

PSYCHOSOCIAL BARRIERS  
TO INTERNET USE  
AMONG OLDER ADULTS

by

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## ABSTRACT

The perspectives of a small network of non-Internet adopting older adults were explored. A general inductive approach illuminated a complex social system where both psychological and social factors contributed and influenced the barriers to non-use of the Internet. The researcher, using a qualitative design and purposive sampling, interviewed 15 older adults 65-87, who were mainly white, protestant, from a county in the southeastern area of the U.S. The general inductive approach and structural coding were used to analyze the qualitative data to identify themes in the text data that were related to the research objectives. Older adults were asked to elaborate on the main reasons for non-use, delve into the factors contributing to their fears and concerns, and reflect on their social network experiences that either provided support or hindered their interest in Internet adoption.

The findings illuminated reticent older adult participants with vacillating levels of interest and reasons for non-adoption that were influenced by co-occurring psychological and social factors. While some support was found regarding the positive influence of social networks, direct and indirect discouragement was primarily found within the social networks of older non-users, which created a barrier to adoption. Serendipitous findings suggested that some participants were in multiple stages of Rogers's Diffusion of Innovations theory suggesting that the ubiquitous nature of Internet-based mobile technology and the ever-changing landscape of technology products hindered decision-making.

## DEDICATION

This research is dedicated to my mother Rita who is a resilient and empowered woman ahead of her time and to my children Jack and Sophia who are bright and beautiful.

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## CONTENTS

|                            |     |
|----------------------------|-----|
| ABSTRACT .....             | ii  |
| DEDICATION .....           | iii |
| ACKNOWLEDGEMENTS .....     | iv  |
| 1. INTRODUCTION .....      | 1   |
| 2. LITERATURE REVIEW ..... | 3   |
| 3. METHODOLOGY .....       | 15  |
| 4. RESULTS .....           | 30  |
| 5. DISCUSSION .....        | 56  |
| REFERENCES .....           | 84  |
| APPENDIX .....             | 91  |

## CHAPTER 1

### INTRODUCTION

The focus of this dissertation started with a curiosity stimulated through my group clinical practice experience working with older adults, and my research interests involving the phenomenon of the perceived barriers to Internet usage. These barriers contribute to the low-rate of the adoption of the Internet by older adults, which places them at an increasing disadvantage as information is being exchanged more frequently via the Internet, thus limiting communication opportunities (Becker, Crandall, Fisher, Kinney, Landry, & Rocha, 2010; Gandy, 2010). The research literature, though, is deficient in that these barriers to Internet use are typically presented as simple categorical responses. In one national research study of older adults, the main reason cited for not using the Internet was a “lack of interest” (Smith, 2010 a) . Another study cited cost, a lack of knowledge, and a lack of perceived need as the main reasons provided for not using the Internet (Mann, Belchior, Tomita, & Kemp, 2005). Yet, individuals exist within a complex social system where psychological and social forces coalesce, both influencing and shaping behavior.

Psychological barriers such as computer anxiety and a lack of self-efficacy have also been cited as main barriers to Internet use, along with cognitive factors (Gatto, & Tak., 2008; Johnson & Kent, 2007). While psychological barriers persist, a social area of interest is the role of ongoing support from others within an older adult’s social network (Fox, 2006; Hale, Cotten, Drentea, & Goldner, 2010). A social network consisting of computer-literate adult children,

grandchildren, and friends was found to be a critical factor in Internet adoption (Agarwal, Animesh, & Prasad, 2009; Gatto & Tak, 2008; Madden, 2010b; Tak & Hong, 2005). The research suggests that both psychological and social factors affect Internet use. Yet, limited research exists with regard to in-depth interviews, focusing on individuals' voices and concerns. The research is limited also in examining the influence of both psychological and social factors on the perceived barriers to Internet use among older adults. This new knowledge may contribute to establishing more effective outreach programs that empower older adults to adopt Internet use, thereby enhancing the quality of their lives

### **Aims of the Dissertation**

The aims of this dissertation are to explore the perceptions behind stated barriers to Internet use among older adults in a rural area in the southeastern US, and to contribute to the age-related Internet adoption literature. Here, the contextual underpinnings of a stated lack of interest, past and current influence on fears and concerns, and the direct and indirect influences of social networks on Internet adoption were explored.

### **Statement of the Problem**

The study seeks to illuminate the perceptions of non-Internet adopting adults over the age of 64, residing in a rural area in the southeastern United States, regarding the psychosocial barriers to Internet Use.

The following research questions guide the study:

1. What do older adults mean when they express a "lack of interest" in using the Internet?
2. What underlying fears and concerns do older adults have related to Internet use?
3. In what ways do members of older adults' social networks support or hinder their Internet use?

## CHAPTER 2

### LITERATURE REVIEW

#### **Longevity and the Growing Elderly Population**

Longevity involves a variety of variables such as medical advances, technology, health promotion, and social programs. Longevity increasingly becomes important because the percentage of the 65 and over population in the United States (U.S.) increased from 12.4% in 2000 to 13.0% in 2010 (U.S. Census Bureau, 2010). This percentage is projected to double between 2012 and 2060, making this growth in longevity a time-sensitive concern (U.S. Census Bureau, 2010). As of 2011 the first of the baby-boomers, who make up 34% of the total U.S. population, reached the age of 65 (Zickuhr, 2010). This boom in longevity has significant social consequences in terms of American society and its trends towards increased social isolation, as noted below.

#### **Trends toward Social Isolation**

Three social indicators point to increasing social isolation in the United States: A reduction in the number and diversity of confidants within social networks, a decrease in civic participation, and an increase in the number of individuals living alone. Research regarding these indicators is discussed below.

Research addressing the indicators of increasing social isolation has documented a decrease in the number of confidants within individual social networks (Brashears, 2011; Hampton, Sessions, & Her, 2011; McPherson, Smith-Lovin, & Brashears, 2006). A decrease in

the number of confidants reflects a decreasing number of available sources of social support within a broader social context (Fleury, Keller, & Murdaugh, 2000; Newton et al., 2008) . A diverse social network consisting of both strong and weak ties was found to be a key contributor to the quality of life of older adults (Ajrouch, Blandon, & Antonucci, 2005; Granovetter, 1973).

In addition to a change in the composition of social networks, evidence suggests that civic participation has decreased. Civic participation supports social exchange and the building of social bonds between diverse socioeconomic demographics that unite to support a common good reflected in the formation of civic organizations (Putnam, 2000; Skocpol, 2002). Robert Putnam first compiled his research on this decreasing level of social and civic connections in his book, *Bowling Alone* (2000). Putnam gathered an array of national social-trend surveys and statistical measures finding a steady decrease in social connections. Putnam (2000) examined a range from formal civic and community connections to informal connections among family and friends. He found a decrease in formal civic and community connections through various measures, such as the decreasing level of participation in the Parent Teachers Association (PTA), which dropped from 50 per 100 families to 20 per 100 families from the 1960's to the early 1980's (Putnam, 2000). This example reflects a trend in decreasing civic participation, which also suggests a shift in traditional social bonds.

Putnam asserted that traditional social bonds were unraveling, thus producing a higher risk for social isolation. This steady decline in social bonds is demonstrated in the 2013 Current Population Survey (CPS) conducted by the U.S. Census Bureau for the Bureau of Labor Statistics. This survey evidences a decrease in civic, political, professional, and international organizational group affiliations, dropping from 7% in 2004 to 5.5% in 2013 (Bureau of Labor Statistics, 2012). In addition, follow-up longitudinal research on decreased close-tie networks

concludes that individuals continue to be at risk for “social dislocations,” calling for more research in social isolation (Brashears, 2011). Hampton, Goulet, Raine and Purcell (2011) examined the growing concern that Internet-based social media may be influencing this decrease in close-tie networks, concluding that Internet use resulted in an increased size and diversity of the social networks but also found a decrease in close-tie networks.

While a shift in traditional social networks appears to be occurring, so is a shift in the percentage of the older adults who live alone. Currently 15% of 65 to 74 year olds live alone, as do 21% of the 75 and older population (U.S. Census, 2010). A new trend, however, is emerging as the baby boomer population continues to age into the 65 and older category. The percentage of 45 to 64 year old baby boomers living alone is increasing dramatically from 24% in 1990 to 29% in 2000 to 36% in 2010 (U.S. Census, 2010). Living alone has been associated with a higher risk for social isolation (Elliott, Painter, & Hudson, 2009; Russell & Taylor, 2009). Social isolation places the individual at risk for decreased cognitive function (Shankar, Hamer, McMunn, & Steptoe, 2013). Older adults living alone with a physical disability have additional instrumental risk for social isolation (Janke, Nimrod, & Kleiber, 2008; Paúl, Ribeiro, & Santos, 2010; Russell & Taylor, 2009). For example, older adults living alone with the same fall risks as other older adults living with someone were less likely to engage in social activity related to their fear of falling (Elliott et al., 2009). According to Taylor, & Hodapp, (2012), older adults living alone were less likely than those living with someone to drive a car (57% vs. 71%) and volunteer in their community (47% vs. 56%), thus limiting the range of opportunities for healthy socialization.

Several factors influence this trend towards social isolation within the older adult population. Advances in health and economic support programs (such as Medicare and Social Security Pensions) provided the opportunity for many older adults to remain living independently beyond their working years, but this phenomenon is also accompanied by age-related losses (Karger & Stoesz, 2010). Along with age-related losses come changes in support systems, changes in the economic landscape and innovations in mass transportation. Communication technology spurred mobility, transforming geographically-local social networks to geographically-distant social networks (Boase, Horrigan, Wellman, & Rainie, 2006; Hale, Cotton, Drentea, & Goldner, 2010). While some may view these advances as gains, Maslow (1954) warned about the dangers of mobility within a community and asserted that it supported the growth of social isolation.

Just as mainstream society may be trending toward social isolation, the Internet provides an opportunity for older adults to reduce their risk for perceived social isolation by maintaining, enhancing, and building more diverse social networks (Hampton, Sessions, Her, & Rainie, 2009; Kiel, 2005; Zickuhr, 2010). Internet adoption provides the opportunity to build the number of confidants within their social network (Hampton, Goulet, Raine, & Purcell, 2011; White et al., 2002). While these are new opportunities for improving the older adults' social networks, the problem is that some older adults have not adopted this new technology.

### **Older Adults and Computer-Mediated Communication**

While the Internet provides a source of potential support for socially isolated older adults, a large percentage of the 65 and over population has not adopted Internet-based social communication. Non-adopting older adults comprise approximately 47% of the 65 and older age group compared to 3% for adults age 18-29 (Zickuhr & Madden, 2012). This non-adoption

reduces the opportunities for intergenerational communication between grandparents and grandchildren. Although the demographics that comprise the bulk of all non-adopters are those who have lower incomes and lower levels of education, attitude appears to be a more salient barrier to adoption (Fox, 2004; Horrigan, 2010; Jansen, 2010; Zickuhr, 2010). Sixty-six percent of non-adopters are described as digitally illiterate and socially distant from the Internet, and these individuals frequently see no benefit to learning the Internet (Horrigan, 2010a; Smith, 2010; Strickland & Hunt, 2005). These characteristics reflect Rogers's (2003) Laggard category of late adopters, which he describes as economically disadvantaged, cautious, and socially isolated from technology. These characteristics of the Laggard category may increase perceived risk and support a negative attitude toward adopting new technology (Fox, 2004; Horrigan & Raine, Allen, & Boyce, 2003; Kim, 2008; Tak & Hong, 2005). However, a supportive social and physical environment conducive to technology adoption (Rogers, 2003) was found to change attitudes of older adults towards learning the computer (Gatto & Tak, 2008; Kiel, 2005).

Although only about 5% of elderly non-adopters have any stated interest in learning to access the Internet (Smith, 2010a), other research demonstrates that a sizable percentage of older non-adopters have transitioned into the adoption category. This sizable percentage is noticeable within the 70 to 75 age group, as Internet adoption grew from 26% in 2005 to 45% in 2008 (Jones & Fox, 2009). One area of interest involving this conflict between attitude and adoption in the literature is the role of ongoing support from others within the older adult's social network, which may guide them towards Internet use (Fox, 2006; Hale et al., 2010). Further, a social network consisting of computer literate adult children, grandchildren, and friends urging the older adult to adopt, and lending support with the new technology was found to be a critical

motivational factor (Agarwal, Animesh, & Prasad, 2009; Gatto & Tak, 2008; Madden, 2010a; Tak & Hong, 2005).

Just as older adults are transitioning to become Internet users, one must acknowledge the physical barriers that can contribute to a reluctance of older non-adopters to explore the Internet. The hand and eye coordination needed to use a mouse or the smaller font on the screens can create a barrier for older adults (Adams, Stubbs, & Woods, 2005; Carpenter & Buday, 2007; Johnson & Kent, 2007; Mellor, Firth, & Moore, 2008). Adaptive technology, though, was found to ease the transition to adoption by providing support to older adults, through methods such as using a rolling ball on the mouse instead of a traditional clicker or providing software with larger fonts and without technical jargon (Johnson & Kent, 2007; Namazi & McClintic, 2003; Tak & Hong, 2005).

Despite the range of barriers to Internet use among older adults, it is important to remember that Internet use has grown among older adults as it has with other age groups. Some older adults have overcome the barriers they have faced and successfully use the Internet for a range of purposes. It is also encouraging that even some older adults who were once reluctant have now embraced the Internet. Once older adults adopt the Internet, they tend to make up for lost time by frequently contacting their friends and family through email, as compared to other age cohorts (Chu, Huber, Mastel-Smith, & Cesario, 2009; Fox & Rainie, 2002b; Kiel, 2005). Such findings raise hopes and underscore the importance of identifying ways to help older adults transition to Internet use. The process of how a technology disseminates through a population leading to adoption or non-adoption is delineated in Rogers's Diffusions of Innovations Theory (Rogers, 2003) and is discussed below.

## **Theoretical Framework**

**Diffusion of Innovations.** The Diffusion of Innovations Theory (Rogers, 2003) provides the foundational work cited throughout the literature delineating the process of how an idea or new technology disseminates throughout a population (Agarwal, Animesh, & Prasad, 2009). This theory originated with the study of rural sociology in 1943, becoming more generalized to recognize a broader consensus of technology use amongst researchers from various fields (Rogers, 2003). Rogers's theory provides a conceptual framework to explore how Internet technology disseminates within the 65 and over population. This theory is relevant to Internet adoption by older adults because it provides a conceptual framework of the variables involved in the transition from non-adopter to adopter of technology. The characteristics of the Laggard category reflect the characteristics of non-adopters of the Internet in terms of their less favorable attitude toward change, resistance, risk aversion, lower education, and lower income (Horrihan, 2010; Smith, 2010a). In addition, the theory delineates the critical support role of literate social network members in adoption (Gatto & Tak, 2008; Madden, 2010b; Saunders, 2004; Tak & Hong, 2005). Rogers's conceptual framework supports the exploration and formulation of empirical questions. The conceptual framework consists of five stages and five categories of adopters. The five stages are: knowledge, persuasion, decision (reject/accept), implementation, and confirmation. These five stages and categories are explained in terms of the applicability to the non-adopters.

The knowledge and persuasion stages relate to each other in that the non-adopting individual becomes aware that a new technology exists and may form a new attitude about its use. This stage applies to the majority of non-adopters who respond in surveys that they are aware of email and the Internet, but they have no interest in adopting it (Zickuhr, 2010).

Individuals in this same non-adopting group, when exposed directly to the Internet and urged by others in their network, change their attitudes toward adoption, and they reach the decision stage (Gatto & Tak, 2008). The decision stage is when the individual actively moves towards further exploration of the new technology and may move further towards the implementation stage, when the individual tests out the technology. If individuals succeed during the implementation stage, they reach the confirmation stage, in which the new adopter decides to continue to use the technology. Through this process, though, setbacks and technical difficulties may inhibit the process, increasing the importance of other network members to foster momentum (Rogers, 2003).

The five categories of adopters are Innovators, Early Adopters, Early Majority, Late Majority, and Laggards. The most applicable demographic to the study of non-adoption is the Laggard category. This Laggard Category is of empirical interest in exploring non-adoption because it reflects the recent adopters who transitioned from the non-adopting population. It would be of empirical interest to compare demographically similar populations of early, late, and non-adopters. One should visualize these categories along a downward slope in terms of the degree of risk aversion, income, education, social norms, and age, which reflect the characteristics of the last to adopt Laggard category (Rogers, 2003).

Rogers's (2003) theory also provides five steps in the decision process to accept or reject an innovation, and these steps are explained below:

- *Relative Advantage*: The benefits of the new technology relative to the old technology.
- *Compatibility*: Compatibility of the new technology with its living environment.
- *Complexity*: The perceived level of difficulty to learn the new technology.
- *Trialability*: Ability to test out the new technology.
- *Observability*: Concrete observable differences in outcomes in comparison to the old technology.

The decision-making process steps are important in informing the future exploration of non-adoption. For example, *complexity* is when an older adult with limited education or physical disabilities may feel intimidated or hesitant to engage in the process of adopting the new Internet technology (Fox, 2006; Ryu, Kim, & Lee, 2009; Johnson & Kent, 2007; Fox, 2006). Rogers's Theory further illuminates the decision-making process within the social communication system regarding the transference of ideas. Innovative members may be perceived as being so different from the norms of the group in terms of age, culture, technical expertise, and use of jargon that a communication barrier can be formed (Johnson & Kent, 2007; Namazi & McClintic, 2003; Rogers, 2003). Within diffusion theory, this dynamic falls under the area of homophily, or "the degree to which two or more individuals who interact are similar in certain attributes such as beliefs and education" (Rogers, 2003, p.19). Building rapport and identifying on a personal level with the potential adoptee has been found to be a successful approach when attempting to sell a new technology (Rogers, 2003). Hence, Rogers's theory suggests that efforts to promote Internet use among older adults might be more successful if older peer educators were involved.

Diffusion of Innovation's Theory provides a conceptual framework to inform exploratory research that underpins non-adoption. Limited empirical research exists that explores how older adults successfully transition from the non-adopter category to Laggard category, despite the barriers of low education and income (Firth & Mellor, 2009; Gatto & Tak, 2008; Hale, Cotten, Drentea, & Goldner, 2010; Horrigan, 2010; Kim, 2008). Further, we know little about true sources of reluctance among older adult non-adopters. Future explorations of these true sources may provide information leading to changes in outreach methods, positively impacting the life trajectory of non-adopting older adults and informing further inquiry into social connection.

#### Rationale

The literature establishes a consensus that only about 5% of elderly non-adopters have any stated interest in learning to access the Internet (Smith, 2010b). The common factors cited in the literature for not using the Internet are: just not interested (31%); do not have a computer (12%); technology is too expensive (10%); technology is too difficult (10%); it is a waste of time (7%); do not have access (6%); too old to learn (4%); do not want it/need it (4%); just do not know how (2%); physically unable (2 %); worried about viruses/spyware/spam (1 %); and other concerns (5%) (Zickuhr, 2010). Limited information currently exists that involves the psychosocial factors influencing these stated barriers to Internet usage in the older adult population. Delving into the experience of older current non-users may illuminate this gap and bring forth new knowledge for further inquiry.

The first knowledge gap involves the perceived barrier of "lack of interest" among older adults towards Internet use. A dichotomous "yes" or "no" does not reveal or delineate the underlying experience of an older adult's lack of interest. Roger's five stages of technology adoption may provide insight into the reasons for this lack of stated interest, such as a basic lack

of knowledge that may shift when knowledge is gained. A dichotomous response of a lack of interest does not address Roger's (2003) decision process, such as the perceived relative advantage of the new technology over the old technology, the perceived level of difficulty to learn the new technology, the perceived level of difficulty to learn the new technology, the compatibility of the new technology within their living environment, the ability to test out the new technology, or concrete observable differences in comparison to the old technology. Any of these factors may contribute to the lack of interest barrier. Therefore, the proposed study will investigate the thoughts and feelings behind older adults' stated lack of interest.

A second major knowledge gap involves the perceived role of family, friends, and service-providing staff in the decisions of older adults to adopt new technology. Many older adult non-users may be risk averse and are firmly entrenched in the norms of their social system with little exposure to the latest technology (Rogers, 2003). We need to know more about the perceptions of older adults' social networks and the ways in which social network members both support and hinder Internet use. For example, one older adult told me that she wanted to play the Internet games her grandchildren were playing. She tried to play secretly when the grandchildren were at school because she was fearful that her adult children, with whom she lives, would look down on her for wanting to play children's games. Another older adult told me she used the Internet secretly, but she was embarrassed to tell her friends because of the Internet's association with pornography. Therefore, the study will investigate the ways that the members of older adults' social networks support or hinder the older adults' Internet use.

A third knowledge gap involves anxiety towards using the Internet. One source of anxiety may be that older non-users may perceive themselves as being so different from Internet users in terms of ability and the use of technical jargon that self-esteem and confidence may inhibit adoption. A frequent complaint of older adult non-users is that they feel “stupid.” Other anxiety-related factors may be health related which inhibit learning opportunities, such as needing to frequently access a bathroom. One older adult who desperately wanted to get computer tutoring did not because the tutor was a male, and she had flatulence. Whereas studies have identified anxiety as a barrier to older adults’ Internet use, we still know little about these anxieties. In order to examine this gap in the literature, the proposed study will further investigate older adults’ anxiety about Internet use. The study will identify older adults’ perceived worries and concerns about Internet use

## CHAPTER 3

### METHODOLOGY

The purpose of this study is to illuminate the stated barriers to Internet use among adults 65 and over living in a county in the southeastern area of the U.S. Since this study involved the perceptions and experiences beyond stated categorical reasons for non-Internet adoption given in the literature, a qualitative approach was chosen (Creswell, 2003; Denzin & Lincoln, 2011; Padgett, 2008). Further, interrelated psychosocial influences were a focus of illumination requiring a flexibility that a structured interview style did not support. Thus, an open-ended, in-depth interview style was utilized while interviewing each study participant one time. The particular method applied in this research was a general inductive approach with structural coding (Saldaña, 2009; Thomas, 2006). The goals of this approach were to answer my research questions and to provide new knowledge to the field.

#### **Approach**

The general inductive approach is a qualitative research approach that involves following systematic procedures to identify patterns and themes from raw interview data. (Denzin & Lincoln, 2011; Padgett, 2008; Thomas, 2006). This approach is similar to a grounded theory approach because it involves similar techniques and procedures of coding, identifying categories, and themes. It differs from grounded theory because the ultimate goal is not to develop a theory. The goal of the general inductive approach is to provide descriptive, valid, responses to research questions. As with both grounded theory and phenomenological qualitative approaches, the

general inductive approach seeks to answer questions with depth and to illuminate underlying meaning (Creswell, 2003). The general inductive approach matched the research objective of describing and illuminating the experiences of the research participants (Thomas, 2006). At the same time, a general inductive approach allows for the exploration of pre-existing theoretical ideas (Padgett, 2008). Rogers's Diffusion of Innovations Theory (2003) informed this study. While this approach and immersion into the process allowed for the exploration of pre-existing theories, it was not limited by one theory or framework (Thomas, 2006). This approach illuminated the influence of underlying psychosocial variables relevant to Roger's Diffusion of Innovations Theory and to the Internet adoption process among this one specific group of older adults. By focusing on current non-users of the Internet, underlying psychosocial reasons regarding the decisions of some older adults to abandon or refrain from Internet use were illuminated.

While in-depth interviews from this sample provided the primary source of data, the interview transcripts were supplemented with ongoing analytical and reflective recordings and journaling, which provided a constant source for referral, reflection, and triangulation. Both audio and written records created an information map reflecting the overall process from the initial titles for coding to my thoughts on the research questions, along with applications to theoretical foundations (Padgett, 2008; Saldaña, 2012; Thomas, 2006).

**Sample.** I conducted in-depth interviews with a total of 15 adults ages 65 and over residing in a rural county in the southeastern section of the U.S. The University of Alabama Institutional Review Board (IRB) approved the research protocol prior to implementing the recruitment of the study participants. The decision to stop at 15 was reached when the responses became redundant and no new information was being contributed (Padgett, 2008). This number

also falls within the range suggested in the literature of between 5 and 30 for intensive in-depth transcripts (Rudestam & Newton, 2007).

The population of the County is 91.2% white with a 65 and older population of 16.3% (U.S. Census Bureau, 2010). I recruited the initial sample members (using the procedures described below) and successfully employed a snowball sampling method, asking interviewees to invite their friends and/or family members who met the criteria to participate. I found one unexpected benefit and one predicted benefit of conducting my study in a small homogeneous community. The unexpected benefit was that my sample's demographics ended up to be primarily educated with ample monetary means, yet they still did not adopt (as described below in the Results chapter). The literature clearly indicates that education and monetary resources are associated with Internet-adoption (Chu, Huber, Mastel-Smith, & Cesario, 2009; Cresci, Yarandi, & Morrell, 2010). Thus, I was able to explore reasons for non-adoption among a homogeneous sample of older adults for whom education and money were not the primary barriers. This was unexpected and a type of unplanned qualitative control criterion. The predicted benefit of conducting my study in a small homogeneous community is that the snowball sampling method works well in such communities (Denzin & Lincoln, 2011; Padgett, 2008). I had provided outreach services to various volunteer and community organizations in the same community. Many of the participants had seen me before but never had any formal or informal association. The familiarity contributed to the process of trust building. There was already a pre-established level of trust and cooperation among the potential study participants, and this facilitated referrals of others from within their social network (Glaser & Strauss, 1967).

To assess whether potential participants met the sample criterion of being current non-users of the Internet, I used the standard definition applied by the Pew Research Foundation over decades of national research tracking Internet adoption. The definition of non-use applies to those who say “no” to the following three questions: “Do you use the Internet, at least occasionally? Do you send or receive email, at least occasionally? Do you access the Internet on a smart cell phone, tablet, or other mobile handheld device, at least occasionally?” (Madden, 2010b; Zickuhr, 2010). An additional exclusion criterion was limited cognitive function that would inhibit the interview process, which was screened for during the initial interview (as described below). As described above, the focus on current non-users allowed for the exploration of the perceived barriers these individuals currently face as well as exploration of past attempts at adoption.

The sample consisted of primarily rural, white, older adults. There was one African American participant; the remaining participants were white. Participants ranged in age from 65 to 87 years with a mean of 76.07 years of age. Eleven were female; four were male. Six were married; nine were widowed. Seven of the participants completed high school, five had some college, and three had undergraduate degrees. All were Protestant Christians. All volunteered in their community, and none worked for pay. The sampling procedures benefited from my own social networking and rapport building.

**Procedures.** The first step in the process was to receive official authorization from the Human Resources Director of the facility. I had initiated several informal conversations with her leading up to the first step of providing an official request to the director of marketing via email. The director then notified the Director of Marketing for the hospital. I emailed the Director of Marketing and arranged to stop by her office. I stopped by her office and explained the details of

the study, reassuring her that no medical research involving patients was involved. Later in the week, I received an official email from the main office in Birmingham, which authorized the study. The Director then assisted me with the poster (see Appendix F) placement around the hospital, and provided me the names of key people in the community and hospital. Several of these contacts, in turn, had me address their volunteer organizations and explain the study. This increased the public awareness of the study. Many of the participants also volunteered with these organizations. The posters and speaking engagements served to stimulate the interest of the participants.

Participants would engage with me, sporadically asking me about the study and my background. I introduced myself to potential participants as an employee of the local hospital who is engaged in a research project through the University of Alabama, and I offered to answer any questions. I emphasized that the study was voluntary, confidential, and participants would receive a ten-dollar gift card for their participation. Then I asked participants whether they would be interested in learning more about the study. If so, I would schedule an interview in my office within the hospital or an office of their choice; this was convenient for the participants and was cleared by the facility administration.

Later in the study, a phrase “respecting” surfaced. That phrase means never to walk by a person without a friendly hello or recognition. I apparently had been “respecting” them for quite a while (even before the study), and this may have assisted in the process of recruitment by building a trust. Sporadically, people would stop and ask me about the study, and I continued to provide any details and build rapport to put them at ease. These inquiries resulted in the first interview being scheduled.

When the first interview was scheduled, it proved to be critical to the research process. The first respondent took the risk, and I received the informal nod. This beginning allowed others to schedule times, and the research participants trickled in over the next few months. The snowball sampling method really started moving after that initial interview. Before each interview, I would organize my tentative questions guide (shown below), remain flexible to exploring unexpected areas, write down random thoughts, reflect, and acknowledge any a priori expectations. I would begin the interview process by providing and describing the informed consent form required for the interviewee's participation, and I would conduct the cognitive screening (described below).

Each of these interviews took approximately one hour excluding the initial paperwork. The interviews were recorded using a digital recorder and backed up onto a portable hard drive. The digital recordings and portable hard drive were kept in my locked desk within a secured location and a locked office. During the interview, I jotted down avenues of interest for future interviews or anything beyond what the audio captures. I was keenly aware not to lose the engagement and rapport, maintaining eye contact and listening intently, as the goal was depth, and this was our first and only interview meeting. I wrote reflective notes after each interview. I transcribed each of the recordings as soon as possible as the interviews progressed. I wanted to reflect on the former interviews, and not lose the benefits of reflexivity. The questions were open-ended, allowing for follow-up and exploration of unanticipated issues identified by the participants. Study guide questions were modified as the data collection proceeded to reflect themes or questions emerging from early interviews.

**Measures.** To screen for cognitive functioning, I used the clock-drawing test, which went smoothly with a low level of stress, especially at the beginning of the interview where engagement was critical (Brodaty & Moore, 1997) (See Appendix G). The clock-drawing test has been demonstrated to be a valid test to screen for dementia (Brodaty & Moore, 1997). The test is scored on a 6-point scale, and a score of 3 or greater represents a cognitive impairment. This test was minimally invasive. All the respondents screened at an acceptable level of cognitive performance. The abbreviated interview in the event of cognitive impairment is included in the Appendix. Demographic information (shown in Table 1) was also gathered during the interview.

**Analysis.** The process of analyzing the interview data focused on coding and identifying patterns and connections among the codes. In this study, a code is a specific, meaningful section of words spoken by the participant in response to a question (Glaser & Strauss, 1967; Saldaña, 2009). The participants' words were assigned a label or "code." Codes were clustered then categorized, which helped to organize the growing number of meaningful participant responses. Analytical memos served a reminder of my reflections about the codes and the interview context. Categories were not discrete, and underlying codes could be merged or disaggregated and rearranged to create other categories. Ultimately, categories coalesced into a theme. In this study, a theme is a term that captures the essence of a variety of meaningful units comprised of participants' responses. A theme is also guided by the research questions. An ongoing process of creating, merging, and categorizing the codes moved towards the discovery of patterns in the data as codes were condensed into categories and even more abstract themes. The goal of this process was to let the codes, categories, and themes emerge, moving from the specific to the general. I was aware of the research questions, but not inhibited by them (Saldaña, 2009). My

goal was to illuminate the psychosocial variables underlying the surface categorical explanations for Internet non-adoption currently prominent in the literature.

The analysis began by reading each transcribed interview completely and making analytical notes in a journal, reflecting initial titles for coding as well as thoughts on the research questions and theory (Saldaña, 2009). The transcripts would be repeatedly read, left for a time, and read again as I made notes and reflected on the process. This process was initially conducted using a traditional hard copy method using pencils with written notes. Atlas.ti.7 (2012) was eventually used to some extent. I became aware of my own reasons for non-adoption faced with technical stress attempting to learn the system. Dragon Dictate 12.5 (2013) was also used, and it helped me to save time and stay organized. In the initial coding process, I attempted to capture the essence of the data, and I reflected in a reiterative way on the individual interviews, the codes and categories in the data, and the totality of the work. Aware that my conclusions could be hasty, I stepped back periodically and acknowledged my filter of experience.

The initial codes and analytical reflections were then re-examined as I looked for emergent patterns and themes, allowing for reorganization and the merging of codes into categories. These initial categories were then examined for connections to the questions and theory driving the research, which required further merging of categories and the emergence of new categories and themes. Some additional categories were formed in consultation with my dissertation chair when she read early drafts of my results.

**Data analysis steps.** The following outlines in more detail the steps I took to analyze the data.

*Step 1: Transcription.* The transcriptions of the interviews were all completed by me shortly after each interview was conducted. The digital recordings were translated and placed into the Word software program, and the data were stored on a portable drive that was secured within a locked desk. Manual coding and qualitative data analysis was performed using paper, pencils, and highlighters as set out in the research proposal. Since I was truly a novice, I was strictly adhering to the coding manual. In hindsight, I might have employed the use of Computer Assisted Qualitative Data Analysis Software (CAQDAS) earlier in the process. It would have made the process more organized and cut down on the plethora of analytical notes, note cards, sketches and drawings. Ultimately, after completing the coding and analysis process (described below), the transcripts were uploaded into Atlas.ti.7 (2012). I also used the Dragon Dictate 12.5 (2013) software to facilitate the process of transcription. Selections of output from Atlas Ti are in shown in Appendix D. In regards to the use of Atlas ti.7 (2012) by the novice, (Saldaña, 2009) wrote:

Trying to learn the basics of coding and qualitative data analysis simultaneously with the sometimes complex instructions and multiple functions of CAQDAS programs can be overwhelming for some if not most. Your mental energies may be more focused on the software than the data...keep in mind that the computer programs itself does not actually code the data for you. That task is still the responsibility of the researcher. The software efficiently stores, organizes, manages, and reconfigures data to enable human analytic reflection. (p. 22).

To begin coding, I first printed out the transcripts. I prepared the text for manual coding and analyses. That is, I printed the transcriptions on the left half of the page and kept the right side clear for coding and notes. I pre-coded with pencil and pens using sketchpads and 8 1/2 x 11 sheets of paper. I first used descriptive coding, a straightforward method for novices to

qualitative research. The method involved applying labels to data at a basic level. The coding was a cyclical act. Saldaña notes, “rarely is the first cycle of coding data perfectly attempted.” (Saldaña, 2009, p. 8), and this was certainly true in my case. I used a pre-coding process for the first two transcripts. The first codes were not used as a source for the second transcript. Once I derived codes from the first two transcripts, I applied the same codes to the remaining transcripts. The coding and analyses process proceeded with the continual reading and re-reading of the data, assignment of codes, and comparison of all the codes and data.

Codes of the first two interviews totaled 78 and 132 and were initially assigned and placed in a codebook (see parts in Appendix D). An analytic memo was written out for each. In terms of numbers, I ended up with numbers similar to those recommended by Saldaña. “The quantity of these codes varies from 80-100 codes to be organized in 15 to 20 categories that combine into 2-8 major themes. There is no standardized or magic number to achieve” (Saldaña, 2009, p.21).

The coding and analyzing process also involved recording my thoughts and reflections on the process. The written documents were spread out to get a grasp on all the data and codes. Analytic notes were recommended throughout the process and the steps I followed are delineated below.

*Step 2: Analytic memos.* In addition to the codes, in the margins of the transcripts, I recorded my thoughts about the interview or the respondents' answers. For example, I would record reflections such as, "She is trying to please her husband", or "Here she is contradicting what she said earlier in the interview", or "I remember she got quiet and seemed really sad during this part of the interview." The analytic memos proved to be very helpful as it was these that enabled me to more easily observe the contradictions in respondents' reasons for avoiding Internet use.

*Step 3: Descriptive and Structural Coding.* Descriptive coding is a basic method assigning a short word or phrase to qualitative data. The researcher is looking for the substance or topic within in the words. I applied descriptive coding by assigning words or phrases to words or examples provided by the participants. Examples of some of the descriptive codes are shown in Appendix D. Structural coding involves placing descriptive codes into a meaningful structure, such us categories and themes. For that stage, I gave an additional designation to the initial codes to indicate which research question the related content applied to best. Examples of Structural codes are also shown in Appendix D.

The codes and categories emanating from the participants responses involved interrelated concepts, especially as they moved from the code to the category to the theme. This segmentation simply organizes, but it is not a permanent typology or classification system since both codes and categories may merge throughout the analysis. A key to the analyses process involves this linking and connecting various categories as themes develop. The three research questions were coded as A "reasons": underlying reason for a lack of interest, B "social": social network influence hindering or supporting Internet use, and C "fear": fears and concerns related

to Internet use. In the structural coding phase, I designated codes as A, B, or C to facilitate latter formation of categories and themes.

*Step 4: Designation of categories and themes responding to research questions.* The final stage of data analysis involved categorizing codes into categories and themes related to each of the research questions. I made note of which structural codes were very similar or related. I put related codes in list to identify and name the themes. For example, several codes related in some way to the expense or cost of using the Internet, therefore, I formed “Cost barriers” as a theme in response to research question 1. As another example, my own reflections and analytic notes I observed participants contradicting themselves as they described reasons to avoid the Internet. As a result, “Shifts and contradictions” became another theme in response to research question 1.

In an inductive process, codes are more concrete than categories and themes. Thus, my analysis process involved moving from the concrete to the abstract. This approach and immersion into the process allowed for inductive exploration of the research questions. It also enabled me to illuminate potential influences of underlying psychosocial variables relevant to Roger’s Diffusion of Innovations Theory to the Internet adoption process among this one specific group of older adults. My codes were the basic building blocks of the categories, which coalesced into themes. The entire process enabled me to illuminate more conceptual underpinnings and connections. The data analysis was guided by a general strategy in the coding and classification process. The research objectives provided guidance for conducting the analysis. The analysis was carried out through multiple readings and interpretations of the raw data. Although the general inductive model is similar to grounded theory, I was not building

theory, but illuminating the participants' perceptions, linking their perceptions to Rogers' theory, and answering the research questions by moving from the concrete to abstract.

The following example will illustrate this process (a more detailed version is in Appendix C).

*Examples of Structural Coding*

*Research Question 2: [C fear concern] What underlying fear and concerns do older adults have related to Internet use?*

*Structural Code for research Question 2 is [C fear concern]*

Theme 2: Learning Challenges

The original category of *Age related learning fears* merged into the final theme of learning challenges. Respondent J said:

The teacher would have to be all right, these people know nothing. Not expecting you to come in knowing a bunch of things, and it would be better if it wasn't once a week because you forget when you get older. You forget. It would be better if it was continuous for a couple weeks or something. That way you could, and then they always start with they pretend you know nothing. Then if you are getting ahead, they'll go all right, you're ready to learn that.

Structural Code for research Question 2 is [C fear concern]

*Late life traumatic learning experience* merged into a theme of learning challenges.

Theme of 2: Learning Challenges. Respondent L said:

I enjoyed it and really and truly wanted to take typing. I don't know why I wanted to take typing. There was a lady that really discouraged me. She said, at your age, I was 49 when I started, She said, At your age, you'll never get up to the speed that you need to be in order to get a job typing. That was a bad thing to tell me. I went through two quarters and quit.

**Trustworthiness and rigor.** To promote trustworthiness and rigor, I shared examples of my coding with two of my dissertation committee members. In addition, I used “member checking” as transcripts were completed to confer with the participants, who were readily available, which was convenient. My goal was to understand if I was capturing their experience in addition to their thoughts and opinions on the overall process. I went back to four participants to ask whether or not my interpretation reflected their experience and to get their perspective as a participant in the study of the emerging categories or themes (Padgett, 2008). I selected four that I thought were the most insightful and readily available. I selected an office near their volunteer office for their convenience. The review took on average 30-45 minutes, and they were provided another gift card for their time.

While there were no instances of questioning an interpretation in the transcripts in general, such reviews did pose the main philosophical question in this area of technology. That question is whether social technology is helping us to stay connected or making us more isolated. Specifically the conclusion was that there are both good and bad aspects involved with Internet use. I guided the conversation from the general to the more specific aspects of their transcript and whether it matched their perceptions. I started this process by first reading sections of their transcript, including the question and their responses. Second, I shared the categories reflecting their responses. All confirmed that the categories developed from their transcripts reflected their perceptions and experiences. Third, I reviewed the overall dissertation research in terms of how these categories related to the overall themes developed. Finally, I asked an open goal-setting question involving what obstacles they perceived in reaching adoption of their Internet-based product. I acknowledged that it was okay not to be absolutely sure of their decision acknowledging the influence of psychological and social factors. Basically, I explored why

participants wouldn't make a purchase decision, when they had an interest in purchasing the product. Participants reiterated that while the interview process did clarify their own underlying reasons, the same psychological and social barriers remained.

All the participants with an interest reported that the interview process helped to clarify their interest in at least one area. However, while the participants found the interview helpful in narrowing down their choices to particular products, the psychological and social barriers remained. For example, three participants wanted an iPad, and one wanted a laptop. They felt, though, that it would be helpful to have one person they felt comfortable with to ask questions throughout the anticipated purchase and implementation. This problem is explored in the literature, which finds that during the implementation phase, the participants find individual coaching, tailored plans, and encouragement helpful (Lagana, Oliver, Ainsworth, & Edwards, 2011). Yet, all still felt conflicted about making a purchase without the full support of their adult children, spouse, or peers, who sent mixed signals of encouragement. This, in turn, fostered the ongoing psychological and social barriers discounting their level of interest. Thus, they were waiting on others to want to teach them and be encouraging about the process. Participants confirmed that I captured their experience.

The goal of the general inductive process was to create a finished product that would provide new questions or perceptions to guide future research (Saldaña, 2009). The purpose of this study was to explore and illuminate the psychosocial barriers to Internet use among older adults. This study has achieved both the goal and the purpose contributing to the literature.

## CHAPTER 4

### RESULTS

The purpose of this study was to explore and illuminate the perceptions of adults 65 and over in one county in the southeastern United States involving their psychosocial barriers to the use of the Internet. Specifically, this study examined the responses to the following research questions:

1. What do older adults mean when they express a “lack of interest” in using the Internet?
2. What underlying fears and concerns do older adults have related to Internet use?
3. In what ways do members of older adults’ social networks support or hinder their Internet use?

In this chapter, I present results for each research question. Themes related to each research question are presented first by providing a general summary of the theme, setting it within the context of the overall research question. Then I summarize the particular theme within the context of the overall participant responses. I illustrate these overall responses with specific examples clarifying the theme, and then I provide a brief transitional reflection on the theme integrating the connection to the next theme. Finally, I summarize all the themes relative to the research question transitioning to the next research question.

## **What Do Older Adults Mean When They Express a Lack of Interest in Using the Internet?**

As I continued to patiently probe beneath my respondents' expressed lack of interest in using the Internet, I was able to identify four themes that help to illuminate what older adults can mean in expressing a lack of interest. Most of the respondents appeared to use the position of lacking interest as a socially acceptable-reason to deflect more in-depth inquiry. The context of the one-on-one, in-person interview provided a vehicle to reach beneath their reticence, which was reflected in their vacillating positions on the subject.

**Theme 1: Shifts and contradictions.** For all but two of the study participants, an expressed lack of interest in the Internet was a general deflection, which initially obscured more specific reasons. Many times, however, the same respondent provided different specific reasons during the course of the interview. Additionally, some participants contradicted themselves when attempting to explain their lack of interest. In the course of the interviews, it was common for participants to not only change their stated main reasons behind non-use of the Internet, but also their degree of interest in specific areas of Internet technology use. In some cases, the participants provided more personal reasons further along in the interview. For example, when I asked, "What are the main reasons, do you think, you don't use the internet? Some people say, 'I'm just not interested.' Does that apply to you?" Respondent O initially replied, "Well, I'm not on the Internet and have no interest at the present time." A short time later, Respondent O contradicted herself by saying:

I would like to have a laptop, and I would use the Internet for research. There's lots of times I want to look up something medical. When you get a certain age, you always have something wrong with you, and I get my book out that's very old, my medical book, and read, but I would prefer to go to the Internet. Sometimes I call my brother in Michigan and say, 'Look up so-and-so.' There's lots of things you can look up, old high school friends, and you can look up genealogy and oh, the Internet is a wonderful thing. I would use it. I would use it.

I posed another question in the interviews: “What do you think is your main reason for not using the Internet?” Respondent A stated:

I had the Internet, I got rid of it about 4 years ago, it’s over my head anymore, I mean at my age, I changed my whole life really, I used to like the Internet, I got rid of it all because I can’t keep up.

I followed up with the following question, “So four years ago, at what point did you throw your hands up and say, ‘I’m done with the Internet I’m off?’” Respondent A replied :

Well, my wife is ah, I’m almost 84, she is 82. She could have been interested in it. She always liked me to get on there and tell her where the deals were and all that. I just got so that I couldn’t, I couldn’t do it anymore. She wasn’t interested in..., Now she’s getting me to buy one of those pads. She wouldn’t use it if I got it. I know she wouldn’t, so I’m not getting it!

When Respondent A provided the two additional reasons of not having the time and the cost, I countered with the question, “Would you have the time to learn, providing you had it all free, would you do it again?” Respondent A said :

“I really don’t know, I wouldn’t say ...For right now, I wouldn’t be interested, there is nothing for me to do on it.”

Here Respondent A added yet another reason: there was nothing for him to do on it. Near the end of the interview, it became clear that a central reason for his non-use involved relationship issues with his wife.

Respondent L shifted from a practical reason for a lack of interest related to cost, to a reason defending her memory of family history:

I’m just not interested. My kids say, ‘Mother you’re too conservative.’ They said, ‘You want to hold onto your money. You don’t want to spend your money.’ My son, right now, is trying to get me to buy a laptop or whatever you call it, iPod or whatever, to talk, and put down things and places that I’ve visited. Everything that I can remember about my mother, daddy, about their families and everything, and just talk. They want me to have something at home so I can record personal histories, my experiences and things like that. I could do a lot. One thing you could put everything you wanted. You could put your recipes. I cook. Little things that I could keep. I could remember my grandchildren and my great grandchildren’s birthdays. I would put that in there.

Likewise Respondent K turns from appearing irritated about technology in church to giving the technology a pass, but only if the Bible is on the device:

I think it's very rude to do that in church. I think your phone should be cut off when you're in church. Since you can do the Bible on it, they may be doing something with that. I don't know. But I think you should pay attention, and if you want to jot down something, write it down on a paper. That's rude. But, if the Bible is on it I guess there might be some good to it.

Similarly Respondent M, started off aggravated at Facebook, but thinks back to reading scripture on a computer:

Oh, it's too much of ... let me say it this way. I'm from the old school and I feel like that, if I want you to know something about me or what I'm doing, I'll tell you. I don't want to tell the whole world and that's the way I feel about it. I may be wrong. From listening to other people that's on Facebook, they got their pages and they this and that and then when you know anything, it's I didn't put that on my ... this kind of thing. I just don't want to be involved in it, but I don't down nobody else, but I don't. But, I used it a long time ago for a bit now and again. I used it to do the daily bible reading, the scriptures, I've seen, the big screen ones are used for crossword puzzles.

Likewise Respondent E is concerned with risk to her grandchildren but reading and the large screen iPad or Kindle is a source of specific interest:

Some good and some bad I guess really because I wouldn't want to get on it. I wouldn't want to put myself on it. I wouldn't want other people to know everything I did every day. My granddaughters are into that, but it is not for me. I have seen theirs. They are bad to show me stuff that they put on there. Pictures and stuff like that. No, see I don't have one. I don't have the Internet.

Well, I have an eye problem and I just don't know if it would benefit me because small print I can't read. I mean real small print I can't read. But they got some literature on these big computers. I don't know what they are all called. But it is just like a TV, a big screen and a lot of it looks like most of it would be big enough. I mean the print.

Respondent N explained his experience with a teacher timing his reading and typing ten years before when he was 68 years old, probably the oldest in the computer class learning to use a Word type writing program relative to the younger students. There was a shift in learning to read words on a computer screen as opposed to on a traditionally printed page. The words on the screen on which he was typing coupled with his decreased relative dexterity and experience with a computer keyboard may have contributed to this impression. He replied with changing reasons:

“I have trouble reading and spelling, and that probably is the biggest reason that I don’t get on the Internet.”

When the question was repeated further along in the interview, Respondent N replied:

“Let’s see. Why don’t I use the Internet? It scares me. It scares me. I’m afraid, I just shun back away from it. I reckon you don’t like or you hate to change, and you’re afraid of what you don’t know”.

Further along in the interview, the previous response to having trouble with spelling and reading was only relative to comparing himself with the younger students in his class,

Respondent N replied:

I started out at the very bottom. I guess it’s my brain. Seems like it just don’t think fast enough. Everybody in the class would get through with it before I did. Of course, I usually got through with it before he called time, but it kind of hurt me that everybody in the class gets through before I do, but I don’t reckon it matters. That computer is not in a big hurry. I guess it’s just me. It just scares me to get on there and da, da, da, da, da, you know, and I’ve got to read that real fast.

A sub-theme emerged involving using the Internet versus using other forms of technology such as cell phones, cameras, DVR, ATM, and Red Box. When there was lack of interest in the Internet the question followed with use of any general use of other technology. Participants were aware of other technologies, and when they saw a distinct observable advantage in it over the old technology or method, there was at times a specific interest in use, but not for Respondent F who said:

Yeah, we've, last Christmas, during Christmas holidays we decided we needed something real nice for our anniversary and Christmas and we decided we get this great big screen television. It covered our whole wall. We bought this machine that plays those other things. What is it? The DVD player and the other...The other thing...oh, the DVD and the [DVR] and did you know, they told showed me how to use it and I don't think I watched it once, anything new, scares me till until I use it a time, even the washing machine or drier ... I mean anything. I've got to start watching it, because we've got all these little all these things that we can watch and we just watch television. But then we got this new one up over here, that's what I've got to use to get these other stuff going.

I asked, "Do you know how to tape the shows"? The respondent replied:

I had never learned that much about watching back. The man that helped us put the television on there. Let's see he works for AT&T I had him come back and show us but I wrote it down what we're supposed to do but still. We've just got to do it. We just don't. I wrote it down ... I had to write things down or I forget it. He showed us and all and we just got to get back to doing that. I don't do it all the time so I need to practice. I think he came back another time. Because the first time he put it in, he was trying to show us some things and I even, [he] had to get to eat supper with us and he had his wife with him and they ate supper with us but later I had him come back afterwards to plug in all the stuff. Because that's what I don't do. I get, I'm afraid of anything new, until I've used it a few times. Afraid of anything new? Yeah, new gadgets, new appliances. Do you use the ATM? No, no. I'm afraid of those. Okay, how about the Redbox? What is a Redbox?

The non-use of the ATM and Walmart self-check-out was shared by Respondents I and E:

I don't use ATM. I never had one time my wife and I signed up for ATM card. Let's see. Then my neighbor across the road got the number. They mailed the number to that address. So I had to go down to the bank to get all that stopped they came over and told me that they had they got my code number. I said Oh no. Give it to me," and they handed it to me. So you went back down to the bank I says, y'all sent that to my code, the mailman put that in my neighbor's box. No I don't want to have anything to do with it.

How about do you use an ATM? Respondent E said, “No, my boys were trying to get me to, but no I don’t. I just never had wanted to mess with it. But now they do but I don’t.”

I asked, did you ever hear of Redbox? “Yes. Yeah. We buy them. Mostly we get them for the children but now they have all moved away and I don’t buy them like I did but I have a bunch.”

So do you use cash or check? “Check. Because if somebody gets your pin, some people have got eyes like a magnifying glass. I don’t have, I never have.” Who taught you to use the DVD?

“My son. I had him showing me. Well, I used to. I don’t as much now because like I say all my grandchildren have moved away and you know I just don’t.”

A second theme involved the perception of an ever-changing landscape of technology influencing respondents’ decision making.

**Theme 2: Fear of fast-changing technology.** Several of the respondents had past experiences with using the Internet or computers. The following comment from Respondent A reflects this perspective on experiencing and observing change:

I had the Internet, I got rid of it about 4 years ago, it’s over my head anymore, I mean at my age, I changed my whole life really. I used to like the Internet. I got rid of it all because I can keep up. I’d even like to have one of these new telephones but ah I don’t know how to do anything on ‘em.

Similarly Respondent G reflected back on her work experience as computers started making their way into work places:

I had wondered about all the differences on them, but I have never done anything with any of them. Back when I was working everybody started going on computer but it has changed. It is unreal how, I forget what year it was, but Lord it has come up so much more now and I haven’t kept up with any of it.

This relative perception of change was reflected in old obsolete technology representing a concrete reminder of a transition period to non-use. Several participants used old technology to define their stopping point, as Respondent O remarked:

I used it, but that wasn't the Internet. I used to do a lot of writing. Of course, my printer broke, and so that's why I sort of stopped that, too. I thought, 'Well, the heck with this for now.' The one I bought actually finally wore out, I guess. So my brother brought me a reconstituted one or something down, and it's smaller. It never really suited me. My printer gave out, so I gave up on it. But now I'd like to throw it away, but I don't know what's in there. It sort of worries me.

In a similar fashion, Respondent E went as far as purchasing a computer with her son, but they never used it:

My son and I bought a laptop he was going to get on and this has been few years ago. He was going to get on the Internet and he never did and I never did either... It is probably way out of date now. I guess that has been three or four years ago.

Likewise, the fast-changing technology required transition periods for Internet-users as the technological communication industry adapted to higher volume, impacting the download speeds. This reality was a common cultural experience for Internet users of the period who experienced this transition from dial-up to digital transmission. Such an experience provided a contributory reason for losing interest in going online and was captured simply by Respondent J who explained: "Well, our computer was real slow for one thing and I don't know. It was a hassle to me."

Reports of such transitioning off periods were common for former adopters using the Internet, or for computer use in general, as programs and graphic user interfaces experienced fast change. A 78-year-old former adopter, Respondent H, articulated this theme of the impact of the rapidly changing technology experience:

Yeah, a long time ago when we had a computer, and I did, we did some games... And I did, when I was a secretary, I did some of my minutes on it... And then that computer tore up and [husband] got a more complicated one, and I could do it better just by writing it, so I quit doing it on the computer. It took me so long to do it on there. I could write it faster than I could do it and change my errors, so I really didn't have anybody to teach me how to do it. I just guessed at it and it took forever and I hated it.

Along with changing reasons and changing technology, a theme developed involving the participants' basic comprehension and misunderstanding about the Internet. With the rapid changes in technology, information has been misunderstood and has not come across clearly to the participants.

**Theme 3: Misconceptions about the Internet.** Because of rapid shifts in technology and advances in the Internet, the respondents had not learned, or been misinformed, about the vast and changing amount of information regarding Internet use. One participant talked about her plan to purchase an iPad around Christmas. Her concept of the Internet was outdated in terms of plugging it into a wall outlet. I asked, "So if you bought your iPad and you didn't have Internet at home, when you came into the hospital you could access their free Internet?"

Respondent F (79-years-old) stated:

I know, they have several people up in surgery waiting, a lot of people will want to come and plug their phone or computers in and there is only one outlet up there and it is behind the garbage can, but some of them use it.

Another participant had contemplated the purchase of an iPad for his spouse. I asked him a practical application question: “So if you got the iPad...brought it home and got the Internet, how would you get the Internet on the iPad?” Respondent A stated, “Well, you see I have no idea.” Furthermore, the respondent did not understand that free Internet service was available through Wi-Fi or understand its function. Such responses indicate that even if this respondent purchased the technology, information literacy regarding how the Internet functions would be necessary.

While this last question about the availability of the Internet revealed a lack of knowledge about how it functions, respondents also could not articulate essential features regarding search engines. I posed the question: “What does Google Mean?” Respondent D explained, “I know it’s something about a computer ghost, I’ve heard that.” When asked, “What do you think you do with Google?” Respondent D stated:

Lord, I don’t know. I just know I’ve heard of the Google and stuff, but there’s so much stuff, it just blows my mind. New technology and stuff... We would like when, when I was growing up, I remember when we didn’t even have electricity.

Respondents also expressed a lack of awareness of new devices and their full capabilities. I was explaining the different devices to read books on, such as the Kindle. I said, “You can just download a book, *The Bible*, and read it.” Respondent N stated: “It already has all that stuff on it? You just *download it, you rent it?*” The only comparable concept to Respondent N was checking out a physical book at a library or renting a video. This response is similar to another respondent’s difficulty of understanding or accepting the concept of paying for a book you cannot put on a shelf. In a way, it is like trying to convince someone to buy something invisible if that person has never seen the practical application. I attempted to explain the concept of books being stored in the digital form (invisible and pixelated), yet appearing like a real book

with pages to flip through on a Kindle. In hindsight, the easiest method would have been to have a Kindle to demonstrate.

This lack of basic comprehension and misunderstanding was illustrated further by respondents' experiences with smart phone technologies. Respondent B, a 74-year-old non-adopter with no Internet or computer experience, acquired an iPhone that her daughter had purchased. Respondent B handed me her iPhone, and I asked her questions about the Google Icon on her home screen and general usage. I pointed to the Google Icon and asked, "What is this screen for?" Respondent B said :

"I guess to text? I don't do that...now Google, I don't know what that means, I don't do Google...I don't use email."

After several exchanges, I understood that the Internet to her was one concrete object or device, and her understanding is summed up in her response to the question: "Would it be difficult to learn the Internet?" Respondent B said, "I don't know, I've never seen anybody work it." As the interview progressed, I attempted to confirm that she had no interest in learning to use the Internet and asked, "So you don't have an interest in learning [the Internet] ...?" She cut me off, basically questioning why she should use the Internet:

"No, this right here [pointing at her iPhone], the reading of the books and I check, I get the news on there, ah I've got pictures on there, what would I use the Internet for?"

I later surmised that Respondent B receives text messages, but she only responds to text messages when she is notified. She taps the icon, and the text sender's name appears for her to respond. Similarly, she can receive pictures and knows how to save them, but she does not know how to send them. When I asked her how the books she reads get on her phone, she replied: "It just shows up on the phone."

This participant provided a serendipitous experience of a first-time older adult without a comprehension of the language or contextual understanding, yet she is learning to navigate the technology on a smart phone without any previous experience. It was common, however, for participants to have heard of a technological term and not know its function or application. Along with a lack of a basic comprehension and some acquired misunderstandings about the Internet, the theme of cost surfaced. These interviews explored the process and perceptions of older non-users purchasing or contemplating the purchase of physical technological devices and the virtual Internet-based products.

**Theme 4: Cost barriers.** Just as respondents struggled to comprehend how the Internet functioned, they also struggled with understanding the actual monthly cost structure of Internet services. In certain disturbing situations, the respondents felt they were being deceived by the costs, but they also felt that they were also at the mercy of the salesperson. I asked Respondent N, “When you said you’re on a cell phone, what kind of cell phone do you have?” He explained:

I just have the basic. I went in there and told her, I said, ‘I want a real good cell phone, but I don’t care about nothing but calling and answering the phone.’ Well, boy, she socked it to me, like I could have gotten one a lot, lot cheaper, but that’s okay. I like my cell phone.

Others tried to fight the battle of negotiating cost with regard to technological services, but they did not grasp the “it” in terms of the Internet, free Wi-Fi service, and the use of Wi-Fi with television and Internet services. In one case, it appeared that Respondent A’s basic free service, the type formerly received from using the television antenna, is all he and his spouse watch for television service. Given that he and his wife reportedly spend little time watching television, their needs could be satisfied with simply using free Wi-Fi available locally or at their daughter’s house, which is in close proximity. Respondent A (84-years-old) has a spouse (82-years-old) who wants an iPad.

In contrast to most respondents, Respondent E referred to cost, but made a point of noting that cost is not a major barrier for him:

A lot of them have told me I need to get one, but I just haven't. Just not doing it. I know it is tricky. Well, not necessarily, I mean, I know you can get all prices. It wouldn't necessarily be a problem. I wouldn't go into something real big or whatever. I guess that is a lot of wondering if it would benefit me to get one.

Respondent A reflects on his spouse:

She tried to bug me to try one of those pads, then I'd have to call Charter to get hooked up with the *things again*, and I don't want to. They cost too much money for one thing. It cost 29.95, and I called the guy, and he said in two years it would be 49.95. I wouldn't give ya 19.95...I was telling him that I was thinking about getting that pad, then he started telling me that in one year it's gonna go up 10 dollars, and then another year it will go up 10 to 49.95, just for the Internet, no I don't want it.

Just as Respondent A was concerned about the increasing cost of the Internet,

Respondent O was perplexed by the variety of devices voicing an interest in reading books on a device, such as the Kindle, but this respondent had difficulty understanding or accepting the concept of purchasing an online book and not physically holding the book she said:

So many times [I want to buy something], the tablet, this Kindle, there's so many different things, that I don't know what they all do... You're actually buying it [the book] aren't you?...That's why I don't understand, people that love books, why would they want to pay for a book? I want it on my bookshelf...The thing of it is I wouldn't want to pay 19 dollars for a book because I wouldn't be buying very many books.

The theme of cost barriers reflected a frustration of trying to understand what products and services were available with regard to cost. This frustration often coalesced in the fear of being overcharged or being coerced into buying services that they do not need. While these points of frustration existed, the voiced interests about purchasing Internet services are positives moves towards adoption. The fears and concerns, however, greatly clouded this positive perspective. Negative associations and anxieties surfaced in great detail with navigating the

Internet, learning to use the Internet, and not learning to use the Internet. These multi-pronged anxieties affected the overall perceptions of the Internet and related technologies.

### **What Underlying Fears and Concerns Do Older Adults Have Related to Internet Use?**

As respondents struggled at times to articulate how the Internet functions, two themes surfaced regarding fears and concerns associated with the Internet. The first theme revolves around the fact that many participants had previous direct and indirect negative experiences with Internet use. Secondly, participants expressed internal anxiety associated with learning a new technology. In these explorations of anxieties, participants reflected negative experiences that had compromised their sense of safety regarding Internet use. The participants were knowledgeable of the dangers associated with Internet use. The terms “hacker” and “identity theft” were linked to the Internet. While most of the participants were aware of the potential risks, their fears were triggered both vicariously and through personal experience.

**Theme 1: Negative experiences.** Part of participants’ underlying fears resounded in their negative feelings and experiences (both vicarious and personal) with the Internet. I will first present findings related to vicarious negative experiences, in which the media plays a central role. Traumatic vicarious experiences were recounted through stories heard through the media, though not personally experienced. Respondents frequently used terms such as “hackers” and “identity theft.” After one respondent mentioned “identity theft,” I asked: “So you hear a lot about identity theft?” Respondent D explained:

“Yeah everywhere, and on the news, Social Security numbers and their credit cards, you just hear something bad all the time.”

I asked about social media: “Have you heard about Facebook?” Respondent B said,

“I heard a lot of people get mad at one another, put things on there they shouldn’t, and it is getting to where *those hackers* are getting in on the Internet.”

Along with the perceived anxieties surrounding Internet use, some respondents shared direct negative personal experiences that created an anxious association with Internet use. When

I asked about any concerns of shopping for items online, Respondent E was already shaking her head in the negative and said,

“Somebody got in my daughter’s and wrote two big checks on her bank account, so they had to give her a new number at the bank, and we haven’t ordered anything else.”

Likewise with regard to Internet security and personal finances, Respondent A shared a similar anxious situation involving almost becoming a victim to a hacker, speaking with a tone of both anger and embarrassment. When I asked, “Does that play any role in you not wanting to be on the Internet?” he replied:

I got some nut that calls me. If I could get him, I’d turn him in. He says ah,.. He is a foreigner, and he has called me at least three times now, I’ve shut him off quick. I want to check your computer, go in your room, and put your computer on [said in a foreign accent]. I said why? He said I can fix anything for you, you just turn it on. Then, well the first time, he sucked me in about the hacking, and I was asking him. He said I need to have two things, your Social Security number and where you bank. I said, ‘You are full of shit.’ That really made me mad. I said, ‘Don’t call me here again.’ He has called me three times. If I could get his number, I’d turn him in. I know he is phony.

Similarly, Respondent C reflected on her concern about privacy:

No, I wouldn't do that, not now because we don't know where we are going as far as government anything. We don't know what how things are going to change. They are changing so fast. So we don't know what is liable to be next you know. In regards to like all that kind of stuff. They get into your computer and get your information don't they?

A few participants brought up the topic of the Internet associated with generalized fear and negative consequences. Regarding the loss of traditional socializing M said:

The grandkids and the children and all and they have their phones and the grandson he has got one I think that you can do everything that you can do on a computer and I think maybe two or three of them do and they carry that with them they are on it continuously. I told my granddaughter the other day I said 'You are no company anymore. I said, all you do is stay on that phone. She has to keep up with everybody. You wonder what it is just like people with different languages. You wonder what when they are talking like anything you pass them, well it is the same thing. There are no conversations really no more when they've got their computer checking up with whatever. They Facebook and I don't know what all they do. I had rather be like if we are having a meal or whatever, I would rather them put them down while we have a meal. It is like they are having another conversation with someone else in another room and you would never do those in normal conversations.

When asked to explain what the Internet is, Respondent I responded about negative religious associations with the Internet:

I think it's ... you want me to tell you what I really think it is? A tool of the devil. I do. How often do you hear the news or see the news and some creep had took a picture of his ass and send it to a girl somewhere? Isn't that the devil's work? It sure ain't God's work.

Likewise Respondent F said:

The book and I got to watch and that was, I thought was how wonderful, wonderful. It's telling you more about the end of times and things, what's all going to happen and stuff. My daughter bought it for me and I need to get that to you so you I wish everybody had this book. Yes, you know, with everything about number, taking the number, that kind of thing.

Faceless and nameless, Internet promoters and sales agents left the participants, at minimum, cautious, and compromised the participants' sense of external security. The fears and concerns became more internalized during the next theme, specifically focused on gaining digital literacy with the Internet. The challenges were based on past negative experiences or anticipated fears of learning in a classroom. These experiences coalesced into the theme of learning challenges.

**Theme 2: Learning challenges.** These internalized perceived and actualized learning challenges reflected various concerns involving learning within a traditional classroom environment. Some participants had traumatic learning experiences regarding technology. In this case, an excellent participant experience, applied early, also applies to learning challenges. Respondent N recounted his anxiety-provoking classroom experience attempting a computer class with a teacher who timed his reading and typing ten years before when he was 68 years old. He was probably the oldest student in the computer class learning to use a Word typewriting program, relative to the younger members in the class. This class was traumatic in terms of using a computer to type, leaving him with the impression that he had trouble reading and writing. He reflected:

“I have trouble reading and spelling, and that is probably the biggest reason that I don’t get on the Internet.”

When the question was repeated further along in the interview, Respondent N replied,

Let’s see. Why don’t I use the Internet? It scares me. It scares me. I’m afraid, I just shun and back away from it. I reckon you don’t like or you hate to change, and you’re afraid of what you don’t know.

To some respondents, visually reading words on a small cell phone screen presented a challenge.

Respondent K remarked on seeing the small screen:

Well, now I know some people that do that but you've got to buy your printing machine don't you? And all that you know to do that, but I have a great niece that she does that all the time but she is very good with a computer, you know. I would try and learn to use it I guess... I have just never had done it. Just really hadn't had the interesting to learn that little ol' bitty, mind of mine is real small, but I know the children all do.

Other participants had more traumatic classroom experiences, such as Respondent L who shared her experience of attending a class as a returning adult learner:

I enjoyed it and really and truly wanted to take typing. I don't know why I wanted to take typing. There was a lady that really discouraged me. I was 49 when I started. She said, 'At your age, you'll never get up to the speed that you need to be in order to get a job typing.' That was a bad thing to tell me. I went through two quarters and quit.

Some participants had specific age-related concerns with learning. When asked, "If you're older, do you feel like there's additional pressure when you sit down to learn something in a class?" Respondent J recalled an experience with speaking to a family member in an informal setting:

Yes, I would think so...yes because I even search for words. I was talking to my sister last night and there two times the word wouldn't come, just a common word I know... You have to think about that...I just tell myself I know it's going to come. It just takes a while.

Still others offered suggestions to reduce these concerns, specific to learning to use the Internet in the classroom. Respondent J captures this theme of learning challenges at an older age. When asked to describe an ideal learning environment, Respondent J explains:

The teacher would have to be all right, these people know nothing. Not expecting you to come in knowing a bunch of things, and it would be better if it wasn't once a week because you forget when you get older. You forget. It would be better if it was continuous for a couple weeks or something. That way you could, and then they always start with they pretend you know nothing. Then if you are getting ahead, they'll go all right, you're ready to learn that.

Discussing an ideal learning environment also led to conversations regarding overall risks and benefits to learning. I asked, "How about, are you worried or concerned about the difficulty in learning how to use it?" Respondent I said, "Well sort of. I guess that is a lot of wondering if it would benefit me to get one. Whether I would learn it or could learn it." Another participant, a self-identified former successful athlete who defined herself by competition and achievement illuminated this anticipatory fear. Her concern was starting and failing at this stage in life. Her

perspective was one of quitting while one was ahead. Respondent J provided this unprompted confession at the end of the interview on learning to use the Internet:

I think ... I don't want to be a failure...See, I don't want to be a failure. I don't want to admit failure; I guess [that's] what it is. I want me to win!...Well, most everything I've tried I've succeeded.

These themes reflected negative experiences, both externally and internally, fostering fear and concern in learning. The negative experiences and learning concerns were just two barriers. Another barrier involved the anxieties surrounding the social networks of older adults.

### **In What Ways Do Members of Older Adult Social Networks Support or Hinder Their Internet Use?**

Participants provided a glimpse inside complex and interconnected social networks, in which these networks provided some support, but mostly created a barrier in terms of discouragement. I will end each this section with support in order to end on a positive note. I will first examine social discouragement within the family social network, and then shift to discouragement from friends.

**Theme 1: Social discouragement from family.** Family members in the participants' social network provided a variety of verbal and non-verbal discouragement. In terms of spoken and unspoken discouragement, Respondent J's husband had his own computer downstairs, but she had to share another computer (physically located right next to her husband) with her adult son. Respondent J was a little embarrassed when she explained that she also shared an email address and password with her adult son. I asked, "So what's the main reason you think you're not using the Internet?" Respondent J said :

Well, I had a computer, well I have one but, okay, you know my husband would show me everything, and then I'd forget. He'd say, 'I already showed you how to do that,' and I'd say 'I know, I know'.... Well, for one thing, my son had been, we have the same email address because he is with us about half the time, and that's not good. But, anyway, he had already had our email address in there with his password....I had trouble with that and so I just gave up...I was hesitant to say that, a little embarrassing.

Respondent J explicitly notes that her experience is “a little embarrassing” with how her family members control her access and her restricted freedom with technology. In this vein of a spouse controlling access, I asked another respondent, “Do you ever need an email sent?”

Respondent H said :

“He can send email... Well I've done it once or twice on that phone [laughing]. He showed me, he pulled up what I needed the little keyboard, in fact I did one yesterday with about five words in it.”

I followed up, reflecting her process having just typed out words asking, “So he gets it up there for you, but you couldn't take the phone by yourself and find all that stuff?” Respondent H said, “Not unless he tells me to.” This notes a verbal and non-verbal discouragement of the use of technology.

While Respondent H's spouse did not encourage the learning of technology, Respondent A voiced outward discouragement involving his wife wanting an iPad:

“Now she's getting me to buy one of those pads. She wouldn't use it if I got it. I know she wouldn't. So I'm not getting it.” Likewise, Respondent G's adult daughter, who lives next door to her, has recently started computer classes while being aware of her mother's interest in taking such a computer class. The adult daughter did not take her mother with her, but she promised to teach her. When asked, “So what's the main reason you haven't learned the Internet?”

Respondent G stated:

Well, really not that much, yet, and I'm thinking I'm getting too old, I guess I thought I'd get through on some of it. My daughter took classes for it. She started... She could teach me everything she knows and will, but she doesn't have the time.

Respondent G's daughter continued to deliver mixed messages of discouragement with technology. Expressing an interest in playing online games, Respondent G stated:

She's [my daughter's] got a lot of friends and they play games on the Internet. She said, 'you would like it' because I've always been competitive... She wants me to do it 'for the games and nothing else,' she said because she likes games.

However, when the topic of playing the games and meeting new friends surfaced,

Respondent G said:

"Well, I don't know about that. She said something about you have to be careful and people on there that could do something or so and so, whatever it was, that part didn't sound too appealing."

But when I asked, "Has anyone tried to support and encourage you to, with, how to learn, how to use a computer? Has anyone tried?" Respondent G remarked:

She [my daughter] has, but she's not sure that I can do it because it's so complicated, stressful. The way she was moving around on the thing, it looked too... A little complicated to follow all that and learn it.

Reflecting that family discouragement can go in multiple directions, Respondent F tried to talk her daughter out of purchasing a computer:

I don't know but my youngest daughter said that it's real expensive so I help her some. She had a computer and something went wrong with it and she finally had to just ditch it. She wants another one but I don't know whether, I just don't feel like, maybe that her mind is enough to, to really know how to use it that much, you know. I'm trying to talk her out of it because there's so much that could get wrong with the computers, get bugs in them and stuff and people can get things.

**Theme 2: Social discouragement from friends.** While participants received discouragement on various levels from family members, they also received discouragement from another social network, their friends. Respondent L was aware of a free local class offered and demonstrated an interest. When prompted about the reason she wasn't taking a class, she responded,

What's holding me? I don't know. I guess I just don't take the time. And, too, you have these people who discourage you, 'You don't need to go to that. That won't teach you anything.' I guess I ought to let people call me back on that.

Even though Respondent L had friends who discounted the possibilities with taking a class, Respondent L had children who were supportive of this endeavor. When I inquired further about the relationship to her of the people discouraging her, Respondent L said,

Friends. People I go to church with [repeating her friends comments] 'You won't learn anything there. When I went, I didn't learn anything.' It's just like somebody telling you they've gone on a cruise. Well I didn't like that. No two people like the same thing.

Discouragement in attempting to learn a new technology also occurred indirectly through the media, ironically. Respondent E put it simply as she responded to the topic of her memory concerns impacting her non-use of the Internet:

"That's the news of the day, everybody is worried, it's in the media a lot. You're constantly aware of it."

This theme continued in terms of social discouragement from a peer and church leader capturing her attitude towards her friends' and single women who use of the Internet. This undercurrent was present throughout the process but was difficult to get many of the participants to articulate their opinion without risking offending their sensibilities. It was similar to a taboo subject related to sex reflected in Respondent H sudden halting of the subject and emphatically stating, "Next subject".

When I asked, “What do you think is the main reason you or others don't use the Internet that you've heard of?” Respondent H (74 year old married female) said:

Well some of my single friends who are very smart, they don't want to have anything to do with it. I mean they don't care for this modern technology or anything... They just don't want it, I mean, they really shouldn't be on there, because, well, you know, it just doesn't look, come across, you know ... mm-mm (negative). Now the other ones [other single friends] ... well let's just say, they may say they are on their doing one thing but.. let's just leave it at that... That's probably what and we don't approve. It doesn't look good, for women in general, you know, we are Christians and should be setting an example, it's not right, okay, there are better uses for your time...next subject.

Although many experienced social discouragement some persevered and were still hopeful to adopt some form of Internet-based communication. While discouragement was disheartening there were examples of social networks of family and friends providing encouragement.

**Theme 3: Social encouragement.** While numerous illustrations of social discouragement from family and friends emerged during the interviews, there were also a limited amount of examples illustrating an encouraging and supportive social network. What surfaced during the interviews was an informal scale with maximum encouragement and support at one end, and minimum support and broken promises at the other end. I will start at the minimum support offered and finish with the maximum encouragement and support offered. The first two illustrations reflect the minimum amount of encouragement, but they also reflect a false hope with broken promises.

I asked, “Anyone ever encourage you to try to learn to get on the Internet or get on the computer?” Respondent C replied:

“Yeah, when I was visiting a while back a ways I was interested in financial things and my son-in-law had one of them. I would stand behind him and watch. I never was thinking on it”

I also asked “Has anyone tried to support you and encourage you to, how to learn the computer. Has anyone tried?” Respondent G (an 83-year-old widow of two years) said:

She [my daughter] has, but she’s not sure that I can do it, because it’s so complicated, stressful...I guess I thought I’d get through on some of it, my daughter took classes for it, she started...She could teach me everything she knows and will, but she doesn’t have the time.

The tone moved from broken promises to a more positive tone of encouragement, but the respondents did not want to bother their support system by asking them for help.

A 65-year-old married female and a former computer user felt more comfortable calling on a son-in-law than her husband or daughter. When the topic of social network encouragement or support surfaced in terms of a desire to purchase a laptop, Respondent J stated:

“I learned how to do little things. Then if I had a question, I could call him and he’d help...Except he’s real busy too. He works long hours.”

Respondent M (a 77-year-old widow) shared that her son teases her playfully by showing her items that may be of interest to her and encouraging her to get on the Internet stating:

“Oh, he’s already on it, but he’s trying to...he teases me because I’m not. He’ll say, ‘You know you could do this. You could do it if you had.’”

When Respondent A was interested in the purchase of a smart phone, I asked, “Who would you ask to help if you have any questions?” Respondent A replied:

“I’ve got two daughters. One is close by, she is down my house half the time, only a block away from me. She knows it excellent.”

One family member purchased a computer for their mother but didn't live nearby so with the implementation and maintenance, it becomes an issue if something needs to be simply updated. Calling outside help may be too costly and not worth keeping the older computer. There are offers but the support is not local. Respondent K said, "If something goes wrong who will help. My children, they don't live local. My grandchildren well, they are busy. They are not local. "

Respondent B (a 74-year-old widow) had the maximum amount of stated encouragement and technology support. She lives alone and had a heart attack while her neighbor was not at home. She used her landline to call for an ambulance. Subsequently, her daughter bought her an iPhone in the event she could not get to the landline (about five months before the interview). Respondent B's granddaughter and daughter have consistently taught her how to use the iPhone. Respondent B is frugal, and, therefore, her family works around this by telling her that everything is free. I asked: "What are you going to use it [iPhone] for?" Respondent B stated:

Well, the only thing I use it for is to read books. My granddaughter has put books on there. She has an account, you know. She can get to read books on, and she can send them to me. She gets the free ones. There is a lot of free ones, so you don't have to pay anything.

When asked how she learns to use the smart phone, Respondent B stated:

She [my granddaughter] didn't want to put too much stuff on it at one time. Because, you know I'm 74 years old. Sometimes my memory don't work right. She said, 'Maw Maw, I'll just show you a few things at a time until you get use to them.'

I noticed that her granddaughter had reversed the letter colors to white letters with a black background, which is suggested in the literature. I asked her about these letters' colors, and

Respondent B said:

“Oh, I see it better on a black background with white letters. I can see that better instead of a white background with black letters.”

Respondent B's first phone had a bad battery, so I asked, “During that time you had the first phone and it kept messing up, did you think it was you?” Respondent B stated:

“Well I kinda, I thought it might be, I kept telling her what was happening, She said ‘It wasn't you, Maw Maw, there is something wrong somewhere.’”

I asked, “Do you get anxious playing around on the phone, like you're going to hit the wrong button or do something when you are learning something new?” Respondent B stated:

Well, I'm afraid I'm going to mess up something and then not be able to get out of it. [But] I just go back to the main screen. [Then] I say, ‘[Daughters name]! I call [daughter's name]! I did something!’ ‘Well, Mama, don't get upset about it, it'll get fixed.’ She'll say, ‘It's still there, I'll just have to figure out how to get it back'...and then she takes care of it.

This last participant's process of adoption is a serendipitous event in that Respondent B never had an interest, yet is now in the process of adopting through a perfect blend of encouragement and support. This overall theme of encouragement and support, though, exemplifies the struggles of those older participants who may have a specific interest, but have social network members who lack the right combination of patience and encouragement to support the adoption of the technology.

## CHAPTER 5

### DISCUSSION

This final chapter seeks to integrate and discuss these results in the context of existing literature and the dissertation's conceptual framework. The focus of this discussion is the exploration of the results of in-depth interviews with a small homogeneous group of older adults using an inductive methodology guided by three research questions. The study was inspired by limitations in the literature with the intent to explore older adults' stated "lack of interest" and other reasons for not using the Internet. This research explores the perceptions of the older adults who are experiencing the phenomenon of the non-adoption of the Internet as a source of knowledge.

The following research questions guided the study:

1. What do older adults mean when they express a "lack of interest" in using the Internet?
2. What underlying fears and concerns do older adults have related to Internet use?
3. In what ways do members of older adults' social networks support or hinder their Internet use?

#### **Summary and Connection to Theory and Existing Literature**

**Overview.** Nine themes emerged from the data analyses that address the three research questions: 1) Shifts and contradictions, 2) Fear of fast changing technology, 3) Misconceptions about the Internet, 4) Cost barriers, 5) Negative experiences, 6) Learning challenges, 7) Social discouragement from family, 8) Social discouragement from friends, and 9) Encouragement.

This section discusses the relevant themes in terms of their impacts on current literature and theory regarding technology adoption.

This study provides a unique contribution to the literature by providing specific examples to illustrate the complex psychosocial environment of the older non-adopter and its influence on the reasons and decisions of the older adult to not adopt the Internet. The study probes the underlying reasons including a stated “lack of interest,” the primary reason provided for non-use in the literature (Fox, 2004; Horrigan, 2010; Jansen, 2010; Zickuhr, 2010). The findings are unique in illuminating the underlying hindering influence of the older adult’s social network.

This study found that both direct and indirect discouragement from family and friends was an underlying psychosocial influence hindering the decision to move towards Internet adoption. Furthermore, the literature calls for more research involving the role of informal educational support provided by family members and friends (Agarwal, Animesh, & Prasad, 2009; Gatto & Tak, 2008; Madden, 2010a). This research is also unique in that the participants were older non-adopters who did not reflect the demographics of typical non-adopters. This is of interest in that this sample is not otherwise hindered by typical barriers, but yet still does not use the Internet. Previous studies have found that non-adopting older adults typically have less education and income, poorer health, and less physical activity when compared to Internet adopters (Cresci, Yarandi, & Morrell, 2010). This study investigates reasons for Internet non-adoption among a sample of relatively healthy, active, educated middle-class older adults.

All the participants in this study started the interview with a stated lack of interest in adopting the Internet. Probing interview questions and responses, however, revealed several psychosocial variables that were contributing to a lack of interest. The common response of “no interest” emerged as a social response readily available to distract from underlying psychosocial

factors hindering adoption. The participants' reasoning was probed for depth, seeking to go beyond a simply stated lack of interest and other hindering reasons, including psychological constructs well documented in the literature for non-adoption, such as computer anxiety, and self-efficacy (Broady, Chan, & Caputi, 2010; Johnson & Kent, 2007).

The research in this area is often centered on hindering psychological constructs that influence adoption. For example, Lagana, Oliver, Ainsworth, & Edwards (2011) conducted a pilot study intervention in which older adults were provided one-on-one computer training in order to improve computer self-efficacy and attitudes towards computers and found significant improvement in both variables. Xie & Bugg (2009) conducted an intervention in which older adults were provided an age-sensitive computer training program to address computer self-efficacy and computer anxiety in which the trainers avoided technical jargon, used large font, and kept each session brief allowing for hands on practice and found significant decreases in computer anxiety and improved self-efficacy.

This study provides depth and context to research outcomes found elsewhere. For example, Gatto and Tak (2008) found that encouragement by others in a support network supported a change in attitude supporting a move towards adoption (Gatto & Tak, 2008). The participants in this study delineated specific examples within their support network of discouragement, inconsistent support and negative attitudes when they asked for support, which fostered their hesitancy with asking for assistance. Further, in this study, participants illuminated the multidimensional experience of being indecisive about learning and purchasing some form of Internet technology while simultaneously experiencing discouraging or mixed signals from their social network. This study helps illustrate the multidimensional nature of non-adoption by older adults.

This research illuminated the indecision of the older adult related to learning and using the Internet and the influence of the underlying psychosocial factors on that decision. However, indecision was also related to the plethora of new technology products they could purchase as they contemplated Internet adoption. The unanticipated speed of technology innovation and the ubiquitous nature of communication appear to have stranded the older non-adopter in Rogers' decision stage. The participants' states of indecision may be associated with wanting to leap quickly from the non-adopter sidelines to use the Internet-based social technology, like their family and peers. But if they do leap and purchase the new technology without the prerequisite knowledge required in Rogers's first stage (the knowledge stage), it can leave them stranded or worse, dependent and frustrated waiting on a capricious support system (Rogers, 2003). This dynamic leaves the participants wanting to use an Internet-based product but not really knowing what "it" is or how to use "it" without the help of others.

**Research question one.** The first research question explored the reasons underlying the participants' lack of interest, and four themes emerged: *shifting reasons and contradictions, fast changing technology, comprehension and misunderstanding, and cost.*

***Shifting reasons and contradictions.*** Participants shifted from no interest to more interest in at least one area of Internet use. This first theme reflects Rogers's second stage of *persuasion*, involving the role that social influence plays in adoption. A limited amount of research examines the conflict between positive and negative attitudes and Internet adoption, especially involving an older adult's social network (Hale, Cotton, Drentea, & Goldner, 2010). In this study, adult children, spouses, and peers primarily provided mixed signals of support and discouragement, ultimately leaving the participants uncertain. Participants felt that they needed help to move to the *decision* and *implementation* stages. A common experience involved the

participant expressing an interest in the Internet, witnessing others using the technology, yet not receiving support to learn the new technology. While members of social networks used these technologies, the social network members did not share their technology literacy with the older adults. Many of the participants' cohorts may have grown up utilizing computers and playing video games. The literature suggests that these experiences increase familiarity and physical dexterity with the technologies, leaving older adults cautious around the new technology (Chen, Kim, Moon, & Merriam, 2008; Johnson & Kent, 2007; Ryu, Kim, & Lee, 2009). Study participants expressed hesitancy when they described their uncertainty, confirming previous studies' findings. New devices and terminology appearing in media sources further exacerbated this uncertainty, contributing to a culture of fear with technology.

***Fear of fast changing technology.*** The fear of fast changing technology reflects other studies' findings regarding hesitancy with adopting Internet technology, along with concerns about feeling left behind. For many study participants, an obsolete or broken computer served as a physical reminder of this rapidly developing technology. Participants who once used the Internet conveyed that they transitioned to being non-adopters when technology broke or needed significant upgrades. Research in this area has found that graphic user interface changes hamper individuals who desire user-friendly and recognizable software (Lagana, Oliver, Ainsworth, & Edwards, 2011 ). Age-sensitive computer training programs (in which the trainers avoided technical jargon, used large font, and kept brief lessons) decreased computer anxiety and improved self-efficacy (Xie & Bugg, 2009). The recognized benefit of using a new technology (Rogers calls it the *relative advantage*) is compared against the effort to learn new technology. One participant did not want to learn Word to compose the minutes of a meeting because she felt

her notepad and typewriter accomplished this task. Some other participants wanted to learn, but they lacked the basic comprehension and needed a class teacher to assume they knew nothing.

***Misconceptions about the Internet.*** Sometimes participants either hesitated to ask or did not know how to ask questions about the Internet. This lack of understanding can also be described as “lack of interest.” Rogers suggests that communication barriers impact transferring ideas and influence the technology adoption decision. Potential supporters, such as peers or teachers, may form a communication barrier through using technological jargon (Johnson & Kent, 2007; Saunders, 2004; Namazi & McClintic, 2003; Rogers, 2003). Participants had heard various technological terms, but they lacked the overall conceptual framework, hindering their transitions to becoming Internet users. The term “Internet” was perceived as a physical device similar to a desktop computer. Participants misinterpreted the term “download” as “downloan” with regard to downloading a book because of the association with the library. A regular wall socket was misinterpreted as the hospital free Wi-Fi service because people used the outlet to charge their phones and computers. These misinterpretations of the overall conceptual framework hindered participants from understanding what the “it” of the Internet was, an important part of the second *persuasion* stage in Rogers’s Theory.

While participants had many misinterpretations about particular terms, they recognized popular technological words such as Google and Wi-Fi. They wanted to understand, but they felt embarrassed to ask for clarity. Participants frequently said that they feared appearing like a “big dummy” because they should know. Although the participants were socially active, they still lacked self-efficacy and made self-deprecating comments such as “my memory is not too good” or “I’m too old.” These findings reflect other research in which an older non-adopter may show an interest in technology adoption, but shift back to a negative attitude (Kim, 2008; Tak &

Hong, 2005; Fox, 2004). Even with hindering factors the participants responded sometimes with enthusiasm and sudden interest when the Internet application was readily understood and comparable to former knowledge such as when taking pictures with a smart phone. Some even expressed interest in acquiring a smart phone simply for this photo application but not comprehending the Internet and its integration with the product. Such findings are consistent with the literature's finding that older learners interest may be engaged, and hindering barriers reduced, with a easily understood Internet-based experience especially when taught by similarly-aged tutors who avoid jargon and adapt use to the older adult (Lagana, Oliver, Ainsworth, & Edwards, 2011 ; Namazi & McClintic, 2003).

**Cost barriers.** Aside from conceptual concerns about technology, participants expressed some concern about the overall cost of the Internet. In the traditional sense, the purchase price of the physical product was not a stated barrier. The actual monthly cost of the ongoing use of Internet technology, however, influenced their decisions to purchase and adopt. One participant thought that all online books cost almost ten dollars after having heard that price advertised and that knowledge becoming embedded. Another participant expressed interest in purchasing an iPad after learning that Wi-Fi was a free service. In this case new knowledge alone and rapport proved critical to supporting the individual through the knowledge stage and coming one step closer to adoption. One participant ran contrary to the other participants in that she had overwhelming social support, but similar to other participants, she lacked the contextual knowledge. In this case, Rogers's Theory worked in reverse as the three middle stages (*persuasion-decision-implementation*) were eliminated when the participant was compelled to use the Internet technology to reduce familial anxiety involving the participant's health. However, the family in this case purchased and provided ongoing educational support. The

participant's practice with the technology allowed for the eventual development of the first stage of Rogers's Theory, *knowledge*. The final stage, *confirmation*, would tentatively occur when the participant experienced the ongoing benefit from the use of the technology (Rogers, 2003).

However, while cost comprehension hindered the decision to adopt technology for some of the participants, negative information and past experiences formed a barrier for others, hindering the adoption of the Internet.

**Research question two.** The fifth theme of negative experiences and the sixth theme of learning challenges addressed the second research question involving fears and concerns hindering adoption.

*Negative experience.* With regard to fears and concerns around adoption, many participants cited negative experiences with technology or previous unsuccessful attempts. The negative experiences ranged from indirect media stories to failed attempts at adoption, creating a prescient fear or concern. Negative experiences involving hacking emerged primarily from the media, resulting in a sense of vulnerability and risk. Other negative media influences involved fears of individuals preying on the elderly and identity theft. Being cautious coincides with a perception of an increased risk, which may support a negative attitude towards adopting a new technology, as the literature has suggested (Fox, 2004; Kim, 2008; Tak & Hong, 2005).

Some participants had negative experiences involving close family members' bank information being stolen or nearly being scammed for their bank account information. These participants also lacked the knowledge to reduce these risks by using firewall technologies, such as PayPal, which keep buyers and sellers separate in financial transactions. A social network consisting of computer literate children, grandchildren, and friends lending support, including the knowledge of virus and hacking prevention tools, can help reduce concerns and fears (Agarwal,

Animesh, & Prasad, 2009; Madden, 2010b). For some participants, however, a negative experience constituted a practical and formidable barrier.

Some participants in this study had negative experiences when using an older home computer. The home computer was never repaired, or it was repaired with software changes, creating graphic interface difficulties. Both circumstances frustrated the older users who eventually stopped using the technology. Other participants had the negative experience of purchasing a new laptop or being gifted a computer, but they never had support to learn the technologies. The final two stages of Rogers's Theory (2003) of *implementation* and *confirmation* explore this phenomenon.

Once individuals adopt the Internet, ongoing technical support is critical. Within Rogers's Theory, the Implementation Stage occurs with ongoing support such as answering technical questions or assisting with the installation of new devices. Minor events can become overwhelming, derailing the process of adoption for the older adult in the early stages of *implementation* and *confirmation* (Czaja, Charness, Fisk, Hertzog, Nair, Rogers, & Sharit, 2006; Saunders, 2004). Physical dexterity and visual barriers may contribute to an elderly non-adopter giving up attempts to explore the Internet. Even the hand and eye coordination needed to use a mouse or small font on the screen can create a barrier for older adults (Johnson & Kent, 2007). Adaptive technology, though, was found to ease the transition to adoption by using a rolling ball on the mouse (instead of a traditional clicker) or providing software with larger fonts (Namazi & McClintic, 2003).

The new adopter must still see that the benefits of use outweigh their outdated methods. This realization is Rogers's Confirmation Stage, when the individuals recognize the benefits. An individual must be immersed in the new technology to acknowledge the depth of benefits. Once the older adults have overcome these initial barriers and explored the Internet, they tend to embrace the Internet. Upon embracing it, individuals tell their friends and family through email more fervently than other cohorts (Chu, Huber, Mastel-Smith, & Cesario, 2009; Fox & Rainie, 2002b). Despite experiencing these successes, new adopters of the Internet must use caution with avoiding possible setbacks, including negative learning experiences.

***Learning challenges.*** Several participants had past experiences with attempting to learn to use the computer when data entry or data processing was not user-friendly. Participants shared terms such as the "green screen." A long-ago association with computer interaction was their last real technological learning experience. Other participants had negative experiences with being the oldest person in the classroom attempting to learn a computer program with a teacher that did not consider terminology and dexterity differences. The participants perceived that they had intellectual deficits specific to the computer even when they read and write well. This described perception is consistent with other studies finding that the lack of consistent engagement of the older adult with the technology may spur first-time anxiety with a technology perceived as too complex. For example, younger cohorts were more confident engaging technological change because they grew up utilizing computers and playing video games (Johnson & Kent, 2007; Namazi & McClintic, 2003; Saunders, 2004).

Many participants observed others' relative ease with technology, especially members of younger cohorts. This observation was often accompanied with the statement of "I'm too old." Such statements in the study support the literature in confirming that older adults who have not grown up with the technology may need more practice with the technology. Detailed interventions for older adults allow more time for trial and error practice, improving feelings of self-efficacy (Xie & Bugg, 2009).

The participants in this study vacillated between struggling with self-perception and needing to hear encouragement and attitudes related to technology adoption can hamper critical transition points in adopting the technology (Czaja et al., 2006; Saunders, 2004).. The participants shared their negative experiences with observing younger members using the technology, contributing to fears and concerns about Internet adoption. Yet, this concern and fear may be countered by the potential benefits for Internet-based communications by the older adult who is geographically isolated from both younger support network members and from retail options (Hale, Cotten, Drentea, & Goldner, 2010; Johnson & Kent, 2007; Madden, 2010a; Tak & Hong, 2005). Older adults have the opportunity to successfully compensate for difficulties they may experience associated with age related loss and continue to participate within their social networks Adapting the education and technology for the older adults is crucial in the adoption process.

With tailored computer programs to address the specific needs, older adults have found improved self-efficacy and reduced computer anxiety (Czaja et al., 2006; Saunders, 2004). Yet, these different types of tailor made programs for older non-adopters had not been disseminated to the participants in this study. Some participants were aware of a computer class offered, but unaware if it met their needs. Other participants were not aware of any computer classes for older adults. These learning experiences culminated in a lack of confidence that participants reflected in phrases such as “big dummy” or “dumb bunny.” Self-efficacy and computer anxiety are well researched in the literature as factors hindering adoption (Broady, Chan, & Caputi, 2010; Gatto & Tak, 2008; Johnson & Kent, 2007; Ryu, Kim, & Lee, 2008; Saunders, 2004). These psychological barriers are interrelated with social factors, which also were explored in this study. The influence of these social interactions on adoption developed into the final three themes. Unfortunately for most of the participants in this study, these social interactions were discouraging.

**Research question three.** Social interactions coalesced into *social discouragement from family, social discouragement from friends, and various degrees of mixed encouragement.*

***Social discouragement from family.*** The participants’ shared experiences reflected that their families directly or indirectly discouraged them from learning new technologies. Almost all the participants voiced an interest in adopting some technology and were surrounded by family members using the latest technology. Yet, only two participants had family members who offered and provided the support, illustrating the psychosocial barrier of social discouragement for many participants. This study illuminated the complex and interrelated social systems in the life course model (Hutchison, 2008), which informs the process of chronological time and its influence on the social connectedness of older adults. One key concept in exploring the social

connections of older adults is linked or interdependent lives (Hutchison, 2008). Just as the literature suggests of these connections' importance, this study suggests that these connections can influence an older adult's adoption of the Internet.

The concept of linked or interdependent lives stresses the continuity and influence that social relationships play throughout the aging process (Hutchison, 2008). The psychosocial influence towards adoption for many of the participants was conflicted between meeting their needs and not wanting to burden their family members. An older participant articulated that she wanted to take a computer class along with her adult daughter who lives next door. Yet, the adult daughter took the class, promised to teach her mother, but had not followed through as promised. This mixed encouragement hindered adoption because the participant did not want to conflict with her adult daughter's promises. Other participants experienced degrees of discouragement mixed in with support, further complicating the adoption process. One participant was using a desktop computer, and she embarrassingly voiced that she had to share an email account and password with her adult son. Her spouse had his own computer and password. When the participant asked for help, her spouse responded inconsistently with either providing assistance or stating "I already taught you how to do that," creating social stress. The participant just gave up using the computer.

***Discouragement from friends.*** While family connections played a substantial role in participants' experiences, so did friends within their social networks. Social interactions provide a method to stay connected with and assess human interactions. These interactions translate to social capital for the individual. Robert Putnam in *Bowling Alone* describes these dynamics as the glue holding together social bonds (Putnam, 2000). The participants in this study maintained or created social bonds through volunteering, offering one method of social interaction which provided the opportunity for finding new friends and the subsequent building of social capital. A network of friends has the potential to buffer age-related loss and support. The overall well-being of the older adult tends to lose social network members through naturally occurring attrition (Putnam, 2000). Yet, if social network members discourage the use of technology, the participant does not have many sources for support. Rogers's theory (2003) recognizes how the influence of opinion leaders and peers can hinder the dissemination of an innovation. In this study, vocal social network members disagreed with the participant about adoption. In one case, the opinion leader did not support single Christians using Internet dating websites. The participant was thus hindered and concerned about how she would be perceived. Another participant's friend told her not to take a computer class because it did not work for the friend. Further, friends demonstrated a negative attitude towards a widowed participant wanting to be online. Across this range of social needs and desires, social influence hindered the decision making process. The literature and theories explore this critical role of social influence.

Social influence is prevalent throughout Rogers's (2003) theory. As individuals seek encouragement as they explore new technology, their social network provides feedback. The Life Course Perspective informs and illustrates this concept through stressing the continuity and influence that social relationships play throughout the aging process (Hutchison, 2008). This concept is reflective of the influence that social networks have on the individual. The literature recognizes the influence of the social network on the decision to move towards adoption (Madden, 2010b; Gatto & Tak, 2008). However, the fear of rejection from a social network underpins this social influence. Indeed, study participants reacted to discouragement, yet wanted to continue to belong to the group. Belonging is a fundamental need, which Maslow (1954) noted in his hierarchy of needs. The need to belong is satisfied through social connection and the natural tendency of humans to affiliate in groups (Maslow, 1954). Thus, discouragement from a family or peer group, which has varying degrees of conformity, forms a real or perceived threat of rejection from the group. Loneliness is defined as "the unpleasant experience that occurs when a person's social network of social relations is deficient in some important way, either quantitatively or qualitatively" (Perlman & Peplau, 1981, p.31). This sense of feeling rejected can hinder adoption. In terms of maintaining support, it can also be a driving force for the older adults to stay connected in order to maintain their social capital. In terms of hindering support, the sense of becoming a burden may stifle requesting support. The social influence of the family and peers in the study ranged from active support to active discouragement, but most support network members provided mixed signals with regard to words vs. deeds. With this array of social complexities, social influence becomes a double-edged tool that can support or hinder adoption.

### **Study limitations.**

*Homogeneous sample.* A limitation in this study is that the homogeneous sample lacks diversity, and the results do not apply to the entire diverse population of older adults. The demographics of the study participants do reflect the population of older adults in this geographic area, providing a window into a very specific group. The participants in this study are Christian, socially conservative, and politically conservative. The study sample reflects homophily within diffusion theory. Homophily is “the degree to which two or more individuals who interact are similar in certain attributes such as beliefs and education” (Rogers, 2003, p.19). While the group is similar with beliefs and education, the group is diverse with underlying psychosocial variables and interrelated social networks. This either creates barriers or forms potential opportunities to adopt technology. Given the time and resources, the inductive method using in-depth interviews seemed to be the best strategy to attain depth in at least one group.

*One-time interviews.* The drawback of the one-time interview is rapport building and trust building, which takes time to elicit the psychological and social variables. The first time one person sits with another person assuming roles, a complex interchange develops based on sensitivity, emotional maturity, and life experience (Denzin & Lincoln, 2011). Preferably, a second interview with follow-up questions could prompt a greater depth and quality of data as rapport would already be established (Padgett, 2008). Another limitation involves participants who may guard information, which can be difficult for data extraction. The optimal interview experience involves a dialogic flow with more in-depth responses, but the participants varied, as some had travel or health-related issues. While silencing a participant would destroy rapport, guiding the participant from the depths of emotionally charged personal concerns could help

maintain rapport (Yalom, 1995). A one-time interview must balance establishing rapport with extracting good data, which happens after rapport has been established (Padgett, 2008).

*Only parts of a social network.* Another limitation is that the study does not reflect the perceptions of others in the participants' social networks. Interviews with a fuller range of individuals with whom the participants have social bonds (including spouses, grandchildren, and adult children) may have provided a fuller picture of the participants' experiences and greater depth with the psychosocial variables (Hogg, Abrams, Otten, & Hinkle, 2004; Watts, 2003). Additionally, interviewing policy makers and educators who teach older adults to use the Internet could have provided their perceptions on the circumstances of older non-adopters. Older adults have complex social identities, and complex social structures influence their Internet adoption decisions (Yalom, 1995). This study just explores the experiences of older adults from the angle of the older adults' experiences.

### **Implications.**

*Implications for practice.* The first implication for practice involves the finding of the hindering influence of the social network on the participant. The findings in this research study illuminated the psychosocial variables of social discouragement from family and friends and learning challenges. The consequence of these negative circumstances may influence many of the "face saving" reasons provided by the participants, thus buffering or discounting their interest, as found in this study and in the literature. This discounting or self-deprecating comments was expressed in this study with reasons such as "I'm too old." Although the psychosocial variables varied in degree for each participant and were multi-dimensional, this lack of self-esteem regarding education was expressed and summed up as the fear of looking like a "big dummy."

Many of the participants in this study either lacked the knowledge they needed to use the Internet or misunderstood the knowledge they had. Adoption was also hindered by the anxiety of being perceived as “a big dummy” in front of peers, friends, or family. This would fit with the participants’ shifts from having no interest to having interest in the Internet. The lack of knowledge and comprehension of what “it” is, coupled with the social anxiety of appearing dumb, hindered the older non-adopters from asking questions of their peers or friends.

A practice intervention for this perception is similar to overcoming other stigmatizing labels. If the older adults simply discuss this fear and see a new support group, they will build confidence. To build group cohesion, a simple method is to formulate an “us versus them” conceptual framework through personifying their greatest fears such as the “critic” or the “know it all.” The group can become more confident through using a style that combines education and humor, encourages, and provides role models. Once the participants understand that the group is safe and they feel confident about asking questions, initial hindering fears subside. The participants can be encouraged by using a historical diary showing their progress to alleviate any surfacing anticipatory fears. Ongoing positive reinforcement through encouragement allows for the process of risk taking begins which fosters group cohesion, which is critical to risk taking and learning (Yalom, 1995).

The second practice implication involves engaging the social networks of the older adult. There was one outstanding characteristic of all the non-adopting older adults in this study, a characteristic exemplified by two participants who had no interest throughout the interview: “If they [children/grandchildren/friends/work/church/volunteer] needed me to, I would.” This statement exemplifies the importance and influence of the participants’ social networks. New intergenerational interventions must incentivize the social networks of the older adult to include

Grandpa and Grandma in technology. The older adults, though, will probably adopt technology only if they need to help or connect with someone. The older adults' decisions and opportunities to use the Internet are bound together with complex family and peer dynamics. These isolated older adults are not using or avoiding the Internet. Why are older adults' learning options castigated to using the Internet apart from their social networks? A practice solution would be to incentivize the social networks of the non-adopting older adults.

One obvious solution would be to engage the schools where their grandchildren attend through offering an incentive such as awards or bonus points for teaching computer skills to the older adults. Likewise, adult children may be able to get a benefit from their workplace involving a community health incentive program. Another practice implication is the engagement of a non-family member in the social network and creation of an "Internet buddy" type of program. This program could piggy back on the Meal on Wheels program and would address both socialization needs and the learning needs of the older non-adopter. This "Internet buddy", if on a fixed-income, could also benefit through incentives already provided through the local Area on Aging agencies senior citizen centers.

An avant-garde innovation to address the research finding of learning challenges and the lack of awareness or desire to attend available education classes at the local senior centers is a type of mobile "tail-gate classroom." This mobile classroom is akin to a modern bookmobile/Meals on Wheels program. First generation easy to use technology like the iPad can be donated and the mobile classrooms can travel to various events seeking to educate, inform, and engage the older non-adopters in a friendly and fun way. Fun and engaging activities can make the older adult the focus of learning through online interactive games such as Scrabble or culturally specific competition, linking the Alabama vs. Auburn theme using online Interactive sports to coincide

with football season. These “tail-gate classrooms” can offer the same benefits of the local senior centers such as food and socializing but with the mobile learning component associating enjoyment with learning.

Another practice implication is the support found in the research for an educational campaign that informs older adults of the practical uses or various forms of technology. Such educational campaigns will be especially effective if they can be built into activities older adults are already engaged with, such as the senior centers described above. In addition, any educational campaign targeting older adults must reflect the fact that some older adults encounter biological and cognitive barriers to learning, which can cause frustration when learning new motor skills connected with computer use (Lagana, Oliver, Ainsworth, & Edwards, 2011; Tak & Hong, 2008). A potential intervention, suggested by Rogers’ Theory of Diffusion of Innovations, would utilize change agents and aides from the specific demographic of the non-adopter. A low threat and successful initial exposure to technology addressing the interest and attitudes towards computer use by older adults is associated with computer anxiety and self-efficacy (Broady, Chan, & Caputi, 2010). Adaptive technology was found to ease the transition to adoption by providing support to older adults through software with larger font and without technical jargon (Johnson & Kent, 2007).

Each educational campaign must be tailored to the target audience. In the (Pseudonym) County Green area, a retired football personality like Gene Stallings or Bo Jackson would provide a good connection. In addition, older adults currently using Internet technology in the specific target market could be incentivized to engage other seniors. The central agencies already funded in the area of computer literacy are the public library and the senior centers. A partnership between local public libraries, senior centers, and hospitals with local colleges could provide a unique intervention helping vulnerable older adults and each organization to achieve its mission of supporting education. Since 6 out of 10 non-adopters report they would need help getting online (Smith, 2010b), the availability of library staff to respond to computer related questions was an important area of customer concern (Becker, Crandall, Fisher, Kinney, Landry, 2010 this could be a critical area of collaboration.

These types of practice implications focused on engaging the social network can reframe the social network to inform and educate rather than hinder. The most frustrating dynamic emerging from this study was that the participants were surrounded with others in their social networks including grandchildren and adult children using the Internet technology that the participant had at least one area of interest in learning. Further, all the participants had access to the Internet either at home or within their community. This is a critical practice implication area involving engaging the social network. Woodward et al. (2011) conducted a similar study focused on older adults' computer confidence and the effect of engagement with family members on reducing fears. They used volunteer tutors who worked one-on-one to teach email and Skype to older adults in order to contact family members. The main focus of the study was to make sure the older adult was comfortable with specific aspects of computer use.

*Implications for policy. Outreach.* The participants reflected either a lack of awareness or lack of clarity concerning the available programs provided from the local senior centers or from the library. Minor changes and the better use of current assets could result in more access for non-adopting older adults. The findings from this research make a good case for adjusting current programs in terms of marketing and applying a short-term increase in funding from the Area Agencies on Aging to senior centers. These centers are not only useful to provide meals and for social programming, but also can be critical resources in encouraging a safe venue for older adults to adopt the Internet.

One such policy change would allow for more mobile classrooms, similar to the bookmobile, to attend many of the functions that the participants frequently attend. These classrooms could be an innovative method of marketing programs through informing and reducing the psychosocial barriers found in the study. This would also convey self-importance for older adults, as their education becomes a priority. This study reflected that adaptive older adults may have a thirst for knowledge, but they may have limited venues to learn. This policy reform implication involves public service organizations, such as the library, as stakeholders in supporting computer literacy. While the main focus of governmental efforts involves working with corporations to expand physical access to technologies, the responsibility for digital literacy is primarily delegated to individuals, private foundations, and educational institutions (Howard, 2010). The possibility of mobile classrooms and other learning environments provides opportunities for these stakeholders to expand digital literacies for these older adults.

Currently, the prospect of one of our participants venturing to the senior center or the library for a class seems unrealistic because of the underlying psychosocial barriers. The participants in this study had the physical access to the Internet available; the psychosocial variables hindered them. Some were aware of classes, but they worried about their negative past experiences in technology classrooms. Some of the participants had already reached the point in adoption of having a computer, but they returned to non-adopter status as a result of a lack of technical support. This lack of support was also found in a nationwide library study, where the availability of library staff to answer questions and offer assistance was found to be a barrier to adoption (Becker, Crandall, Fisher, Kinney, & Landry, 2009). It appears from the limited research in this area that the same issue would impact the older adults if they took a class at the library.

*Cost barriers.* Understanding the true operating cost within the context of other psychosocial barriers hindered the participants' decisions to commit to learning or purchasing a technology product. The changing terminology and variety of products created anxiety over uncertainties about content knowledge and support systems. One potential policy change is to connect older adult education or technology with a family or business credit or tax reduction. This increased connection and access would provide new customers for the communication industry, health education for the health industry, and a potential support role for the local business community.

*Collaboration.* During this study the hospital had unused computer rooms paid through government funding to train medical professionals to implement electronic health records. There were no skilled computer literate volunteers available to provide tutoring at the facility, but the local college had trained computer teachers. The policy implication for collaboration involves sharing available resources with stakeholders within a community, which can be productive collaboration. Although money is limited collaboration can make the best use out of those resources. This collaboration between the local colleges and hospitals could provide a unique evidenced-based intervention helping vulnerable older adults and the local college meet its goals with computer literacy. An example of this type of collaboration involved an intervention from the University of Alabama at Birmingham, which taught basic computer skills at assisted living and independent living facilities through grant funding (Walton, 2011).

This study reveals timely and pressing policy issues since the use of communication technology will integrate healthcare along with all current forms of communication (radio, television, telephone, cable, and Internet). This dynamic will have far reaching implications for net neutrality and questions of defining the Internet as a public utility because the Internet is an essential part of life. The Internet impacts the ability of nearly all Americans to stay connected. It also provides access to a variety of benefits that non-adopters may not have, placing non-adopters at a growing disadvantage from accessing health information.

*Implications for future research.* One implication for future research is the role of the social network in both fostering and hindering Internet use among older adults. We need further research to test interventions that incorporate social networks, involving both family and friends, with regard to computer classes and Internet adoption for older adult learners. Further, throughout the study, I did not have the benefit of interviewing the older adults' social network members. Thus, a question that emerged was the role of the attitude towards Internet adoption and learning of individuals within the social network of the older adult. Further, did this attitude support or thwart attempts at self-efficacy through technology adoption? This area is fertile for future research in terms of empowering or protecting older adults with regard to the aging process. Are adult children overprotecting their parents from the Internet? These hindering perceptions of the literate social network members towards the adoption of their older adult would be a unique contribution in contrast to the role of the social network in encouraging adoption (Gatto & Tak, 2008; Madden, 2010b; Saunders, 2004; Tak & Hong, 2005).

Another research implication involves questions related to the best times and locations to support Internet adoption. An interesting phenomenon that I observed was that the participants appeared to be keenly aware of all the local places and times where all the other older adults gathered for coffee and informal socialization and talking. For example, there were several venues such as restaurants and malls where older adults are ready to learn and socialize at various times throughout the day. It would be interesting to determine what would be the best time and type of class to offer to these older adults? Would a "walk & talk" group be a potential venue to integrate education, socialization, and exercise?

The impact of intergenerational Internet communication differences also has implications for future research. Older adults perceived a lack of eye contact and a greeting with younger cohorts as rude. The younger generational perspective could yield interesting results about this behavior, especially given practices surrounding the use of technologies such as the smart phone. Along with general communication differences, intergenerational concerns regarding response time surfaced. The participants quickly responded to a text and waited expecting to receive an answer right away. One participant even placed the phone central to her activity area and then would sit and do a puzzle while waiting for another message. An empirical question may be the differences in multitasking between generations or intra-generational differences between non-adopters and adopters. This may lead to an innovative method or best time for introducing a new method tailored specifically to the older non-adopter. Such an intergenerational comparison study could offer new knowledge supporting social connections.

Another implication for research addresses the need to focus on non-adopters who are socially isolated. The respondents to this study were socially engaged, and the study findings illustrate barriers to research for older adults with strong social networks. We need to know more about barriers to Internet use among older adults who are isolated. How do isolated older adults perceive the Internet and forms of social networking? Lacking influences from family and friends, how do isolated older adults form their perceptions of the Internet? The health consequence associated with isolation, along with the potential benefits of engaging older adults only underscores the importance of learning more about barriers to Internet use amongst this group.

***Relevance of the study to social work.*** Empowerment and self-determination are two key ethical components of social work practice (Reamer, 2005). We do not want our older citizens to be exploited or to create a forced dependency based on the “haves” [digital literate] and the “have nots” [the digitally illiterate]. Further, the older adult would have a greater opportunity to sustain access to resources and no longer have to depend solely on others within their social networks for fostering empowerment and self-determination ((Becker, Crandall, Fisher, Kinney, Landry, & Rocha, 2010)..

The more isolated the older adult becomes, the more vulnerable they become physically and psychologically. Computer mediated social communication offers new options to reduce perceived social isolation in traditionally hard-to-reach populations who are older, disabled, and geographically isolated (Gatto & Tak, 2008; Madden, 2010b). Older adults who are socially disconnected are at risk for biopsychosocial declines (Doane & Adam, 2010; Patterson & Veenstra, 2010). Unfortunately, as more interventions become available online, traditional programs are at risk for decreasing due to the cost-prohibitive nature of reaching isolated populations (Hale, Cotten, Drentea, & Goldner, 2010). Therefore, these older adults who are not online are at an increasing disadvantage ((Becker, Crandall, Fisher, Kinney, Landry, & Rocha, 2010; Gandy, 2010). . Yet, this unprecedented rise in longevity also provides the opportunity for the profession of social work to enhance the quality of life for older adults.

The empowerment and self-efficacy of older adults can be enhanced through the use of technology to connect with the world around them (Broady, Chan, & Caputi, 2010; Gatto & Tak, 2008; Ryu, Kim, & Lee, 2009). This step towards social connection can reduce their social isolation. It can also provide opportunities to engage in generativity, gain access to late-life job opportunities, learn health information, engage in late-life learning, access government services, and remain active (Smith, 2010b). These results of social connection through the Internet can help foster empowerment, a key ethic of social work. Thus, the profession of social work can lead the way for older adults' by supporting computer literacy and thus help redefine successful aging through the use of empowering technologies.

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## Appendix A

Table 1: Demographics of the Sample

|                |                  |    |
|----------------|------------------|----|
| Age            | 65-69            | 1  |
|                | 70-79            | 10 |
|                | 80-87            | 4  |
| Marital Status | Married          | 6  |
|                | Widowed          | 9  |
| Education      | High School/GED  | 7  |
|                | Some College     | 5  |
|                | Undergraduate    | 3  |
| Ethnicity      | Caucasian        | 14 |
|                | African American | 1  |
| Religion       | Protestant       | 15 |

## Appendix B: Interview Guide

1. You currently do not use the Internet; can you tell me your experience involving the Internet?
2. What would you say you are missing out on by not use the computer for social communication?
3. What concerns do you or others same age peers have involving Internet use?
4. What do you think are the reasons that you or some of your same age peers do not use the Internet?
5. Why do you think older adults would not have an interest in using the computer for social communication? Do you have an interest? If so, explain interest or lack of interest?
6. Do you think your friends or family would be supportive of you learning the Internet?  
How do your friends encourage you to use the Internet?  
How do they discourage you?  
How do your family members encourage you to use the Internet?  
How do they discourage you?
7. What do you think can be done to reach out and promote the use of the Internet by older adults?
8. Free classes are provided at the library and at the senior center, have you any experience or your peers with taking a class or reasons for not taking a free class there?
9. Do you have an interest in using the Internet?
10. Do you have access to a computer?
11. Is cost a factor?
12. What are some of the potential difficulties learning to use the Internet?
13. Do you find it's a waste of time?
14. Do you feel you are just too old to learn?
15. Do you think you need to learn it?
16. Do you want to but just don't know how?
17. Are their physical difficulties?

18. Are you worried about viruses/spyware/spam?

Additional questions and shortened interview for those not passing the initial screening:

1. What are some positive things you have heard about the Internet?
2. What are some of the negative things you have heard about the Internet?
3. What do you think would be the most difficult part of learning the Internet?
4. What does it mean when someone Googles something?

Demographic questions:

What is your age?

What is your highest level of schooling?

Do you live alone?

Are you widowed?

How do you usually describe your race or ethnicity?

## Appendix C: Coding Process Example

### Example of the coding and analysis process

*Research Question 2: What underlying fear and concerns do older adults have related to Internet use?*

*Structural Code for research Question 2 is [C.fear concern]*

Theme 2: Learning Challenges

The original category of *Age related learning fears merged* into the final theme of learning challenges.

### Link to Rogers Diffusion Innovations Theory

*Complexity*: The perceived level of difficulty to learn the new technology. Homophily Diffusion

*Trialability*: Ability to test out the new technology.

The teacher would have to be all right, these people know nothing. Not expecting you to come in knowing a bunch of things, and it would be better if it wasn't once a week because you forget when you get older. You forget. It would be better if it was continuous for a couple weeks or something. That way you could, and then they always start with they pretend you know nothing. Then if you are getting ahead, they'll go all right, you're ready to learn that.

*Structural Code for research Question 2 is [C.fear concern]*

*Late life traumatic learning experience*

Merged from research question 3 Bsocial: social network influence support or hindering

Theme of 2: Learning Challenges.

The original category of *Age related learning fears merged* into the final theme of learning challenges.

***Link to Rogers Diffusion Innovations Theory***

*Persuasion:* Influence classroom experience influencing Rogers decision stage.

Knowledge Stage: new knowledge acquisition influence illuminating question 2 fear and concern.

“I enjoyed it and really and truly wanted to take typing. I don’t know why I wanted to take typing. There was a lady that really discouraged me. She said, At your age, I was 49 when I started, She said, At your age, you’ll never get up to the speed that you need to be in order to get a job typing. That was a bad thing to tell me. I went through two quarters and quit.”

## Appendix D: Example Codes

### **Descriptive codes**

3rd Person negative experience no interest  
Ability skill  
Active Social Discouragement  
Active Social Encouragement  
Age Related learning  
Age related vulnerability  
Ageism Age related  
Alienation Rejection  
Aware Interest but Didn't ask  
Behavioral change result of negative tech experience  
Church Related  
Confidence  
Cost Conceptual Deficit  
Denied label as a daily technology user -us vs them  
Direct Traumatic experience with hacking  
Empowering proud  
Experience First Hand Direct  
Experience with technology in the past  
Family Friends close ties use Internet  
Focus of Interest in technology  
Friends use Internet  
Heard about it  
If he had given me a package I..  
Justifying abilities contribution

## **Structured codes**

Areason: computer was old slow broken

Areason: desires autonomy own computer

Areason: distant removed outside looking in

Areason: late life traumatic learning experience

Areason: printer was broken

Areason: sees the advantage over old technology

Areason: traumatic indirect a friend hacker event

Areason: traumatic personal hacker event

Areason: conceptualizing the Internet

Areasons: a change in interest level

Areasons: awareness watching perking interest

Areasons: conceptualizing cost

Areasons: conceptualizing difficulty limited exposure

Areasons: conceptualizing latest technology

Areasons: conceptualizing word knowledge

Areasons: direct experience with the benefit

Areasons: entry point of interest

Areasons: for not starting use

Areasons: for stopping use

Areasons: I'm too old

Areasons: lack of awareness of local resources

Areasons: lack of Promotion of local resources

Areasons: little cheap one

## Appendix E: Example Analytic Note

“Thought on Identity, reasons in common with children and grandchildren, what to talk about Facebook knows it all. They already know it all.” “Persuasion influence, could I? Should I?” “Social network.”

“A reason to call to spend quality time, interrupting too busy.”

“Unanticipated speed of technology leaving confused what to buy or what to throw away. Conflicted generational, don’t like to throw things away.” “Knowledge, what do all those new words mean?” “How do you know you don’t know?” “Fear of learning or social network”.

“Hyper aware of social approval. Need to be approved all the time.” “Thread running through all questions.”

“Observability but not trial and error missing a kick the tires or test drive.”

“Hinder by fear or their fear of others knowing they don’t understand, but feel like they should.”

Appendix F  
IRB APPROVAL

Office for Research  
Institutional Review Board for the  
Protection of Human Subjects



July 29, 2013

Brian Maloney  
School of Social Work  
Box 870314

Re: IRB#: 13-0R-255 "Perceived Psychosocial Barriers to Internet Use among Older Adults"

Dear Mr. Maloney:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

Your application will expire on July 28, 2014. If your research will continue beyond this date, complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the IRB Request for Study Closure Form.

Please use reproductions of the IRB approved stamped consent forms to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.



Are you 65 and older and currently do not use the Internet?



Well, my name is Brian Maloney and I am a doctoral student at The University of Alabama and I want to know why? It's voluntary and confidential.

You will receive a \$10 gift card and help a good cause.

- Do you have an hour and half to spare?

You just have to answer some questions and share your point of view. All interviews are confidential.

Where? Right here at the hospital.

Give us a call and we will schedule an appointment.

205-387-4441

**VA IRB ApproVedi Document**  
**Approval date:**  
**Expiration date: 21**

## Informed Consent Form

Study title: Perceived Psychosocial Barriers to Internet Use among Older Adults

Investigator: Brian Maloney, Ph.D. Student, University of Alabama

You are being asked to take part in a research study. The study is called: Perceived Psychosocial Barriers to Internet Use among Older Adults. The study is being conducted by Brian Maloney who is a Ph.D. student at the University of Alabama, School of Social Work.

What is this study about? What is the investigator trying to learn?

The study goal is to understand true reasons older adults don't use the Internet and how policies or how programs might be changed to make Internet use more appealing.

Why have I been asked to be in this study?

You have been asked to be in this study, because you are age 65 or older and do not currently use the Internet.

How many people will be in this study?

About 25 people will be interviewed for the study.

What will I be asked to do in this study?

If you agree to participate in the study, we will sit here in my office and I will ask you questions about your experience with the Internet and reasons you don't use it. Examples of questions are:

About how many times have you tried using the Internet?

What was that experience like for you?

What are some reasons that you do not use the Internet?

How much time will this entire process take?

The interview should take about one hour. The entire study (including paperwork time) should take about an hour and a half.

Will being in this study cost me anything?

There is no cost to you for participating other than your time.

Will I be compensated for being in this study?

In appreciation of your time, you will be given a \$10 gift card. If you start the interview but do not finish, you will still receive the gift card.

What are the risks (dangers or harms) to me if I am in this study?

Little or no risk to you is foreseen. Some of the questions may remind you of frustrations you experience or of arguments you have had with friends or family members.

What are the benefits (good things) that may happen if I am in this study?

There are no direct benefits to you. Although you will not benefit personally from being in the study, you may feel good about knowing that you have helped provide information that could be used to help others.

What are the benefits to science or society?

It is hoped that this study can inform efforts to help older adults use the Internet if they want to.

How will my privacy be protected?

The interview will be conducted in a private location where others cannot hear your comments. You may decline to answer any interview questions.

How will my confidentiality be protected?

Your name will not be included on any study materials. The signed consent forms will be kept separately from the study data. All study materials will be stored in a locked drawer in a locked office. All electronic records, such as transcripts or audio recordings, will be stored on a password-protected computer. No study reports will identify the names or agency names of participants. No one, including your employer, will be informed of your participation.

What are my rights as a participant in this study?

Taking part in this study is voluntary. It is your free choice. You can refuse to be in it at all. If you start the study, you can stop at any time. There will be no effect on your relations with the University of Alabama or the (Pseudonym) County Green Facilities.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

What if I have concerns or complaints?

All concerns and complaints about your rights as a person in a research study should be directed to Ms. Tanta Myles, the Research Compliance Officer of the University, at 205348-8461 or toll-free at 1-877-820-3066.

You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at [http://osp.ua.edu/site/PRCO\\_Welcome.html](http://osp.ua.edu/site/PRCO_Welcome.html) or email the Research Compliance office at [participantoutreach@bama.ua.edu](mailto:participantoutreach@bama.ua.edu).

Who do I call if I have questions about the research?

All questions about the research should be directed to Brian Maloney at 205-387-4441 or [Brian.Maloney@BHSALA.com](mailto:Brian.Maloney@BHSALA.com).

You may also contact the investigator's advisor Dr. Brenda Smith, The University of Alabama, at 205-348-6528

After you participate, you are encouraged to complete the survey for research participants that is online at the outreach website or you may ask the investigator for a copy of it and mail it to the University Office for Research Compliance, Box 870127, 358 Rose Administration Building, Tuscaloosa, AL 35487-0127.

I give consent for the interview to be audio-taped for accuracy. I understand that the tape will be stored in a secure, locked drawer and destroyed at the end of the study.

Yes

No

I have read this consent form. I have had a chance to ask questions. I agree to take part in it. I will receive a copy of this consent form to keep.

\_\_\_\_\_  
Signature of Research Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

## Appendix G

### Clock Drawing Measure

# CLOCK DRAWING TASK

Freehand clock drawing is a complex task that requires different abilities in addition to constructional skills.<sup>1,2</sup> It has been shown to be a sensitive measure of constructional apraxia,<sup>2</sup> but also may reflect general deficits in the conception of time.<sup>1</sup> This task is particularly useful as a screening tool to differentiate normal elderly from individuals with cognitive impairment, and in particular with Alzheimer's disease which accounts for approximately 75% of all dementias.<sup>3</sup> It is important to note that performance on this brief screening test does not establish criteria for dementia. However, it can be useful in determining whether further cognitive evaluations are necessary.<sup>4</sup>

## SCORING:

Although various methods for scoring the Clock Drawing Task have been described,<sup>1,2,4</sup> a 0-4 point method<sup>5</sup> is presented here, which is brief, sensitive, and easy to apply<sup>4</sup>:

|                                      |               |
|--------------------------------------|---------------|
| Draws closed circle:                 | Score 1 point |
| Places numbers in correct positions: | Score 1 point |
| Includes all 12 correct numbers:     | Score 1 point |
| Places hands in correct positions:   | Score 1 point |

## INTERPRETATION:

Certain errors, such as grossly distorted contour or extraneous markings, are rarely produced by cognitively intact persons.<sup>4</sup> **Clinical judgment must be applied, but a low score indicates the need for further evaluation.** It is important to note that any cut-off score is subjective and arbitrary, and classification errors may occur. However, it is unlikely that a perfectly drawn clock will be drawn by a cognitively impaired person. When in doubt, multiple sources of evidence should be examined.<sup>4</sup>

## NEXT STEP:

Performance on this brief screening test does not establish criteria for dementia, but can be useful in determining whether further cognitive evaluations are necessary.<sup>4</sup> If performance on clock drawing is impaired, a complete diagnostic evaluation for dementia (eg, DSM-IV<sup>6</sup> criteria) should be considered. This evaluation should include a standardized cognitive assessment such as the Mini-Mental State Examination (MMSE).<sup>7</sup>

References: 1. Tuokko H, Hadjistavropoulos T, Miller JA, et al. The Clock Test: a sensitive measure to differentiate normal elderly from those with Alzheimer disease. *J Am Geriatr Soc.* 1992;40:579-584. 2. Mendez MF, Ala T, Underwood KL. Development of scoring criteria for the Clock Drawing Task in Alzheimer's disease. *J Am Geriatr Soc.* 1992;40:1095-1099. 3. Morris JC. Differential diagnosis of Alzheimer's disease. *Clin Geriatr Med.* 1994;10:257-276. 4. Nolan KA, Mohr RC. Screening for dementia in family practice. In *Alzheimer's Disease: A Guide to Practical Management, Part II*. Richter RW, Blass JP, eds. St. Louis, Mo: Mosby-Year Book Inc; 1994:81-95. 5. Data on file. Pfizer Inc, New York, NY. 6. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*. 4th ed. Washington, DC: American Psychiatric Association; 1994:142,143. 7. Folstein MF, Folstein SE, McHugh PR. Mini-Mental State: a practical method for grading the cognitive state of patients for the clinician. *J Psychiat Res.* 1975;12:189-198.