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# Retiring to Cyberspace: Factors Influencing Older Adults' Ownership of Computer Technology and Internet Usage at the Time of Retirement

Carol S. Strother

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RETIRING TO CYBERSPACE: FACTORS INFLUENCING OLDER ADULTS' OWNERSHIP  
OF COMPUTER TECHNOLOGY AND INTERNET USAGE AT THE TIME OF  
RETIREMENT

by

CAROL SUE STROTHER

Under the Direction of Dr. Erin Ruel

ABSTRACT

Increasingly, computer and Internet usage play a vital role in connecting individuals to the larger society. Many factors may influence computer ownership and frequency of Internet usage by retired older adults. This thesis applies two theoretical frameworks, Cumulative Inequality theory and Intergenerational Solidarity theory, to explore major factors that may influence retired older adults' computer ownership and their frequency of Internet usage. Special attention will be paid to issues of social inequality: including retirement status (respondent and spouse), availability of an employer-paid pension (respondent and spouse), accumulated wealth, income, educational attainment, and employer-paid health insurance (respondent and spouse). In addition, this thesis will explore issues of intergenerational solidarity, specifically, number of children and number of children living in the household in relation to computer ownership and Internet usage, in particular. This study uses the Wisconsin Longitudinal Study (WLS) data that were collected through phone surveys that were conducted in 2004.

INDEX WORDS: Older Adults, Retirement, Wealth, Computer Ownership, Frequency of Internet Usage, Wisconsin Longitudinal Study

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CAROL SUE STROTHER

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Science

in the College of Arts and Sciences

Georgia State University

2013

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Carol Sue Strother  
2013

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May 2013

## DEDICATION

First of all, I would like to dedicate this thesis to my husband, Billy. Without you this journey would not have been possible. You inspired me to take the journey and supported me throughout. There are no appropriate words that can come close to expressing my gratitude to you. You helped me fulfill a dream that is providing a tremendous amount of joy in my life.

Finally, I would like to dedicate this thesis to my Mom and Dad. Mom, you were the first to inspire the topic of this thesis. You were the first in our home to take a chance on the purchase of a personal computer and attending classes to learn this new and complicated technology during your retirement years. You always inspired me in the way you lived your life. Your desire to embrace life and live it to the fullest throughout your life course has made a permanent imprint on my life. I love you and miss you. I look forward to the day when we can share our lives again for eternity. Dad, you also inspired the topic of this thesis in the way that you have embraced computer technology and incorporated it into your daily life. At 83-years-old, you are still living your life in a way that is inspirational to everyone you encounter. I am proud of you for adapting to the ways our society operates in this information age and continuing to stay connected. I love you. I am thankful that we can still share this life together.

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## CHAPTER 1: INTRODUCTION

One indicator that supports how integral the Internet has become in the lives of the majority of people living in our society is the dramatic increase in household Internet services between 2000 and 2010 (NTI, 2010). Back in 1995, The Harris Poll began to measure people who were going online and found that less than 18 million adults were using the Internet in their homes and many other places (Senior Journal, 2008). However, the online population rapidly climbed. The online population tripled between 1995 and 1997 from 9% to 30%, to 63% in 2000, 73% in 2004, and 81% in 2008 (Senior Journal, 2008).

Although the online population has seen substantial growth since 1995, about a quarter of our population are not connected. Senior Journal (2008) found in 2004 that 27% of the population was still not connected, and a study by Lenhart (2003) found essentially the same in that 24% of the United States population was still not connected to the internet. More specifically, the study found that younger individuals were more connected than older individuals, those with a higher socioeconomic status were more connected than those with a lower socioeconomic status, those with at least a postsecondary degree were more connected than those who did not have postsecondary degrees, and families who had children were more connected than those families who did not have children (Lenhart, 2003).

Most importantly, the findings revealed that cost was one of the most influential predictors of internet connection (Lenhart, 2003). Additionally, Anderson and Tracey (2001:456) state, "lifestyle and/or life stage transitions may trigger adoption of the Internet and, simultaneously, changes in domestic time use." This adoption of the Internet in the household is particularly significant for people in retirement who have social networks that are widespread

and for those who acquired training in the use of a computer and the Internet when they were still working in the work force (Anderson and Tracey, 2001). When older adults transition into retirement, many desire to stay in touch with people who are in their social network and played an important role in their pre-retirement life. They desire to maintain a similar social lifestyle post-retirement. The Internet could provide one avenue for maintenance of retired older adults' social relationships, which could also increase their time spent using the Internet. However, there is a segment of the American population that is not using the Internet as much as other demographic segments; that would be older adults.

In 2008, seniors made up 16% of the American population, but they made up only 10% of the online user population (Senior Journal, 2008). One reason that was offered for the low user ratio is that there are millions of senior adults who are too poor to acquire access or they are physically unable to use computer and Internet technology (Senior Journal, 2008). It was also predicted that for these reasons, seniors would never compete as online users with people who are of a younger age (Senior Journal, 2008). However, seniors who are physically able and can afford computer and Internet technology might help to decrease the competitive age gap of online users. For some of the seniors who were going online at home, a study conducted by Georgia Institute of Technology in Atlanta found that 60% liked their experiences with technologies, 36% disliked their experiences, and 4% were undecided (Study, 2007). Furthermore, those who liked their experiences with technologies liked the improvement in activities such as communication, research, education, health care monitoring and maintenance (Study, 2007).

## 1.1. Research Questions

Earlier studies have pointed out the importance of computer and Internet access in the lives of older adults (Bob, 2011). However, little is known about how social equality and family environment are related to older adults' computer ownership and Internet usage. This thesis addresses the following research questions: 1) What is the relationship between older adults' socioeconomic status (including: income, educational attainment, retirement status, employer-paid pension, accumulated wealth, and employer-paid health insurance) and their computer ownership and Internet usage?; and 2) What is the relationship between older adults' familial factors (including: number of children and number of children living in their household) and their computer ownership and Internet usage?

Furthermore, this study addresses the above research questions through the lens of two theoretical frameworks, Cumulative Inequality Theory and Intergenerational Solidarity Theory, in the hopes that further understanding can be discovered about the potential relationship between retirement status, computer ownership, and Internet usage. Cumulative Inequality theory suggests that retired older adults with more financial stability than others have better access to computer and Internet technology both in terms of finances and the leisure time to use them.

The second theoretical framework, Intergenerational Solidarity, is comprised of six conceptualizations of familial solidarity, of which, functional solidarity provides the best view on how the parent/child relationship might affect the financial stability of retired older adults and hence hinder their ability to own computer technology. Additionally, the concepts of affectual and associational solidarity might be the most useful when seeking to understand how adult

children might have an effect on their older parents' computer ownership and Internet usage if the parent and child live together.

In order to answer the aforementioned research questions, through the lens of the above theoretical frameworks, this study will utilize secondary data from the Wisconsin Longitudinal Study (WLS). The WLS data for this study were collected starting in 2003 and concluding in 2005 when respondents were in their early 60s, around retirement age. This is currently the most recent round of publically available data and is identified as the 2004 wave. The 2004 WLS phone interview data are the most useful wave of data collected because it is the first and only wave in which questions were asked about the respondents computer ownership and frequency of Internet use.

## **1.2. Significance of Study**

This study will contribute to the field of aging by bringing to the forefront the reasons why older adults may not be included in our technological society. Older adults who are living in or transitioning into the retirement phase of their life with sufficient financial resources to sustain a comfortable lifestyle are more likely to have the ability to own a computer and spend more time using Internet technology than older adults who have insufficient financial resources to sustain the same comfortable lifestyle.

Furthermore, this study will contribute to the field of sociology by investigating the relationships that may exist between older adults' retirement status, cumulative financial stability, and familial environments and their ability for computer ownership, which ultimately leads to their access to participate in the online world. Any significant discovery in this study will offer older adults a technologically brighter future by bringing more awareness to the

existing literature about how cumulative inequalities and familial environments might prevent retiring older adults' ability to own computer technology, have access to internet technology, and remain or become active participants in the same way the majority of people stay connected, communicate with others, and seek knowledge in our society today. If this study's hypotheses are proven it would lend support for meaningful policy implications and future direction that would benefit the older adult segment within our society.



## **CHAPTER 2: LITERATURE REVIEW**

### **2.1. Theoretical Framework**

Theoretically, a single framework does not encompass and explain retired older adults' financial ability to adopt or motivation to adopt computer and Internet technology. In the process of investigating older adults' computer ownership and frequency of Internet usage, two theoretical frameworks can be applied tangentially in order to shed some light in this study: Cumulative Inequality Theory and Intergenerational Solidarity Theory.

#### ***2.1.1. Cumulative Inequality Theory and Social Structural Factors***

Cumulative Inequality Theory was originally introduced by Robert Merton in order to understand why inequality in productivity and social recognition existed among scientists (O'Rand, 1996). Merton argued that inequality developed over time among scientists creating an advantage for a few and a disadvantage for many (O'Rand, 1996). Those scientists who had the ability and means for productivity were more likely to benefit from increased social recognition; therefore, creating more resources for continued productivity (O'Rand, 1996). This repetitive cycle of productivity and social recognition over time creates an unequal distribution among scientists and results in a bias among scientists with a few having a greater advantage for continued productivity and social recognition and many scientists with less of a chance for advantageous productivity resulting in less social recognition (O'Rand, 1996).

For almost a decade, Dannefer has argued that this model of inequality could be useful for explaining age differences because it provides a middle-range approach to the life course that requires the link between outcomes on an individual level with systemic processes occurring over time (O'Rand, 1996, Dannefer, 1987, 1988, 1991; Dannefer & Sell, 1988). Furthermore, according to O'Rand (1996), the inequalities that exist within the older adult population cannot be explained by a single occurrence or circumstance that took place within their life course or the accumulation of their personal, individual choices over time (O'Rand, 1996). Instead, the inequality that is created within the older adult population is a "product (interaction)" of institutional social forces and a variety of individual choices throughout the life course process (O'Rand, 1996).

For example, older adults experience very diverse paths throughout their life course. Throughout their life course stratification takes place just like in any other segment of our population. Some older adults may not have ever had an opportunity to be employed by a company that offered a pension plan. Some may not have ever had the opportunity to save financially for their retirement because their earnings were just enough to make ends meet. Furthermore, many employers do not bear any cost for their employees' health insurance; therefore, the older adult would have either incurred the cost for their own health insurance or elected not to carry any health insurance, which would result in personal out-of-pocket expenses throughout their life course. Such occurrences could prevent many older adults from obtaining a stable financial or wealth status for their retirement years. Therefore, many older adults experience very diverse processes throughout their life course which leads to diversity in their financial status and the accumulation of wealth before and during their retirement years.

In the next section, I will discuss each of these sources of cumulative disadvantages in more detail. A review of the literature of major factors will provide a background for this study and some insight into their influence on older adults' computer ownership and use of Internet technology. Furthermore, the Cumulative Inequality theory will explain computer ownership and the use of Internet technology through the variation in assets accumulated over a lifetime which can be determined by their socioeconomic status.

#### 2.1.1.1. Socioeconomic Status

##### 2.1.1.1.1. *Educational Attainment*

Education plays a major role in individual earnings levels. For example, the higher the education level an individual achieves the more likely it is that they will accumulate more wealth than those who achieve less education (Tachivanski, 1986). Furthermore, those who have the opportunities to achieve higher levels of education and make higher levels of earnings are more likely to have the ability to save more for their future retirement years. As a result, the distribution of wealth during retirement by educational attainment presents even greater wealth inequalities than inequalities in earning levels at any other time (Tachibanski, 1986). Previous research has shown that as people begin to receive a retirement pension, they are more likely to accumulate a larger amount of wealth (Tachibanaki, 1986). Additionally, higher educational attainment and accumulated wealth might be related to their adoption of computer and Internet technology because it is more affordable and beneficial to their lifestyle. Previous research found that respondents who used computer technology yet did not use the Internet were more likely to be those respondents who were less educated (DiMaggio, 2008). As previously mentioned, findings by Cotton (2004) revealed that unequal access to the Internet for health

information is related to education and income. People who have less education and lower incomes are less likely to utilize the Internet to obtain health information (Cotton, 2004).

#### *2.1.1.1.2. Income*

A person's social class and income might create differences in computer and Internet use. Previous research has suggested that some middle-class users of computers and the Internet may not use technology for entertainment and enjoyment (Buse, 2009; Buckingham, 1993). However, other middle-class respondents did use the technology for leisure purposes (Buse, 2009; Buckingham, 1993). One respondent who had a working-class background was not quick to decide if they considered playing games on a computer to be a leisure activity (Buse, 2009; Buckingham, 1993). Resistance to spend time on a computer and the Internet may be considered by some older adults to be a waste of time due to their strong work ethic (Buse, 2009; Richardson et al., 2005). Dimaggio (2008) reinforces this idea by comparing computer users and Internet users and found that those who used the computer and did not use the Internet were more likely to be working in the retail or blue-collar workforce. A study conducted by Lorence, et. al., (2006) found that low-income groups remain consistently underserved when it comes to their access and Internet and computer usage. Depending on their social class and income, older adults might carry over the work ethic mindset they had during their working years into their retirement years which might affect their adoption and use of computer and Internet technology.

Similar to any demographically defined group in the general population, older adults share the same widely dispersed income range where at one end there are the "pension [or asset] elite" and at the opposite end are those who are near or persistently poor (O'Rand, 1996:232,

Duncan & Smith, 1989). However, most older adults are somewhere in the middle of this range representing the average (O'Rand, 1996). Over time, the portion of the elderly population who maintain their wealth in near proximity to the average, might "be better represented by such concepts as 'status' or 'income maintenance'" (O'Rand, 1996:232; Crystal, Shea, & Krishnaswami, 1992; Henretta & Campbell, 1976).

#### *2.1.1.1.3. Wealth*

In the United States, the traditional path towards adequate financial resources during retirement has been referred to as the three-legged stool, Social Security benefits, private pensions, and personal savings (Engen, 2005). Adequate financial resources during retirement can be defined as a continuum of standard of living from preretirement into postretirement (Engen, 2005). When people are planning for the retirement phase of their life, many people desire to continue the same standard of living they had when they were working in the work force (Purcell, 2009). Throughout their working years, many people accumulate wealth to supplement their income and/or act as a safeguard for their desired standard of living during their retirement years. Some wealth accumulated during older adults' working years can be used later as a source of consumption as they continue to age (Lee, 2003). Accumulated wealth during a person's retirement years will better serve them in their ability to enjoy their retirement from their former responsibilities in the work force and experience a degree of self-fulfillment at a greater level (Gilleard, 2005). Wealth is another financial source by which older adults can draw upon in addition to other retirement accounts such as an employer pension plan (Purcell, 2009). Many times older adults can convert their net wealth assets, such as earned dividends and interest, into an additional source of income (Purcell, 2009). They might also liquidate, fully or

partially, their net wealth assets in order to increase their financial situation which can aid in increasing their consumption during their retirement years (Purcell, 2009). In general, net wealth is defined as the difference between a person's total assets minus their total liabilities which equals their net worth.

It is to the benefit of older adults to start early in preparing for their retirement years. The combination of pension plan payments, personal savings, and investing in non-cash assets can aid in assuring more comfortable living in retirement years than those older adults who have not made such contributions or considerations toward their retirement. A comfortable lifestyle can afford older adults more of an opportunity to adopt and use computer technology. Furthermore, a comfortable lifestyle might also afford older adults the opportunity to spend more time using the Internet for leisure activities and interests. Another valuable benefit to include when older adults are considering their financial stability during their retirement years is health insurance coverage.

#### *2.1.1.1.4. Retirement*

Today, the retirement phase of life is not determined by the completion of the work-force phase of life into a retirement phase of life (Hyde, et.al, 2004). According to Hyde's study results certain aspects of work-force participation continue into the retirement phase (Hyde, et.al, 2004). Hyde determined that existence of inequalities during retirement can be attributed to inequalities established during the work-force years rather than the retirement years (Hyde, et.al, 2004). However, according to Buse, "Full retirement is a time that highlights boundaries, traditionally marking the transition from the public sphere and the world of work to a period of leisure" (Buse, 2009:1151; Roche, 1989). When many people prepare for their retirement years,

their financial situation is one of the main concerns throughout their working years. However, many people are not able to financially follow the traditional path into full retirement.

Therefore, older adults who have reached a qualifying age, which sometimes changes between cohorts, for traditional full retirement may not be able to obtain full or even partial retirement because of the inequalities they experienced throughout their working years. The opportunity and ability to accumulate wealth and save for their future retirement may have been nonexistent. Having sufficient financial resources in retirement is one goal that most people hope to reach while they are working in the labor force. Many people not only strive for adequate financial resources to meet their needs while they are living in the retirement phase of their life, but they also desire to have enough income and security to live comfortably. For many older adults during the retirement years wealth is a buffer and a vital resource against developments that are not foreseeable or planned (Casey, 2002:25). However, older adults who were members of a lower socioeconomic status during their working years may not have had the ability to accumulate beneficial resources in order to buffer against vital needs during their retirement phase of life. Additionally, older adults who live under a low socioeconomic status while in the work-force would be more likely to live in a lower socioeconomic status post-retirement.

Many people who are preparing for retirement are concerned about the potential consequences of retirement such as changes in their economic status, a deterioration of their health status as they continue to age, and changes in role status (Prasad, 1964). Therefore, many individuals try to safeguard, as much as possible, against a deficient amount of wealth so that they can remain living independently. Furthermore, the amount of wealth an older adult has acquired throughout their working years can also make a major contribution towards the lifestyle they will lead when they are fully retired. Although studies on retirement and cumulative

disadvantage are prolific, little is known about the specific link between a full retirement status, wealth and computer ownership, usage, and Internet use. One would speculate that older adults who have sufficient wealth for their full retirement years might be more likely to own and use computer and Internet technology. Additionally, older adults who have sufficient wealth for full retirement might also spend more time using the Internet because there is less concern about meeting their financial needs and more time to enjoy leisure activities using computer technology. Employer pensions can be considered a positive contributor in building the wealth of older adults and a contributor towards buffering resources during retirement.

#### *2.1.1.1.5. Employer Pension*

"The metaphor of the 3-legged stool is often used to describe America's system of retirement income security, suggesting that economic well-being among the elderly is based on Social Security, employer provided pensions, and individually accumulated assets" (Woods, 1996:1). When considering the financial status of older adults during retirement, the United States provides a minimal amount of financial support with Social Security benefits in the hopes that with individual efforts and employer programs, the individual will have the ability to live in their retirement years in a similar manner that they lived before retirement (Rappaport, 2011). An employer pension plan for individuals is an added benefit that can help to provide additional financial security and possibly continue a quality standard of living during their retirement years. Employers who offer their employees a retirement pension plan are the heroes of many employees' future financial lives (Christman, 2010). Most employees do not begin thinking and planning about retirement income and their financial security during retirement early enough (Christman, 2010). According to The Principal Financial Well-Being Index, 73% of retirees



wished that they would have started planning for retirement at least ten years before they actually retired (Christman, 2010; PFWI, 2009).

Employer pension plans are an investment and considered to be a beneficial retirement asset (Mitchell, 1998). Employer pension plans are even more valuable and beneficial when considering the mindset of many people living in our society. The American society is considered to be a consumption society in that people's happiness and wealth are considered to be the same (Blanchett, 2011). Unfortunately, many people in our society are not good savers (Blanchett, 2011). Furthermore, many American's tend to have one of the lowest rates of savings compared to other developed nations of people (Blanchett, 2011). However, in today's society, many people are maintaining a healthier lifestyle and living longer, and many older adults have made contributions to their wealth, apart from governmental resources, that affords them an opportunity to live a reasonable standard of living during retirement (Hyde, 2004) that might even be similar to the lifestyle that they lived before retirement (Rappaport, 2011). Employer pensions and personal savings are a couple of ways that might help to ensure a certain type of lifestyle, part of which includes computer and Internet usage, and helps to ensure financial stability and security during an older adult's retirement years. One other way that older adults have saved for their future retirement years is through their accumulated wealth (Purcell, 2009).

#### *2.1.1.1.6. Employer Health Insurance*

Health insurance can be a valuable commodity in our society today. "In the United States, health insurance is a key resource for payment of most health services" (Healy, 2011:44). People are living longer and overall health has improved because preventive measures, medical treatments and procedures have advance significantly (Lorence, 2006; HHS, 2004). Although

health insurance can assist in a person's overall financial stability, there is inequality in people benefiting from such assistance (Lorence, 2006; HHS, 2004). When older people are burdened with paying for medical expenses out of their personal finances because they lack appropriate health insurance coverage, it has the potential to deteriorate their financial stability (Goldman, 2003). This unstable financial situation can be further compounded if the older adult is married and has a spouse whose health is poor and the spouse also lacks adequate health insurance coverage.

As people grow older, having access to medical care becomes increasingly important. Older adults who have the benefit of employer-paid health insurance are likely to be more financially secure than those who must pay for health insurance out of their own pocket or cannot afford health insurance. A study conducted by Goldman (2003:194) found that "Medicare HMOs, employer supplements, and Medicaid effectively insulate against the risk of high expenditures." The additional benefit of health insurance has the potential to avoid out-of-pocket expenditures and could be an additional contribution towards a person's wealth. Previous research found that an older adult's wealth is reduced significantly if they incur serious health issues (Andrew and Ruel, 2010). Therefore, the increased financial cushion through having health insurance coverage might allow older adults a greater likelihood to own a computer and use the Internet seeking health information. However, according to findings by Cotton (2004), unequal access to the Internet for health information is related to education and income. People who have less education and lower incomes are less likely to utilize the Internet to obtain health information (Cotton, 2004). Knowing this can help clarify further who is more likely to go online to look for health information and who is more likely to look for health information offline (Cotton, 2004). Furthermore, having adequate health insurance might play a vital role in

whether older adults can benefit from online health information, afford to access online health information, or have the financial ability to obtain professional medical care. Adequate health insurance for older adults is one essential necessity that might help to combat financial instability, promote seeking health information online for better health, and might promote increased well-being and a more comfortable lifestyle during their retirement years.

Employer pensions, personal savings, wealth, and adequate health insurance are various ways that might help to ensure a comfortable lifestyle, financial stability and security during an older adult's retirement years. Thus, I expect that older adults with greater levels of these assets will be more likely to own a computer and engage in activities on the internet.

However, major unexpected life events can place older adults from having adequate resources to live a comfortable lifestyle during their retirement. "Any major life event may be seen as a stressor with negative consequences for health and well-being (Daatland, 2007:811; Dohrenwend & Dohrenwend, 1974). A sociological viewpoint would consider the negative effects of only undesired and unexpected life events (Daatland, 2007:811; Neugarten, 1968; Hagestad & Neugarten, 1985; McLanahan & Sørensen, 1985). One such unexpected event could be when adult children move back home. When adult children move home, a financial burden often is placed on their parents to provide for their needs. The additional financial burden could diminish the financial resources for older adults in such a way that they cannot afford computer ownership and Internet service.

A second theoretical framework that is useful in this study is the Intergenerational Solidarity theory. It may provide the lens to understand how certain familial factors might affect older adults in this study and their ownership and usage of Internet technology during their retirement years.

### ***2.1.2. Intergenerational Solidarity Theory and Familial Environment Factors***

Intergenerational Solidarity theory was originally developed by Vern Bengtson and colleagues. The focus of the theory is on the construction of familial relationships between generations and views this construction from individuals within the family (Gunhild, 2005; Bengtson & Black, 1973; Black & Bengtson, 1974). Specifically, the theory seeks to summarize individual behaviors and emotional feelings which are characteristic of the relationship between parent and child (Gunhild, 2005). The summary of individual behaviors and feelings are considered over the life course of individuals (Gunhild, 2005). The specific life course relationship focus is on the feelings, support, cohesion, and interaction between parents and their children, and also between grandparents and their grandchildren (Bengtson, 2001).

The intergenerational solidarity theory is multi-dimensional and is comprised of six conceptual ideas: affectual solidarity, associational solidarity, consensual solidarity, functional solidarity, normative solidarity and structural solidarity (Bengtson, 2001, Bengtson & Mangen, 1988; Bengtson & Schrader, 1982; Roberts, Richards, & Bengtson, 1991). These six conceptual ideas were developed in order to help explain the cohesion and solidarity across generations of the family (Gunhild, 2005). Affectual solidarity is measured by degrees of affection, closeness, respect, trust, etc. for members of the family and by perceived reciprocity among members of the family (Bengtson & Roberts, 1991). Associational solidarity is measured by the frequency of interaction or contact and by the types of common shared activities (Bengtson & Roberts, 1991). Consensual solidarity is measured by the degree that family members agree concerning values, beliefs, and attitudes (Bengtson & Roberts, 1991). Functional solidarity is measured by the

degree that family members help each other and exchange their resources (Bengtson & Roberts, 1991). Normative solidarity is measured by the strength of commitment to family roles and obligation, also known as familism (Bengtson & Roberts, 1991). Structural solidarity is measured by the opportunity to develop intergenerational relationships which considers the number of members within the family, the health of the members within the family, and the geographic location of the family members (Bengtson & Roberts, 1991).

For the purposes of this study, the concept of functional solidarity will be the most helpful when seeking to understand how children might have an effect on the financial and wealth status of their retired older adult parents and their ability for computer ownership and Internet usage. The focus of functional solidarity is on assistance and support through useful assets, aid, and emotional support (Bengtson, 2001). According to Bengtson, assistance and support within families and between generations originates from older generations and flows down to younger generations (Bengtson, 2001). Furthermore, previous research has shown that over the life course a higher percentage of financial support flows from parents to their children (Bengtson, 2001; McGarry and Schoeni (1995); Bengtson and Harootyan (1994); Soldo and Hill (1993). Therefore, the theoretical framework of intergenerational functional solidarity seems most appropriate for understanding how select familial factors, such as, number of children and number of children living in the household, can affect older adults' computer ownership and their frequency of Internet use.

Also, for the purposes of this study, the concepts of affectual and associational solidarity will be the most helpful when seeking to understand how children might have an effect on their older adult parents computer ownership and Internet usage. Affectual solidarity suggests that if the parent/child relationship shares a mutual degree of closeness and they live a long distance

from each other, older adult parents may be more likely to acquire and use computer and Internet technology to keep in contact on a regular basis. Furthermore, the concept of associational solidarity will aid in explaining the amount of time spent using computer and Internet technology. Computer and Internet technology provides expedient and swift contact and communication. This observation might suggest that people who share a close relationship and live a great distance from each other would be more likely to own computer and Internet technology and have greater usage of computer and Internet technology. A review of the literature on these major factors, having children, adult children living in the respondent's household, and distance of a child, will provide a background for this study and some insight into their influence on older adults' ownership and use of Internet technology.

#### 2.1.2.1. Children/Adult Children Living in the Household

In the United States society throughout the 20th century it was not uncommon for adult children to live in the same household with their aging parents (Choi, 2003; Choi 1996; Crimmins and Ingegneri 1990; Himes, Hogan, and Eggebeen 1996; Schmertmann et al. 2000). Although it is commonly thought and known that aging parents typically move in with their adult child for the parental care needs, research from the 1987-88 National Survey of Families and Households found that most adult children who are living with a parent are living in their parents' household rather than the reverse (Alwin, 1996; Aquilino, 1990). There are many factors that play a role in the return of an adult child into their parents' household, such as the expense and availability of other living arrangements, the lack of opportunities to obtain a job, the child's inability to be financially independent, and various other circumstances that may exist in the family home (Sassler, 2008). Studies conducted in the early 1990's that focused on adult

children who lived in their parents' household also revealed that adult children who lived with their aging parents in their parents' home may be due to the adult children's economic need instead of the declining health status and need for care for the parents' (Choi, 2003:385; Aquilino 1990; Ward, Logan, and Spitze 1992).

Oftentimes, when it comes to parent and child relationships, parents tend to provide more support with stronger feelings of obligation and affection than a child for their parent (Smits, 2010; Rossi & Rossi, 1990). Previous research found that when it came to household chores and income that was brought into the household, the children benefited more from the intergenerational living arrangement than the parents (Smits, 2010; Choi, 2003; Speare & Avery, 1993). Additionally, adult children who moved back into their parents' household and also brought their children into the household might place an additional need for child care that many grandparents consider to be a welcome opportunity to spend time with their grandchildren (Smits, 2010; Lin & Rogerson, 1995). An adult child might move into their parents' home after a divorce when there is a need for housing and other types of support (Smits, 2010; DaVanzo&Goldscheider, 1990). However, the more siblings a child has the more likely it is that they may make living arrangements other than moving back into their parents' household (Smits, 2010).

Today, in the 21st century, children in their 20's and 30's are more likely to live with their parents, more so than in any previous generation (Sassler, 2008; Furstenberg, 2000; Goldscheider and Goldscheider, 1994). Sassler (2008) found that almost all of the respondents responded that the main reason they moved back into their parents' household was financial. Furthermore, many respondents said that experiencing the material benefits while living in their parents' household brought them happiness and most parents had welcomed them back to

continue financial dependence (Sassler, 2008). Even if adult children were employed, most respondents did not make any financial contributions to the household, but assumed responsibility for their own personal expenses, such as credit card, clothing and toiletry expenses (Sassler, 2008). Therefore, previous research has shown that many times when adult children move back into their parents' household, it can create added expenses for parents. Furthermore, for those older adults who are living through their retirement years, they might experience further financial strain and instability, as well as, a drastic change in maintaining a more financially comfortable lifestyle. Retired older adults might be less likely to own and use computer technology if they are under financial strain due to their adult children living in their home.

Aside from the financial strain children living with their older adult parents might cause, Intergenerational Solidarity theory also provides insight into the closeness and frequent contact in many parent/child relationships. Computer and Internet technology can assist in maintaining close bonds and provide an avenue for frequent contact in parent/child relationships. Therefore, older adults who do not have adult children living in their home might be more likely to own and use computer and Internet technology.

## **2.2. Sociodemographic Factors**

### ***2.2.1. Age***

Older adults experience many changes as they progress through their life course. One change might be in the amount and frequency of contact with other people, especially due to retirement from the work force or health issues that prevent or limit their mobility. One goal of a research study conducted by Loge and Jung (2001) was to understand more about the context of



the digital divide between the essential goals that older and younger people place on Internet use in their everyday life. Regardless of the degree of dependence on Internet usage, Loges and Jung found that the older respondents concluded that the Internet was as central to their lives as it is to people who are younger (Loges and Jung, 2001). According to Trocchia, among Internet users, older adults are a growing segment and under-represented (Trocchia, 2000). Compared to many groups of younger users, many older adults might have more available time and income to acquire and use computer and Internet technology (Trocchia, 2000).

However, Loges and Jung (2001) state it is not the amount of time a person uses computer technology and the Internet that is most important in providing feelings of connectedness, but the importance of the role of the Internet in a person's everyday life that helps to determine their feelings of connectedness. On the other hand, a previous study found that many older adults over age 65 were less likely to utilize the internet for fun, leisure activities (Buse, 2009; Fox, 2004; Selwyn et al, 2003). However, older adults over the age of 65 were more likely to utilize the internet to research genealogy (Buse, 2009; Fox, 2004).

Additionally, older adults who are hesitant or resist the adoption of computer and Internet technology into their lives might feel like it is too complicated for them to learn (Gatto, 2008). The older adults who do attempt adoption might become discouraged if they feel frustrated when first learning how to use computer and Internet technology (Gatto, 2008). Feelings of connectedness and activities that might contribute to feelings of well-being by the usage of computer and Internet technology might be further differentiated according to a person's gender.

### **2.2.2. Gender**

Previous research findings have varied concerning the adoption of and use of computer and Internet technology. One study by Buse (2009) found no clear gender differences concerning the meaning that the respondents placed on technologies. The sample findings revealed that men and women varied in their degree of enjoyment and confidence in using computer technology (Buse, 2009). However, this finding was different from a previous research study where women were less likely to consider Internet usage as an activity of leisure (Buse, 2009, Martinson et al., 2002; Singh, 2001). Additionally, a study conducted by Barnett et. al. (2000) found slight gender differences among older adults concerning Internet usage as a leisure activity, but these differences were not present concerning computer usage (Buse, 2009; Barnett, 2000).

### **2.2.3. Marital Status**

Many times throughout a person's life course personal relationships can be gained and/or lost. Often and unfortunately for older adults, their social networks tend to diminish due to the death of a spouse, friends, and retirement from the work force which prevents regular contact with co-workers and friends (Alterovitz, 2009; de Vries, 1996). Some older adults increase their usage of computers in order to avoid a decrease in their mobility and undesired isolation (Alterovitz, 2009; Fox, 2004; Wright and Query, 2004). Older adults who have the inclination and access to computer technology are increasingly using them to improve and grow their social networks by using chat rooms, email and Web sites that are created for online dating (Alterovitz,

2009; Fox, 2004; Wright and Query, 2004). People of all ages are desirous of some type of close relationship with other people for companionship and/or some type of friendship (McIntosh, 2011). Given that computer and Internet technology can be a valuable tool in order for older adults to continue valuable and beneficial relationships with other people, the technology might also prove to be valuable tool when considering an older adult's health status.

#### ***2.2.4. Health Status- Self-reported***

Although older adults can plan for and contribute towards a stable financial future, their health is something that will more than likely become unstable and begin to decline as they age. As people age there is a greater likelihood of health decline, irrespective of life circumstances or financial status. Consequently, there is a greater risk for social disconnection and isolation. Computer ownership and Internet usage might be one avenue to help older adults remain connected and minimize isolation when their health status begins to decline and lessens their mobility. According to a study conducted by Houston (2002), the respondents who considered their health status as either fair or poor were more frequent users of the Internet when comparing to the respondents who considered their health status as either excellent or good. Furthermore, respondents with a fair or poor health status were more likely to participate in online chats, search for information concerning themselves, and to talk to their doctor about the information they found on the Internet (Houston, 2002). Additionally, results from a study conducted by Atkinson (2009) found that 58% of the respondents who were Internet users made searches for personal health information.

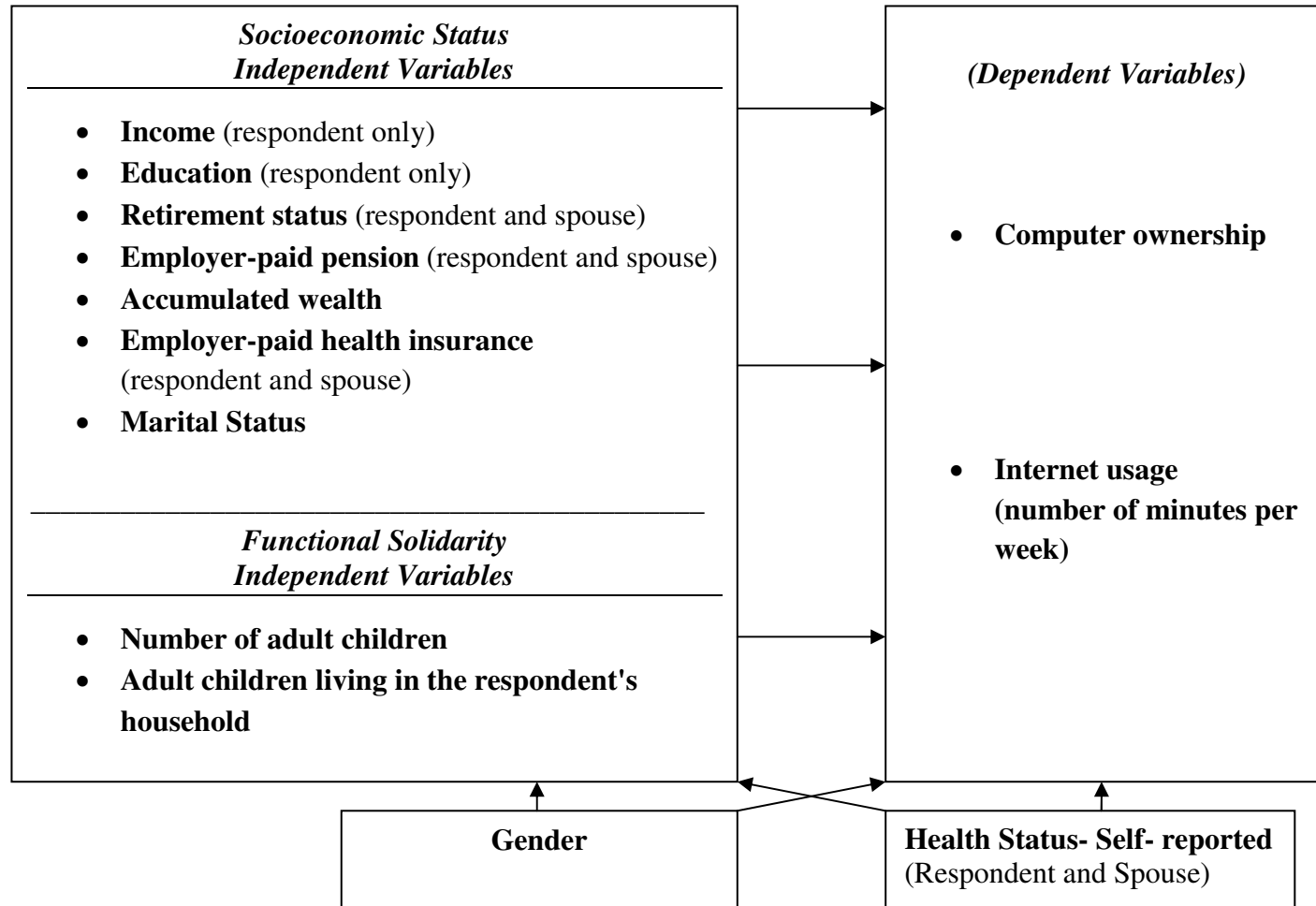
The Internet is oftentimes used by individuals as a tool for not only creating and maintaining social relationships but also for acquiring beneficial information for older adults

who are concerned about their health status. In today's society, one other benefit to computer access and Internet usage is that the worldwide Web is oftentimes a tool, when utilized, that can be an avenue for health education and health promotion (Lorence, 2006). In addition to website utilization and Internet consultation with medical professionals, online support communities have been identified as one of the primary methods of online health information seeking for both consumers and members of their social networks (Cotten, 2004; Kummervold et al., 2002; Cline & Haynes, 2001; Preece, 2000; Cotten, 2001). A study by Lorence (2006) found that across all groups of race and ethnicity, people who were going online to search about health information were not searching for information about fitness, nutrition, or general health information but were seeing information on specific disease information. But there are disparities among diverse people groups that may prevent access by computer and the Internet. Such disparities might "severely limit their participation in a consumer-centric, shared decision-making healthcare environment" (Lorence, 2006:242; Brailer, 2004). However, Liszka, et. al. (2006) found a high rate of usage in their study sample when seeking health information via the computer and Internet. Their sample was made up of patients who were of a low-socioeconomic status, a high percentage of minorities, and low education were not only accessing health information online but were also making changes when considering the information, only half of the participants shared the information with their doctor.

Previous research shows that factors related to wealth and financial status can affect an older adult's ability to own and use computer technology and their frequency of Internet usage. Furthermore, background variables also could affect computer ownership and frequency of Internet usage: these include: age, gender, marital status, and health status (respondent and spouse). For this study, special attention is paid to factors that may be associated with

cumulative inequality. These factors include: retirement status (respondent and spouse), access to an employer-paid pension (respondent and spouse), accumulated wealth, and employer provided health insurance (respondent and spouse). The financial status and wealth of older adults may have a cumulative effect on older adults' computer ownership and their computer and Internet use. In this study, the major factors of retirement status (respondent and spouse), employer-paid pension (respondent and spouse), accumulated wealth, and employer-paid health insurance (respondent and spouse) will represent a few of the key factors that could contribute towards the wealth of an individual.

Figure 1.1 represents the theoretical frameworks of Cumulative Inequality theory and Intergenerational Solidarity theory just discussed and how each theory will aid in understanding how these factors might affect older adults' ownership and usage of Internet technology.



**Theoretical Frameworks**  
**Cumulative Inequality Theory & Intergenerational Solidarity Theory**

**Figure 1**

Older adults have experienced diverse processes throughout their life course which may lead to diversity in their financial status and the accumulation of wealth before their retirement years. In this study, major factors, such as, retirement status (respondent and spouse), employer-paid pension (respondent and spouse), accumulated wealth, employer-paid health insurance (respondent and spouse), number of children, and number of children living in the household, will represent a few of the major factors that could affect the financial status and wealth of an individual. Therefore, this study proposes to investigate the association between retirement status, socioeconomic status, computer ownership, and Internet usage in the hopes of making some small contribution to the literature.

### **2.3. Hypotheses**

When people prepare for their retirement years, their financial situation is one of their main concerns. Having sufficient financial resources in retirement is one goal that many people hope to reach while they are working in the labor force so that they might have adequate financial resources to meet their needs and live securely and comfortably. Additionally, the amount of wealth older adults accumulate throughout their working years can not only make a major contribution towards their post-retirement lifestyle but may provide more leisure time for enjoyable activities, such as computer and Internet usage. Both Cumulative Inequality and Intergenerational theories will provide some insight about how social inequality and familial environments might affect retiring older adults and their adoption and usage of computer and Internet technology. Therefore, this study proposes the following six hypotheses based on the Cumulative Inequality theory:

Hypothesis 1: Educational attainment is positively associated with computer ownership and Internet usage per week for older adults.

1a: Older adults who have acquired a higher education are more likely to own a computer than older adults who have not acquired a higher education.

1b: Older adults who have acquired a higher education will use the Internet more per week than older adults with lower educational levels.

Hypothesis 2: For older adults, as income increases, computer ownership and amount of time per week spent on the Internet increases.

2a: Older adults who receive higher incomes are more likely to own a computer than older adults who receive lower incomes.

2b: Older adults with a computer who receive a higher income will use the Internet more per week than older adults with a lower income.

Hypothesis 3: For older adults, higher levels of accumulated wealth are positively associated with a greater amount of time per week spent on the Internet.

3a: Older adults who have more accumulated wealth are more likely to own a computer than older adults who have less accumulated wealth.

3b: Older adults who have more accumulated wealth will use the Internet more per week than older adults who have less accumulated wealth.



Hypothesis 4: Retirement status is positively associated with computer ownership and Internet usage per week for older adults.

4a: Older adults who are fully retired are more likely to own a computer than older adults who are partially or not retired.

4b: Older adults who are fully retired will use the Internet more per week than older adults who are partially or not retired.

Hypothesis 5: Employer's pension is positively associated with computer ownership and Internet usage per week for older adults.

5a: Older adults who receive an employer's pension are more likely to own a computer than older adults who do not receive an employer's pension.

5b: Older adults who receive an employer's pension will use the Internet more per week than older adults who do not receive an employer's pension.

Hypothesis 6: Employer-paid health insurance is positively associated with computer ownership and Internet usage per week for older adults.

6a: Older adults who have employer-paid health insurance are more likely to own a computer than older adults who do not have employer-paid health insurance.

6b: Older adults who have employer-paid health insurance will use the Internet more per week than older adults who do not have employer-paid health insurance.

The remaining two hypotheses address older adults' familial environment and its potential influence on older adults' computer ownership and Internet usage based on the Intergenerational Solidarity theory.

Hypothesis 7: Having more children is negatively associated with computer ownership and Internet usage per week for older adults.

7a: Older adults with an increasing number of children are less likely to own computer than older adults who do not have children.

7b: Older adults with an increasing number of children will use the Internet less per week than older adults who do not have children.

Hypothesis 8: Older adults with an adult child living in the household are less likely to own a computer have lower Internet usage per week.

8a: Older adults who have adult children living in their home are less likely to own a computer than older adults who do not have adult children living in their home.

8b: Older adults who have adult children living in their home will use the Internet less per week than older adults who do not have adult children living in their home.

## **CHAPTER 3: DATA AND METHODOLOGY**

### **3.1. Data**

This study utilizes the most recent round of data collection identified as the 2004 wave (Hauser, et.al., 2005). In 2004, data were collected by phone interviews with the participants, as well as, the utilization of a mail survey. For the purposes of this paper, only the phone survey data was used. As of 2004, the WLS had been following the surviving respondents for 47 years. The age range of the respondents at the time of data collection in 2004 was mostly 64- 65-years-old.

The WLS is a study of a cohort of students who graduated from Wisconsin high schools in 1957. The study began with over 10,000 graduate participants and has maintained contact with the majority of the graduates who are still living. In 1977, the WLS incorporated the graduates' siblings into the survey. In 2004, the WLS incorporated the graduates' spouses and siblings' spouses into the survey. The WLS has addressed many topics with the 1957 graduates with a desire to focus on various aspects of their life course such as their family life, work, retirement, economic status, physical/mental health and well-being status, health care status, social participation, and plans for end of life (Hauser, et.al., 2005).

The WLS conducted the first round of data collection in 1957. Additional waves were conducted in 1964, 1975, 1992, and 2004 with the original participants or the participants' parents. Throughout the different waves of data collection, WLS has maintained a high percentage of response rates. The initial wave in 1957 resulted in a total study sample of 10,317 graduate cases. The second wave, in 1964, resulted in a total study sample of 8,922 cases for a response rate of 87%. The third wave, in 1975, resulted in a total study sample of 9,138 for a

response rate of 89%. In 1992, the fourth wave resulted in a study sample of 8,493 cases for a response rate of 87%. The most recent wave was conducted starting in 2003 and concluding in 2005 and is identified as the 2004 wave. The 2004 wave of data collection resulted in a total study sample of 7,265 cases. Nearly 88 percent of those graduates who were eligible and still living participated in the 2004 wave. Between the 1992 and 2004 waves, the number of deceased respondents more than doubled (587; 1,288, respectively).

Additionally, there were 202 participants who did not complete the entire 2004 phone interview. Therefore, the study sample is 6216 participants who completed the entire 2004 phone interview only.

I dropped another 165 cases because it is likely that the computer is in the home because an adult child brought it into the home when they moved in. An additional 1049 cases were listwise deleted due to missing values on one or more of the variables included in the analyses. For the dependent variables, computer ownership and Internet usage, 191 and 233 cases, respectively, were dropped. For the independent variables based on the Cumulative Inequality theory the following cases were dropped due to missing values of the following variables: income (79 cases), accumulated wealth (113 cases), respondent's retirement status (35 cases), spouse's retirement status (56 cases), respondent's employer-paid pension (66 cases), spouse's employer-paid pension (39 cases), and respondent and spouse employer-paid health insurance (157 cases). For the variables based on the Intergenerational Solidarity theory, certain cases were dropped due to missing values in the following variables: number of children (32 cases) and marital status (40 cases). Therefore, for this study, the total study sample is 6,051 cases.

In the 2004 wave approximately 66 percent of the participants who were 65-years-old were non-Hispanic white and had completed at least 12 years of formal education. Although the WLS sample is comprised mostly of white, non-Hispanic participants, there are about a handful participants who are African Americans, Hispanic or Asian. Therefore, WLS does not represent racial minorities. Additionally, the ancestry of the participants is mainly English, German, Scandinavian, Polish, Irish and Czechoslovakian (Hauser, et.al., 2005).

### 3.2. Measurement of Variables

All variables and the measurement of all variables used in this study are shown in the following Table 1 along with the control variables.

**Table 1- Measurement of Variables**

<b>Variable Description</b>	<b>Original Measurement</b>	<b>Recoded Measurement</b>
<b>Dependent Variables</b>		
1. Computer ownership "Is there a computer, desktop, or laptop, in your household that someone uses?" (OWNCMPTR)	1= Yes 2= No System missing	0= No 1= Yes System missing
2. Internet usage= Number of minutes per week "Number of minutes graduate spends per week using the Internet from home, including using e-mail, the web, chat rooms, and any instant messaging." (INTRNUSE)	0- 2400 minutes (continuous) System missing	0-1500 minutes (continuous) System missing
<b>Independent Variables</b>		
1. Yearly Income Provide their total household income. (LOGINC)	0- 710,000 (continuous) System missing	0- 13.47 (continuous- logged) System missing
2. Educational attainment "What is the graduate's highest degree since high school?" (EDU1PSTGRD); (EDU2B); (EDU3SMECLG)	12= Less than one yr of college 13= One year of college 14= Asst. degree, two yrs college	0= Less than one year, one year, Associates degree, three years or more, Bachelor's degree 1= Post Bachelor's degree

	<p>15= Three or more yrs college</p> <p>16= Bachelor's degree</p> <p>17= Master's degree</p> <p>18= Two-yr Master's</p> <p>19= Professional. degrees, one or more yrs post-two-yr-Master's</p> <p>20= PhD, MD</p> <p>21= Post doctorate education</p> <p>System missing</p>	<p>System missing</p> <p>0= Less than one year, one year, Associates degree, three years or more, Master's degree, two year Master's, Professional degrees; one or more years, post-two-year-Master's, PhD, MD, post doctorate education</p> <p>1= Bachelor's degree</p> <p>System missing</p> <p>0= Bachelor's degree, Master's degree, two year Master's, Professional degrees; one or more years, post-two-year-Master's, PhD, MD, post doctorate education</p> <p>1= Some college</p> <p>System missing</p>
<p>3. Retirement status (respondent)--</p> <p>"At this time do you consider yourself partly retired, completely retired, or not retired at all?"</p> <p>(RTR1CRE), (RTR2PRE), (RTR3NRE)</p>	<p>1= Completely retired</p> <p>2= Partly retired</p> <p>3= Not retired at all</p> <p>System missing</p>	<p>0= Not at all retired</p> <p>1= Completely retired</p> <p>System missing</p> <p>0= Not at all retired</p> <p>1= Partly retired</p> <p>System missing</p> <p>0= Retired either partly or completely</p> <p>1= Not at all retired</p> <p>System missing</p>
<p>4. Retirement status (spouse)--</p> <p>Currently working</p> <p>"Current spouse's labor force activity."</p> <p>(WF1CWSP), (WF2RTSP)</p>	<p>1= Currently working</p> <p>2= Not working, unspecified</p> <p>3= Looking for work</p> <p>4= Keeping house</p> <p>5= Unable to work</p> <p>6= Retired</p> <p>7= Volunteer</p> <p>8= Student</p> <p>9= Not working, seasonal lay-off</p> <p>12= Other</p> <p>System missing</p>	<p>0= No spouse/spouse not working</p> <p>1= Spouse currently working</p> <p>System missing</p> <p>0= No spouse/spouse not retired</p> <p>1= Spouse retired</p> <p>System missing</p>
<p>5. Employer-paid pension (respondent)</p> <p>"Did Respondent report having employer provided pensions?"</p> <p>(PENRE)</p>	<p>1= Yes</p> <p>2= No</p> <p>System missing</p>	<p>0= No</p> <p>1= Yes</p> <p>System missing</p>

6. Employer-paid pension (spouse) "Is your spouse currently receiving regular payments from any of these pensions or retirement plans?" (PENSP)	1= Yes 2= No System missing	0= No 1= Yes System missing
<b>Variable Description</b>	<b>Original Measurement</b>	<b>Recoded Measurement</b>
7. Accumulated wealth "Respondent and spouse net worth, complete reports only." (WEALTH)	-15,000- 12,000,000 (continuous) System missing	8.52- 16.30 (logged- starting value 5,000) System missing
8. Employer-paid health insurance-- (respondent and spouse) "Are you covered by any health insurance plans through your current or former employer or union?" "Are you covered by any health insurance plans through your spouse's current or former employer or union?" (emphealth)	0= No 1= Yes System missing	0= No 1= Yes System missing
9. Number of children "Total number of respondent's children. Include biological, adopted, step or foster children as well as other children respondent considered to be a part of his/her family." (CHLDRN)	0= No children 1= One child 2= Two children 3= Three children 4= Four children 5= Five children 6= Six children 7= Seven children 8= Eight children 9= Nine children 10= Ten- Seventeen children System missing	0= No children 1= One child 2= Two children 3= Three children 4= Four children 5= Five children 6= Six children 7= Seven or more children System missing
10. Children living with respondent in the respondent's home "Do any of your children live with you?" (CHLDLIV)	1= Yes 2= No System missing	0= No 1= Yes System missing
11. Marital status Participants were asked to identify their current marital status. (nospouse)	1= Currently married 2= Separated 3= Divorced 4= Widowed 5= Never married System missing	0= Married 1= Not married System missing

<b>Control Variables</b>		
1. Gender Participants were asked to identify their gender. (female)	1= Male 2= Female	0= Male 1= Female
<b>Variable Description</b>	<b>Original Measurement</b>	<b>Recoded Measurement</b>
2. Health status (respondent) "In general, would you say your health is excellent, very good, good, fair, or poor?" (goodhealthRE)	1= Excellent 2= Very good 3= Good 4= Fair 5= Poor System missing	0= Poor/Fair 1= Good/Very good/Excellent System missing
3. Health status (spouse) "How would you describe your current spouse's health?" (goodhealthSP)	1= Excellent 2= Good 3= Fair 4= Poor 5= Very poor System missing	0= Very poor/Poor/Fair 1= Good/Excellent System missing

### 3.2.1. *Dependent Variables*

Two conceptually different dependent variables are examined: 1) computer ownership and 2) Internet usage by minutes per week. For the first dependent variable, computer ownership, the participants were asked: "Is there a computer, desktop, or laptop, in your household that someone uses?" There were two valid responses 1= yes, 2= no. I recoded this variable into a dummy variable with 0= no, 1= yes- cases with missing values were dropped.

The second dependent variable, Internet usage, which is measured by minutes per week, asked the participant for: "Number of minutes graduate spends per week using the Internet from home, including using e-mail, the web, chat rooms, and any instant messaging." It was only asked of those participants who stated they owned a computer. There were valid responses ranging from 0- 2400 minutes per week- cases with missing values were dropped. I recoded this variable into a continuous variable that is top coded at 1500 minutes because the most significant



number of responses were around 1500 minutes or less and was closest to the most frequently given responses. Therefore, top coding at 1500 minutes per week provided a normal distribution by minimizing the outliers.

### **3.2.2. *Independent Variables***

Twelve major independent variables are included in this study. Nine of the twelve independent variables are related to social inequality: income, education, retirement status (respondent and spouse), employer-paid pension (respondent and spouse), accumulated wealth, and employer-paid health insurance (respondent and spouse). The last three independent variables are related to the concept of the functional aspect of intergenerational solidarity: number of children, number of children living in the respondent's home, and the respondent's marital status. The respondents were asked to provide their total household income based on all sources of income, such as, salaries or wages, social security, pensions, business or farm, joint earning of interest or dividends, etc. The values for the income variable ranges from \$0-\$710,000. I recoded the variable into a logged income variable with a starting value of 5,000 because it is not normally distributed. Logging income provides a more normal distribution by reducing or eliminating the outliers.

Educational attainment of the graduate respondent is derived from a question that asked participants: "What is the graduate's highest degree since high school?" There were eleven different responses with 12= Less than one year of college, 13= One year of college, 14= Associate degree, two years college, 15= Three or more years college, 16= Bachelor's degree, 17= Master's degree, 18= Two-yr Master's, 19= Professional degrees, one or more years, post-two-year-Master's, 20= PhD, MD, 21= Post doctorate education. I recoded the variable into

three dummy variables. The first dummy variable is post-bachelor's degree with values 17 or higher set to one and all other values set to zero. The second dummy variable is bachelor's degree with a value of 16 set to one and all other values were set to zero. The third dummy variable is some college with values 15 or lower set to one and all other values set to zero.

Retirement status (respondent) is derived from a question that asked participants: "At this time do you consider yourself partly retired, completely retired, or not retired at all?" There were three responses: 1= completely retired, 2= partly retired, 3= not retired at all. I recoded the variable into two dummy variables; one for completely retired and one for partially retired.

Retirement status (spouse) is derived from a question that asked participants for: "Current spouse's labor force activity." There were nine responses with 1= currently working, 2= not working, unspecified, 3= looking for work, 4= keeping house, 5= unable to work, 6= retired, 7= volunteer, 8= student, 9= not working, seasonal lay-off, 12= other. There were 1645 cases coded as inappropriate. The primary reason for the inappropriate code was not being married. These were recoded to zero. I created two dummy variables for currently working and retired.

Employer-paid pension (respondent) is derived from a question that asked participants: "Did Respondent report having employer provided pensions?" Response categories were "yes" and "no." Some cases were coded as inappropriate which reflects no retirement plans for the respondent. Therefore, the inappropriate responses were moved into the "no" category which would reflect the respondent does not receive a pension. I recoded the variable into a dummy variable with 0= no, 1= yes.

Employer-paid pension (spouse) is derived from a question that asked participants: "Is your spouse currently receiving regular payments from any of these pensions or retirement

plans?" Response categories were "yes" and "no." I recoded the variable into a dummy variable with 0= no, 1= yes. The cases with inappropriate responses were analyzed. If the responses were inappropriate because the respondent is not currently married or the respondent's wife does not work, then those responses were coded "0".

Wealth is defined as the total assets of the respondent and spouse excluding total liabilities such as non-pension net assets, real estate equity assets in their home, farm, business or other real estate, and vehicle equity resulting in net worth (Andrew and Ruel, 2010). The wealth variable is derived from a question that asked participants to provide: "Respondent and spouse net worth, complete reports only." The wealth values range from -15000 to 12000000. In order to obtain a normal distribution, I recoded the variable moving the negative wealth values into a zero wealth value. I also logged the wealth variable with a starting value of 5,000. Logging wealth provides a more sensitive measure in detecting the significance of incremental changes if the respondents' wealth is small. Logging wealth also provides a more normal distribution which minimizing outliers.

Health insurance is derived from two questions; one for the respondent and one for the spouse. The participants were asked: "Are you covered by any health insurance plans through your current or former employer or union?" and "Are you covered by any health insurance plans through your spouse's current or former employer or union?" Response categories were "yes" and "no." After recoding both the respondent and spouse health insurance variable into dummy variables, I combined both variables into one variable for analysis. Cases coded as inappropriate were analyzed by performing crosstabulations between the marital status variable and both the respondents health insurance variable and the spouse health insurance variable in order to determine if the inappropriate responses were due to the respondent being unmarried. Another

crosstabulation was performed between the health insurance variable for the respondent and the health insurance variable for the spouse to determine if the inappropriate answers should be set to "no" due to no spouse or no spouse health insurance. Therefore, I recoded the variable into a dummy variable with 0= no, 1= yes, and inappropriate responses were set to zero.

Number of children is derived from a question that asked participants for: "Total number of respondent's children. Include biological, adopted, step or foster children as well as other children respondent considered to be a part of his/her family." The variable ranges from 0 (no children) to 10 (10-17 children). I recoded this variable into a continuous variable that is top coded at seven or more children in order to construct a normal distribution which minimizes outliers. Therefore, the responses were recoded as: 0= no children, 1= one child, 2= two children, 3= three children, 4= four children, 5= five children, 6= six children, 7= seven or more children.

The variable measuring children living with the respondent in the respondent's home is derived from a question that asked participants: "Do any of your children live with you?" Response categories were "yes" and "no." I recoded this variable into a dummy variable with 0= no, 1= yes. The inappropriate values were set to 0=no because the respondent was not married or had zero children.

I am including spousal variables, but not everyone is married. For the marital status of the graduate respondent, the participants were asked to identify their current marital status. Response categories are: 1= currently married, 2= separated, 3= divorced, 4= widowed, 5= never married. I recoded the variable into a single dummy variables with 0= married, 1= not married. The inclusion of the "nospouse" variable, which reflects respondents who are not married, was

added in order to minimize any biased effect that might exist and to obtain a more accurate measure of all variables concerning the spouse of the respondent. If the value on all spousal independent variables for those without spouses is zero, the true estimated regression coefficients will be biased; including a dummy variable for not married should minimize any bias this creates.

### **3.2.3. *Control Variables***

For this study, three control variables are included. For the gender of the graduate respondent, there were two possible responses, Male or Female. Originally, the variable was coded as 1= male and 2= female. I recoded this variable into a dummy variable with 0= male, 1= female.

Self-reported health status of the graduate respondent. The respondent was asked "In general, would you say your health is excellent, very good, good, fair, or poor?" I recoded the variable into a dummy variable with excellent, very good, and good set to 1, and poor and fair health statuses set to zero.

Graduate respondent's assessment of their spouse's health status. The graduate participant was asked "How would you describe your current spouse's health?" I recoded the variable into a dummy variable with good/excellent set to 1, and very poor, poor, and fair health statuses set to zero. I also moved the inappropriate values into the reference category because these are due to the respondent not having a spouse. One weakness in the construction of this variable was that the participant was asked to provide their subjective description of their spouse's health status instead of obtaining the self-reported health status from the spouse. The participant's perception of their spouse's health status could vary considerably from their spouse's subjective perception or self-report of their own health status.

### 3.2.3. *Data Analysis*

Data were analyzed with Statistical Package for the Social Sciences (SPSS), version 19.0. Data analysis included three steps.

In the first step, I ran univariate analyses on all the variables in order to obtain descriptive statistics. This provided information about what the study sample looks like, as well as, univariate diagnostics to determine if linear regression is appropriate. Additionally, univariate diagnostics for each of the dependent and independent variables provides information concerning the distribution of each variable. Univariate diagnostics provides many types of descriptive statistics including measurements of each variable's central tendency such as the mean of the sample, standard deviation, variance measures, and information about any deviation from normality, which reveals skewness and kurtosis of the sample. Normal distribution shows symmetry around the mean. If the distribution is normal, 68% of the values will fall between  $\pm 1$  standard deviations from the mean value, 95.5% of the values will fall between  $\pm 2$  standard deviations from the mean value, and 99.7% of the values will fall between  $\pm 3$  standard deviations from the mean value (Agresti and Finlay, 2009). Descriptive statistics provides information about the maximum, minimum, and range of the spread of the distribution of the variable's sample, and provides information concerning the standard errors of the mean and any deviation from normality revealing skewness and kurtosis of the sampling. The standard error measures the stability or sampling error of the sampling distribution around the mean (Agresti and Finlay, 2009). When the results reveal a small number this will be indicative of a small sampling error or greater stability of the sampling distribution (George and Mallery, 2011). Variable manipulation was based on univariate findings.

Next, I ran Pearson correlations on all variables to determine 1) correlations with the dependent variables, and 2) to check for multicollinearity. First, it is important to understand some of the assumptions for correlation, such as: 1) the variables are from a random sample of data, 2) there is a linear or near linear relationship between the two variables, and 3) the measurement of the variables should be dummy or continuous, interval, or ratio variables. Testing for correlation between variables helped to determine the degree of the relationship. The most commonly used measure for determining the degree of a relationship is Pearson's correlation coefficient, also referred to as Pearson's  $r$ . Pearson's correlation coefficient measures the degree that one independent variable is dependent on another independent variable in a linear relationship. The measurement of Pearson's  $r$  can determine the pattern of the relationship between two variables by the sign of the value. A positive (+) value denotes that as one variable increases, the other variable will increase. A negative (-) value denotes that as one variable decreases, the other variable will increase. Additionally, the value for Pearson's  $r$  will range somewhere between -1 and +1 (Agresti and Finlay, 2009).

I determined the strength of associations by how close the value of  $r$  was to the value of zero. The closer the value of any two variables relationship is to zero, the less variation the two variables share, which means they are not very related. The less the two variables are related the weaker the relationship between the two variables, and the closer the estimated correlation is to zero. On the other hand, the closer the value of  $r$  is to one (+1 or -1), the two variables share more variation, which means the two variables are strongly related (Agresti and Finlay, 2009). The scale used to determine the strength of two variables is: 0-.1= weak in strength, .11-.30= moderate in strength, and .31-1.0= strong in strength. For this study, if a Pearson's correlation

coefficients is 0.7 or higher, this means there is a strong linear variation and a strong relationship between two of the independent variables, and I then determined how to handle the dependence.

In the third and final step of data analysis, this study employed regression analysis in order to gain insight when testing the twelve major independent variables to see if they might influence the ability for older adults to own computer technology and their frequency of Internet usage. However, there were two different regression models for each of the two dependent variables. The regression model most appropriate for the first dependent variable, computer ownership, was logistic regression (LR) analysis because the measurement of this dependent variable is binary and discrete with 0= no and 1= yes. The regression model that seemed most appropriate for the second dependent variable, frequency of Internet usage, was ordinary least squares (OLS) regression analysis because this dependent variable is a continuous variable and an interval/ratio level of measurement. I will conduct a logistic regression analysis of computer ownership first followed by an OLS regression analysis of time spent per week using the Internet. However, for the sake of methodological clarity, I will discuss OLS regression first prior to introducing logistic regression.

#### 3.2.3.1. Ordinary Least Squares (OLS) Regression Analysis

Ordinary least squares analysis (OLS) was one regression analysis that was utilized in this study. OLS regression is the most appropriate method of analysis because one of the dependent variables, number of minutes per week the respondent uses the Internet, is a continuous, interval level of measurement and is linear in nature. The statistical linear equation used for OLS regression is:  $Y_1 = a + bX_1 + \epsilon$  (Agresti and Finlay, 2009). The dependent (outcome) value is a continuous, interval/ratio value represented by ( $Y_1$ ). The equal sign (=)



denotes that the equation is linear. The parameters in a linear equation is represented by,  $a + bX_1$ , and they are the actual variable values from the WLS data set. This is in contrast to the parameter values of the logistic regression equation that was also used in this study because the values in the logistic equation were restricted to values of 0 and 1 due to the dependent variable being dichotomous and having a binomial distribution in nature. In a linear equation, the distribution is assumed to be normal and therefore denoted by  $\epsilon$  (Agresti and Finlay, 2009).

### **Ordinary Least Squares- Model #1**

In order to perform the OLS regression analysis, I created three regression models. The first OLS model regressed, number of minutes per week the respondent uses the Internet, on the twelve independent variables: income, education, retirement status (respondent and spouse), employer-paid pension (respondent and spouse), accumulated wealth, and employer-paid health insurance (respondent and spouse), number of children, number of children living with the respondent in the respondent's home, and marital status.

$$\begin{aligned}
 Y_1 \text{ (# minutes/week use Internet)} = & a + b_1 \textit{income} + b_2 \textit{education} + b_3 \textit{retirement} + \\
 & b_4 \textit{employer pension} + b_5 \textit{wealth} + b_6 \textit{employer health insurance} + \\
 & b_7 \textit{number children} + b_8 \textit{number children living with respondent} \\
 & + b_9 \textit{marital status} + \epsilon
 \end{aligned}$$

### **Ordinary Least Squares- Model #2**

The second OLS model added the three control variables: gender and health status (respondent and spouse) to model #1.

$$Y_1 (\# \text{ minutes/week use Internet}) = a + b_1 \text{income} + b_2 \text{education} + b_3 \text{retirement} + b_4 \text{employer pension} + b_5 \text{wealth} + b_6 \text{employer health insurance} + b_7 \text{number children} + b_8 \text{number children living with respondent} + b_9 \text{marital status} + b_{10} \text{gender} + b_{11} \text{health status} + \epsilon$$

### **Ordinary Least Squares- Model #3**

The third OLS model duplicated model #2 except the sample was limited to respondents who were completely retired.

$$Y_1 (\# \text{ minutes/week use Internet}) = a + b_1 \text{income} + b_2 \text{education} + b_3 \text{retirement (retired only)} + b_4 \text{employer pension} + b_5 \text{wealth} + b_6 \text{employer health insurance} + b_7 \text{number children} + b_8 \text{number children living with respondent} + b_9 \text{marital status} + b_{10} \text{gender} + b_{11} \text{health status} + \epsilon$$

These three models were tested in an ordinary least squares analysis (OLS) to obtain a better understanding about how retirement status, employer-paid pension, accumulated wealth, employer-paid health insurance, number of children, number of children living in the respondent's home, and marital status affect the respondent's frequency of Internet usage. The three OLS regression models revealed any effects that the variables may have on each other, in combination with each other, as well as, testing the variables individually. Furthermore, and foremost, since I am assuming a causal relationship among the dependent and independent

variables that are stated in the hypotheses, OLS revealed any significant effects among these variables. Secondly, since I am furthering these potential causal relationships by adding in certain background variables, OLS regression analysis again revealed any significant effects that the control variables had on any relationship that existed between my dependent and independent variables. Finally, in model 3, I sought to find out if there were any significant effects between older adults who are retired and those who are not retired including all of the independent and control variables.

### **Assumptions and Diagnostics**

There are nine assumptions when using OLS regression: 1) there is a linear relationship between the independent variables and the dependent variable, 2) explanatory variables have not been excluded, 3) explanatory variables that are irrelevant have not been included 4) the dependent and independent variables do not contain measurement error, 5) the error term ( $\varepsilon$ ) is normally distributed, 6) the mean or expected value of the error term is equal to zero,  $E(\varepsilon_i) = 0$ , 7) the variances are constant (homoscedasticity), 8) the error term ( $\varepsilon$ ) is not correlated with the independent variables, and 9) there is independence for each error term. Each of these assumptions yields the best, most efficient linear estimates (least squares), and minimizes the error term. When running diagnostics in OLS regression, these nine assumptions were verified.

### **Estimation and Interpretation**

The estimations in an OLS regression are determined by least squares which differs from the logistic regression model where the estimates are determined by the maximum-likelihood. Furthermore, least squares aids in minimizing the residual sum.

In this study, the statistical test that was employed to test the relationship between the dependent variable, number of minutes per week the respondent uses the Internet, and the twelve independent and three control variables is a t-test. When testing coefficients a t-test is appropriate because it compares the means of two variable groups. Comparison of the t-test means aids in deciding whether to accept or reject the null hypothesis.

### **Significance and Model Fit**

In each model, a t-test tested the coefficients and provided statistical understanding of the pattern, strength, and significance of the models. In SPSS, the sign (positive or negative) of the unstandardized coefficient, B, revealed how the dependent variable is affected by the independent variable when controlling all effects from the other independent variables. A positive sign indicated that as the independent variable increased by one unit, the dependent variable increased by one unit (George and Mallery, 2011). A negative sign indicated as the independent variable decreased by one unit, the dependent variable decreased by one unit (George and Mallery, 2011). Furthermore, SPSS also provided a measurement of model strength and accuracy with an  $R^2$  value. The value of  $R^2$  indicated how well all of the independent variables predict or explain the effects on the dependent variable when all of the independent variables were grouped together (George and Mallery, 2011). The goodness of fit for linear measurement using an OLS regression model is the value of  $R^2$ . In order to determine the significance of a relationship, the p-value must be less than .05 for a relationship to be considered a statistically significant relationship.

### 3.2.3.2. Logistic Regression Analysis

Logistic regression is conducted when the dependent variable has a binomial distribution. The statistical equation used for logistic regression is:  $\log\left(\frac{Pr_y}{1-Pr_y}\right) = a + bX_1 + x$ . The equation differs from a linear regression equation,  $Y_1 = a + bX_1 + \epsilon$ , in a couple of ways. In logistic regression, the dependent (outcome) value is not an interval/ratio value ( $Y_1$ ), but instead the dependent (outcome) value is dichotomous and only between 0 and 1. Because the values for the dependent variable are only between 0 and 1, and not an infinite value, values are transformed into probabilities and then odds to overcome this limitation. We then log the odd to make the variable unbounded:  $\log\left(\frac{Pr_y}{1-Pr_y}\right)$ . In this study, the outcome (dependent variable) is the log odds of owning a computer versus not owning a computer.

Continuing the comparison of linear and logistic equations, the logistic model of analysis is similar in respect to the appearance of parameters in the equations,  $a + bX_1$ , but the values are different. In a linear equation the parameters are the associations between the independent variables and the dependent variable in logits, but since the values of the logistic model are transformed into odds it overrides that constraint, then the parameters are  $\log_e$  (odds ratios). Since logits make little substantive sense, I used the odds ratio to interpret the associations.

#### **Logistic Regression- Model #1**

In order to perform my logistic regression analysis, I created three regression models. The first logistic model regressed, computer ownership, on the twelve independent variables: retirement status (respondent and spouse), employer-paid pension (respondent and spouse),

accumulated wealth, and employer-paid health insurance (respondent and spouse), number of children, number of children living in the respondent's home, and marital status.

$$\log\left(\frac{Pr_{computer\ ownership}}{1-Pr_{computer\ ownership}}\right) =$$

$$a + b_1 income + b_2 education + b_3 retirement + b_4 employer\ pension + b_5 wealth +$$

$$b_6 employer\ health\ insurance + b_7 number\ children +$$

$$b_8 number\ children\ living\ with\ respondent + b_9 marital\ status + x$$

### **Logistic Regression- Model #2**

The second logistic model adds the three control variables: gender and health status (respondent and spouse) to model #1.

$$\log\left(\frac{Pr_{computer\ ownership}}{1-Pr_{computer\ ownership}}\right) =$$

$$a + b_1 income + b_2 education + b_3 retirement + b_4 employer\ pension + b_5 wealth +$$

$$b_6 employer\ health\ insurance + b_7 number\ children +$$

$$b_8 number\ children\ living\ with\ respondent + b_9 marital\ status + b_{10} gender +$$

$$b_{11} health\ status + x$$

### **Logistic Regression- Model #3**

The third logistic model duplicates model #2 except the sample is restricted to those who are retired.

$$\log\left(\frac{Pr_{computer\ ownership}}{1-Pr_{computer\ ownership}}\right) =$$

$$a + b_1 income + b_2 education + b_3 retirement\ (retirees\ only) + b_4 employer\ pension$$

$$\begin{aligned}
& + b_5 \textit{wealth} + b_6 \textit{employer health insurance} + b_7 \textit{number children} \\
& + b_8 \textit{number children living with respondent} + b_9 \textit{marital status} + b_{10} \textit{gender} \\
& + b_{11} \textit{health status} + x
\end{aligned}$$

### **Assumptions and Diagnostics**

There are four assumptions when using logistic regression: 1) the dependent variable is a binary, dichotomous variable, 2) the results are independent statistically, there is no correlation, 3) all predictors that are necessary (excluding unnecessary) are included in the model, and 4) the variable categories must be mutually exhaustive and have mutual exclusivity. One way logistic regression assumptions differs from OLS (ordinary least squares) assumptions in that the dependent variable is not a binary, dichotomous variable.

### **Estimation and Interpretation**

Furthermore, logistic regression usually demands a large sample size because the maximum likelihood coefficients standard errors provides estimates for samples that are large. When running diagnostics in logistic regression, the aforementioned four assumptions were verified.

### **Significance and Model Fit**

In this study, the statistical test that was employed to test the dependent variable, computer ownership, with the twelve independent and five control variables, was the Wald test. The Wald test was appropriate since the dependent variable is dichotomous and the results reflect probabilities (Agresti and Finlay, 2009). The Wald test compared the maximum likelihood

estimate of the parameters with the predicted or probability value (Agresti and Finlay, 2009). In each model, the Wald test tested the coefficients (b) for significance. If the coefficient (b) was positive, the coefficient was greater than one (1) which means as the odds increased for the parameter then the odds increased for the dependent variable. If the coefficient (b) was negative, the coefficient was less than one (1) which means as the odds decreased for the parameter then the odds decreased for the dependent variable. If the coefficient (b) was zero, the coefficient was equal to one (1) which means the odds did not change. The Wald test generates a Z statistic and then the value of Z is squared in order to create a chi-square distribution (Agresti and Finlay, 2009). Furthermore, SPSS provided a measurement of model strength with a pseudo- $R^2$  value. A value of 0 for pseudo- $R^2$  indicated that the model is not predictive, whereas, a value of 1 indicated that the model was a good fit for measurement.



## CHAPTER 4: FINDINGS

As previously indicated, the purpose of this study is to examine if Cumulative Inequality and Intergenerational Solidarity theories explain older adults', particularly retired older adults', computer ownership and Internet usage. This chapter outlines the findings of the analyses described in the previous chapter.

I start by presenting descriptive statistics of all variables included in the analyses in Table 2. The results reveal that 74% of older adults own a computer. On average, older adults spend 208 minutes (3.5 hours) on the Internet in a given week. The average yearly income in the sample was \$65,949. Older adults educational attainment revealed that 14% earned a post-bachelor degree, 14% earned a bachelor degree, 6% attained some college education, and 66% were high school graduates with no higher education. Analysis of retirement status revealed that 50% of the sample were completely retired, 23% partially retired, and 27% not retired at all. Analysis of the respondents' spousal retirement status revealed that 32% were currently working, 33% were retired, and 35% were doing something else. There were 46% of the older adults who receive an employer-paid pension, and 31% with a spouse who receives an employer-paid pension. On average, older adults have \$602,477 in accumulated wealth. Half of the respondents had employer-paid health insurance and/or spousal employer-paid health insurance.

Analysis of the familial factors of the older adults in the sample revealed they have three children on average. Among those who have children, 10% have children who live with them in their household. Marital status revealed that 78% of the respondents are married.

Analysis of the background characteristics of the sample reveal that 52% of the respondents are female, and 90% report their health status as good. Among those who have a spouse, 65% report the health status of their spouse is good.

**Table 2- Variable Descriptive Statistics**

<b>Dependent Variables</b>	<b>Variable Name</b>	<b>Mean</b>	<b>Std. dev.</b>	<b>Range</b>
	Computer ownership- OWNCOMPTR	.74	.44	0-1
	Freq. of Internet use per week- INTRNTUSE	208.16	337.85	1-1500
<b>Independent Variables</b>	Yearly Income (logged)- LOGINC	10.46	1.38	1-6.57
	Education- Post Bachelor degree- EDU1PSTGRD	.14	.34	0-1
	Education- Bachelor degree- EDU2B	.14	.34	0-1
	Education- Some college- EDU3SMECLG	.06	.24	0-1
	Education- High School	.66		
	Respondent- Completely retired- RTR1CRE	.50	.50	0-1
	Respondent- Partially retired- RTR2PRE	.23	.42	0-1
	Respondent- Not retired- RTR3NRE	.27	.44	0-1
	Spouse- Currently working- WF1CWSP	.32	.47	0-1
	Spouse- retired- WF2RTSP	.33	.47	0-1
	Spouse- doing something else	.35		
	Respondent employer-paid pension- PENRE	.46	.50	0-1
	Spouse employer-paid pension- PENSP	.31	.46	0-1
	Accumulated wealth (logged)- WEALTH	12.18	1.82	1-7.78
	Respondent/Spouse employer-paid health insurance- emphealth	.50	.50	0-1
	Number of children- CHLDRN	3.01	1.63	1-7
	Children living in respondent's home- CHLDLIV	.10	.29	0-1
	Unmarried respondent- nospouse	.78	.41	0-1
<b>Control Variables</b>	Gender- female	.52	.50	0-1
	Respondent- good health- goodhealthRE	.90	.30	0-1
	Spouse- good health- goodhealthSP	.65	.48	0-1
N= 6051				

Table 3 presents correlations of all variables included in the analyses. There is some pertinent and significant information related to older adults, computer ownership, and Internet use per week revealed in the analyses. There is a strong, significant relationship between older adults' computer ownership and Internet use per week ( $r = .364$ ). There is a moderate, significant relationship between older adults' yearly household income and accumulated wealth and their computer ownership. There is a moderate, significant relationship between older adults who are not married and computer ownership ( $r = .197$ ). There is a moderate, significant relationship between the health status of older adults' spouse and their computer ownership. There is a moderate, significant relationship between older adults' accumulated wealth and Internet use per week. There is a strong, significant relationship between older adults' accumulated wealth and yearly household income ( $r = .521$ ). There is a moderate, significant relationship between older adults' employer-paid health insurance and their accumulated wealth ( $r = .144$ ). There is a moderate, significant relationship between older adults' accumulated wealth and Bachelor's degree or higher educational attainment ( $r = .120$ ). There is a moderate, significant relationship between older adults' yearly household income and employer-paid pension and employer-paid health insurance ( $r = .141$  and  $r = .148$ ). There is a moderate, significant relationship between older adults' employer-paid pension and employer-paid health insurance ( $r = .134$ ). There is a moderate, significant relationship between older adults' employer-paid pension and having a post-Bachelor's degree ( $r = .157$ ). There is a moderate, significant relationship between older adults' Internet use per week and having a post-Bachelor's degree ( $r = .133$ ).

To summarize, the above correlations suggest that in the bivariate case, the measures of Cumulative Inequality and Intergenerational Solidarity appear to predict computer ownership and Internet usage for older adults.

**Table 3- Variable Correlations**

N= 6051	Computer ownership	Freq. of Internet use per week	Yearly Income (logged)	Education- Post Bachelor degree	Education- Bachelor degree	Education- Some college	Respondent- Completely retired	Respondent- Partially retired	Respondent- Not retired	Spouse- Currently working	Spouse- retired	Respondent employer paid pension	Spouse employer-paid pension	Accumulated wealth (logged)	Resp/Spse employer-paid health insurance	Number of children	Children living in respondent's home	Unmarried respondent	Gender (female)	Respondent- good health
Computer ownership Pearson's r Sig. (2-tailed)	1																			
Freq. of Internet use Pearson's r Sig. (2-tailed)	.364** .000	1																		
Yearly Income (logged) Pearson's r Sig. (2-tailed)	.183** .000	.105** .000	1																	
Education- Post Bachelor degree Pearson's r Sig. (2-tailed)	.155** .000	.133** .000	.169** .000	1																
Education- Bachelor degree Pearson's r Sig. (2-tailed)	.093** .000	.079** .000	.094** .000	-.158** .000	1															
Education- Some college Pearson's r Sig. (2-tailed)	.037** .003	-.003 .792	.006 .625	-.109** .000	-.108** .000	1														
Respondent- Completely retired Pearson's r Sig. (2-tailed)	.003 .799	.051** .000	-.094** .000	-.055** .000	-.010 .411	-.012 .324	1													
Respondent- Partially retired Pearson's r Sig. (2-tailed)	.012 .308	.021 .072	.041** .000	.013 .263	-.002 .870	-.018 .140	-.549** .000	1												
Respondent- Not retired Pearson's r Sig. (2-tailed)	-.015 .208	-.079** .000	.067** .000	.050** .000	.013 .279	.031* .011	-.608** .000	-.329** .000	1											
Spouse- Currently working Pearson's r Sig. (2-tailed)	.083** .000	-.014 .228	.115** .000	.011 .370	.006 .580	.019 .117	-.244** .000	-.122** .000	.160** .000	1										
Spouse- retired Pearson's r Sig. (2-tailed)	.077** .000	.012 .327	-.030** .010	-.015 .214	-.018 .126	-.011 .373	.260** .000	-.082** .000	-.216** .000	-.489** .000	1									
Respondent employer-paid pension Pearson's r Sig. (2-tailed)	.062** .000	.036** .003	.141** .000	.157** .000	.034** .004	-.009 .473	.087** .000	-.029* .014	-.070** .000	-.064** .000	-.003 .822	1								
Spouse employer-paid pension Pearson's r Sig. (2-tailed)	.085** .000	.003 .790	.007 .552	-.019 .110	-.010 .373	.007 .570	.192** .000	-.052** .000	-.168** .000	-.144** .000	.488** .000	-.019 .106	1							
Accumulated wealth (logged) Pearson's r Sig. (2-tailed)	.222** .000	.122** .000	.521** .000	.163** .000	.120** .000	.012 .355	-.004 .715	.013 .267	-.008 .521	.096** .000	.024* .036	.064** .000	.063** .000	1						
Resp/Spse employer-paid health insurance Pearson's r Sig. (2-tailed)	.091** .000	.019 .108	.148** .000	.093** .000	.058** .000	.002 .849	-.127** .000	-.029* .016	.171** .000	.098** .000	-.011 .336	.134** .000	.030* .012	.144** .000	1					
Number of children Pearson's r Sig. (2-tailed)	.052** .000	-.031** .009	.027* .023	-.118** .000	-.058** .000	.016 .209	-.024* .041	.003 .801	.024* .038	.083** .000	.051** .000	-.062** .000	.059** .000	-.004 .719	-.003 .771	1				
Children living in respondent's home Pearson's r Sig. (2-tailed)	.051** .000	-.033** .006	.011 .348	-.013 .256	-.011 .345	.019 .130	-.054** .000	.006 .625	.056** .000	.032** .006	-.055** .000	-.019 .100	-.045** .000	-.050** .000	.014 .243	.156** .000	1			

	Computer ownership	Freq. of Internet use	Yearly Income (logged)	Education- Post Bachelor degree	Education- Bachelor degree	Education- Some college	Respondent- Completely retired	Respondent- Partially retired	Respondent- Not retired	Spouse- Currently working	Spouse- retired	Respondent employer-paid pension	Spouse employer-paid pension	Accumulated wealth (logged)	Resp/Spouse employer-paid health insurance	Number of children	Children living in respondent's home	Unmarried respondent	Gender (female)	Respondent- good health
Unmarried respondent Pearson's r Sig. (2-tailed)	.197** .000	.001 .949	.117** .000	.013 .251	-.004 .703	.006 .632	.040** .001	.033** .005	-.077** .000	-.358** .000	.370** .000	-.040** .001	.355** .000	.191** .000	.068** .000	.173** .000	-.012 .299	1		
Gender (female) Pearson's r Sig. (2-tailed)	-.059** .000	-.039** .001	-.184** .000	-.133** .000	-.026* .025	.015 .227	.064** .000	-.095** .000	.018 .117	-.136** .000	.126** .000	-.162** .000	.298** .000	-.127** .000	.006 .584	.060** .000	.016 .167	-.150** .000	1	
Respondent- good health Pearson's r Sig. (2-tailed)	.097** .000	.031** .009	.079** .000	.053** .000	.052** .000	.010 .406	-.092** .000	.029* .015	.077** .000	.015 .183	.033** .004	.043** .000	.050** .000	.145** .000	.069** .000	.006 .614	-.039** .001	.067** .000	.005 .682	1
Spouse- good health Pearson's r Sig. (2-tailed)	.191** .000	.027** .022	.119** .000	.037** .002	.033** .005	.012 .344	.025** .033	.026** .026	-.053** .000	-.344** .000	.256** .000	-.020 .083	.256** .000	.239** .000	.084** .000	.117** .000	-.023 .055	.719** .000	-.144** .000	.117** .000

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

#### 4.1. Predicting Owning a Computer

Table 4 presents the results of regressing computer ownership on Cumulative Inequality variables and Intergenerational Solidarity variables. The statistics presented are odds ratios and confidence intervals. Recall that I ran three models; Model 1 tests the twelve theory-based variables without controls; Model 2 adds the control variables. The third model limits the sample to retirees only. All three models met the criteria for goodness-of-fit ( $\chi^2$ ). The comparisons and interpretations of these models will either support or refute the proposed hypotheses. Additionally, all three models resulted in similar statistical significance or non-significance ( $R^2 = .134, .137$  and  $.133$ , respectively).

In Model 1, total family income is positively and significantly associated with owning a computer. Each one percent increase in logged income is associated with an 11% increase in the probability of owning a computer. Educational attainment also is significantly associated with computer ownership; respondents who have attained a post-Bachelor degree are five times as likely to own a computer as high school graduates on average, while college graduates and those with some college are 2.8 times and 1.96 times as likely to own a computer compared to high school graduates.

Neither respondents' retirement status, nor their spouses', is significantly associated with computer ownership. However, having an employer-paid pension plan, either the respondent's or the spouse's, is significantly associated with computer ownership. Respondents who receive an employer-paid pension have a 22% greater probability of owning a computer than respondents who do not receive an employer-paid pension. Respondents whose spouse receives an employer-paid pension have a 22% greater probability of owning a computer than respondents whose spouse does not receive an employer-paid pension.

Wealth accumulation is significantly associated with computer ownership. Each one percent increase in logged accumulated wealth is associated with a 19% increase in the probability of owning a computer.

Employer-paid health insurance is significantly associated with computer ownership. Respondents who receive employer-paid health insurance have a 21% greater probability of owning a computer than respondents who do not receive employer-paid health insurance.

Having children is significantly associated with computer ownership. Each additional child is associated with a 10% increase in the probability of owning a computer. However, having an adult child living in the respondent's home is not significantly associated with computer ownership.

Marital status is significantly associated with computer ownership. Respondents who are unmarried have a 100% increase in the probability of owning a computer than respondents who are married.

In Model 2, which adds controls for gender and self-reported health status, we see little change from model 1, except for retirement status. Each one percent increase in logged income is associated with a 12% increase in the probability of owning a computer. Older adults who attained a post-Bachelor's degree are still 4.93 times more likely to own a computer as high school graduates on average, while college graduates and those with some college are 2.73 times and 1.95 times more likely to own a computer compared to high school graduates. Completely retired older adults have an 18% increased probability of owning a computer compared to older adults who are partially retired. Yet, retirement status is not significantly associated with computer ownership. The respondents' spouses' retirement status on computer ownership also is not statistically significant. Respondents who receive an employer-paid pension (but not

spouse's retirement plan) have a 21% increase in the probability of owning a computer than respondents who do not receive an employer-paid pension. Each one percent increase in logged accumulated wealth is associated with a 17% increase in the probability of owning a computer. Respondents who receive employer-paid health insurance have a 20% increase in the probability of owning a computer than respondents who do not receive employer-paid health insurance. Each additional child is associated with a 10% increase in the probability of owning a computer. Respondents who are unmarried (variable= nospouse) have a 70% increase in the probability of owning a computer than respondents who are married.

In Model 3, which limits the sample to those completely retired, there are no major differences in predictors on computer ownership compared to all older adults. Each one percent increase in logged income is associated with a 9% increase in the probability of owning a computer. Older adults who attained a post-Bachelor's degree are 5.09 times as likely to own a computer as high school graduates on average, while college graduates and those with some college are 2.69 times and 1.82 times as likely to own a computer compared to high school graduates. Retired respondents who receive an employer-paid pension have a 26% increase in the probability of owning a computer than respondents who are not retired. Retired respondents with accumulated wealth have a 19% increase in the probability of owning a computer than respondents who are not retired. Retired older adults have a 26% increase in the probability of owning a computer when they receive employer-paid health insurance compared to those without employer-paid health insurance. Each additional child is associated with an 11% increase in the probability of owning a computer. Retired respondents who are not married have a 42% increase in the probability of owning a computer compared to those who are married.



## 4.2. Summary

Based on the Cumulative Inequality theory, the hypotheses concerning older adults' socioeconomic status and computer ownership were significantly supported. The findings support that older adults (retired or not) who receive higher incomes are more likely to own a computer than older adults who receive lower incomes. Older adults (retired or not) who have higher educational attainment are more likely to own a computer than older adults who have a high school education. Older adults who are completely retired are more likely to own a computer than older adults who are partially retired or not retired at all only when controlling for the respondents gender and the self-reported health status of the respondent and their spouse. Older adults (retired or not) who receive an employer-paid pension are more likely to own a computer than older adults who do not receive an employer-paid pension. Older adults (retired or not) who have more accumulated wealth are more likely to own a computer than older adults who have less accumulated wealth. Older adults (retired or not) who have employer-paid health insurance are more likely to own a computer than older adults who do not have employer-paid health insurance.

Based on the Intergenerational Solidarity theory, the hypotheses concerning older adults' familial environments and computer ownership were not supported. The findings did not support that older adults (retired or not) who have children are more likely to own a computer than older adults who do not have children. Additionally, children living in the respondents' home had no significant effect on older adults' computer ownership.

### **4.3. Predicting Time Spent on the Internet Per Week**

Next, I turn to examining predictors of time spent per week on the Internet for those who own a computer. The results are presented in Table 5. I used the same three models as I presented in Table 4.

In Model 1, older adults who attained a post-graduate education spend, on average, 108 more minutes on the Internet per week than did high school graduates. Older adults who attained a Bachelor's degree spend 76 more minutes per week on the Internet than did high school graduates, but those with some college educational attainment are not statistically different from high school graduates. Respondents who are completely retired spend 105 more minutes per week on the Internet than respondents who are not retired at all. Respondents who are partially retired spend 83 more minutes on the Internet per week than respondents who are not retired at all. Respondents' spouses' retirement status on Internet usage per week is not statistically associated with time spend on the Internet. Respondents who receive an employer-paid pension spend 26 fewer minutes per week on the Internet per week than respondents who do not receive an employer-paid pension. Respondents who are unmarried spend 96 fewer minutes on the Internet per week than respondents who are married.

In Model 2, where controls for gender and self-reported health statuses are added to model 1, we find no substantive changes in the estimated relationships between the twelve independent variables and minutes per week on the Internet.

In Model 3, which limits the sample to those who are retired, there are some interesting differences compared to the full sample. For retired older adults who own a computer, income is not associated with the amount of time spent on the Internet. Educational attainment has a stronger effect for the retired population. Retired older adults who attained a post-graduate

education spend, on average, 122 more minutes per week on the Internet than do high school graduates. Older adults who attained a Bachelor's degree spend 81 more minutes per week than high school graduates, on average. The effects of the respondents' spouses' retirement status on Internet usage per week is not statistically significant. The effect of retired respondents who receive an employer-paid pension on Internet usage per week is not statistically significant. Employer-paid pension plans owned by the participant and spouse switch in terms of significance. The results show that the effects of the retired respondents' spouse who receives an employer-paid pension on Internet usage per week is statistically significant ( $p < .05$ ). Retired respondents whose spouse receives an employer-paid pension spends 34 fewer minutes per week on the Internet than respondents who are not retired. The results show that the effects of retired respondents' accumulated wealth on the amount of time spent on the Internet per week is not statistically significant. The effect of retired respondents' employer-paid health insurance on the amount of time spent on the Internet per week is not statistically significant. Retired respondents' children on the amount of time spent on the Internet per week is not statistically significant, and retired respondents' children living in the respondents' home on Internet usage per week is not statistically significant. The effect of retired respondents' marital status on Internet usage per week is statistically significant ( $p < .001$ ). Retired respondents who are unmarried spend 121 fewer minutes on the Internet per week than respondents who are married.

#### **4.4. Summary**

Based on the Cumulative Inequality theory, two of the hypotheses (H1b, H4b) concerning older adults' socioeconomic status and time spent per week on the Internet were supported. The findings support that older adults (retired or not) who attain a Bachelor's degree or higher spend more time per week on the Internet than those with a high school degree or some college. Older adults completely or partially retired spend more time per week on the Internet than older adults who are not retired. However, four of the Cumulative Inequality hypotheses (H2b, H3b, H5b, 6b) were not supported. Older adults who receive an employer-paid pension spend less time per week on the Internet than older adults who do not receive an employer-paid pension, and older adults (retired or not) income, accumulated wealth, and employer-paid health insurance had no significant effect on the amount of time per week spent on the Internet.

Based on the Intergenerational Solidarity theory, neither hypotheses concerning older adults' familial environments and minutes per week on the Internet were supported. Older adults (retired or not) children or children living in their home had no significant effect on the amount of time per week spent on the Internet.

**Table 4- Logistic Regression of Owning a Computer for Older Adults  
Odds Ratios and (Confidence Intervals)**

Independent Variables	Model 1	Model 2	Model 3 □
Constant	-3.86	-4.11	-3.83
Yearly Income (logged)- LOGINC	1.11*** (1.06- 1.17)	1.12*** (1.06- 1.18)	1.09** (1.02- 1.16)
Education- Post Bachelor degree- EDU1PSTGRD	5.00*** (3.92-6.37)	4.93*** (3.87- 6.29)	5.09*** (3.74- 6.92)
Education- Bachelor degree- EDU2B	2.80*** (2.29- 3.41)	2.73*** (2.24- 3.34)	2.69*** (2.12- 3.42)
Education- Some college- EDU3SMECLG	1.96*** (1.50- 2.57)	1.95*** (1.49- 2.56)	1.82*** (1.31- 2.51)
Respondent- Completely retired- RTR1CRE	1.14 (.98- 1.34)	1.18* (1.01- 1.38)	.99 (.84- 1.16)
Respondent- Partially retired- RTR2PRE	1.16 (.97- 1.38)	1.18 (.99- 1.41)	
Spouse- Currently working- WF1CWSP	1.18 (.96- 1.45)	1.11 (.90- 1.37)	1.06 (.82- 1.36)
Spouse- retired- WF2RTSP	1.18 (.96- 1.46)	1.12 (.91- 1.39)	1.12 (.88- 1.42)
Respondent employer-paid pension- PENRE	1.22** (1.07- 1.38)	1.21** (1.06- 1.38)	1.26** (1.08- 1.46)
Spouse employer-paid pension- PENSP	1.22* (1.04- 1.43)	1.17 (.99- 1.39)	1.17 (.96- 1.41)
Accumulated wealth (logged)- WEALTH	1.19*** (1.14- 1.25)	1.17*** (1.12- 1.23)	1.19*** (1.12- 1.26)
Respondent/Spouse employer-paid health insurance- emphealth	1.21** (1.06- 1.37)	1.20** (1.05- 1.36)	1.26** (1.09- 1.46)
Number of children- CHLDRN	1.10*** (1.05- 1.14)	1.10*** (1.05- 1.14)	1.11*** (1.06- 1.16)
Children living in respondent's home- CHLDLIV	.941 (.737- 1.20)	.95 (.75- 1.22)	.84 (.62- 1.13)
Unmarried respondent- Nospouse	2.00*** (1.62- 2.48)	1.70*** (1.32- 2.18)	1.42* (1.06- 1.90)
<b>Control Variables</b>			
Gender- female		1.06 (.92- 1.22)	1.04 (.89- 1.23)
Respondent- good health- goodhealthRE		1.45*** (1.19- 1.76)	1.49*** (1.20- 1.85)
Spouse- good health- goodhealthSP		1.33** (1.11- 1.59)	1.45*** (1.18- 1.78)
N	6051	6051	4471
R-square	.134	.137	.133
Chi- square (goodness-of-fit)	.757	.236	.705

\* p<.05 \*\* p<.01 \*\*\* p<.001 Chi- square> .05

□ Data is limited to retiree's only

Note: Reference categories: graduate- high school degree only, graduate- not retired, spouse- not working/not retired, graduate- no employer-paid pension, spouse- no employer-paid pension, graduate/spouse- no employer-paid health insurance, graduate- no children living in graduate's home, and graduate- married.

**Table 5- Ordinary Least Squares Regression of Frequency of Internet Use by Older Adults (Unstandardized Coefficients: B (Standard Error))**

<b>Independent Variables</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3 (retiree's only)</b>
constant	159.55** (56.50)	171.05* 61.00	232.80** (72.21)
Yearly Income (logged)- LOGINC	8.41 (4.91)	8.40 (4.92)	7.79 (6.14)
Education- Post Bachelor degree- EDU1PSTGRD	107.98*** (15.01)	107.80*** (15.12)	122.36*** (18.43)
Education- Bachelor degree- EDU2B	75.66*** (15.05)	75.47*** (15.11)	81.33*** (18.12)
Education- Some college- EDU3SMECLG	22.60 (22.38)	22.68 22.39	22.43 (27.73)
Respondent- Completely retired- RTR1CRE	105.36*** (14.12)	104.18*** (14.20)	
Respondent- Partially retired- RTR2PRE	82.77*** (15.67)	82.51*** 15.74	-23.83 (14.52)
Spouse- Currently working- WF1CWSP	-12.57 (17.59)	-15.16 (17.91)	-21.43 (21.80)
Spouse- retired- WF2RTSP	-9.00 (18.04)	-10.65 (18.22)	-8.80 (21.02)
Respondent employer-paid pension- PENRE	-25.85* (11.26)	-25.55* (11.40)	-21.96 (13.66)
Spouse employer-paid pension- PENSP	-21.15 (13.23)	-21.10 (14.17)	-34.33* (16.40)
Accumulated wealth (logged)- WEALTH	3.83 (4.53)	3.69 (4.57)	6.35 5.69
Respondent/Spouse employer-paid health insurance- emphealth	-2.09 (11.27)	-2.24 (11.30)	11.36 (13.29)
Number of children- CHLDRN	-4.78 3.61	-4.74 (3.62)	-3.76 (4.38)
Children living in respondent's home- CHLDLIV	38.09 (21.68)	37.95 (21.70)	38.87 (28.19)
nospouse	-96.10*** (20.66)	-106.21*** (24.56)	-120.85*** (29.43)
<b>Control Variables</b>			
Gender- female		.55 (12.56)	-3.30 (14.90)
Respondent- good health- goodhealthRE		-10.69 (21.03)	3.72 (23.85)
Spouse- good health- goodhealthSP		14.73 (16.93)	25.49 (20.33)
N	4380	4380	3255
adjusted R <sup>2</sup>	.043	.043	.042

\* p<.05 \*\* p<.01 \*\*\* p<.001 Chi-square > .05

□ Data is limited to retiree's only

Note: Reference categories: graduate- high school degree only, graduate- not retired, spouse- not working/not retired, graduate- no employer-paid pension, spouse- no employer-paid pension, graduate/spouse- no employer-paid health insurance, graduate- no children living in graduate's home, and graduate- married.

## CHAPTER 5: DISCUSSION

The purpose of the this study was to find out if older adults, who are embarking upon or living within the retirement phase of their life, have the financial stability to achieve computer ownership and spend time using the Internet in order to remain an active member in today's technologically driven society. This study has considered major factors that can create barriers preventing older adults' acquisition of computer technology, which ultimately leads to prohibiting their active participation and staying connected in today's online world.

Data from the 2004 Wisconsin Longitudinal Study (WLS) phone survey was most useful for this study in that it provided valuable insight into the lives of older adults who are living near or within the retirement phase of their life. The WLS data provided information about older adults' socioeconomic status and major factors that affect their status, such as income, education, retirement status, employer-paid pension, accumulated wealth, and employer-paid health insurance. The data also provided valuable information concerning older adults' familial environment and major factors that might affect their financial stability before or after their retirement.

Cumulative Inequality Theory is a useful framework in this study because it provides further understanding about how older adults' socioeconomic status affects their computer ownership and Internet usage. The theory suggests that older adults with more financial stability than others have better access to computer and Internet technology, which would ultimately provide a pathway towards technological connectedness. A bulletin poll conducted by AARP found that respondents whose income was greater than \$25,000 were more likely to own and use a computer at home (Keenan, 2009). Therefore, this study finding provides support that, as

household income increases, respondents are more likely own a computer and spend more time per week using the Internet. I found a positive and significant association between income and computer ownership: as income increased the probability of computer ownership increased. Furthermore, previous literature reveals that cost was one of the biggest reasons that influenced if people were connected or were not connected (Lenhart, 2003). I unexpectedly found the relationship between income and time spent per week using the Internet was not significant.

Accumulated wealth during older adults' working years can be used later as a resource for consumption as they continue to age (Lee, 2003). When people are planning for the retirement phase of their life, many people desire to continue the same standard of living they had when they were working in the paid work force (Purcell, 2009). I expected to find as older adults' accumulated wealth increased, they would be more likely to own a computer, as well as, spend more time per week using the Internet. I found a positive, significant relationship between older adults' computer ownership and accumulated wealth. I unexpectedly found that there was not a significant relationship between older adults' accumulated wealth and the time they spend per week using the Internet. One reason that might explain why I found no association between income and accumulated wealth and Internet usage might be because the cost of Internet service has dropped over time. In the last two years, the cost of Internet service dropped substantially in the rich, developed countries in the world (Tan, 2011). Although the substantial drop in cost does not include the time frame of the 2004 WLS data collection, it still might suggest that in previous years there may have been a more steady decline in cost since the inception of the Internet prior to the substantial drop in cost. Additionally, older adults' might have the income and accumulated wealth to participate in other leisure activities.



Educational attainment is an important factor in determining a person's socioeconomic status throughout their life course. Additionally, the higher the education level an individual achieves, the more likely it is that they will accumulate more wealth than those who achieve less education (Tachivanski, 1986). My findings also support the importance of educational attainment and its relationship to computer ownership and time spent per week using the Internet. Although previous research found that respondents who used computer technology yet did not use the Internet were more likely to be those respondents who were less educated (DiMaggio, 2008), this study was unable to substantiate this finding because the respondents in the study sample were all high school graduates. However, in my findings I was able to account for having higher education levels versus having lower education levels. I expected and found that older adults who have attained higher education are more likely to own a computer and spend more time per week using the Internet.

For older adults, previous research has shown that as people begin to receive a retirement pension, they are more likely to accumulate a larger amount of wealth (Tachibanaki, 1986). Therefore, I expected to find older adults who received an employer-paid pension would be more likely to own a computer and spend more time per week using the Internet. I found positive, significant support for the relationship between employer-paid pension and computer ownership. However, I found that older adults who receive an employer-paid pension are less likely to spend more time per week using the Internet. This finding might be explained by some older adults' resistance to spend time on a computer and the Internet because they consider it to be a waste of time due to their strong work ethic (Buse, 2009; Richardson et al., 2005). Additionally, older adults who have the ability to afford leisure time during their retirement may not want to spend time confined in front of a computer. They may prefer traveling and enjoying other activities

outside their home. For many older adults, computer and Internet technology could just be a tool to be used for a brief period of time instead of a tool that is important to maintain their lifestyle.

Intergenerational Solidarity Theory is also a useful framework in this study because it provides further understanding about how older adults' familial factors affect their computer ownership and Internet usage. One familial factor in this study considered how an adult child living in the respondent's household might affect the older adult's financial ability to own a computer and time spent per week using the Internet. Previous research found that when it came to household chores and income brought into the household, children benefited more from the intergenerational living arrangement than their parents (Smits, 2010; Choi, 2003; Speare & Avery, 1993). I expected to find that older adults whose adult children are living in their home would be less likely to own a computer and spend less time per week using the Internet. I unexpectedly found no significant relationship between adult children living in the home and older adults' computer ownership and Internet usage. Interestingly, however, I did find a positive, significant association between older adults who have children and their computer ownership. This finding could be explained by a previous study's finding that many times the adult children of older adults will give their parents their old computer equipment when they acquire new computer equipment for themselves (Gatto, 2008; Fox, 2004; Saunder, 2004). Additionally, adult children might provide technical support and/or instruction to their parents thereby promoting computer ownership.

Furthermore, the association between older adults who have children and computer ownership can be further understood through the lens of the Intergenerational Solidarity theory in that intergenerational socialization flows upward suggesting children assist their parents in keeping them connected through computer ownership. On the other hand, one aspect of the

theory, affectual solidarity, can help explain this finding by suggesting that intergenerational socialization is flowing downward from the parent to the child because of the parents' desire to stay connected to their children. Older adults with children may purchase computer technology because it is the child's most desired form of communication or the child(ren) lives a long distance from their parents. Given that previous research suggests that children benefit more from the living arrangements with their parents when considering income (Smits, 2010; Choi, 2003; Speare & Avery, 1993), older adults' might purchase a computer for the household for the mutual benefit of the parent, child, and/or grandchild living in their household.

### **5.1. Limitations**

One limitation for this study is the minimal racial diversity of participants. Approximately 99.3 percent of the participants are non-Hispanic white. There are only a handful, .7 percent, of participants who are minority (African Americans, Hispanic, Asian, etc.). Although the sample size is large, this limitation would prevent generalization to the population because minorities are not adequately represented.

Also, a limitation that was applicable for my study was the limited public access to certain variables. For example, it might have been meaningful to include the variable concerning the distance of a selected child into my research. This variable might have given further significant insight into why older adults own a computer and possibly spend more time per week using the Internet if the child lived far away from the participant and computer technology met a communication need. However, public access of this variable did not provide any specific information about the distance between the parent(s) and their selected child, the information was only accessible through the private data. Furthermore, given that I would only have this

information on a single child and not all children might mean that I would still have no significant findings.

Another limitation of the study was the time frame in which the data were collected. Data collection began in 2003 and concluded in 2005. Since 2005, computer technology has changed and advanced with numerous innovations in a short period of time. Given that technology by its nature changes at such a fast-pace, often accompanied by a reduction in cost and an increase in affordability of older technology, it is difficult to maintain a consistent state of reliability for very long when you consider the amount of time it takes to collect and analyze data and publish the findings. However, there is strength in cumulative research studies concerning the technological world we live in that they can build upon each other to reveal any pattern of social inequalities.

## **5.2. Conclusion**

Today, computer and Internet technology has permeated our society. The Internet is beneficial for older adults in that it provides a way to stay in touch with people who live far away, potentially increased communication with their children and grandchildren, provide increased positive feelings about their social support system, and aid in helping them feel physically and mentally better (Cody, 1999). Although this study focused on the older adult population, it investigated further within this particular cohort with the intention to provide a narrower lens by which we can see how older adults who are in the retirement phase of their life can be affected. One strength of this study is that it has provided significant results that bring to the forefront major factors related to how older adults' socioeconomic status creates an access barrier to full participation in the technological world. The results showed that the major access

barrier is not related to Internet usage. The major access barrier is computer ownership for older adults.

Given that this study showed a major barrier to computer ownership, Cumulative Inequality theory provided relevant insight into how major factors of the participant's socioeconomic status over time created an obstacle later in life which prevented their ability to fully participate, unlike younger cohorts, in our technologically driven society. As indicated in this study, older adults' education, income, accumulated wealth, and employer-paid pension are important determinants for computer ownership. Educational attainment is an important determinant of time spent per week using the Internet. Furthermore, when considering the study sample in this study, the racial and socioeconomic makeup of participants are mostly white, privileged participants. Therefore, if mostly white, privileged older adults are suffering from cumulative socioeconomic barriers imagine the insurmountable barriers minority, underprivileged older adults might face.

Even though this study has substantiated the effects of cumulative inequality and computer ownership, the Intergenerational Solidarity theory provided some additional insight into how older adults' familial environment can help to offset the impact of older adults' inability to own a computer. However, consideration must continue to be given to the fact that this study sample consists of more privileged participants who are more than likely receiving support from children who might be more privileged. Given that Intergenerational Solidarity helped to explain the influence that children have on their parents' computer ownership, it did not help to explain the amount of time their parents spent per week using the Internet.

For this study, the Cumulative Inequality theory was the better theory to help explain and understand how affordability can be one obstacle older adults might face in acquiring computer technology, especially as they enter or reside within the retirement phase of life. The Intergenerational Solidarity theory explained very little regarding older adults' financial ability to own a computer. Although the Cumulative Inequality and Intergenerational Solidarity theories provided appropriate frameworks for this study, one suggested modification would be for consideration to be given to the aging population across societies and how social change due to technology can create obstacles not only for the current older adult population but also younger generations who will one day become older adults. Technology is becoming a vital necessity to the well-being of many people so that they remain connected and fully participate in the society in which they live.

Given that our society has changed in the way we communicate, policy implications should focus on making sure our older adults, especially those retired, can afford to connect in today's technological connectedness. Policy implications should focus on making computer technology more affordable for older adults who do not have the financial resources to acquire the technology due to cumulative inequality throughout their life course. For example, today, many higher education institutions offer free or reduced-cost classes for older adults (Brandon, 2009). However, one barrier that might prevent accessibility for older adults to receive a free or reduced-cost higher education is a mobility issue related to the aging process. The same type of barrier should be considered when providing older adults with access to computer and Internet technology. Although there are many social institutions, such as public libraries, common areas in retirement complexes, that provide public access to computers and the Internet, mobility issues and access availability should be major considerations for older adults. For aging policy, I

would propose the same type of social policy that higher educational institutions offer (free or reduced-cost) to be implemented for older adults in their acquisition of computer and Internet technology. The policy would provide either free or a substantial discount depending on an older adult's income. Additionally, when assisting in the acquisition of computer and Internet technology for older adults, placing the technology within their home would provide more convenience, as well as, continuous accessibility.

Another avenue by which older adults might receive assistance in computer ownership would be through public and private donations. As mentioned earlier, computer technology advances at a very rapid rate. Alongside the rapid advancement of technology are people who keep pace in acquiring the newest, fastest, often lighter and smaller, computer technology. Creating a charitable avenue for purchasers of newer technology to donate or receive a monetary discount on their purchase of newer technology when they bring in their older technology could also provide older adults free or affordable computer technology in their home. For example, sometimes a retailer will provide a discount when a customer brings in older equipment to purchase newer equipment. In turn, the retailer bares the cost for any necessary repairs to the used equipment for charitable donation. When considering ways to provide affordable computer technology to older adults, social policy, public and private donations are viable ways we can assist our older adult population in staying connected.

Future research is another way our society can help our older adult population regarding computer ownership. Future research has the potential to bring beneficial awareness and focus that can lead to greater service to the older adults who are experiencing a disconnection in today's technological society. One suggestion for future studies would be to consider older adults who are experiencing limitations in mobility. Older adults, retired or not, who have issues

with mobility could experience additional barriers regarding computer ownership and would benefit greatly by the convenience and ease of personally owning a computer located within their home. Another suggestion for future research is to conduct similar analyses regarding major factors of socioeconomic status and major factors of familial environment with a more racially diverse population of participants, something this study was unable to analyze due to the racial composition of the participants. Future research studies can offer beneficial results to the field of aging and contribute to the field of sociology by finding ways to lessen the intersectional impact of socioeconomic inequalities throughout the life course and technological social change. Any significant discovery in future studies can offer older adults a technologically brighter future and help break down any barrier that prevents older adults' ability to own computer technology, have access to internet technology, and be an active participant in the online world in the same way the majority of people stay connected, communicate with others, and seek knowledge in today's society.



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