7 and higher</td>
<td>43</td>
<td>74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-7</td>
<td>9</td>
<td>14.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-8</td>
<td>13</td>
<td>21.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-9</td>
<td>15</td>
<td>24.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-10</td>
<td>6</td>
<td>9.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I am aging well”</td>
<td>3.3</td>
<td>.55</td>
<td>Min. 2 – Max. 4</td>
<td></td>
</tr>
<tr>
<td>Total Successful Aging Ratings</td>
<td>57</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Definitely True</td>
<td>19</td>
<td>31.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Mostly True</td>
<td>38</td>
<td>62.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Mostly False</td>
<td>3</td>
<td>4.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Definitely False</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Missing</td>
<td>1</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Participants reported mean resiliency scores ($M = 73.3$, $SD = 12.2$) were within a standard deviation of the general population comparison group ($M = 80.4$, $SD = 12.8$).

Seventy-five percent of participants met criteria for positive adaptation, reporting “often true” or “true nearly all of the time” on items “I am able to adapt to change” and “I tend to bounce back after illness or hardship” ($M = 8.1$, $SD = 1.3$) (Table 5.).
Table 5.  
*Adaptability and Resiliency (N = 61)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Resiliency</td>
<td>73.3</td>
<td>12.2</td>
<td>Min. 49 – Max. 98</td>
</tr>
<tr>
<td>Positive Adaptation</td>
<td>8.1</td>
<td>1.3</td>
<td>Min. 4 – Max. 9</td>
</tr>
</tbody>
</table>

Ninety percent of participants reported suffering from a chronic medical illness (n = 55). The greatest number of participants suffered from cataracts and high blood pressure, 62.3% and 52.5% respectively. At least a quarter of the participants reported having been diagnosed with each of the following: cancer, heart disease, osteoporosis or another significant medical illness (Table 6.).

Table 6.  
*Chronic Medical Illness/Disease (N=61)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suffer from chronic medical illness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- No</td>
<td>6</td>
<td>9.8</td>
</tr>
<tr>
<td>- Yes</td>
<td>55</td>
<td>90.2</td>
</tr>
<tr>
<td>Suffer from the following medical illness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cancer</td>
<td>16</td>
<td>26.2</td>
</tr>
<tr>
<td>- Diabetes</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>- Heart Attack</td>
<td>10</td>
<td>16.4</td>
</tr>
<tr>
<td>- Stroke</td>
<td>8</td>
<td>13.1</td>
</tr>
<tr>
<td>- Parkinson’s Disease</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>- High Blood Pressure</td>
<td>32</td>
<td>52.5</td>
</tr>
<tr>
<td>- Cataracts</td>
<td>38</td>
<td>62.3</td>
</tr>
<tr>
<td>- Other Heart Disease</td>
<td>15</td>
<td>24.6</td>
</tr>
<tr>
<td>- Osteoporosis</td>
<td>19</td>
<td>31.1</td>
</tr>
<tr>
<td>- Respiratory Disease</td>
<td>13</td>
<td>21.3</td>
</tr>
<tr>
<td>- Other Significant Medical Illness</td>
<td>19</td>
<td>31.1</td>
</tr>
</tbody>
</table>
Statistical Analyses

The primary investigator predicted the following: a significant discrepancy between objective and subjective ratings of successful aging; a positive correlation between scores of daily functioning and scores of adaptability and resiliency; and finally, resiliency and adaptability will add to the predictive power of higher subjective ratings of successful aging after controlling for the effect of having a disability.

As predicted, a significant discrepancy was found between the number of respondents rated as aging successfully according to researcher-defined criteria (n = 0) and the number of respondents who rated themselves as aging successfully (n = 57, 93%). It should be noted that the primary investigator intended to run a chi square analysis to determine if a significant discrepancy existed between the number of participants who rated themselves as aging successfully and the number of participants rated to be aging successfully by researcher defined criteria. Given that none of the participants met all three of Rowe and Kahn’s criteria for successful aging the number of observed cases was zero and therefore a chi-square analysis was neither feasible nor necessary to determine statistical significance by comparing the number of observed and expected cases of successful agers.

A majority of participants met operational criteria for Independent Living (75%, n = 46), Active Engagement (84%, n = 51), Positive Adaptation (75%, n = 46), Mastery/Growth (70%, n = 43) and Life Satisfaction criteria (52%, n = 32). Only 13% (n = 8) of participants qualified for Absence of Disease/Medical Illness and only two persons (3.3%) were considered to be “free from disability” according to operational criteria of “no limitation” in the ability to lift or carry groceries, climb one flight of stairs,
bend/kneel/stoop, walk one block, or bathe/dress oneself. Ultimately, no participants met all operational criteria for successful aging (Table 7.).

Table 7.  
*Participants Meeting Researcher-Defined Criteria (N=61)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>M</th>
<th>SD</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living Independently</td>
<td>46</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Engagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Visiting friends/family 1 time or more per week</td>
<td>58</td>
<td>95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- I have close and secure relationships</td>
<td>51</td>
<td>84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Adaptation</td>
<td>46</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastery and Growth</td>
<td>43</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>32</td>
<td>52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absence of Disease/Illness</td>
<td>8</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freedom From Disability</td>
<td>2</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participants Meeting All Criteria</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For purposes of comparison with the Montross et al. (2006) study, bivariate correlations were run on scores of subjective ratings of successful aging and scores of general health (MOS-SF-36), resiliency (CD-RISC), positive adaptation (CD-RISC), activity, and social functioning (MOS-SF-36). In an attempt to identify other potential correlates of subjective ratings of successful aging, correlations were also run between subjective ratings of successful aging and freedom from disability, mastery/growth, absence of disease and life satisfaction (MOS-SF-36). Scores on subjective ratings of successful aging were significantly correlated with scores on general health (r = .35, p < .01), social functioning (r = .33, p < .05), positive adaptation (r = .26, p < .05), mastery and growth (r = .28, p < .05) and life satisfaction (r = .32, p < .05) (Table 8.).
Table 8.  
*Bivariate Correlations of Subjective Ratings of Successful Aging (N = 61)*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Subjective Rating of Successful Aging</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Health</td>
<td>.35**</td>
</tr>
<tr>
<td>Resiliency</td>
<td>.25</td>
</tr>
<tr>
<td>Positive Adaptation</td>
<td>.26*</td>
</tr>
<tr>
<td>Activity</td>
<td>-.07</td>
</tr>
<tr>
<td>Social Functioning</td>
<td>.33*</td>
</tr>
<tr>
<td>Freedom From Disability</td>
<td>.22</td>
</tr>
<tr>
<td>Mastery/Growth</td>
<td>.28*</td>
</tr>
<tr>
<td>Absence of Disease</td>
<td>.05</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>.32*</td>
</tr>
</tbody>
</table>

*Correlation significant at the 0.01 level (2-tailed), **Correlation significant at the 0.05 level (2-tailed)*

Bivariate correlations were run on scores of adaptability and resiliency (CD-RISC) and scores of social and physical functioning (MOS-SF-36). Scores of social and physical functioning were not significantly correlated with scores of adaptability and resiliency as predicted. Additionally, role limitations due to physical and emotional problems were not significantly associated with resiliency or adaptability (Table 9.).

As the central aim of the study was to address the hypothesis that positive adaptation and resiliency would partially predict scores on subjective ratings of successful aging when functional impairments were controlled for, a hierarchical multiple regression was utilized. It should be noted that given the considerable number of participants who were rated as having a disability (n= 58, 91%), controlling for this variable had no effect.
Table 9.
*Bivariate Correlations Among Resiliency, Adaptability and Social, Emotional and Physical Functioning (N = 61)*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Resiliency</th>
<th>Adaptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Functioning</td>
<td>.12</td>
<td>.14</td>
</tr>
<tr>
<td>Physical Functioning</td>
<td>.02</td>
<td>.07</td>
</tr>
<tr>
<td>Role Limitations Due to Physical Problems</td>
<td>.00</td>
<td>-.02</td>
</tr>
<tr>
<td>Role Limitations Due to Emotional Problems</td>
<td>.25</td>
<td>.1</td>
</tr>
</tbody>
</table>

As a result, a standard regression was also run, and similarly resulted in a lack of statistical significant findings for the predictive ability of resiliency and positive adaptation for subjective ratings of successful aging (Table 10.).

Table 10.
*Summary of Hierarchical Regression Analysis for Variables Predicting Subjective Ratings of Successful Aging (N = 61)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Std. Error</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Constant Variable</td>
<td>3.0</td>
<td>.48</td>
<td></td>
</tr>
<tr>
<td>Total Resiliency</td>
<td>.02</td>
<td>.01</td>
<td>.33</td>
</tr>
<tr>
<td>Positive Adaptation</td>
<td>-.12</td>
<td>.09</td>
<td>-.29</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant Variable</td>
<td>2.86</td>
<td>.48</td>
<td></td>
</tr>
<tr>
<td>Total Resiliency</td>
<td>.02</td>
<td>.01</td>
<td>.35</td>
</tr>
<tr>
<td>Positive Adaptation</td>
<td>-.143</td>
<td>.08</td>
<td>-.33</td>
</tr>
<tr>
<td>Freedom From Disability</td>
<td>.00</td>
<td>.00</td>
<td>.23</td>
</tr>
</tbody>
</table>

Note. R squared = .06 for Step 1; ΔR squared = .05 for Step 2 (ps < .05). *p < .05, **p < .01, ***p < .001.
Prior to analysis, the possibility of multicollinearity between variables was assessed. The highest inter-correlation of .70 between the independent variables of resiliency and positive adaptation was not strong enough to indicate multicollinearity, which is typically considered to be a concern when variables indicate a correlation of about .90 (Tabachnick & Fidell, 2001). Sample size is an important consideration for purposes of the generalizability of the results of a multiple regression. Stevens (p.72, 1996) recommends that for “social science research, about 15 subjects per predictor are needed for a reliable equation.” The current study met this requirement with two predictor variables and an N = 61.

CD-RISC scores of resiliency and positive adaptation were entered in blocks to determine the extent to which each of the variables adds to the prediction of subjective ratings of successful aging when controlling for freedom from disability. In the first step of the hierarchical regression analysis, resiliency was found to account for 5.8% of the variance of the subjective rating scores and was not statistically significant \[F (2, 47) = 1.44; \text{R squared} = .058, p = ns\]. Positive adaptation was entered in the second step of this analysis and together the two independent variables accounted for 10.8% of the variance \[F (1, 46) = 2.61; \text{R squared} = .11, p = ns\]; a value that did not reach statistical significance. Positive adaptation accounted for an additional 5% of the variance in the model. Overall, among these variables, the unique contribution of resiliency \((\beta = .33, p = ns)\); and positive adaptation \((\beta = -.29, p = ns)\) were not statistically significant (Table 10.).
As part of interpretation of output from the multiple regression and the check for violation of assumptions (i.e., outliers, normality, linearity, homoscedasticity, and independence of residuals), scores were plotted on a histogram (Figure 2.) and revealed a bell shaped curve, indicating a normal distribution.

**Figure 2. Histogram of Normal Distribution of Subjective Ratings**

The distribution of scores and linearity were further checked by inspecting the residuals scatterplots, and the Normal Probability Plot of the regression standardized residuals. The Normality Probability Plot indicated a reasonably straight line from bottom left to top right, which, consistent with Figure 2., suggests no major deviations of normality (Figure 3.).
In the scatterplot (Figure 4.) the residuals should be roughly rectangularly distributed, with most scores concentrated in the center (along the 0 point). Deviations from a centralized rectangle suggest some violation of the assumptions. The majority of residuals follow the expected pattern and do not indicate a violation of assumptions. Multiple regression is very sensitive to outliers (very high or low scores). Outliers on the dependent variable were also checked through the standardized residual plot (Figure 4.). According to Tabachnick and Fidell (p.122, 2001), who define outliers as those with standardized residual values above 3.3 (or less than -3.3), there was no violation of this assumption.
Figure 4. Scatterplot of Dependent Variable: Subjective Scores of Successful Aging
DISCUSSION

Researchers have established a consistent and significant discrepancy in the number of older adults who rate themselves as aging successfully and the number who are rated as such by researcher-defined criteria. In an effort to better understand the underlying processes involved in this discrepancy, the primary investigator sought to examine variables that older adults have identified as important aspects of aging well. As researchers and theorists have suggested relationships between resiliency, positive adaptation and successful aging, the current investigator opted to make a unique contribution to the literature and explore the predictive capacity of these variables on subjective ratings of successful aging.

To achieve this aim, the primary investigator replicated the Montross et al. (2006) study and ran an additional hierarchical regression analysis to determine if resiliency and positive adaptation partially explain the variance in subjective ratings of successful aging when controlling for physical disability. Results of the hierarchical regression analysis indicated that resiliency and positive adaptation did not account for a significant degree of the variance in subjective ratings when entered separately or together. Although resiliency and positive adaptation may not in fact significantly predict subjective ratings of successful aging, several issues should be considered before conclusions are drawn.

The primary investigator used a hierarchical regression to analyze the predictive ability of resiliency and positive adaptation when controlling for physical disability. The criterion utilized for defining physical disability was the operational definition provided
by Rowe and Kahn (1998) (i.e., the absence of limitation in physical function) and 96% of the study participants were rated as living with a physical disability. Due to an overwhelming majority being considered as living with a physical disability, controlling for this variable had no effect and nullified the utility of employing a hierarchical regression. Although no violations of assumptions were observed and the multiple regression appeared sound, the relative impotence of the control variable not only impacted analysis of the central hypothesis; it precluded a meaningful differentiation between participants with real physical disabilities and those whose functional impairments were consistent with the typical declines associated with aging. As a result, the investigator was unable to make legitimate inferences as to how resiliency and positive adaptation impact the self-ratings of adults with and without physical disabilities.

As noted, the rationale for examining the predictive capacity of resiliency and positive adaptation was the established relationships between these variables and successful aging in quantitative and qualitative research. The current investigator did not, however, find a significant relationship between resiliency and subjective ratings of successful aging. Positive adaptation (which Montross et al. did not include in their correlational analyses) was significantly associated with subjective ratings, but the strength of the relationship was modest. Additionally, resiliency and positive adaptation were not significantly related to social functioning, physical functioning, and/or role limitations due to either physical or emotional problems.

Given the lack of consistency between the results of the current study’s correlational analyses and those of prior research, consideration of sample characteristics is warranted. General health scores (MOS-SF-36) of the current sample were consistent
with normative comparison data, however, comparisons between the sample group and normative data on the CD-RISC, revealed lower than average total resiliency scores. The mean score for the general population (N = 577) was 80.4 with a standard deviation of 12.8; whereas the mean score for the studied sample was 73.3, with a standard deviation of 12.2, and a range of 49 to 98.

Due to the relatively small sample size, findings of the current study may provide a skewed representation of the relationship between resiliency, positive adaptation and subjective ratings of successful aging. The finding that positive adaptation, an aspect of resiliency, was moderately associated with subjective ratings of successful aging, may be an underestimated value. In the general population, the strength of the relationship between positive adaptation and subjective ratings of successful aging may be of greater significance. This assumption is supported by the focus groups run by Reichstadt et al. (2006) in which every group emphasized the need for a positive attitude, realistic perspective, and the ability to adapt to change. Although resiliency as a whole may not be associated with higher self-ratings of successful aging, aspects of resiliency, particularly the ability to adapt to changes in later life, may be important.

Subjective ratings were significantly associated with better general health scores, social functioning, mastery/growth and life satisfaction and this is consistent with Montross et al.’s (2006) findings and Rowe and Kahn’s (1998) inclusion of physical functioning and engagement in social activities in their successful aging model. Subjective ratings were not, however, significantly associated with greater activity, freedom from disability, and absence of disease. The findings of the current study are mixed in their consistency with previous research and this lack of congruence is perhaps
best explained by the observations made by Reichstadt et al.’s (2006) focus groups. In these groups, the opinions of older adults varied on the necessity for general physical health and wellness and the impact of disability and illness perceived to be mitigated by environment, finances and social support. Overall, investigators concluded that older adults place less emphasis on factors such as longevity, genetics, absence of disease/disability, function and independence. This distinction may account for the results of the current study when compared to Montross et al.’s findings, as well as the observed significant relationships between subjective ratings and better general health scores, social functioning, positive adaptation, mastery/growth, life satisfaction and no significance between subjective ratings and greater activity, freedom from disability, and absence of disease.

The relatively small sample size and low scores on the CD-RISC may impact the generalizability of the current findings. Given the apparent importance of psychosocial variables in the subjective ratings of older adults, further research into the role of resiliency, attitude and adaptation is warranted- specifically with larger samples. Additionally, the current study did not address the variables of security and stability, which older adults in Reichstadt et al.’s (2006) focus groups identified as also being important variables in aging successfully. Future research should include these factors as they may be important environmental variables that mitigate the effects of disease, disability, cognitive and physical functioning. It should be noted that 33% of the current sample declined to respond to the income question in the demographics section, and reticence to provide financial information may prove a barrier to future research targeting these variables.
The observed discrepancy between subjective and objective ratings of successful aging was the fundamental assumption of the current study and based on the findings of Strawbridge, Wallhagen and Cohen (2002); Knight and Ricciardelli (2003); Montross and Depp (2006); Depp and Jeste (2006); Reichstadt, Depp, Palinkas and Jeste (2006). The discrepancy between subjective and researcher-defined ratings of successful aging was again observed and is perhaps the most salient aspect of the current study, given its reliable significance across studies. This finding has led prior researchers to hypothesize a range of implications, including the notion that Rowe and Kahn’s model excludes individuals with lifelong and acquired disabilities from being viewed as aging successfully; does not attend to the realities, importance, and compensations made for losses and gains in later life; and does not account for gender, race and class inequities (Minkler and Fadam, 2002; Aldwin, Spiro & Park, 2006; Steverink, Lindenberg & Ormel, 1998; and Heckhausen & Schulz, 1996). In addition to review of researcher-defined criteria, investigators should also consider the validity of how subjective ratings are measured, particularly the sufficiency of two items (“I am aging well” and rating ones aging on a scale of 1-10) to capture the entirety of a person’s self-aging perceptions. Potential modifications could include modeling a self-rating on various categories, similar to that of researcher-defined criteria which evaluates multiple aspects of functioning.

A majority of this study’s participants met criteria for active engagement, positive adaptation, mastery/growth, and life satisfaction; and thirteen percent were considered to be free from disease and medical illness. Only two persons were considered to be living free from disability, specified as having “no limitations” in the physical activities of
carrying groceries, climbing a flight of stairs, bending, kneeling or stooping, walking one block or bathing one’s self. The finding that only two persons were considered to be free from disability is particularly noteworthy because 11% of the sample met all other criteria for aging successfully.

The automatic exclusion by Rowe and Kahn of older adults with lifelong and acquired disabilities is of considerable concern, and the finding that only two participants met criteria for freedom from disability, may indicate that the criteria for freedom from disability is too restrictive and represents an unrealistic standard of physical functioning for older adults. The 2000 US Census Bureau indicates that 21% of adults ages 65-74 and 36% of adults ages 75 years and older are living with a physical disability; however when using Rowe and Kahn’s criteria, the current examiner classified ninety-six percent of the sample to be living with a physical disability. This finding is particularly surprising as the mean general health (MOS-SF-36) scores of the sample were consistent with normative data, suggesting that the participants’ general health is similar to that of the general population. The primary researcher interprets this finding to indicate that Rowe and Kahn classify the vast majority of older adults as having functional impairment(s) that preclude them from being considered to be aging well. The emphasis of “no impairment” in daily activities means that regardless of effort and activity, older adults with physical disabilities or limitation in basic physical activity will be excluded from being rated as aging successfully. Interestingly, even among samples that demonstrate high general health and physical functioning, a considerable number of adults are not classified as aging successfully. Only 5% of Montross et al.’s (2006) sample met Rowe and Kahn’s criteria despite mean general health scores that were
somewhat higher than normative data and 28% reporting absence of any limitations in basic physical activities. Ninety-two percent of the sample rated themselves as aging successfully.

The discrepancy between subjective and researcher-defined ratings may be observed because older adults place less emphasis than Rowe and Kahn on the absence of disease and disability and the maintenance of high physical and cognitive function-central aspects of Rowe and Kahn’s model. It is important to recall that Rowe and Kahn’s model not only grew out of a desire to develop a conceptual basis of positive aspects of aging, but to clarify the genetic, biomedical, behavioral, and social factors contributing to the maintenance and promotion of function in later life. Rowe and Kahn’s secondary objective led to a focus on the absence of disease, disability, high physical and cognitive function as the emerging costs associated with old age channeled attention toward identifying effective preventative interventions for the maladies that result in significant financial burdens for the patient, family and society. As such, it is likely that Rowe and Kahn were intentionally restrictive in an effort to identify older adults who were exceptional in their functional capacities.

One potential consequence of overly restrictive criteria is a Type II error, meaning that a number of adults who are aging successfully will not be identified. The potential harm of failing to accurately identify true positives is dependent on the variable being measured. In the case of successful aging, it is important to consider that research indicates those with more positive aging self-perceptions report better functional health than do those with more negative self-perceptions of aging; more positive self-perceptions of aging are associated with better functional health over the long term; and
older adults who have more positive perceptions of aging are likely to practice preventative health behaviors over the course of 20 years (Levy, Slade, Kasl, 2002; Levy & Myers, 2004; Goodwin, Black & Satish, 1999; Sarkisian, Hays & Mangioine, 2002). More negative attitudes about aging have been associated with decreased preventative health care and decreased reporting of health problems to physicians. Therefore, overly restrictive definitions of successful aging are potentially more problematic than a Type I error, or false positive, which could lead to better health care practices if self-perceptions of aging are influenced in a positive direction.

Due to the concerns of a Type II error and the inflated number of adults considered to be aging with a disability according to Rowe and Kahn’s criteria, review and potential modification of the criteria are warranted. Additional modifications include research into security/stability, and due to the limitations of the current study, further investigation into the importance of attitude and adaptation. If in larger samples, these variables are found to play a significant role in how older persons age successfully, incorporating these variables into an operational definition of successful aging is advisable. In addition to criteria modifications, when making revisions to the successful aging model, researchers should consider the heterogeneity of persons who are aging well. Suggestions of the current investigator include a rating system based on a cumulative score for relevant categories or the requirement that older adults meet five out of six categories.

Rowe and Kahn expanded perspectives on the heterogeneity among older adults by adding the category of successful agers to usual agers, and renewed philosophical debate and empirical investigation into what it means to age well. It appears that the very
research that was ignited by Rowe and Kahn’s model has also reflected the need for a successful aging model update. Reactions to the inherent exclusivity of the model have evolved into an emphasis of inclusivity and understanding older adults who live well despite some degree of decline in later life. Given that 19% of US population ages 21-64 experience disabilities, Rowe and Kahn’s model may no longer be an adequate representation of how many theorists, researchers and the general population of older adults conceptualize successful aging.

In the final remarks of “Successful Aging,” Blazer (2006) cautions that health care professionals must continue the pursuit of a more substantial empirical base for the emerging construct of “successful aging,” translating new data into clinically meaningful interventions that enhance physical and cognitive function, as well as alleviating emotional suffering that accompanies psychiatric disorders. He notes that successful aging is a relatively new concept, however, health care providers cannot truly measure the success of our therapies if we cannot identify what success means in the eyes of our patients. It appears that while differences exist between research models and subjective ratings of successful aging, the psychosocial variables implied by older adults to be so critical to aging well are a potential platform for bridging these perspectives and carving a path toward effective interventions and improved quality of life for older adults.
References


PACIFIC UNIVERSITY

Informed Consent to Act as a research participant in The Aging Study

Investigator(s) Contact Information

Principal Investigator(s):
Serena Meyer, MS
Pacific University, School of Professional Psychology
Contact Information: meye5995@pacificu.edu, Tel: 503-989-1152

1. Introduction and Background Information

You are invited to voluntarily participate in The Aging Study conducted by Serena Meyer, MS, a doctoral student of Clinical Psychology at Pacific University. The purpose of this study is to better understand the opinions and experiences of older adults as they age. You are invited to participate because you use the services of Calaroga Terrace. Please read this form carefully and ask any questions you may have before agreeing to be in this study.

2. Study Location and Date

The study is expected to begin December 2007, and to be completed by July 2008. The location of the study will be Calaroga Terrace.

3. Procedures

If you agree to be in this study, we will ask you to complete general background questions (such as age, educational background, marital status, etc.), report your general physical and mental health functioning, rate how successfully you see yourself as aging, and rate how well you adapt to and overcome adversity. To answer these questions, you will fill out the provided forms (pencil and paper). To ensure your privacy, you will complete the forms independently in a quiet seating area. A study investigator will be available at all times if you have questions or require assistance filling out the questionnaire. Participation in the study requires that you fill out the form one time only, and there are no future requirements. Anticipated completion time is approximately 20 minutes. If you decide at any time that you would not like to participate or continue filling out the questionnaire, please return your materials to the investigator. There is no penalty if you change your mind and/or decline to participate. To better serve other participants and future study efforts, you will have an opportunity to express your concerns and reasons for not participating. Your choice to answer or decline to answer will be respected. Again, we appreciate and respect your decision to decline without penalty.
4. Participants and Exclusion

Only participants who meet the following conditions will be included in the study:
- Adults ages 60 and older
- Persons who complete the informed consent

In an effort to protect participants who may experience difficulty participating in The Aging Study, the following persons will be excluded from the study:
- Persons who are actively psychotic or delusional
- Persons who, due to language barriers, are unable to complete informed consent and the questionnaire

*If you have special needs and require assistance to complete the following forms, please notify the investigator. We appreciate and value your participation and we will do our best to assist you and ensure that your participation is a pleasant experience.

5. Risks and Benefits

The comfort, convenience, and privacy of the participants were strongly considered when developing the questionnaire packet. Although anonymity is ensured as each questionnaire is coded with a number (not by name), some participants may experience discomfort disclosing personal information. If you feel discomfort at any time while you are filling out the questionnaire, please notify the investigator. If concerns persist after speaking with the investigator, please return the questionnaire and you are encouraged to contact the Primary Investigators (Serena Meyer, MS and Dan McKitrick, Ph.D.) to discuss your thoughts. If complaints reflect regular and unanticipated risks to study participants, the Primary Investigators will terminate the study if necessary.

Participation in this study is non-beneficial as the participants will not directly benefit from filling out surveys. If requested, investigators will notify participants of the findings at the conclusion of the study via email or letter.

6. Alternatives Advantageous to Participants

Not applicable.

7. Participant Payment

You will not receive payment or monetary compensation for your participation. You will receive a small token (of your choice) of appreciation for your time and participation (i.e. gift certificate, book of crossword puzzles, seeds and a small pot).
8. Promise of Privacy

The study will maintain the anonymity of each participant as a number will code each questionnaire and names will not be connected with the assigned number of the questionnaire. The names and signature of participants will be recorded for the purposes of informed consent, however, the informed consent and questionnaire will remain separate at all times. The informed consent and questionnaire will be collected in two separate folders, which will be stored in a secure and locked file cabinet in the investigator’s office. If the results of this study are to be presented or published, we will not include any information that will make it possible to identify you as an individual. No tape recordings or videotapes will be used at any time for purposes of this study.

9. Voluntary Nature of the Study

Your decision whether or not to participate will not affect your current or future relations with Pacific University. If you decide to participate, you are free to not answer any question or withdraw at any time without prejudice or negative consequences.

10. Compensation and Medical Care

Not applicable.

11. Contacts and Questions

The researcher(s) will be happy to answer any questions you may have at any time during the course of the study. The researchers Serena Meyer, MS and Dan McKitrick, Ph.D. can be reached at meye5995@pacificu.edu and mckitrid@pacificu.edu. If you are not satisfied with the answers you receive, please call Pacific University’s Institutional Review Board, at (503) 352 – 2112 to discuss your questions or concerns further. All concerns and questions will be kept in confidence.

12. Statement of Consent

I have read and understand the above. All my questions have been answered. I am 18 years of age or over and agree to participate in the study. I have been given a copy of this form to keep for my records.

Participant’s Signature                                                                 Date
Participant contact information:

Street address: ______________________
______________________
______________________

Telephone: ______________________
Email: ______________________

This contact information is required in case any issues arise with the study and participants need to be notified and/or to provide participants with the results of the study if they wish.

Would you like to have a summary of the results after the study is completed?

___Yes ____No

_________________________________________  __________________
Investigator’s Signature                  Date
The following are general information questions. Please check the box that best answers each question.

1. Sex:  
   - [ ] male
   - [ ] female

2. Age: ___________ (in years)

3. What is your marital status?
   - [ ] single
   - [ ] in a steady relationship
   - [ ] married
   - [ ] divorced
   - [ ] widowed

4. Do you have children?
   - [ ] yes
   - [ ] no

5. What is the highest level of education that you have completed? (please check the highest level you have completed)
   - [ ] some high school
   - [ ] completed high school
   - [ ] some additional training (apprenticeship, trade courses)
   - [ ] undergraduate university
   - [ ] postgraduate university
6. Please check the box that best describes your racial identity:

☐ Caucasian
☐ African American
☐ Asian American
☐ Native American
☐ Pacific Islander
☐ Hispanic/Latino
☐ Bi-racial
☐ Other __________________________

7. How often do you attend religious services?

☐ once a week
☐ about once a month
☐ only on religious holidays
☐ never

8. Current combined household income:

☐ Less than $12,000 per year
☐ $12,000 - $24,000 per year
☐ $24,000-$40,000 per year
☐ $40,000-$60,000 per year
☐ $60,000-$100,000 per year
☐ More than $100,000 per year
We want to know about your hobbies. Please circle how many days per week you participate in the following activities:

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<td>Completing Crossword puzzles</td>
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<td>4</td>
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<tr>
<td>Attending Classes/ Lectures</td>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Watching TV</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Writing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Playing sports/exercising</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Making artwork</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Attending religious activities</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using the computer</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Please circle how many days per week you participate in the following activities:

<table>
<thead>
<tr>
<th>Activity</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playing cards</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listening to the radio</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Visiting friends</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Visiting family</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
Please answer the following questions about your general health.

In general, would you say your health is:

Excellent   Very good   Good   Fair   Poor

**Compared to one year ago, how would you rate your health in general now? (Check one)**

_____ Much better now than one year ago

_____ Somewhat better now than a year ago

_____ About the same

_____ Somewhat worse now than one year ago

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

Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports:

Yes          Yes          No
Limited a    Limited a   Not Limited
Lot          Little       At All

Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf:

Yes          Yes          No
Limited a    Limited a   Not Limited
Lot          Little       At All

Lifting or carrying groceries:

Yes          Yes          No
Limited a    Limited a   Not Limited
Lot          Little       At All

81
<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>Limited a</th>
<th>Little</th>
<th>No</th>
<th>Limited a</th>
<th>Little</th>
<th>At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climbing several flights of stairs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climbing one flight of stairs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bending, kneeling, or stooping:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking more than a mile:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking several blocks:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking one block:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathing or dressing myself:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
During the past four weeks, have you had any of the following problems with your work or other regular daily activities, as a result of your physical health?

Cut down the amount of time you spent on work or other activities:

Yes  No

Accomplished less than you would like:  Yes  No

Were limited in the kind of work or other activities:  Yes  No

Had difficulty performing the work or other activities (for example, it took extra effort):

Yes  No

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

Cut down the amount of time you spent on work or other activities:

Yes  No

Accomplished less than you would like:

Yes  No

Didn’t do work or other activities as carefully as usual:

Yes  No

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

Not at all  Slightly  Moderately  Quite a bit  Extremely
How much bodily pain have you had during the past four weeks? (Circle One)

None     Very mild     Mild     Moderate     Severe     Very Severe

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

Not at all     Slightly     Moderately     Quite a bit     Extremely

These questions are about how you feel and how things have been with you during the past four weeks. For each question, please give the one answer that comes closest to the way you have been feeling. (Circle One)

How much of the time during the past 4 weeks……

Did you feel full of pep?

All of the Time     Most of the Time     A Good Bit of the Time     Some of the Time     A Little of the Time     None of the Time

Have you been a very nervous person?

All of the Time     Most of the Time     A Good Bit of the Time     Some of the Time     A Little of the Time     None of the Time

Have you felt so down in the dumps that nothing could cheer you up?

All of the Time     Most of the Time     A Good Bit of the Time     Some of the Time     A Little of the Time     None of the Time

Have you felt calm and peaceful?

All of the Time     Most of the Time     A Good Bit of the Time     Some of the Time     A Little of the Time     None of the Time
Did you have a lot of energy?

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Most of the Time</th>
<th>A Good Bit of the Time</th>
<th>Some of the Time</th>
<th>A Little of the Time</th>
<th>None of the Time</th>
</tr>
</thead>
</table>

Have you felt downhearted and blue?

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Most of the Time</th>
<th>A Good Bit of the Time</th>
<th>Some of the Time</th>
<th>A Little of the Time</th>
<th>None of the Time</th>
</tr>
</thead>
</table>

Did you feel worn out?

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Most of the Time</th>
<th>A Good Bit of the Time</th>
<th>Some of the Time</th>
<th>A Little of the Time</th>
<th>None of the Time</th>
</tr>
</thead>
</table>

Have you been a happy person?

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Most of the Time</th>
<th>A Good Bit of the Time</th>
<th>Some of the Time</th>
<th>A Little of the Time</th>
<th>None of the Time</th>
</tr>
</thead>
</table>

Did you feel tired?

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Most of the Time</th>
<th>A Good Bit of the Time</th>
<th>Some of the Time</th>
<th>A Little of the Time</th>
<th>None of the Time</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Most of the Time</th>
<th>A Good Bit of the Time</th>
<th>Some of the Time</th>
<th>A Little of the Time</th>
<th>None of the Time</th>
</tr>
</thead>
</table>

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

I seem to get sick a little easier than other people:

<table>
<thead>
<tr>
<th>Definitely True</th>
<th>Mostly True</th>
<th>Don’t Know</th>
<th>Mostly False</th>
<th>Definitely False</th>
</tr>
</thead>
</table>
I am as healthy as anybody I know:

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Mostly</th>
<th>Don’t</th>
<th>Mostly</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>True</td>
<td>True</td>
<td>Know</td>
<td>False</td>
<td>False</td>
</tr>
</tbody>
</table>

I expect my health to get worse:

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Mostly</th>
<th>Don’t</th>
<th>Mostly</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>True</td>
<td>True</td>
<td>Know</td>
<td>False</td>
<td>False</td>
</tr>
</tbody>
</table>

My health is excellent:

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Mostly</th>
<th>Don’t</th>
<th>Mostly</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>True</td>
<td>True</td>
<td>Know</td>
<td>False</td>
<td>False</td>
</tr>
</tbody>
</table>
We want to know how you feel about your aging process. On a scale from 1 to 10 please rate how successfully you see yourself aging. (subjective rating of successful aging)

<table>
<thead>
<tr>
<th>Least Successful</th>
<th>Most Successful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
</tbody>
</table>

Please indicate your agreement with the following statement.

“I am aging well”

Definitely True   Mostly True   Mostly False   Definitely False
We want to know about your beliefs and how you respond in different situations.
(Circle One)

I am able to adapt to change.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I have close and secure relationships.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sometimes fate or God can help.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I can deal with whatever comes.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Past success gives me confidence for new challenges.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I see the humorous side of things.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Coping with stress strengthens me.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I tend to bounce back after illness and hardship.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Things happen for a reason.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I give my best effort no matter what.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You can achieve your goals.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When things look hopeless, I don’t give up.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I know where to turn for help.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Under pressure, I can focus and think clearly.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I prefer to take the lead in problem solving.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I am not easily discouraged by failure.
Not True  Rarely True  Sometimes True  Often True  True Nearly All of the Time
At All

I think of myself as a strong person.
Not True  Rarely True  Sometimes True  Often True  True Nearly All of the Time
At All

I can make unpopular or difficult decisions.
Not True  Rarely True  Sometimes True  Often True  True Nearly All of the Time
At All

I can handle unpleasant feelings.
Not True  Rarely True  Sometimes True  Often True  True Nearly All of the Time
At All

I have to act on a hunch.
Not True  Rarely True  Sometimes True  Often True  True Nearly All of the Time
At All

I have a strong sense of purpose in life.
Not True  Rarely True  Sometimes True  Often True  True Nearly All of the Time
At All

I am in control of my life.
Not True  Rarely True  Sometimes True  Often True  True Nearly All of the Time
At All

I like challenges.
Not True  Rarely True  Sometimes True  Often True  True Nearly All of the Time
At All
I work to attain my goals.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I take pride in my achievements.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Rarely True</th>
<th>Sometimes True</th>
<th>Often True</th>
<th>True Nearly All of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At All</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Do you suffer from or has a physician ever told you that you have any of the following? (Please check all that apply)

___ cancer    ___ high blood pressure
___ diabetes    ___ cataracts
___ heart attack    ___ other heart disease
___ stroke    ___ osteoporosis
___ Parkinson disease    ___ respiratory disease

If we have not listed a medical condition(s) that you feel is important please write-in the medical conditions in the space below

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________