THE SIGNIFICANCE OF RELIGION ON HEALTH FACTORS RELATED TO AGING AMONG AMERICAN ADULTS USING THE NATIONAL SURVEY OF MIDLIFE DEVELOPMENT IN THE UNITED STATES

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THE SIGNIFICANCE OF RELIGION ON HEALTH AND BEHAVIOR FACTORS RELATED TO AGING AMONG AMERICAN ADULTS USING THE NATIONAL SURVEY OF MIDLIFE DEVELOPMENT IN THE UNITED STATES

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Abstract

There is a substantial body of evidence that demonstrates an association between religiosity and health outcomes in adults of all ages. Many studies have demonstrated that factors such as religious importance and service attendance may provide social vehicles for factors such as increased access to health care, better management of chronic diseases, and increased availability to preventive health services and education. These religious factors may also influence the way in which a person perceives and copes with his or her health issues.

Successful aging theory is a combination of three factors or characteristics: low risk of disease and disease-related disability, high mental and physical function, and active engagement with life. This theory allows for a more holistic approach to aging and health.

The overall goal of this observational study using quantitative data from the 1994/95 National Survey of Midlife Development in the United States (MIDUS) was to analyze whether any statistically significant relationships exist between religiosity defined as religious devotion, importance, influence, and service attendance and the three factors of successful aging. The results demonstrated significant relationships between all religiosity variables and active engagement in life. Other statistically significant findings were discovered with the factors: self

physical and mental health rating, times in the hospital, routine visits to the doctor, and certain religiosity variables. Many of the findings still existed when analyzed across demographic co-variants. Finally, the use of a theoretical model and logistic regression demonstrated that active engagement in life may be a bridge variable between successful aging health outcomes and service attendance.

The results don't show more religion means healthier, but that religion can play an intricate role in an individual's own health. The public health relevance of the study is to make public health professionals aware of the relationships that exist between religiosity and successful aging health outcomes. Religious venues may provide a good resource for preventive health services and education. Most importantly, a person's religious beliefs may affect the way a person deals with physical or mental illness. Public health professionals should embrace the religious beliefs of patients regardless of their own beliefs.

TABLE OF CONTENTS

LIST OF TABLES

APPENDIX A:

MIDUS STUDY 1994/95
Comparisons of Health and Religiosity Variables:

Table 1: Active Engagement in Life

Table 2: High Mental and Physical Function

Table 3: Low Risk of Disease and Disease-Related Disability

x

LIST OF FIGURES

1.0   INTRODUCTION

On January 30, 2001, President Bush unveiled a plan to dramatically expand the role of religious organizations in social programs, sending Congress a proposal to open all federal grant programs to religious groups (NCOA, 2001). This idea brings up some very important issues (other than the separation of church and state) about the part that religion plays in our society. Its importance and impact on civilization have been evident throughout history.

Since the beginning of mankind, humans have searched for ways to explain the meaning of their own existence. A superior power that guides life is often given credit as to why we are part of the world. The belief in a "God" or "Gods" controlling everything from the weather to romance has been a common thread of historical civilizations and is widespread even today. Recent Gallup surveys indicate that 96% of Americans believe in God or a universal spirit, 90% pray, and 43% attend church weekly or more often (Princeton Religion Research Center, 1996). This information demonstrates that religion is a universal part of society.

Religion is humanity's tendency to seek to maximize the meaning and value of our life-experience by aligning that life-experience with a higher or deeper reality, with "an unseen order" that somehow transcends ordinary human existence (Kirkland, 2001). This alignment can serve to integrate diverse aspects of our lives (individually or collectively), and to imbue our lives with a sense of purpose or direction (Kirkland, 2001). From this general tendency, religious values (guidelines for thought and action) develop into practices and beliefs.

These religious beliefs and practices may impact on physical and mental health, on the meaning that illness has for persons, and on decisions that people make about their health care

(Koenig, 1997). For many elders, religious faith is a durable source of hope, meaning, and purpose, particularly during difficult times (Koenig et al., 1998). An increasing number of studies have reported that those who are more religious experience greater well-being (Ellison, 1991) and life satisfaction (Ellison et al., 1989), less depression (Kendler et al., 1997), less anxiety (Koenig et al., 1993), cope better with stress (Pargament, 1997), and are less likely to commit suicide (Martin, 1984). This information and the significant role that experts believe religion plays in society proves that it is important for public health researchers to analyze the impact of religion on health outcomes especially through middle to late adulthood.

This dissertation will investigate any significant existing relationships between religiosity and successful aging. Its goal will be accomplished in two parts. First, there will be a review of the literature including the following: 1) a description of America's aging population and the associated public health issues; 2) a review of religion and what this term means for the purposes of public health analysis; 3) the relationship that exists between religion and aging; 4) a review of research that links religion and health outcomes (both mental and physical); 5) a description of successful aging theory. Second, an observational study using secondary data will determine if any statistically significant relationship exists between religiosity and successful aging. Upon conclusion, the dissertation will further solidify a documented religion and health outcomes relationship which occurs as an individual ages from young adulthood to death and discuss both the clinical and policy implications of the determined results.

2.0   BACKGROUND LITERATURE

2.1 United States Aging Population and Significant Public Health Issues:

Many researchers and experts refer to a current phenomenon known as the "Graying of America". Americans over the age of 65 years old are becoming an increasing larger and powerful force. As we prepare to enter the twenty-first century, previously unimagined numbers of people are growing to be very old in America (Kahn & Rowe, 1999). It is estimated that in the forty-five hundred years from the Bronze Age to the year 1900, life expectancy increased twenty-seven years, and that in the short period from 1900 to 1990 it increased by at least that much. The changes have been so dramatic that it is currently estimated that of all the human beings who have ever lived to be sixty-five years or older, half are currently alive (Kahn & Rowe, 1999). Also with the "Baby-Boom" generation moving into this age group, this trend is likely to continue through the year 2050. This section will describe the current and future population numbers, economics, health status, and health care of these older Americans. It is important to look at the older population in America for this dissertation, because the possible impact that religion can have across the lifespan will affect individuals the most during the later years of their life. In addition, the specific public health issues posed by this segment of the population will be identified and discussed throughout.

2.1.1 Current and Future Population Numbers

In 2000, there are estimated 35 million people ages 65 or older in the United States, accounting for almost 13 percent of the total population (Aging Stats, 2000). This means that

about one out of every eight Americans is over the age of 65 years. The number of older Americans has increased by 3.7 million or 12.0% since 1990. However, the number of Americans aged 45-64 – who will reach 65 over the next two decades – increased by 34% during this period (AOA & U.S. Census Bureau, 2001& 2000). In 2011, the "Baby Boom" generation will begin to turn 65, and by 2030, it is projected that one in five people will be age 65 or older. The size of the older population is projected to double over the next 30 years, growing to 70 million by 2030 (Aging Stats, 2000).

The population age 85 and older is currently the fastest growing segment of the older population. In 2000, an estimated 2 percent of the population is age 85 or older (Aging Stats, 2000). By 2050, this segment could account for about 4.8 percent of the total population (U.S. Census Bureau, 2000). While centenarians were rare in 1900, their numbers swelled to 32,000 by 1982, 61,000 today, and it is projected that by the middle of the next century, there will by over 600,000 individuals in the United States over the age of 100. Four out of centenarians are women (Kahn & Rowe, 1999). The size of this age group is especially important for the future of our health care system, because these individuals tend to be in poorer health and require more services than younger old.

As the older American population is growing larger, it is also rapidly becoming more racially diverse. About 16.4% of persons 65+ were minorities in 2000 with the following representation: 5.6% Hispanic origin, 8.0% African American, 2.4% Asian or Pacific Islander, and less than 1% American Indian or Native Alaskan. In addition, 0.8% of persons 65+ identified themselves as being of two or more races (AOA & U.S. Census Bureau, 2001 & 2000). By 2050, the percentage of the older population that is non-Hispanic white is expected to

4

decline from 84% to 64%. Hispanic persons are projected to account for 16 % of the older population; 12 % of the population is projected to be non-Hispanic black; and 7% of the population is projected to be non-Hispanic Asian and Pacific Islander. However, the Hispanic older population is expected to increase the most rapidly of all racial and ethic groups. Hispanics are projected to increase in total number from 2 million in 2000 to over 13 million by 2050 outnumbering African Americans by the year 2028 (Aging Stats, 2000). This means that public health initiatives for older Americans in the future will have to consider larger and more racially diverse populations.

Some other important population characteristics of older Americans that can affect public health are martial status, educational attainment, and living arrangements. In 2000, older men (74%) were much more likely to married than older women (43%). Almost half of all older women (45%) were widows compared with 14% of older men (AOA & U.S. Census Bureau, 2001). This is due to a combination of factors, including sex differences in life expectancy (discussed later), the tendency of women to marry men who are slightly older, and higher remarriage rates for older widowed men than widowed women (Saluter & Lugaila, 1998). Divorced and separated older persons represented only 8% of all older persons in 2000; however, their numbers have been steadily increasing over the last couple of years (AOA & U.S. Census Bureau, 2001). Educational attainment plays an important role in socioeconomic status and the well-being of seniors. In 1950, only 18 percent of older Americans finished high school; however, about 67 percent of people aged 65 or older had completed high school in 1998 (Day & Curry, 1998). The percentage of this population with a college degree is increasing also, but there still exists substantial educational differences between men, women, ethic, and racial

groups. Like marital status, the living arrangements of seniors are important because they are closely linked to income, health status, and the availability of caregivers. Over half (55%) of older non-institutionalized persons lived with their spouse in 2000. The proportion living with spouse decreased with age, especially for women. Only 28.8% of women 75+ years old lived with a spouse. About 30% (9.7 million) of this population lived alone in 2000. They represented 40% of older women and 17% of older men. The proportion living alone increases with advanced age. Among women aged 75 and over, for example, half (49.4%) lived alone (AOA & U.S. Census Bureau, 2001).

2.1.2 Economics

When considering economics, poverty is an important measure. About 3.4 million elderly persons (10.2%) were below the poverty level in 2000, which is not much different from the level reached in 1999. Another 2.2 million or 6.7% of the elderly were classified as "near-poor" (income between the poverty level and 125% of this level). One of every twelve (8.9%) elderly Whites was poor in 2000, compared to 22.3% of elderly African Americans and 18.8% of elderly Hispanics (U.S. Census Bureau, 2001). Also, poverty rates seemed to increase with the following factors among elderly: living in the central city, living in rural areas, living in the South, being female, and living alone. Overall, the highest poverty rates (38.8%) were experienced by older Hispanic women who lived alone or with nonrelatives in 2000 (U.S. Census Bureau, 2001).

The median income of older persons in 2000 was $19,168 for males and $10,899 for females. Households containing families headed by persons 65+ reported a median income in

2000 of $32,854 ($33,467 for Whites, $27,952 for African-Americans, and $24,330 for Hispanics) (U.S. Census Bureau, 2001). However, a total of 37.2% of Americans over 65 years old fell into the low income, poverty, and extreme poverty groups (26.8%, 8.1%, and 2.3% respectively) in 1998 (Aging Stats, 2000). This statistic indicates that a significant proportion of the older population has minimal income.

Sources of income are another important economic factor. In 1998, Social Security benefits provided about two-fifths of the income for older Americans; and asset income, pensions, and personal earnings each accounted for about one-fifth of the total income. For older Americans in the lowest fifth of income distribution, Social Security plays a large role accounting for 82% of income; and public assistance provides another 10% (SSA, 2000). Older Americans in higher income distribution groups have diverse sources of money with asset income and earnings accounting each for about 30% of the total income. Finally, people tend to rely more on Social Security and asset income as they reach the over 85 years old category (SSA, 2000). This information demonstrates the important role Social Security plays in the income of the older Americans.

2.1.3 Health Status

There are several indicators of health status in the American older population. Each of these factors impact health outcomes and the delivery of health care services.
Life expectancy, mortality, chronic health conditions, memory impairment, depressive symptoms, self-rated health statues, and disability are the factors listed below with a brief description.

- **Life Expectancy:**   Americans are living longer now than ever before. Life expectancy has increased from 49 years in 1900 to 70 years in 1960. Currently in 1997, life expectancy at birth was 79 years for women and 74 years for men (Aging Stats, 2000). More than 70 percent of people now live to the traditional retirement are of 65 years old, nearly three times as man as did so at the century (Kahn & Rowe, 1999). The well-known but still unexplained difference in life expectancy of men and women continues; however, women live on average 7 years longer than men. There are also striking and disturbing racial differences in life expectancy. Caucasian women on average, live 6 years longer than women of African-American descent, and Caucasian men live about 8 years longer than African-American men (Kahn & Rowe, 1999). Also, the life expectancy for Americans at the ages of 65 years old and 85 years old has increased. Americans that reach the age of 65 are expected to live an additional 18 years, and men and women that reach the age of 85 are expected to live an additional 7 years and 6 years respectively (Aging Stats, 2000). This

  information indicates that through public health improves older adults are living longer and will comprise a larger part of our total population.

- **Mortality:** As expected with increases in life expectancy, the overall death rates in the U.S. population have decreased over the last century. The mortality, however, for some diseases has increased specifically chronic conditions. In 1997, the leading cause of death among persons age 65 or older was heart disease (1,832 deaths per 100,000 persons), followed by cancer (1,133 per 100,000),

stroke (426 per 100,000), chronic obstructive pulmonary diseases (281 per 100,000), pneumonia and influenza (237 per 100,000), and diabetes (141 per 100,000). Among persons age 85 or older, heart disease was responsible for 40% of all deaths (National Center for Health Statistics, 1999). Although there are significant differences in these mortality rates when compared on the basis of sex and race, this information demonstrates that the older population is suffering from increasing chronic conditions over a longer period that require more health care and service utilization.

- **<u>Chronic Health Conditions:</u>** Chronic conditions such as arthritis, diabetes, and heart disease negatively affect quality of life, contributing to declines in functioning and the inability to remain in the community (CDC, 1997). Five of the six leading causes of death among older Americans are chronic diseases. In 1995, about 58 percent of persons age 70 or older reported having arthritis, 45 percent reported having hypertension, and 21 percent reported having heart disease. Other chronic diseases included cancer (19 percent), diabetes (12 percent), and stroke (9 percent). About 64 percent of older women reported having arthritis, 48 percent reported having hypertension, and 19 percent reported having heart disease. Older men were less likely to report having arthritis (50 percent) and hypertension (41 percent), but were more likely to report having heart disease (25 percent). Men were also more likely to have had cancer (23 percent), compared with women (17 percent) (SOA, 1987 & SOA II, 1995). The prevalence of chronic conditions also varies by race and ethnicity in the older

population. In 1995, 67 percent of non-Hispanic black persons, 58 percent of non-Hispanic white persons, and 50 percent of Hispanic persons reported arthritis. Non-Hispanic black persons were also more likely to report having diabetes, stroke, and hypertension than either non-Hispanic white persons or Hispanic persons. Cancer was reported by 21 percent of non-Hispanic white persons, compared with 9 percent of non-Hispanic black persons, and 11 percent of Hispanic persons (SOA, 1987 & SOA II, 1995). This data indicates that the management of chronic conditions in older adults is becoming an increasingly important issue in public health. Also, the prevalence differences on the basis of ethnicity and race leads to issues of culture and belief when treating chronic conditions.

- **<u>Memory Impairment:</u>** The prevalence of moderate or severe memory impairment is slightly lower among older women than among older men. In 1998, memory impairment occurred among 35 percent of women age 85 or older, compared with 37 percent of men in the same age group. In 1998, the percentage of older adults with moderate or severe memory impairment ranged from about 4 percent among persons ages 65 to 69 to about 36 percent among persons age 85 or older (HRS, 1998). The loss of memory is an important health factor because low cognitive functioning is a risk factor for increased health service needs and entering a nursing home.

- **<u>Depressive Symptoms:</u>** Higher levels of depressive symptoms are associated with higher rates of physical illness, greater functional disability, and higher

health care resource utilization (Wells, Stewart, Hays, Burman, Rogers, Berry, Greenfield, & Ware, 1989). In 1998, about 15 percent of persons ages 65 to 69, 70 to 74, and 75 to 79 had severe symptoms of depression, compared with 21 percent of persons ages 80 to 84, and 23 percent of persons age 85 or older (HRS, 1998). This information indicates that a significant proportion of the U.S. older population suffers from depressive symptoms. Because of this factors influence on all other aspects of the health, it is an important issue.

- **<u>Self-Rated Health Status:</u>** This factor represents physical, emotional, and social aspects of health and well-being. Good to excellent self-reported health correlates with lower risk of morality (Idler & Benyanini, 1997). During the period 1994 to 1996, 72 percent of older Americans reported their health as good, very good, or excellent. Women and men reported comparable levels of health status. Positive health evaluations decline with age. Among non-Hispanic white men ages 65 to 74, 76 percent reported good to excellent health, compared with 67 percent among non-Hispanic white men age 85 or older. A similar decline with age was reported by non-Hispanic black and Hispanic older men, and by women, with the exception of non-Hispanic black women. Among older men and women in every age group, non-Hispanic black and Hispanic persons were less likely to report good health than non-Hispanic white persons (NHIS, 1998). This factor can be an important indication of health care utilization and the extent to which an older adult is dealing with the onset of a chronic condition.

- **<u>Disability:</u>** Disability is one of the best functional measures of health status. Illness, chronic disease, and injuries can limit both mental and physical abilities.

Increased disability usually leads to more health care service utilization. In 1998, among those 65-74 years old, 28.8 percent reported a limitation caused by a chronic condition. In contrast, over half (50.6%) of those 75 years and over reported they were limited by chronic conditions (U.S. Census & National Center for Health Statistics, 2001). In 1997, more than half of the older population (54.5%) reported having at least one disability of some type (physical or nonphysical). Over a third (37.7%) reported at least one severe disability. Over 4.5 million (14.2%) had difficulty in carrying out activities of daily living (ADLs) and 6.9 million (21.6%) reported difficulties with instrumental activities of daily living (IADLs) (U.S. Census & National Center for Health Statistics, 2001). Also, disability increases with age. Almost three-fourths (73.6%) of those aged 80+ report at least one disability. Over half (57.6%) of those aged 80+ had one or more severe disabilities and 34.9% of the 80+ population reported needing assistance as a result of disability (U.S. Census & National Center for Health Statistics, 2001). This information indicates that disabilities affect a significant proportion of the older population.

All this information on health status illustrates some trends in the older population. Older Americans are living longer, increasing in number, and suffering from more chronic conditions. Also, memory impairment, depressive symptoms, and disability become increasing prevalent with age. This means that the older populations more than ever before require increased health services. Increased consumption of services and chronic health problems for older Americans

has created a need for public health professionals to look for other factors such as religion that can have a positive impact on health status. However, these needs do not develop overnight and are the accumulation of how an individual lives their life from adulthood to death.

2.1.4 Health Care

For the reasons discussed above, the complexity and amount of health care required is becoming increasing larger. This statement is demonstrated using several indicators of health care that will be discussed below. The first indicator is the overall health care expenditures. Health costs incurred on average by older consumers in 1999 consisted of $1554 (51%) for insurance, $706 (23%) for drugs, $601 (20%) for medical services, and $158 (5%) for medical supplies (U.S. Census & National Center for Health Statistics, 2001). Also, increasing years of age usually indicates increased health care expenditures. In 1996, the average annual expenditure on health care was $5,864 among persons ages 65 to 69, compared with $9,414 among persons ages 75 to 79, and $16,465 among persons age 85 or older (MCBS, 1996).

Another important indicator is the type of health care services using by older Americans. The majority of older adults have access to health care through Medicare, which provides a variety of services. Older people had about four times the number of days of hospitalization (1.6 days) as did the under 65 aged population (0.4 days) in 1999. The average length of a hospital stay was 6.0 days for older people, compared to only 4.1 days for people under 65. The average length of stay for older people has decreased 6 days since 1964. Older persons averaged more contacts with doctors in 1999 than did persons of all ages (6.8 contacts vs. 3.5 contacts) (U.S. Census & National Center for Health Statistics, 2001). In addition, use of home health services

increased substantially from 2,141 home health visits per 1,000 enrollees in 1990 to 8,227 visits per 1,000 in 1997. Home health care use increased during this period in part because of an expansion in the coverage criteria for the Medicare home health benefit. However, home health visits from Medicare claims dropped to 5,058 per 1,000 beneficiaries, following implementation of the Balanced Budget Act, which changed Medicare payment policies for home health care services in 1998 (Posial & Chulis, 2000). This information demonstrates that older adults use a variety of health care services.

Even though all older adults use health services, there were differences in access to health care by race. In 1996, the percentage of older Americans who reported delays due to cost was highest among non-Hispanic black persons (10 percent), followed by Hispanic persons (7 percent), and non-Hispanic white persons (5 percent). About 2 percent of non-Hispanic white persons reported difficulty in obtaining health care, compared with 4 percent of non-Hispanic black persons and 3 percent of Hispanic persons (MCBS, 1996).

Another important factor of health care besides the total expenditure and access data is out-of-pocket expense. This expense is the portion that seniors must pay that is not covered by Medicare, health insurance, etc. In 1999, older consumers averaged $3,019 in out-of-pocket health care expenditures, an increase of more than a third since 1990. In contrast, the total population spent considerably less, averaging $1,959 in out-of-pocket costs. Older Americans spent 11% of their total expenditures on health, more than twice the proportion spent by all consumers (5%). Health costs incurred on average by older consumers in 1999 consisted of $1554 (51%) for insurance, $706 (23%) for drugs, $601 (20%) for medical services, and $158

(5%) for medical supplies (U.S. Census & National Center for Health Statistics, 2001). This data illustrates that interventions or factors, which reduce total health care expenditure, can help the individual senior by reducing the amount that they have to pay out-of-pocket.

In conclusion, older Americans are living longer and increasing in numbers. A significant proportion of their income is from Social Security and their health care from Medicare. The information above demonstrates that many seniors live alone, have a low income, and have significant disability, memory impairment, and depressive symptoms. There are several differences in both race and sex. However, many older Americas require health services for the treatment of chronic conditions, which require significant expenditures. This need for health services is also affected throughout adult life by factors like the number of times an individual is in the hospital or visits the doctor for routine care. In order to reduce health care expenditures and assist seniors with management of their chronic conditions, public health professionals need to investigate other factors that can influence health outcomes such as religion throughout the lifespan.

2.2 Religion and the Public Health Meaning

Religion is defined in **Webster's New World Dictionary** as the belief in and worship of a God or gods (Webster's, 1990). However, this term means more than just a belief for the majority of the population. Religion in many cases is both a philosophy and a way of life. As stated in the introduction, the definition is much more elaborate.

"**Religion**" is not mere intellectual assent to certain propositions about the nature of

life. Rather, it involves what people do in their lives: "religion" has been called

15

"*enacted tradition*" or "*embodied belief.*" It originates in humanity's tendency to seek to maximize the meaning and *value of our life-experience* by (re-) aligning that life-experience with *a higher or deeper reality*, with "an unseen order" that somehow transcends ordinary human existence. That alignment can serve to *integrate* diverse aspects of our lives (individually and collectively), and to imbue our lives with *a sense of purpose and direction*. The concern with *establishing and maintaining a harmonious relationship with the higher deeper reality while conducting our everyday life* often generates religious values – *guidelines for thought and action* that often develop into powerful cultural forces. The myths, symbols, rituals, and intellectual reflection that grow up around people's experience of the higher/deeper reality form the basis of **religious traditions ("religions")**. *"Religions" evolve within human culture and society*, and are affected by the surrounding physical, historical, and cultural realities (Kirkland, 2001).

This statement indicates that religion is an interwoven part of our society, culture, and history.

This definition indicates that religion and religious values are used to "maximize the meaning and value of our life-experience" and can guide the manner in which people act. Religion has influence on thinking, behavior, and actions. It infiltrates many of the key decisions that are made during the course of a life. One of these key decisions relates to health behaviors and care utilization. It is clear that religion and religious values could have a connection with health outcomes in general. Taking this into consideration, the following questions come to mind: 1) what does religion mean from the perspective of a researcher,

16

2) what are some analytic models that can be used for research on religion and health, and 3) does enough of the United States population participate in organized religion to make it a important factor of public health?

2.2.1 Research Definition of Religion

Social and behavior science writings define religion as "… a process, the search for significance in ways related to the sacred" (Pargament, 1997). Conceptual definitions of religious involvement indicate that it is multidimensional construct. Often, religious involvement is seen as containing two dimensions: a behavioral dimension and a subjective dimension. The behavioral component pertains to individual characteristics and activities that reflect organizational or pertains to individual characteristics and activities that reflect organizational or public religious expressions (e.g. denominational affiliation and religious-service attendance), as well as private activities that may be performed outside of religious institutions. Subjective dimensions of religious involvement include attitudes, beliefs, experiences, self-perceptions and attributions that involve religious or spiritual content (e.g. religious identity and feelings of closeness with God) (Levin, Taylor, & Chatters, 1995 and Williams, 1994).

For the purposes of this dissertation, concentration will be focused on the behavior component of religion. This is due to the fact that variables such as religious-service attendance are measurable and often included in national surveys. Also, a quasi-measure (religious salience) of the subjective dimension will be used. It is important to describe how these behavioral and subjective religious variables can be linked to public health research (more specifically health outcomes).

An adaptation-functional paradigm will be used for this description. As stated in research by Meador and associates (1992), this paradigm allows one to assume that religious behavior variables such as religious affiliation most likely serve as proxies for more elemental/mediating factors that effect health outcomes. These variables often reflect a discrete set of beliefs on which a person's view of the world is based (Meador at.el., 1992). Attitudes and patterns of behavior- both interpersonal and intra-personal- often arise from the particular belief system prescribed by one's religious practice (Meador at. el., 1992). Religious practice with well-established denominations that are firmly rooted in the culture of a society may be indicative of emotional stability (Meador at. el., 1992). This emotional stability will then influence elemental/mediating factors such as health status, coping skills, and social support/networks. In turn, these factors can impact health outcomes. This is the basic mechanism for a series of analytical models discussed later.

At this time, it is also important to mention spirituality, which is more closely related to the subjective dimension of religion. Spirituality, although distinct from religion, is nonetheless a related construct (Taylor at. el., 2000). Spirituality can be described as transcendent, numinous experiences (e.g. feelings of closeness to God, peacefulness, and sacredness), which emphasize a relationship to something greater than oneself and are invested with a sense of personal meaning and significance that may have important consequences for health and well-being (e.g. behaviors, attitudes, and emotional states) (Hill, 1999). The convergence of religion and spirituality is particularly evident for beliefs and experiences that specifically have God as their reference point (Chatters, 2000). From the statements above, it is clear that there is a

relationship between spirituality, behavioral, and subjective dimensions of religion. The influence that religion has on health outcomes involves an interwoven participation of these three concepts.

2.2.2 Analytical Models Used for Research on Religion and Health

Based on work done by Ellison (1993) and Levin & Chatters (1998), five basic models have been discussed representing several possible relationships among religion, mediating factors (previously mentioned), and physical and mental outcomes. All of the models analyze this relationship from the perspective of dealing with an introduced stress such depression, disability, etc. The following is a listing and brief description of each model.

- **Suppressor Model (or stressor response)** – The presence of a stressor leads individuals to increase (or mobilize) their religious activities (e.g. prayer and service attendance) and other various coping responses, which then function to reduce or suppress the deleterious effects of stress on health.

- **Health Effects Model (or stressor effect)** – Stressors function to suppress or prevent religious activity and may also have negative psychosocial effects on mediating factors (e.g. decreases in support from others and negative emotional states).

- **Distress-Deterrent (or counterbalancing)** – This model suggests that stress and religion on health occurs across levels of stress and partially compensates for the deleterious impact of stressors on physical and mental health.

- **Moderator** – This model proposes that religion operates to moderate the effects of stress on health. Because religion's effect is contingent on the level of stress

experienced, it may be particularly useful for individuals who are experiencing significant stress (e.g. stress derived from health problems).

- **Prevention –** This model suggests that religion has both direct and indirect protective effects on health. Religious involvement benefits health indirectly by its influence for positive lifestyle and health behaviors that result in reductions in risk for particular health conditions (e.g. via healthy diets), as well as lower exposure to stressful circumstances (e.g. interpersonal conflicts). In addition, various aspects of religious involvement may benefit health directly, for example, stress-reducing aspects of religious devotion and prayer.

Although these models describe the positive relationships between religious involvement and health, it is important to mention that this relationship can also be a negative one. Some religious practices in denominations such as the belief that only God heals not modern medicine can be detrimental to health. Now that there is a workable definition of religion and models that describe the relationship between religious involvement and health, it is time to determine whether or not there are enough people involved in organized religion to justify its study in the public health arena.

2.2.3 Population of Organized Religious Practice

This dissertation will focus on the United States although religious bodies or denominations flourish throughout the world. America has a greater number of religious groups than any other country in the world. However, exact numbers can be hard to obtain because the government does not include a question about religion on its census.

This means that the size of religious groups is obtained from the results of national surveys.

Barry A. Kosmin, Seymour P. Lachman, and associates at the Graduate School of the City University of New York did the largest, most comprehensive surveys on religious identification. In 2001, they conducted the American Religious Identity Survey (ARIS), which included a sample size of 50,000 Americans. The ARIS yielded the results demonstrated in the following table.

Table 1:
Top Ten Organized Religions in the United States, 2001
*(Includes nonreligious/secular identification)

Religion	2001 Estimated Adult Population	2001 Estimated % of Adult Population
Christianity	159,030,000	76.5%
Judaism	2,831,000	1.3%
Islam	1,104,000	0.5%
Buddhism	1,082,000	0.5%
Hinduism	766,000	0.4%
Unitarian Universalist	629,000	0.3%
Wiccan/Pagan/Druid	307,000	0.1%
Spiritualist	116,000	
Native American Religion	103,000	
Baha'i	84,000	
*Nonreligious/Secular	27,539,000	13.2%

(Data from self-identification, ARIS)

The data from this table indicates that approximately 80% of the United States population identified themselves as belonging to one of these religious bodies. Although these numbers are not free from argument, this information clearly demonstrates that organized religion affects a significant number of Americans and warrants investigation by public health researchers. The next step is to look at the relationship that religion has with aging and public health research.

2.3 Relationship Between Religion And Aging

Robert Atchley (1991) has observed that church participation is the number one form of organizational activity among older persons. This observation raises the following questions: 1) Is there a change in individual religious involvement as a person grows older and 2) What is the association between aging and religious involvement?

There have been several studies that have researched the relationship between aging and religion. In 1987, Glamser examined the mean levels of belief and church attendance during years before and after retirement. This study concluded that there appears to be more individual change in religious belief and behavior in late adulthood than previously thought (Glamser, 1987). Another study demonstrated church attendance remained stable over 30 years (1952 to 1982), but the percentage of frequent church attenders increased steadily after age 45 into old age (Sasaki, 1987). Also, Curtenay and associates (1992) examined the relationship between religiosity, age, and health in a sample that included centenarians. Their data suggested that there might be a linear increase in religiosity with age, especially for beliefs, knowledge about religion, and reliance on religion in daily life (Curtenay et. al., 1992). The information obtained from these studies would indicate that religiosity or religious influence increases as we become older.

Although it would appear clear-cut, recent data has suggested that this is not entirely true. Research in the social sciences has documented that older people do not become more religious as they age (Nelson, 1981). There are several reasons for this discrepancy. Much of the research cited above used cross-sectional data as opposed to cohort data. This means that the differences discovered could have been due to generational variations that will not hold true over time.

However, an analysis using data from a cohort of people born in the 1930s demonstrated that the percentage of individuals reporting to be very religious increased from 37% when in their thirties to 45% when in their sixties. The largest increase occurred between their forties and fifties, perhaps corresponding with parental death and full realization of one's mortality (Social Gerontology, 2002). This concept is further supported by a study completed in 1992, which indicated 35% of elders surveyed reported they wished they had spent more time in their life on religion (Degenova, 1992). Some other reasons would be the use of convenience samples and the variables used to measure religion. Regardless of the extent, this information has demonstrated that a significant number of older adults strengthen their religious beliefs as they age.

What is a reason why this phenomenon occurs? With the diminished role of elderly in our society, many are affected by the disengagement theory in social science research that conceptualizes how role loss and increasing preoccupation with self and with death are common experiences of aging (Hall, 1985). This geographical and emotional isolation in later life, frequently beyond the complete control of the older person, may lead to emotional disorder (Hall, 1981). Religion can be thought of as a source of spiritual support and freedom at these times of difficult adjustment in the life of the elderly, such as approaching death (Kubler-Ross, 1969). Religion can also give direction and provide a social network of critical importance to older people (Lemke & Redmann, 1984). An older person with the use of religion can begin to transcend the facts of a situation of loss, for example, by broadening horizons toward a more universalistic vision (Payne, 1981). Finally, spiritual development and moral virtue enhance the quality of life and make life more satisfying (Hiltner, 1981). Based on the concepts described

above, it is clear that the elderly person can use religion as an important tool while weaving

 through the possible emotional distress of aging and combating negative stereotypes associated

with ageism.

Religion or religious influence can impact the quality of life in an elderly person. Quality

of life and emotional stress have been documented to effect health outcomes. Therefore, there is

obviously a possible relationship between aging, religion, and health outcomes.   Many

professionals have researched this connection, and the next section will describe the results of

some of this work.

2.4 Research on Religion, Health Outcomes and Aging:

2.4.1 Research on Religion and Mental Health

There have been many studies conducted investigating the relationship between religious

involvement and mental health. The following section will discuss research in the following

areas: 1) Positive associations between mental health and religious involvement and 2) The

relationship between religious involvement and negative mental health states such as depression,

anxiety, and suicide.

Moberg (1956) surveyed persons over the age of 65 in seven old age homes located in

Minneapolis-St. Paul and found that Religious activities were positively related to adjustment.

Singh and Williams (1982) examined the relationship between religious attendance and

"satisfaction with health" among the elderly. Multivariate analysis revealed that the strongest

predictor of health satisfaction among all variables assessed was religious attendance. Doyle and

Forehand (1984) examined data from a national sample of persons aged 46-90 years old. Among

persons ages 40-54 years, there was a positive association between importance of religion and life satisfaction. Among those ages 65 and older, importance of religion was related to life satisfaction at about the same level as social involvement. Krause (1993) examined the relationship between religiousness and well being in a sample of 709 persons aged 55 or older. There was a positive relationship between a second-order religiosity factor (global religious orientation based on five religious dimensions) and life satisfaction, as well as a positive relationship between subjective religiosity and life satisfaction.

The information above demonstrates that there is clearly a relationship between religious involvement and positive mental health (life satisfaction). This is an important link from the standpoint that religious involvement may be an important way in which older adults cope with chronic diseases and other health problems. The next paragraphs illustrate the relationship between religion and several mental health problems like depression, anxiety, and suicide.

Morse and Wisocki (1987) examined the extent to which religious beliefs and church attendance influence psychological adjustment in later life. Elderly people with higher levels of religious activity and beliefs show greater psychological health and adjustment. Kennedy, Wisniewski, Kelman, Thomas, and Metz (1990) examined and compared the prevalence of depressive symptoms among elderly Jews and Catholics. Symptoms of depression were significantly less common among Jews than Catholics. Attendance at church services was less common among Jews than Catholics. Koenig et al. (1992) examined the frequency of religious coping among older medical inpatients. Findings suggest that religious coping is a common behavior that inversely related to depression in hospitalized elderly men. Koenig et al. (1998) examined the effects of religious belief and activity on remission of depression in medically ill hospitalized older patients. Greater intrinsic religiosity predicted shorted time to remission.

25

Koenig et al. (1993) examined the relationship between religion and anxiety in community dwelling older adults. This data did not demonstrate an independent relationship between religion and anxiety in later life, dynamic factors may effectively mask an underlying association; for example, if older persons turn to religion when excessively anxious, this could mask a protective or therapeutic effect for religion. Martin (1984) examined the association between annual variations in suicide rates between 1972 and 1978 as a function of church attendance. The data supported the notion that religion deters suicide. Lester (1988) examined relationships between suicide and homicide rates, religious affiliation, and church attendance. Church attendance is a much stronger predictor of suicide and homicide than is denomination. Koenig (1994) examined the relationship between religious coping and suicidal thoughts among physically ill older men. Religious cognitions may help to allay thoughts of suicide in physically ill older men (the group with the highest suicide rates in the U.S.).

2.4.2 Research on Religion and Physical Health

Researchers have studied links between religion and physical disorders for quite some time. This section will review literature and research about the influence of religion in the following areas of physical health: 1) Hypertension; 2) Heart disease; 3) Stroke; 4) General health and disability; 5) Mortality; and 6) Health care utilization. The results are demonstrated in the following paragraphs.

Scotch (1963) examined the relationship of hypertension and lifestyle factors among urban and rural Zulus in South Africa. Among rural dwellers, religious commitment was

negatively related to hypertension for both men and women. Among urban dwellers, church affiliation was negatively correlated with hypertension for women and positively (but weakly) correlated for men. Graham and colleagues (1978) analyzed data from the Evans County Cardiovascular Epidemiological Study (ECCPS) in Georgia. Found a consistent association between frequent church attendance and lower age-standardized systolic and diastolic blood pressure (included smokers, non-smokers, white-collar, and blue-collar workers. Lapane et al. (1997) surveyed two large population-based random samples in Rhode Island. After adjusting for other risk factors, the average diastolic blood pressure of church members was significantly lower than of non-members. Koenig, George, Cohen, et al. (1998) examined the relationship between blood pressure and religious activities in participants from Duke EPESE survey. Cross-sectional analysis revealed small (1-4 mm Hg) but consistent differences in mean systolic and diastolic blood pressures between frequent and non-frequent church attendees. Lower pressures were also noted in those who frequently prayed or studied the Bible.

Friedlander et al. (1986) compared a sample of Jews that experienced their first myocardial infarction (MI) with a control group. The risk of MI among secular men was more than four times greater than that for religiously orthodox men.

The risk of MI among secular women was more than seven times greater that religiously orthodox women. Goldbourt, Yaari, et al. (1993) reported the 23-year follow-up results form the Israeli Ischemic Study. The risk of death from CAD among the most orthodox believers during the 23-year follow-up was 20% lower than that for less orthodox Jews or nonbelievers. The results remained significant when controlled for age, systolic BP, cholesterol, smoking, diabetes, body mass index, and baseline CAD. Oxman et al. (1995) examined the effects of religious

attendance, importance of religion, and religious support on six-month mortality rates for older adults that underwent CABG. Only 5% of persons who attended religious services at least every few months died compared to 12% of those who never or rarely attended services. None of the persons that described themselves as deeply religious died during the study.

Colantonio, Kasi, and Ostfeld (1992) examined psychosocial variables (including religiousness) as risk factors for stroke among community dwelling older adults. Both high depression scores and infrequent church attendance predicted high stroke incidence. Stroke incidence among persons who never attended church was almost double that of those who attended church weekly or more often.

Musick (1996) examined a three-year prospective cohort study of persons over the age of 65 in North Carolina. Among 1,202 whites, there was a significant interaction between both private and public religious involvement and functional impairment. High levels of functional impairment and either high devotional activity or high religious attendance at baseline were related to better perceptions of physical health on follow-up. Hogstel and Kashka (1989) examined accounts by the old-old (over the age of 85 years) on how they maintain their health and well-being. Faith in God and Christian living rank right up there among the factors that the old-old feel contribute to their longevity and health.

Seeman et al. (1987) examined the effects of church membership on mortality in Alameda County (Participant 38 years or older). Lack of church membership predicted greater mortality for persons age 60 and over. Goldman et al. (1995) examined predictors of mortality between 1984 and 1990 in a national probability sample (Participants over the age of 70 years). Lack of church attendance significantly predicted a greater probability of dying during the six-

28

year follow-up period for men and women after several variables were controlled. Hummer et al. (1999) followed a random sample of adults from 1987 to 1995. Non church attendees lived to an average age of 75.3 years, compared with 81.9 years for those who attended services once a week and 82.9 for those who attended services more than once a week.

Schiller and Levin (1988) performed a comprehensive literature search on the topic "a religious factor in healthcare utilization." After controlling for age, sex, race, education, health status, chronic diseases, and health lotus of control, subjects holding a church office had both shorter hospital stays and a longer period of time from their last hospitalization. There was a Levin and Markides (1985) study to examine the relationship between religious attendances, self-rated religiosity, days of bed disability and physician visits per year. The results of this study provided little evidence (except for men 65 to 80 years old that demonstrated fewer physician visits for frequent church service attendees) that there is a relationship religion and a reduction in healthcare utilization among Mexican Americans.

As evidenced from the information provided in the table above, there is some link between physical health and religious involvement. Whether this relationship is causal or coincidence remains to be proven through further research. However, further study of this relationship and understanding the degree of its importance could be important to public health professionals and healthcare policy makers.

2.5 Theory of Successful Aging:

In the book **Successful Aging**, Kahn and Rowe define successful aging as the ability to maintain three key behaviors or characteristics:

- Low risk of disease and disease-related disability

- High mental and physical function

- Active engagement with life

Each of these factors is important in itself, and to some extent independent of the others (Kahn & Rowe, 1998).

There is a kind of hierarchical ordering among the three components of successful aging. The absence of disease and disability makes it easier to maintain mental and physical health. And maintenance of mental and physical function in turn enables (but does not guarantee) active engagement in life (Kahn & Rowe, 1998). However, it is the combination of these three factors that represents the concept of successful aging most fully.

This successful aging theory will be used to determine whether or not religion has an effect on adults throughout life and their overall mental and physical health. This theory allows a more holistic approach to aging and health. It also incorporates all the health issues mentioned previously that impact public health and the aging process.

3.0   RESEARCH DESIGN, PROBLEM STATEMENT AND METHODS

The purposed research is an observational study that will investigate any relationship between religiosity and three components of successful aging theory in a population of Americans 25-74 years old. The data used in this dissertation was not originally collected for this purpose; however, use of existing data can provide important and cost-effective information about this topic in a large already studied population.

3.1 Study Population

The 1994/95 National Survey of Midlife Development in the United States (MIDUS) was chosen for this dissertation. The advantages of using this data are that it contains a large number of midlife and older subjects selected from across the United States and it collected extensive physical health, psychological, behavioral, and social factors on this population.

3.1.1 The National Survey of Midlife Development in the United States

The first MIDUS, funded by the John D. and Catherine T. MacArthur Foundation, investigation was conducted in 1994/95 with a sample of over 7,000 Americans aged 25 to 74. In 2002, the National Institute on Aging provided a 26 million dollar grant to the Institute on Aging at the University of Wisconsin, Madison to carry out this study and a longitudinal follow-up. MIDUS II is currently in progress (Wisc.edu, 2006).

The purpose of the study was to investigate the role of behavioral, psychological, and social factors in understanding age-related differences in physical and mental health. The study was innovative for its broad scientific scope; its diverse samples (which included twins and siblings of main sample respondents), and its creative use of "satellite" studies to obtain in-depth assessments in key areas (e.g. daily stress, cognitive functioning) (Wisc.edu, 2006).

3.1.2 Description and Demographics of Study Population

The study population for this dissertation was drawn from the first MIDUS study. The MIDUS survey was administered to a nationally representative sample of 7,189 non-institutionalized, English-speaking adults. There was an oversampling of older respondents and

men to guarantee a good distribution on the cross-classification of age and gender. All respondents are in the age range 25-74. Respondents were recruited by telephone to participate in the survey. The respondents were administered a 30-minute telephone interview, and then a two-part self-administered questionnaire was mailed to them (MIDMAC, 2006). For the purposes of this dissertation, the MIDUS study population of participants who completed both parts of the survey will be used. The total number of participants was 4,242.

Table 2 on the next page documents the demographic variables of the study population:

3.2 Study Variables

This section describes the characteristics of variables used to analyze the statistical relationships between religiosity measures (specifically religious salience, religious service attendance, and religious influence) and three components of successful aging theory (including low risk of disease and disease-related disability; high mental and physical function; and active engagement with life) in the first MIDUS survey data of respondents. The variables selected in this analysis were limited due to the constraints of using data not collected solely for the purposes of the intended study.

Table 2:
MIDUS Study 1994/95
Demographic Variables

	Number of Respondents (%)		
	Men	**Women**	**Total**
Age in Years:			
44 and under	1033	965	1998 (47.1%)
45 to 54	510	471	981(23.1%)
55 to 64	382	414	796 (18.8%)
65 to 74	230	237	467 (11%)
Totals:	2155 (50.8%)	2087 (49.2%)	4242 (100%)

	Men	**Women**	**Total**
Race:			
White	1590	1561	3151 (87.8%)
Black	92	138	230 (6.4)
Native American	15	10	25 (0.7%)
Asian	30	26	56 (1.6%)
Other	51	43	94 (2.6%)
Multiracial	12	19	31 (0.9%)
Totals:	1790	1797	3587 (100%)

	Men	**Women**	**Total**
Marital Status:			
Married	1470	1132	2602 (61.4%)
Separated	67	72	139 (3.2%)
Divorced	243	402	645 (15.2%)
Widowed	46	203	249 (5.9%)
Never Married	327	278	605 (14.3%)
Totals:	2153	2087	4240 (100%)

Currently Employed:	#	%
Yes	2615	74.10%
No	862	24.40%
Total:	3477	98.50%

Table 2 continued

	Men	Women	Total
Highest Education Level:	19	12	31 (0.7%)
No school/Some Grade School	45	35	80 (1.9%)
Eight Grade	138	169	307 (7.2%)
Some HS	38	26	64 (1.5%)
HS Graduate	517	621	1138 (26.8%)
1-2 Years College	366	414	780 (18.4%)
3 or Years College	99	95	194 (4.6%)
Graduated 2 Year College	139	174	313 (7.4%)
Graduated 4 Year College	446	307	753 (17.8%)
Some Graduate School	66	50	116 (2.7%)
Master's Degree	159	140	299 (7.1%)
PhD	121	44	165 (3.9%)
Totals:	2153	2087	4240 (100%)

	Men	Women	Total
Income ($ per Year):			
0 to $9999	348	738	1086 (31.6%)
$10000 to $29999	464	623	1087 (31.6%)
$30000 to $49999	497	266	763 (22.2%)
Over $50000	399	102	501 (14.6%)
Totals:	1708	1729	3437 (100%)

3.2.1 Religiosity Measures

Religion is a specific system of belief, worship, etc., often involving a code of ethics (Webster's, 1990). The term religious is devotion to this system of belief. For the purpose of this analysis, the extent to which a person is religious will be defined by the following variables: religious salience, service attendance, and influence.

These three variables were selected because of their possible impact on health outcomes. It is not to say that the more a person prays, attends service, or considers religion important directly defines them as healthier. However, these factors will influence characteristics of health like access and availability of services, preventive health practices such as exercise, and perception of self-health rating both physical and mental.

Religious Salience:

Religious salience is the extent to which a respondent when asked views religion as important and influential in their lives. This variable was divided into two different categories. First, religious devotion was measured using the survey question, "How religious are you?" (Scale: 1=Very; 2=Somewhat; 3=Not very; and 4=Not at all). Second, religious importance was measured with the survey question, "How important is religion in your life?" (Scale: 1=Very; 2=Somewhat; 3=Not very; and 4=Not at all) (MIDUS Codebook, 2006)

These measures are two distinct aspects of religious salience which need to be considered in the analysis. For example, a respondent may consider themselves devoted to their religious practices but don't view religion as important in their day to day living.

Service Attendance:

Service attendance is the number of times a person participates in a religious ceremony. This information is obtained from the survey question, "How often do you usually attend religious or spiritual services?" Scale (1=More than once a week; 2=About once a week; 3=One to three times a month; 4=Less than once a month; and 5=Never) (MIDUS Codebook, 2006)

This measure was used because it is a variable that is universal to research involving the impact of the religion on health. Service attendance as a single measure of religion has several limitations. Different religious denominations have varying service commitments, and it stands to reason that a healthier person is able to get to more services than a person suffering from mental or physical limitations. However, service attendance in combination with other religious variables can be an effective measure of religiosity.

Religious influence is the extent to which an individual uses their knowledge and beliefs of religion to influence their decisions. This information is taken from the survey question, "When you make decisions in your daily life; how often do you refer to your religious or spiritual beliefs?" Scale (1=Often; 2=Sometimes; 3=Rarely; and 4=Never) (MIDUS Codebook, 2006)

This variable is used in the dissertation to examine the impact of religion on personal health decisions. A respondent may consider their self very religious, but the weight they give to this factor while analyzing health options is an important relationship that needs to be investigated in this study.

Table 3 documents the frequencies of the religiosity variables:

Table 3:

MIDUS Study 1994/95

Religiosity Variables

	Number of Respondents (%)		
	Men	**Women**	**Total**
Religious Salience:			
A. How Religious are you?			
Very	305	447	752 (20.4%)
Somewhat	831	943	1774 (48.1%)
Not Very	496	319	815 (22.1%)
Not at all	180	100	280 (7.6%)
Totals:	1812	1809	3621 (98.1%)
B. How Important is religion in your life?			
Very	506	806	1312 (35.6%)
Somewhat	680	644	1324 (35.9%)
Not Very	433	259	692 (18.8%)
Not at all	178	93	271 (7.3%)
Totals:	1797	1802	3599 (97.5%)

	Men	**Women**	**Total**
Religious Service Attendance:			
More than 1x per week	174	246	420 (11.2%)
1x per week	415	482	897 (24.3%)
1-3x per month	220	260	480 (13.0%)
Less than once per month	556	513	1069 (29.0 %)
Never	434	312	746 (20.2%)
Totals:	1799	1813	3612 (97.9%)

	Men	**Women**	**Total**
Decisions on Religious/Spiritual Belief:			
Often	399	661	1060 (28.7%)
Sometimes	465	532	997 (27.0%)
Rarely	415	330	745 (20.2%)
Never	524	289	813 (22.0%)
Totals:	1803	1812	3615 (98.0%)

3.2.2 Successful Aging

Successful Aging in this dissertation will be defined using the following general

categories: low risk of disease and disease-related disability; high mental and physical function;

and active engagement with life. Several variables were selected from the study population to represent each of these general categories. Low risk of disease and disease-related disability includes variables such as current BMI, presence of chronic diseases (heart, hypertension, and cancer), depression, and number of times seen by doctor or admitted to the hospital. High mental and physical function includes variables such as current self rating of health, physical activity, and self rating of mental functional status. Active engagement with life includes variables that define social networks such as contact with others, family engagement, community involvement, employment, and volunteer activities.

This model as defined by Dr. Rowe and Dr. Kahn in their 1998 book titled, <u>Successful Aging</u>, is dynamic and changes throughout the lifespan. It is a combination of all three factors that determines the success of an individual through the aging process. Successful aging according to this model is not necessarily ranking high is all three general categories. For example, an individual considered to be successfully aging may have a debilitating disease such as cancer but is able to remain actively engaged in life and function at a highest possible mental and physical level.

3.3 Problem Statement

The overall goal of this dissertation is to determine if there is a statistically significant relationship between religiosity measures (religious salience, service attendance, and religious influence) and three components of successful aging theory (including low risk of disease and disease-related disability; high mental and physical function; and active engagement with life)

using a national survey of American adults. This will be achieved through specific analysis of

the data to answer the following questions:

- In the MIDUS survey population of adults, does statistically significant relationship exist between the following: religious salience and three components of successful aging?

- In the MIDUS survey population of adults, does statistically significant relationship exist between the following: religious service attendance and three components of successful aging?

- In the MIDUS survey population of adults, does statistically significant relationship exist between the following: religious influence and three components of successful aging?

- Are relationships demonstrated from the previous four questions when analyzed across the following factors: age, sex, race, marital status, and educational level?

- In the MIDUS survey population of adults, does statistical support exist for a theoretical model between religiosity and successful aging?

- What if any impact does these discoveries have on the public health and professional practice?

3.4 Theoretical Model:

This theoretical model analyzes the relationship that exists between religiosity and

successful aging theory.   The model demonstrates that religiosity effects active engagement in

life (one component of successful aging) which then in turn effects low risk of disease and

disease-related disability and high mental and physical function (the other two components of successful aging.

This relationship is interwoven and dynamic. The definition of interwoven is that several of the variables can be affected at the same time with no clear-cut divisions. For example, an individual can have a strong social network which gives that person an increased level of mental and physical function causing a higher perception of health status and increased religious service attendance. This demonstrates how several factors, some of which were not measured in the survey data, interact to provide a link between religiosity and successful aging theory. Also, dynamic means this relationship can be either positive or negative causing a re-evaluation of an individual's position. Finally, there are several other outside variables that influence this relationship. These variables include the following: age, sex, race, education level, and marital status. A diagram of how this relationship exists in a theoretical model is illustrated in Figure 1 on the next page.

3.5 Analysis Strategy

The analysis will attempt to investigate the statistical relationships between complex variables of religiosity and successful aging. Other variables that will be considered because of their possible influence religiosity and successful aging are age, sex, race, marital status, and educational level.

The analysis will be completed in two stages both using various bivariate and multivariate statistical techniques. The first stage will compare the components of religiosity with the measures of successful aging. The second stage will analyze the relationship of religiosity and the components of successful aging within the theoretical model illustrated in

Figure 1: Mechanism of Religiosity Over Successful Aging Theory

- The model of Religiosity over Successful Aging Theory is an **Interwoven Dynamic Model**.

SUCCESSFUL AGING: Combination of 3 Factors

RELIGIOSITY:

Religious Salience
Services Attendance
Religious Importance

Active Engagement in Life:

Social Networks
Contact with Others
Family engagement
Community Involvement
Volunteer Activities
Employment

Low Risk of Disease and Disease-Related Disability:

BMI
Presence of Chronic Diseases
Depression
Number of Hospital Admissions

High Mental and Physical Function:

Current Self Rating of Health
Physical Activity
Current Mental Functional Status

Negative or Positive Occurrences Causing Re-evaluation
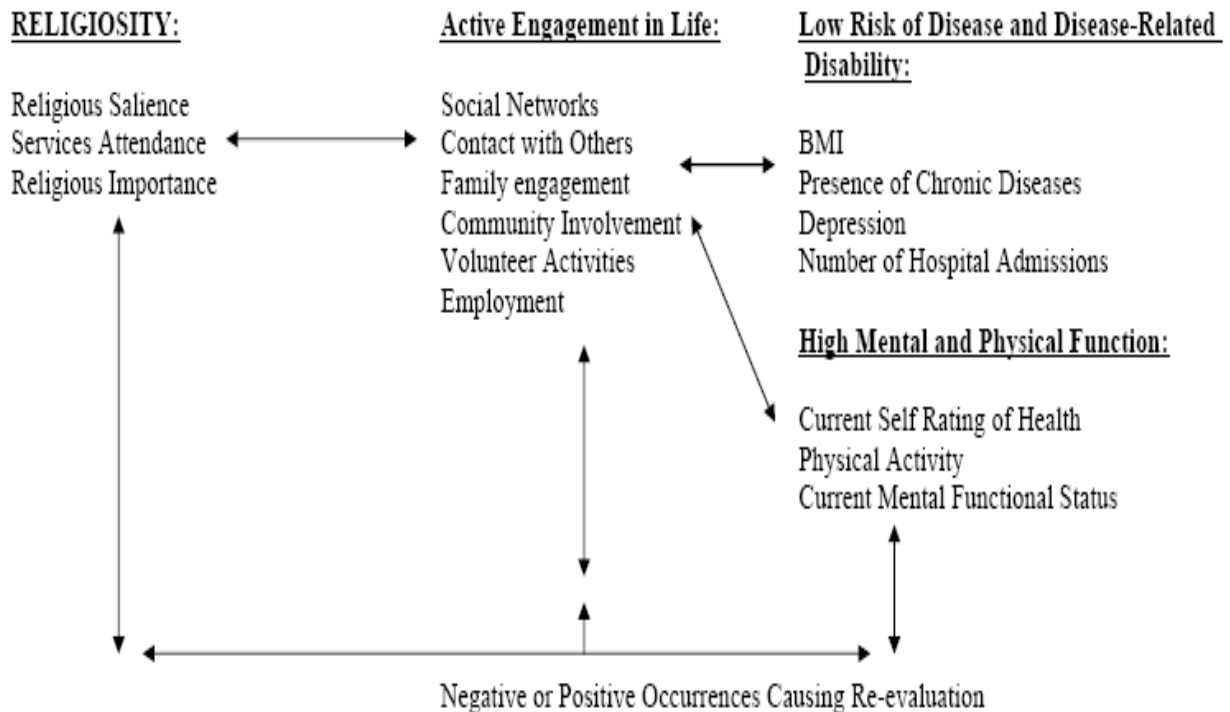
CO-Variants (Influence Dynamic Interwoven Model)

- Age
- Sex
- Race
- Educational Level
- Marital Status

41

4.0 ANALYSIS, DISCUSSION, AND CONCLUSION FROM RESULTS

4.1 Data Analysis

The data will be analyzed overall and across age, sex, race, education, and marriage.

4.1.1 Analysis Overall

The results of statistical chi-squared and ANOVA comparisons between the religiosity variables and health variables (including those of successful aging) are demonstrated in tables 4-5. In addition, appendix A contains detailed frequencies of religiosity and successful aging variables. The following paragraphs are the results from this analysis.

First, the variables used to measure active engagement in life were statistically significant at the $p < 0.001$ level across all religiosity variables. This indicates that a relationship between the social aspects of the successful aging model and religiosity exists. Individuals ranking themselves as more religious, placing a greater importance on religion, more frequent service attendees, and using religion as a greater influence in decision making were more likely to have contact with family or friends more the once a week, work for pay, and volunteer in community services. This demonstrates that individuals ranking themselves as more religious in all categories have increased social interaction with family, friends, and community. These individuals, also, rank higher in one of the key components of successful aging, active engagement in life.

Table 4:
MIDUS Study 1994/95
Comparisons of Health and Religiosity Variables:

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
	How Religious?	Importance	Attendance:	Influence:
ACTIVE ENGAGEMENT IN LIFE				
Contact with Family more than 1x per week	117.072 ***	173.658 ***	113.930 ***	92.678 ***
Contact with Friends more than 1x per week	1334.110 ***	1008.152 ***	1130.908 ***	1191.475 ***
Currently Working for Pay	118.139 ***	118.369 ***	78.976 ***	74.605 ***
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	18.256**	17642**	11.046*	6.149
Vigorous Activity Several Times a Month	36.469 *	47.868 ***	49.141 **	39.809 **
Or More: (Summer)				
Vigorous Activity Several Times a Month	48.908 ***	62.560 ***	62.213 ***	40.443 **
Or More: (Winter)				
Self-Mental Health Rating:	33.115 *	53.539 ***	61.333 ***	56.311 ***
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	34.463 *	59.114 ***	33.686	52.888 ***
(About the right Weight)				
Heart Condition (Yes)	23.961 **	15.071	9.98	14.493
Taking Medications for Hypertension (Yes)	33.581 ***	39.708 ***	44.896 ***	31.518 ***
Cancer (Yes)	4.335	7.199	8.599	11.853
Depression (Yes)	12.993	8.806	23.773	17.119

* p<0.05, **p<0.01, ***p<0.001

43

Table 5:
MIDUS Study 1994/95
Analysis for Religious VS Continuous Health Variables

ANOVA Analysis for Religious VS Health Variables: (F Value)	Religious Salience:		Service	Religious
	How Religious?	Importance	Attendance:	Influence:
ACTIVE ENGAGEMENT IN LIFE				
Hours per Month:				
Volunteering at Hospital, etc.	121.1 ***	99.014***	74.637***	115.077***
Volunteering at School	111.872***	86.268***	65.497***	111.008***
Volunteering at Politics	101.794***	83.617***	64.826***	107.997***
Volunteering at other Organization or Charity	152.024***	110.785***	96.973***	141.691***
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
BMI	4.267**	4.379**	3.464**	3.125*
Over the Last 12 Months:				
Times in Hospital	3.242*	6.115***	5.332***	3.138*
Nights in Hospital	1.751	1.721	2.814*	1.33
Over the Last Month:				
Times Dr. Visit for Routine Care	9.603***	6.489***	0.789	3.800**
Times Dr. Visit for Urgent Care	0.472	0.3	1.511	0.852
Times Dr. Visit for Scheduled Tx.	2.546*	1.133	0.968	0.672
Times Visited Psychiatrist	0.24	0.367	1.596	0.485
Tmes Visited General Dr.	3.357**	0.778	1.348	3.902**
Times Visited Psychologist	2.752*	2.652*	1.569	1.216

* p<0.05
** p<0.01
***p<0.001

Second, the variables used to measure high mental and physical function were compared with the religiosity variables. Self-health rating (excellent or very good) was significant with religious salience and service attendance at the $p<0.05$ level. Respondents rating self-health as excellent or very good and religious devotion as very or somewhat important was 33.6% compared with 16.2% rating the opposite. The results for religious importance was 35.4% to 14% and service attendance was 25% for heavy attendees (more than 1-3 times per month) to 24.1% for individuals with less service attendance respectfully. This variable was not significant with religious influence. Self-mental health rating (excellent or very good) was significant with all religiosity variables at the $p<0.05$ level (religious importance, service attendance, and religious influence all significant at the $p<0.001$ level). Individuals rating mental health as excellent to very good and religious devotion as very or somewhat important were 40.4% to 13.6% for the opposite. The results for religious importance were 42.4% to 15%, religious influence 33.2% to 24.4%, and service attendance was 30.4% for heavy attendees to 27.1% for respondents with less services attendance respectively. Additionally, vigorous physical activity during both the winter and summer were statistically significant at the $p<0.05$ level with all religiosity variables. These results exhibit a relationship that exists with religiosity variables and high mental and physical function another key component of the successful aging model.

Finally, variables measuring low risk of disease and disease-related disability were compared with the religiosity variables. Individuals ranking themselves at about the right weight were more likely to rank themselves as religious 19.4% to 9.5%, give religion greater importance 20.7% to 8.1%, and use religion to influence decisions 15.6% to 13.3% all significant at the $p<0.05$ level. BMI was statically significant with all religiosity variables at the $p<0.05$ level.

45

Also, the times that an individual was in the hospital with the mean number of visits decreasing and the taking medications for hypertension for higher rankings in religiosity were significant at the p<0.05 level. Individuals ranking higher in religious devotion, religious importance, and religious influence visited the doctor more for routine care with the mean number of visits increasing for higher rankings in religiosity variables. These results indicate that there is a statistical relationship between some measures for low risk of disease and disease-related disability, the third component of successful aging. In addition, there may be a relationship between the religiosity variables and access to health care concerning number of hospital visits and routine doctor care.

The next step in this analysis will be to compare these religiosity variables and successful aging variables across age, sex, race, martial status, and education. Then the variables will be compared using logistic regression with the model demonstrated with Figure 1.

4.1.2 Analysis by Age, Sex, Race, Education, and Marriage

The statistical analysis of age across religiosity variables and health variables was completed by dividing some of the data into two sets: 44 years old and younger vs. 45 years and older. The remainder of information was controlled for age and analyzed. The results are demonstrated in tables 6-8.

Once again, all the active engagement in life variables were significant at the p<0.001 level when compared with religiosity. This means that regardless of age or age group the social network variables were all associated with a greater ranking in religious salience, service

46

attendance, and religious influence. These results imply that there is statistical relationship between increased active engagement in life and individuals that attend service more and consider religion as both important and influential.

The comparison between high mental and physical function and religiosity differed with age. Individuals that were 44 years and younger who ranked religiosity higher in all four categories were also more likely to rate their health as excellent or very good at the $p<0.01$ level. None of the other variables were significant. For individuals 45 and older, this was true only at the $p<0.05$ level.   These older respondents, also, with a higher ranking in religious importance and service attendance were more likely to engage in vigorous activity during the winter several times a month at the $p<0.01$ level. Religious influence was significant with this variable at the $p<0.05$ level.   This information indicates that age does play a role in the relationship between religiosity, self-health rating, and vigorous activity during the winter months.

Finally, there were some relationships noted between religiosity and low risk of disease and disease-related disability. Respondents with higher rankings in all religiosity variables when controlled for age had a better BMI and visited the hospital less times at least at the $p<0.05$ level. Respondents ranking higher in religious devotion, importance, and influence had more routine visits to the doctor at the $p<0.001$ level.

Table 6:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Age 44 and Under

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
	How Religious?	Importance	Attendance:	Influence:
ACTIVE ENGAGEMENT IN LIFE				
Contact with Family more than 1x per week	51.048***	82.437***	59.860**	57.276**
Contact with Friends more than 1x per week	702.219***	543.082***	420.302***	484.139***
Currently Working for Pay	48.945***	84.027***	25.883**	31.807***
HIGH MENTAL AND				
** PHYSICAL FUNCTION:**				
Self- Health Rating: (Excellent or Very Good)	7.33	7.221	4.209	0.558
Vigorous Activity Several Times a Month	18.58	20.334	30.623	29.781
Or More: (Summer)				
Vigorous Activity Several Times a Month	24.059	25.522	24.266	21.345
Or More: (Winter)				
Self-Mental Health Rating:	50.967***	46.806**	61.974***	112.975***
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	17.057	30.79	20.032	21.921
(About the right Weight)				
Heart Condition (Yes)	10.013	5.446	15.619	12.268
Taking Medications for Hypertension (Yes)	4.252	4.75	4.469	3.955
Cancer (Yes)	3.944	2.227	9.608	3.164
Depression (Yes)	3.774	3.96	9.969	16.466

* p<0.05
** p<0.01
***p<0.001

Table 7:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Age 45 and Over

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Contact with Family more than 1x per week	91.793***	117.892***	88.005***	59.371***
Contact with Friends more than 1x per week	685.513***	516.644***	754.112***	738.139***
Currently Working for Pay	59.514***	51.675***	49.624***	33.318***
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	10.150*	11.084*	11.672*	10.981*
Vigorous Activity Several Times a Month	21.057	32.801*	30.918	26.906
Or More: (Summer)				
Vigorous Activity Several Times a Month	29.993	40.445**	49.264**	34.974*
Or More: (Winter)				
Self-Mental Health Rating:	18.9	26.174	41.069*	20.862
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	35.066*	55.625***	25.67	33.724*
(About the right Weight)				
Heart Condition (Yes)	12.991	9.889	4.781	8.288
Taking Medications for Hypertension (Yes)	14.873	21.776**	27.456**	13.74
Cancer (Yes)	1.591	3.644	7.973	16.476*
Depression (Yes)	19.446	14.721	23.694	15.726

* p<0.05
** p<0.01
***p<0.001

Table 8:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Continuous Across Age

ANOVA Analysis for Religious VS Health Variables: (F Value)	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Hours per Month:				
Volunteering at Hospital, etc.	121.100***	99.014***	74.637***	115.077***
Volunteering at School	111.872***	86.268***	65.497***	111.008***
Volunteering at Politics	101.749***	83.617***	64.829***	107.997***
Volunteering at other Organization or Charity	152.024***	110.785***	96.973***	141.691***
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
BMI	4.267**	4.379**	3.464**	3.125*
Over the Last 12 Months:				
Times in Hospital	3.242*	6.115***	5.332***	3.138*
Nights in Hospital	1.751	1.721	2.814*	1.33
Over the Last Month:				
Times Dr. Visit for Routine Care	9.603***	6.489***	0.789	3.8***
Times Dr. Visit for Urgent Care	0.472	0.03	1.511	0.852
Times Dr. Visit for Scheduled Tx.	2.526*	1.133	0.968	0.672
Times Visited Psychiatrist	0.24	0.367	1.595	0.485
Times Visited General Dr.	3.357**	0.778	1.348	3.902**
Times Visited Psychologist	2.752*	3.652*	1.596	1.216

* p<0.05
** p<0.01
***p<0.001

The rest of tables 9-20 compare religiosity with successful aging variables across sex, race, education, and marriage. Active engagement in life variables were significant for the most part across all demographic variables to at least $p < 0.05$ level. This means that regardless of the sex, race, education, and marriage individuals who ranked themselves as more religious, placing a greater importance on religion, attending service more frequently, and influenced by religion more when making decisions were, also, more likely to have employment and frequent contact with family and friends. A case can be made that statistically there is a relationship across religiosity variables and active engagement in life variables regardless of age, sex, race, education status, and marital status of the individual respondent.

When investigating the variables used for high mental and physical function across sex, race, education, and marital status, some differences arise. Females demonstrate no significant difference between and rating of mental health status and religiosity variables; whereas, self-rating of mental health status as excellent to very good is significant for males with religious devotion ($p < 0.01$), importance ($p < 0.001$), service attendance ($p < 0.01$), and influence ($p < 0.001$). The opposite is true for self-health rating with males demonstrating a significant relationship with religious devotion ($p < 0.01$), importance ($p < 0.01$), service attendance ($p < 0.05$), and influence ($p < 0.05$) respectively. All other variables investigated across gender showed no significance. With race, a relationship exists with mental health status as well. Caucasians in study demonstrated a statistical relationship with mental health rating, religious importance ($p < 0.001$), and service attendance ($p < 0.001$). Self mental health rating for all other races was significant at the $p < 0.001$ level with all religiosity variables. The only significant relationship for self-rated health (excellent or very good) was with religious influence at the $p < 0.01$ level for other race individuals.

51

When comparing the respondents across education (high school and below vs. above high school) and martial status, some differences were noted for the high mental and physical function variables. Individuals with a high school education or lower who ranked self health as excellent to very good had higher religiosity rankings in all four categories at the $p<0.01$ level. This variable was not significant for individuals with a higher than high school education. However, a self mental health rating (excellent or very good) was significant with lower educated individuals with a higher rank in service attendance ($p<0.01$) and religious influence ($p<0.001$) and higher educated individuals with a higher rank in religious importance ($p<0.001$) and service attendance ($p<0.05$). The only major difference in martial status was a higher mental health rating had a significant statistical relationship with all religiosity variables at least at the $p<0.01$ level for married individuals and this variable was not significant for the non-married.

The next step in this analysis was to compare religiosity with the low risk of disease and disease-related disability variables across sex, race, education, and marital status. As evidenced by tables 6-20, the only variable that was significant across all variables of religiosity was times in the hospital. Individuals that rated themselves as religious, considered religion important, attended services more, and used religion to influence their decisions had less visits to the hospital of the last 12 months when controlled for sex, race, education, and martial status. There was also an occasional statistically significant relationship between number of routine doctor visits and religiosity.

This analysis demonstrates that some statistical relationships between religiosity and successful aging barriers exist. It is impossible to say whether religiosity can predict health outcomes from this analysis. The next step is to look at a possible model that defines a possible relationship between religiosity and successful aging theory.

4.1.3 Theoretical Model Analysis

The theoretical model was analyzed by selecting the religiosity variables and selected successful aging variables due to the constraints of the data set used. Active engagement in life variables were selected as current employment, contact with family, and contact with friends. High physical function variables selected were self-health rating and self mental health rating. Also, low risk of disease and disease-related variables were selected as hospital stay (times in hospital), presence of heart disease, high blood pressure, cancer, and depression. All this data was analyzed using binary logistic regression on SPSS. The successful aging variables were divided in two categories to allow for this binary analysis.

Table 9:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Males

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
	How Religious?	Importance	Attendance:	Influence:
ACTIVE ENGAGEMENT IN LIFE				
Contact with Family more than 1x per week	62.016***	72.09***	74.723***	60.549***
Contact with Friends more than 1x per week	854.003***	552.948***	594.678***	632.784***
Currently Working for Pay	21.762**	35.814***	15.261	17.649*
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	6.492	5.157	6.439	1.329
Vigorous Activity Several Times a Month	11.956	20.247	46.150**	24.533
Or More: (Summer)				
Vigorous Activity Several Times a Month	16.598	31.841*	29.275	23.574
Or More: (Winter)				
Self-Mental Health Rating:	38.956**	69.627***	52.941**	73.169***
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	22.81	54.513***	29.269	24.621
(About the right Weight)				
Heart Condition (Yes)	11.008	8.053	7.189	9.943
Taking Medications for Hypertension (Yes)	21.605**	21.266**	25.748**	14.965
Cancer (Yes)	3.63	4.129	4.952	11.463
Depression (Yes)	11.287	12.989	27.09*	13.185

* p<0.05
** p<0.01
***p<0.001

Table 10:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Females

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	How Religious?	Importance	Attendance:	Influence:
Contact with Family more than 1x per week	46.851*	99.053***	62.581**	39.169
Contact with Friends more than 1x per week	452.410***	502.083***	588.664***	588.940***
Currently Working for Pay	114.634***	93.858***	76.970***	69.015***
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	17.189**	19.565**	12.663*	9.991*
Vigorous Activity Several Times a Month	31.416*	31.15	37.337	14.05
Or More: (Summer)				
Vigorous Activity Several Times a Month	40.463**	40.920*	55.700***	26.664
Or More: (Winter)				
Self-Mental Health Rating:	22.048	21.917	43.649*	23.754
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	20.401	25.194	24.173	28.154
(About the right Weight)				
Heart Condition (Yes)	35.643***	18.611*	15.47	12.526
Taking Medications for Hypertension (Yes)	16.853*	25.433**	23.225*	28.302***
Cancer (Yes)	1.412	3.331	12.198	10.256
Depression (Yes)	9.29	5.265	18.803	5.964

* p<0.05

** p<0.01

***p<0.001

Table 11:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Continuous Across Gender

ANOVA Analysis for Religious VS Health Variables: (F Value)	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Hours per Month:				
Volunteering at Hospital, etc.	121.100***	99.014***	74.637***	115.5077***
Volunteering at School	111.872***	86.268***	65.497***	111.008***
Volunteering at Politics	101.749***	83.617***	64.829***	107.997***
Volunteering at other Organization or Charity	152.024***	110.785***	96.973***	141.691***
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
BMI	4.267**	4.279***	3.464**	3.125*
Over the Last 12 Months:				
Times in Hospital	3.242*	6.115***	5.332***	3.138*
Nights in Hospital	1.751	1.721	2.814*	1.33
Over the Last Month:				
Times Dr. Visit for Routine Care	9.603***	6.489***	0.89	3.800**
Times Dr. Visit for Urgent Care	0.472	0.03	1.511	0.852
Times Dr. Visit for Scheduled Tx.	2.526*	1.133	0.968	0.672
Times Visited Psychiatrist	0.24	0.67	1.595	0.485
Times Visited General Dr.	3.357**	0.778	1.348	3.902**
Times Visited Psychologist	2.752*	2.652*	1.596	1.216

* $p < 0.05$
** $p < 0.01$
***$p < 0.001$

Table 12:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Caucasian

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Contact with Family more than 1x per week	97.568***	155.218***	109.475***	81.698***
Contact with Friends more than 1x per week	30.861***	38.327	82.237***	48.522*
Currently Working for Pay	63.452***	71.965***	55.311***	40.757***
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	10.257*	6.415	7.662	5.675
Vigorous Activity Several Times a Month	25.804	39.420**	41.958*	27.923
Or More: (Summer)				
Vigorous Activity Several Times a Month	26.172	40.410**	49.716**	34.84*
Or More: (Winter)				
Self-Mental Health Rating:	24.548	64.874***	50.421**	12.848
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	18.656	32.651*	29.035	34.712*
(About the right Weight)				
Heart Condition (Yes)	23.683**	9.901	7.825	8.369
Taking Medications for Hypertension (Yes)	28.651***	30.047***	39.272***	25.021**
Cancer (Yes)	5.624	9.923	9.198	11.324
Depression (Yes)	7.842	6.38	18.257	13.875

* p<0.05
** p<0.01
***p<0.001

Table 13:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Other Races

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Contact with Family more than 1x per week	60.714***	34.05	37.919	43.721*
Contact with Friends more than 1x per week	75.718***	49.430*	57.652*	60.476**
Currently Working for Pay	27.220**	31.980***	37.016***	29.290***
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	3.315	4.341	4.329	16.289**
Vigorous Activity Several Times a Month	18.051	21.566	32.994	18.299
Or More: (Summer)				
Vigorous Activity Several Times a Month	35.528*	30.306	34.368	18.734
Or More: (Winter)				
Self-Mental Health Rating:	60.722***	67.102***	71.855***	56.796***
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	23.977	43.212**	24.669	24.756
(About the right Weight)				
Heart Condition (Yes)	8.634	6.399	17.006	9.238
Taking Medications for Hypertension (Yes)	8.746	12.136*	7.488	6.186
Cancer (Yes)	0.965	1.719	3.517	1.214
Depression (Yes)	6.192	7.686	11.426	7.711

* p<0.05
** p<0.01
***p<0.001

Table 14:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Continuous Across Race

ANOVA Analysis for Religious VS Health Variables: (F Value)	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	How Religious?	Importance	Attendance:	Influence:
Hours per Month:				
Volunteering at Hospital, etc.	7.236***	5.427***	5.621***	7.019***
Volunteering at School	10.078***	5.133***	5.403***	8.096***
Volunteering at Politics	8.576***	6.126***	7/022***	10.492***
Volunteering at other Organization or Charity	14.233***	5.271***	7.454***	7.326***
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
BMI	4.095**	3.370**	2.737*	3.488**
Over the Last 12 Months:				
Times in Hospital	1.081	1.525	4.032**	0.029
Nights in Hospital	0.935	1.522	2.873*	0.621
Over the Last Month:				
Times Dr. Visit for Routine Care	8.475***	5.142***	0.767	1.587
Times Dr. Visit for Urgent Care	0.777	0.042	1.618	1.714
Times Dr. Visit for Scheduled Tx.	2.019	0.874	0.647	1.334
Times Visited Psychiatrist	0.312	0.283	1.363	0.656
Times Visited General Dr.	3.27*	0.708	1.563	10.877***
Times Visited Psychologist	2.727*	2.439*	1.545	0.95

* p<0.05
** p<0.01
***p<0.001

Table 15:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
High School Education or Lower

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Contact with Family more than 1x per week	59.417***	86.951***	62.501**	56.038**
Contact with Friends more than 1x per week	551.195***	44.635***	562.851***	537.729***
Currently Working for Pay	59.093***	62.865***	43.969***	55.476***
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	15.791**	16.773**	17.710**	14.173**
Vigorous Activity Several Times a Month	32.570*	36.412*	26.491	30.949
Or More: (Summer)				
Vigorous Activity Several Times a Month	36.902*	42.657**	40.305*	39.185**
Or More: (Winter)				
Self-Mental Health Rating:	23.632	30.047	44.881**	58.628***
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	25.234	41.411**	32.136	58.238***
(About the right Weight)				
Heart Condition (Yes)	16.459*	8.592	12.179	12.306
Taking Medications for Hypertension (Yes)	19.440*	26.186**	26.310**	12.169
Cancer (Yes)	5.426	6.247	9.669	3.588
Depression (Yes)	9.619	6.004	15.493	13.075

* p<0.05

** p<0.01

***p<0.001

Table 16:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Above High School Education

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Contact with Family more than 1x per week	79.702***	102.343***	77.713***	61.678***
Contact with Friends more than 1x per week	784.741***	553.218***	542.519***	625.891***
Currently Working for Pay	43.138***	35.339***	35.862***	19.250***
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	6.748	0.482	4.344	1.995
Vigorous Activity Several Times a Month	25.222	21.347	43.522*	22.083
Or More: (Summer)				
Vigorous Activity Several Times a Month	30.623	32.418*	62.632***	23.041
Or More: (Winter)				
Self-Mental Health Rating:	26.967	64.544***	41.170*	25.294
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	26.194	26.757	30.942	20.22
(About the right Weight)				
Heart Condition (Yes)	14.17	15.591*	6.448	9.816
Taking Medications for Hypertension (Yes)	14.175**	13.602**	17.521**	21.301***
Cancer (Yes)	3.869	3.912	10.385	14.783
Depression (Yes)	12.42	7.335	19.922	14.364

* p<0.05
** p<0.01
***p<0.001

Table 17:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Continuous Across Education

ANOVA Analysis for Religious VS Health Variables: (F Value)	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Hours per Month:				
Volunteering at Hospital, etc.	121.018***	98.942***	74.579***	114.988***
Volunteering at School	111.798***	86.207***	65.444***	110.931***
Volunteering at Politics	101.680***	83.556***	64.778***	107.919***
Volunteering at other Organization or Charity	151.954***	110.175***	96.91***	141.6***
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
BMI	4.169***	4.292**	3.545**	3.990*
Over the Last 12 Months:				
Times in Hospital	3.243*	6.113***	5.333***	3.134*
Nights in Hospital	1.751	1.721	2.814*	1.33
Over the Last Month:				
Times Dr. Visit for Routine Care	9.588***	6.467***	0.775	3.778**
Times Dr. Visit for Urgent Care	0.472	0.031	1.51	0.853
Times Dr. Visit for Scheduled Tx.	2.522*	1.146	0.97	0.664
Times Visited Psychiatrist	0.241	0.37	1.603	0.485
Times Visited General Dr.	3.373**	0.769	1.344	3.893**
Times Visited Psychologist	2.766*	2.66*	1.593	1.212

* p<0.05
** p<0.01
***p<0.001

Table 18:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Married

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Contact with Family more than 1x per week	77.330***	105.248***	79.535***	49.624**
Contact with Friends more than 1x per week	754.947***	581.212***	735.377***	718.301***
Currently Working for Pay	62.487***	46.516***	47.335***	33.698***
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	14.999**	11.781*	7.372	2.345
Vigorous Activity Several Times a Month	24.216	25.816	32.908	23.727
Or More: (Summer)				
Vigorous Activity Several Times a Month	32.326*	35.882*	26.61	33.822*
Or More: (Winter)				
Self-Mental Health Rating:	48.715***	95.953***	66.101***	39.763**
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	20.359	45.663**	25.36	35.062*
(About the right Weight)				
Heart Condition (Yes)	10.698	5.998	5.053	6.09
Taking Medications for Hypertension (Yes)	16.471**	16.922**	14.366*	14.374**
Cancer (Yes)	3.21	5.567	9.646	17.549*
Depression (Yes)	7.087	7.998	26.181*	9.721

* p<0.05
** p<0.01
***p<0.001

Table 19:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Not Married

Chi-Squared for Religious VS Health Variables:	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Contact with Family more than 1x per week	63.806***	91.611***	63.631**	59.904***
Contact with Friends more than 1x per week	594.724***	452.482***	436.473***	489.069***
Currently Working for Pay	60.804***	105.430***	37.807***	52.836***
HIGH MENTAL AND				
PHYSICAL FUNCTION:				
Self- Health Rating: (Excellent or Very Good)	8.894	10.792*	4.547	5.735
Vigorous Activity Several Times a Month	36.113*	55.103***	44.930**	35.520*
Or More: (Summer)				
Vigorous Activity Several Times a Month	43.442**	52.174***	58.653***	32.682*
Or More: (Winter)				
Self-Mental Health Rating:	15.101	15.721	35.16	23.871
(Excellent or Very Good)				
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
General Weight Evaluation:	27.647	39.741**	26.125	32.648*
(About the right Weight)				
Heart Condition (Yes)	23.973	19.900*	16.689	12.441
Taking Medications for Hypertension (Yes)	18.455*	25.094**	31.604***	19.101*
Cancer (Yes)	7.589	8.293	12.951	7.669
Depression (Yes)	16.471	8.438	17.046	16.481

* p<0.05
** p<0.01
***p<0.001

Table 20:
MIDUS Study 1994/95 Comparisons of Religious and Health Variables
Continuous Across Marriage

ANOVA Analysis for Religious VS Health Variables: (F Value)	Religious Salience:		Service	Religious
ACTIVE ENGAGEMENT IN LIFE	**How Religious?**	**Importance**	**Attendance:**	**Influence:**
Hours per Month:				
Volunteering at Hospital, etc.	121.110***	99.014***	74.637***	115.077***
Volunteering at School	111.872***	86.268*	65.497***	111.008***
Volunteering at Politics	101.479***	83.617***	64.829***	107.997***
Volunteering at other Organization or Charity	152.024***	110.785***	96.973***	141.691***
LOW RISK OF DISEASE AND				
DISEASE-RELATED DISABILITY:				
BMI	4.267**	4.379**	3.464**	3.125*
Over the Last 12 Months:				
Times in Hospital	3.242*	6.115***	5.332***	3.138*
Nights in Hospital	1.751	1.721	2.814*	1.33
Over the Last Month:				
Times Dr. Visit for Routine Care	9.630***	6.489***	0.789	3.800**
Times Dr. Visit for Urgent Care	0.472	0.03	1.511	0.852
Times Dr. Visit for Scheduled Tx.	2.526*	1.133	0.968	0.672
Times Visited Psychiatrist	0.24	0.367	1.595	0.485
Times Visited General Dr.	3.357**	0.778	1.348	3.902**
Times Visited Psychologist	2.752*	2.652*	1.596	1.216

* p<0.05
** p<0.01
***p<0.001

The self ratings of physical and mental health were divided by individuals that ranked themselves as excellent to very good and good to poor. All other variables were divided by yes and no. For example, times in the hospital were divided by individuals that visited the hospital at least once vs. those who were not over the last 12 months. An abbreviated model with the predicted relationships is illustrated in Figure 2.

Upon completing the analysis, the only religiosity variable that was statistically significant with the successful aging variables for high physical and mental health and low risk of disease and disease-related disability once the active engagement in life variables were added to the model was service attendance at least at the $p<0.05$ level.

These results indicate that individuals in the survey with higher levels of service attendance who are currently employed and have regular contact with family and friends were more likely to rank themselves as excellent to very good on both the self-health and mental rating, have no hospital stays over the last 12 months, and have no presence of high blood pressure, cancer, or depression. None of the other religiosity variables and successful aging variables demonstrated statistical significant in this model analysis. The results of this analysis were posted in tables 21, 22, and 23.

Figure 2: Variables Used in Analysis of Religiosity Over Successful Aging Theory Model

- The model of Religiosity over Successful Aging Theory is an **Interwoven Dynamic Model**.

SUCCESSFUL AGING: Combination of 3 Factors

RELIGIOSITY:

Religious Salience
Services Attendance
Religious Importance

Active Engagement in Life:

Social Networks
Current Employment
Family contact
Contact with Friends

Low Risk of Disease and Disease-Related Disability:

Number of times in Hospital
Presence of Heart Disease
Presence of High Blood Pressure
Presence of Cancer
Depression

High Mental and Physical Function:

Current Self Rating of Physical Health
Current Self Rating of Mental Health

Negative or Positive Occurrences Causing Re-evaluation
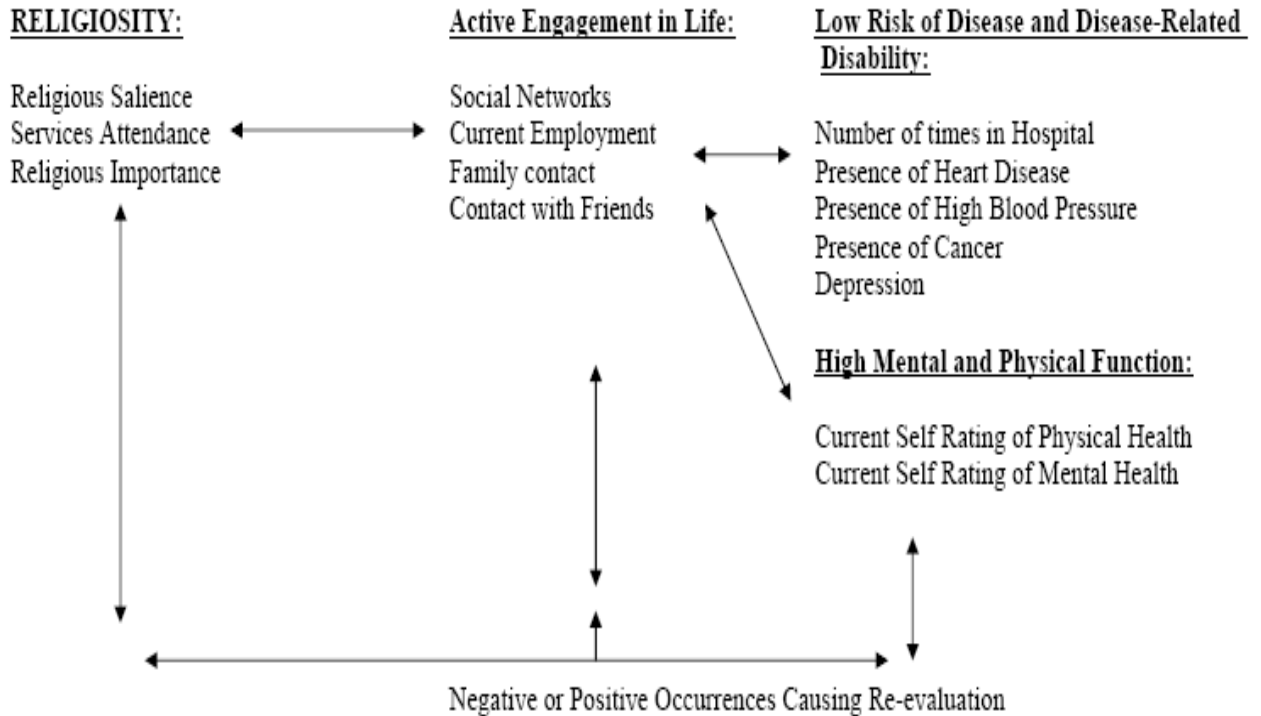
CO-Variants (Influence Dynamic Interwoven Model)

- Age
- Sex
- Race
- Educational Level
- Marital Status

Table 21:
Odds Ratio Analysis of Religiosity and Active Engagement in Life vs. Selected   High Mental and Physical Function Variables

Variables:	Self-Health Rating:		Self-Mental Health Rating:	
	Baseline:	With Active Engagement:	Baseline:	With Active Engagement:
Religious Salience:				
Religious Devotion	.907*	.908*	.971	.975
Religious Importance	1.021	1.021	1.038	1..039
Service Attendance	1.061*	1.064*	1.125***	1.125***
Religious Influence	.987	.990	.944	.946
Active Engagement in Life:				
Current Employment	--	1.148***	--	1.125***
Contact with family	--	.995	--	.997
Contact with friends	--	1.061**	--	1.073**
Chi-Squared	6.482	71.587***	19.499**	71.414***

*p<0.05
**p<0.01
***p<0.001

Table 22:
Odds Ratio Analysis of Religiosity and Active Engagement in Life vs. Selected Low Risk of Disease and Disease-Related Disability Variables

	Hospital Stay:		Heart Disease: (No)		High Blood Pressure: (No)		Cancer: (No)		Depression (No)	
Variables:	Baseline:	With Active Engagement:	Baseline:	With Active Engagement:	Baseline:	With Active Engagement:	Baseline:	With Active Engagement:	Baseline:	With Active Engagement:
Religious Salience:										
Religious Devotion	0.764**	0.777**	1.1016	1.013	.890	.905	.953	.955	1.016	1.015
Religious Importance	1.060	1.060	.938	.948	.985	.996	.867	.905	1.010	1.011
Service Attendance	1.084*	1.088*	1.020	1.029	.924*	.926*	1.029	1.037	1.173***	1.179***
Religious Influence	.995	1.001	1.014	1.024	.949	.959	.996	1.005	.825***	0.828***
Active Engagement in Life:										
Current Employment	--	1.176***	--	1.219***	--	1.181***	--	1.201***	--	1.039*
Contact with family	--	.968	--	.943*	--	.919*	--	.985	--	.989
Contact with friends	--	.224	--	1.032	--	1.075*	--	1.009	--	.970
Chi-Squared	13.931**	60.353***	1.177	71.852***	26.535***	88.671***	4.439	38.866***	33.591***	39.379***

*p<0.05
**p<0.01
***p<0.001

Table 23:
Odds Ratio Analysis of Religiosity and Active Engagement in Life vs. Selected Health Variables with Age

Variables:	Self-Health Rating:	Self-Mental Health Rating:	Hospital Stay:	Heart Disease: (No)	High Blood Pressure: (No)	Cancer: (No)	Depression: (No)
	With Age:	With Age:	With Age:	With Age:	With Age:	With Age:	With Age:
Religious Salience:							
Religious Devotion	.971	.979	.778**	1.032	.948	.982	1.006
Religious Importance	1.011	1.035	1.059	..927	.957	.881	1.021
Service Attendance	1.071*	1.128***	1.089*	1.053	.953	1.064	1.174***
Religious Influence	.998	.948	1.002	1.049	.999	1.034	0.820***
Active Engagement in Life:							
Current Employment	1.133**	1.118***	1.175***	1.181***	1.119***	1.158***	1.054*
Contact with family	.997	.998	.968	.935*	0.922*	.991	.987
Contact with friends	1.055*	1.070**	1.036	1.015**	1.048	.987	.976
Age	.735***	.883	.974	.371***	.136***	.295***	1.360***
Chi-Squared	90.505***	74.376***	60.417***	145.669***	359.799***	101.131***	53.811***

*p<0.05
**p<0.01
***p<0.001

4.2 Discussion, Summary, and Conclusions

The results indicate that there are several statistically significant relationships that exist from analysis of this data set. However, interpretations of these results are limited due to the survey information used. My conclusion is that there is a relationship between religiosity and successful aging, but the impact and direction of the relationship cannot be determined in this dissertation. Further study is required in this area. This study does stress the importance of consideration for an individual's personal religious beliefs when studying public issues or providing health services in the community. It is not to say that the more religious a person is makes them more healthy, but that religion does impact a person's health is some ways that will be directly determined through further study.

The data used for the study contained threats to validity. The subjects used came from the MIDUS survey. They were prescreened using a telephone interview and then asked to fill out a more extensive mailed survey. Although the subjects were randomly selected for the telephone survey, they were limited to institutionalized, English-speaking adults and only 4,242 of the original 7,189 selected completed the second part of the survey. This limits the generalizability of the dissertation results, because there may have been unique reasons why the subjects chose to participate in the more extensive second survey. Additional limits to generalizabiltity included the fact that the majority of the subjects classified their race as Caucasian. There were a limited number of participants from other races. Although an analysis was done, it is difficult to truly discussion the religiosity differences based on race from this data.

Another limitation in this study was the variables used for religiosity. The data collected was not originally intended for the purposes of this dissertation. The variables selected were the

best available. Information regarding spiritually and other aspects of religiosity would have been valuable information.   In addition, the term religion is extremely hard to quantify and the questions asked on the survey did not address all the aspects of religiosity that the subjects may feel. Besides religiosity, the variables for the successful aging theory were selected from pre-assigned survey questions. This is dynamic and at times hard to quantify.

Although there were limitations in this observational study, some relevant information was discovered.   The overall analysis demonstrated a relationship between the religiosity variables selected (religious devotion, religious importance, service attendance, and religious influence) and the social or active engagement in life variables from the successful aging theory. These results indicate that there is relationship between how a person ranks themselves in religiosity and social interaction with family, friends, work, and community.   Individual with increased social contact in these areas also ranked higher in all areas of religiosity.   This relationship also existed when compared across and controlled for age, sex, race, education, and martial status. This means that there is a relationship regardless of the circumstances existing between religiosity and social interaction. The direction of this relation is unknown. It is hard to say whether religiosity affects social interaction or social interaction affects religiosity, but regardless of the direction this finding is important to public health professionals. Increased social networks and social interaction could lead to increased opportunity for health education and access to health care.

Religiosity variables were also compared across several health outcome variables relating to the successful aging model. Some common themes were the statistically relationship that existed between self-rating of physical and mental health with all of the selected religiosity

72

variables. The higher a person rated themselves on the religiosity measures the more likely they were to consider the physical and mental health as excellent to very good. In addition, older individuals demonstrated this relationship more with physical health and younger individuals with mental health. Mental health self ratings were also statistically related to several of the religiosity variables for men, women, and Caucasians. Other common themes that existed were a relationship between the number of times a person was in the hospital and routine doctor visits. Individuals whether or not the data was controlled for age, sex, race, education, and marital status demonstrated a relationship with decreased hospital visits, increased routine doctor visits and higher rankings in at least one of the religiosity variables. These results indicate that the a significant relationship exists between the religiosity variables selected and some of the successful aging variables even when analyzed in the presence of age, sex, race, education and marital status.

Finally, analysis of the theoretical model indicated a relationship existing between service attendance and the health outcome variables. Self physical and mental health ranking, number of times in hospital over the last 12 months, number of routine doctor visits, and the presence of high blood pressure, cancer, and depression were all significantly related to service attendance when the active engagement of life variables (employment, contact with family, and, friends) were added to the model. These results indicate that active engagement in life may be a bridge variable between successful aging health outcomes and service attendance. The other religiosity variables did not remain significant when fitted into the model. Interpretation of this result is limited, because it is hard to know whether increased service attendance led to healthier people or healthier people attended service more.

Regardless of the limitations of the information discovered in this dissertation, the results are important from a public health perspective. Although it is unknown whether religiosity affects successful aging or vice versa, it is important for public health professionals to consider religion. Religiosity affects health care in various ways. For example, an individual wh attends services regularly may have a more extended social network which gives way to increased access to health care. Religious venues may provide a good resource for preventative health services and public health education. Most importantly, a person's religious or spiritual beliefs may affect the way a person deals with a chronic or acute physical or mental illness. The use of religion as a coping skill should be considered and embraced by all public health professionals when dealing with patients regardless of their own held beliefs. This dissertation has documented a relationship that statistically exists between religiosity and the components of successful aging (active engagement in life, high mental and physical function, and low risk of disease and disease related disability) regardless of age. It is not to say that the more religious a person is the healthier they are, but that religion can play an intricate role in an individual's own health in various ways.

APPENDIX A:
FREQUENCY COMPARISONS OF HEALTH RELIGIOSITY VARIABLES

APPENDIX A: Table 1

MIDUS Study 1994/95
Comparisons of Health and Religiosity Variables:
ACTIVE ENGAGEMENT IN LIFE

1.1 Religious Salience:

A. How Religious are you?				
	Very	Somewhat	Not very	Not at all
Contact with Family more than 1x per week	14.7% (531)	31.8% (1142)	13% (471)	3.6% (130)
Contact with Friends more than 1x per week	13.2% (486)	29.3% (1082)	13.4% (493)	4.7% (176)
Currently Working for Pay (Yes)	13.5% (475)	35.7% (1259)	17.8% (628)	6.6% (233)
Hours per Month: (mean)				
Volunteering at Hospital, etc.	64.62	39.07	33.47	28.99
Volunteering at School	70.08	45.48	31.74	40.68
Volunteering on Politics	70.94	48.08	36.94	40.55
Volunteering at other Organization or Charity	54.41	35.01	19.41	38.96
B. Religious Importance?				
Contact with Family more than 1x per week	25.5% (920)	23.4% (840)	10.8% (389)	3.1% (114)
Contact with Friends more than 1x per week	22.3% (822)	22.3% (826)	11.3% (415)	4.3% (162)
Currently Working for Pay (Yes)	24.2% (853)	27.2% (959)	15.6% (551)	6.3% (221)
Hours per Month:(mean)				
Volunteering at Hospital, etc.	53.44	36.9	34.9	26.42
Volunteering at School	58.79	44.9	31.42	37.95
Volunteering on Politics	61.2	46.99	34.84	38.29
Volunteering at other Organization or Charity	45.47	31.53	24.2	39.25

1.2 Service Attendance:

	> Than 1x/wk.	1x per week	1-3x per Mth.	Less 1x/mth.	Never
Contact with Family more than 1x per week	8.1% (291)	16.2% (584)	8.9% (322)	18.7% (671)	11.1% (399)
Contact with Friends more than 1x per week	8.1% (302)	14.7% (544)	8.2% (303)	17.9% (850)	11.5% (422)
Currently Working for Pay (Yes)	7.2% (253)	17.6% (621)	10.0% (354)	23.4% (826)	15% (529)
Hours per Month:(mean)					
Volunteering at Hospital, etc.	72.78	46.34	57.5	32.07	28.51
Volunteering at School	86.12	51.52	58.49	35.79	33.38
Volunteering on Politics	93.06	54.88	63.05	33.83	36.68
Volunteering at other Organization or Charity	60.25	38.83	44.1	23.46	32.87

1.3 Decisions Based of Religion: (Religious Influence)

	Often	Sometimes	Rarely	Never
Contact with Family more than 1x per week	20.1% (721)	17.6% (630)	13.8% (494)	12% (431)
Contact with Friends more than 1x per week	18.1% (669)	16.9% (624)	12.9% (474)	12.6% (466)
Currently Working for Pay (Yes)	19.6% (692)	20.5% (725)	15.6% (550)	17.6% (621)
Hours per Month:(mean)				
Volunteering at Hospital, etc.	57.45	40.62	38.27	27.48
Volunteering at School	58.84	46.21	45.96	31.93
Volunteering on Politics	63.5	51.36	41.71	33.84
Volunteering at other Organization or Charity	46	32.81	31.71	29.24

**Total Percentage of Study Respondents (Total Number of Study Respondents)

APPENDIX A: Table 2

MIDUS Study 1994/95
Comparisons of Health and Religiosity Variables:
HIGH MENTAL AND PHYSICAL FUNCTION:

2.1 Religious Salience:

A. How Religious are you?				
	Very	Somewhat	Not very	Not at all
Self- Health Rating: (Excellent or Very Good)	10.3% (377)	23.3% (857)	12% (440)	4.2% (156)
Vigorous Activity Several Times a Month	6.8% (251)	14.6% (536)	5.9% (271)	2% (74)
Or More: (Summer)				
Vigorous Activity Several Times a Month	9.1 % (336)	19.6% (717)	8% (294)	2.7% (98)
Or More: (Winter)				
Self-Mental Health Rating:	12.9% (477)	27.5% (1012)	12.7% (467)	0.9% (34)
(Excellent or Very Good)				
B. Religious Importance?				
Self- Health Rating: (Excellent or Very Good)	17.5% (647)	17.9% (662)	10.1% (372)	3.9% (145)
Vigorous Activity Several Times a Month	12.1% (443)	10.3% (375)	5.1% (187)	1.8% (69)
Or More: (Summer)				
Vigorous Activity Several Times a Month	15.8% (578)	13.8% (505)	7.1% (262)	2.6% (95)
Or More: (Winter)				
Self-Mental Health Rating:	21.6% (799)	20.8% (766)	10.7% (396)	4.3% (158)
(Excellent or Very Good)				

2.2 Service Attendance:

	> Than 1x/wk.	1x per week	1-3x per Mth.	Less 1x/mth.	Never
Self- Health Rating: (Excellent or Very Good)	5.5% (204)	12.7% (468)	6.9% (254)	14.6% (546)	9.5% (354)
Vigorous Activity Several Times a Month	3.9% (143)	7.3% (266)	3.6% (130)	7.9% (287)	6.8% (251)
Or More: (Summer)					
Vigorous Activity Several Times a Month	5% (186)	10.1% (370)	4.6% (171)	10.8% (397)	8.8% (320)
Or More: (Winter)					
Self-Mental Health Rating:	7.2% (265)	15.1% (558)	8.1% (296)	16.3% (604)	10.8% (399)
(Excellent or Very Good)					

2.3 Decisions Based of Religion: (Religious Influence)

	Often	Sometimes	Rarely	Never
Self- Health Rating: (Excellent or Very Good)	14% (517)	13.9% (513)	10.4% (386)	11.1% (410)
Vigorous Activity Several Times a Month Or More: (Summer)	9.8% (355)	8% (296)	5.5% (202)	6.1% (223)
Vigorous Activity Several Times a Month Or More: (Winter)	12% (440)	11% (406)	7.9% (291)	8.4% (308)
Self-Mental Health Rating: (Excellent or Very Good)	17.1% (631)	16.1% (592)	11.5% (423)	12.9% (478)

**Total Percentage of Study Respondents (Total Number of Study Respondents)

APPENDIX A: Table 3
MIDUS Study 1994/95
Comparisons of Health and Religiosity Variables:
LOW RISK OF DISEASE AND DISEASE-RELATED DISABILITY:

3.1 Religious Salience:

A. How Religious are you?				
	Very	Somewhat	Not very	Not at all
BMI (mean)	27.1	26.8	26.4	25.7
General Weight Evaluation: (About the right Weight)	6% (222)	13.4% (495)	6.7% (248)	2.8% (103)
Heart Condition (Yes)	2.9% (106)	6.4% (236)	2.2% (82)	0.8% (28)
Taking Medications for Hypertension (Yes)	3.9% (143)	7.9% (290)	2.6% (95)	0.6% (22)
Cancer (Yes)	1.6% (59)	3.4% (125)	1.6% (58)	0.4% (14)
Depression (Yes)	5.6% (205)	12.1% (445)	5.7% (211)	2% (73)
Over the Last 12 Months:				
Times in the Hospital (mean)	24	32	19	29
Nights in the Hospital (mean)	190	243	204	337
Over the Last Month:				
Times Dr. Visit for Routine Care (mean)	1.92	1.54	1.3	1.08
Times Dr. Visit for Urgent Care (mean)	0.72	0.65	0.8	0.61
Times Dr. Visit for Scheduled Tx. (mean)	1.3	0.89	1.08	1.1
Times Visited Psychiatrist (mean)	0.34	0.31	0.4	0.43
Times Visited General Dr. (mean)	0.9	0.57	0.54	0.48
Times Visited Psychologist (mean)	0.8	0.88	1.4	2.32

B. Religious Importance?				
	Very	Somewhat	Not very	Not at all
BMI (mean)	26.9	26.8	26.5	25.6
General Weight Evaluation:	10.5% (387)	10.2% (376)	5.2% (193)	2.9% (106)
(About the right Weight)				
Heart Condition (Yes)	4.9% (179)	4.7% (173)	1.9% (69)	0.5% (19)
Taking Medications for Hypertension (Yes)	6.8% (251)	5.2% (191)	2.2% (80)	0.6% (22)
Cancer (Yes)	2.9% (107)	2.2% (83)	1.3% (49)	0.5% (17)
Depression (Yes)	9.4% (348)	9.0% (332)	4.8% (177)	1.9% (71)
Over the Last 12 Months:				
Times in the Hospital (mean)	26	28	20	30
Nights in the Hospital (mean)	203	241	229	262
Over the Last Month:				
Times Dr. Visit for Routine Care (mean)	1.75	1.47	1.36	1.15
Times Dr. Visit for Urgent Care (mean)	0.68	0.71	0.72	0.69
Times Dr. Visit for Scheduled Tx. (mean)	1.08	0.96	0.97	1.33
Times Visited Psychiatrist (mean)	0.29	0.42	0.3	0.42
Times Visited General Dr. (mean)	0.7	0.61	0.51	0.68
Times Visited Psychologist (mean)	1	0.79	1.3	2.35

3.2 Service Attendance:

	> Than 1x/wk.	1x per week	1-3x per Mth.	Less 1x/mth.	Never
BMI (mean)	27.5	26.7	26.7	26.6	26.2
General Weight Evaluation:	2.9% (107)	7.2% (264)	3.3% (121)	8.8% (324)	6.7% (248)
(About the right Weight)					
Heart Condition (Yes)	1.6% (59)	3.1% (114)	1.5%(56)	3.4% (126)	2.7% (100)
Taking Medications for Hypertension (Yes)	2.5% (94)	4.3% (159)	1.9% (71)	3.5% (128)	2.6% (96)
Cancer (Yes)	0.9% (35)	1.9% (70)	0.8% (28)	1.7% (62)	1.6% (60)
Depression (Yes)	2.6% (97)	5.8% (214)	3.0% (111)	7.9% (291)	6% (220)
Over the Last 12 Months:					
Times in the Hospital (mean)	14	22	27	29	32
Nights in the Hospital (mean)	121	206	210	265	269
Over the Last Month:					
Times Dr. Visit for Routine Care (mean)	1.64	1.59	1.55	1.51	1.43
Times Dr. Visit for Urgent Care (mean)	0.8	0.48	0.73	0.86	0.66
Times Dr. Visit for Scheduled Tx. (mean)	1.2	0.97	1.13	0.98	1.05
Times Visited Psychiatrist (mean)	0.39	0.15	0.31	0.36	0.57
Times Visited General Dr. (mean)	0.84	0.55	0.51	0.6	0.71
Times Visited Psychologist (mean)	0.72	0.77	1.81	1.31	0.92

3.3 Decisions Based of Religion: (Religious Influence)

	Often	Sometimes	Rarely	Never
BMI (mean)	27	27	26.5	26.2
General Weight Evaluation:	7.7% (283)	7.9% (290)	6.1% (225)	7.2% (266)
(About the right Weight)				
Heart Condition (Yes)	3.7% (135)	3.6% (133)	2.5% (94)	2.4% (90)
Taking Medications for Hypertension (Yes)	5.6% (208)	4.0% (149)	2.8% (102)	2.4% (88)
Cancer (Yes)	2.4% (84)	1.8% (65)	1.2% (45)	1.6% (58)
Depression (Yes)	8.2% (303)	6.8% (252)	5.3% (196)	5.0% (183)
Over the Last 12 Months:				
Times in the Hospital (mean)	27	29	25	26
Nights in the Hospital (mean)	208	230	239	240
Over the Last Month:				
Times Dr. Visit for Routine Care (mean)	1.7	1.53	1.41	1.4
Times Dr. Visit for Urgent Care (mean)	0.61	0.67	0.76	0.75
Times Dr. Visit for Scheduled Tx. (mean)	1.09	1.11	0.88	0.99
Times Visited Psychiatrist (mean)	0.33	0.36	0.24	0.45
Times Visited General Dr. (mean)	0.6	0.74	0.45	0.62
Times Visited Psychologist (mean)	1.43	0.95	0.81	1.04

**Total Percentage of Study Respondents (Total Number of Study Respondents)

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82

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