April 2022

An Exploratory Study of Technology Use by Older/Senior Men for Enrichment, Communication, and Social Connectedness

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for Enrichment, Communication, and Social Connectedness

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Curriculum and Instruction
with an emphasis in Adult Education
Department of Leadership, Policy and Lifelong Learning
College of Education
University of South Florida

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Date of Approval:
March 28, 2022

Keywords: elder learning, digital engagement, training, education

DEDICATION

To Ellen Owens

Survivor, teacher, mentor, community servant, and Grandmother

ACKNOWLEDGMENTS

I would like to thank my entire doctoral committee who provided great contributions to this study. Additionally, each of the committee members have given their time and effort to older adults in unique ways with their personal time. Thank you to the very kind and patient Dr. Yi-Hsin Chen who provided statistical support to this study. To Dr. Johanna Lasonen, thank you for your careful and professional evaluation of critical aspects for the study's content. Dr. Tony Tan, you have always been there as a guiding light for academic growth; school could never have been the same without you. Lastly, an unpayable debt of gratitude to Dr. Judith Ponticell who relentlessly worked with the study design and data sorting; I will miss our weekly meetings.

This study would not have been possible without the genuine cooperation from the four participants who opened their lives up to this research.

Robert Heath, a very special thank you goes out to you for everything you have done for me.

Lastly, any person who doubts himself, yet has the courage to proceed, has my sincerest respect.

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ABSTRACT

More older adults are moving toward options for digital connection; keeping up with and learning technology is challenging. Older adults' perceptions of the difficulty of learning to use technology may contribute to their hesitancy to adopt technology options (Barnard, Bradley, Hodgson, & Lloyd, 2013). The purpose of this study was twofold: (1) to explore the experiences of older/senior men learning and using technology for enrichment, communication, and social connectedness; and (2) to identify learning experiences and/or supports that aided these older/senior men in building knowledge, confidence, and comfort in technology use.

This was an exploratory qualitative study utilizing in-depth interviews. The study focused on the experiences of older/senior men over the age of 70. Analysis of interview transcripts yielded five themes in technology use by participants: (1) technology used; (2) motivation; (3) communication; (4) social connectedness; and (5) enrichment. Further analysis of interview transcripts yielded six themes in learning technology: (1) confidence; (2) curiosity; (3) external support; (4) letting go; (5) problem solving; and (6) training/assistance.

The challenge in engaging older adults in technology use and learning is designing technology, programming, and applications that suit their wants and needs, and in developing training and learning supports to assist them in meeting their goals, in their way, and in their own time.

CHAPTER 1

INTRODUCTION

According to the World Health Organization (WHO) (2017), adults, aged 60 years and older, represent the fastest growing age group worldwide, moving from 12% in 2015 to 22% of the population by the year 2050. The World Health Organization further speculated that “ageism may now be more pervasive than sexism or racism,” manifested in “prejudicial attitudes, discriminatory practices or policies that perpetuate ageist beliefs” (World Health Organization, 2017, Fact 6).

In the United States, the U.S. Census Bureau (2018) projected similar growth for adults aged 65 years and over, moving from 15% in 2016 to 22% of the population by the year 2050. In a 2006 report by the Anti-Ageism Taskforce at The International Longevity Center in New York, the task force noted, “Ageism existed long before it was given its name” (p. 17). In America, the report concluded, “Ageism remains embedded within the nation’s institutions with de facto discrimination in the workplace, health care, language, and in the media” (p. 19).

The term *ageism* was first coined by Dr. Robert Butler in 1969. Butler was a physician specializing in gerontology and the founding director of the National Institute on Aging. He won a Pulitzer Prize in 1976 for his book, *Why Survive? Being Old in America* (1975). Butler (1980) defined ageism as comprised of three aspects:

> 1) Prejudicial attitudes toward the aged, toward old age, and toward the aging process, including attitudes held by the elderly themselves; 2) discriminatory practices against the elderly, particularly in employment, but in other social roles as well; and 3) institutional practices and policies which, often without malice, perpetuate stereotypic beliefs about the elderly, reduce their opportunities for a satisfactory life, and undermine their personal dignity. (p. 8)

Levy (2018) later defined ageism as “negative attitudes and behavior toward older adults” and noted that negative stereotypes of older adults often portray them as “cranky, forgetful, incompetent, lonely, sickly, and unattractive” (p. 226). Levy further noted that ageism “contributes to negative behavior toward older persons including disrespectful, avoidant, and patronizing behavior from community and family members” (p. 228).

Ageism may also contribute to social isolation and loneliness. Ageist practices may “restrict social opportunities for older adults, leading to reduced social engagement, and increased late-life loneliness” (Shiovitz-Ezra, Shemesh, & McDonnell/Naughton, 2018, p. 142). Furthermore, negative stereotypes and negative behaviors can result in older adults feeling “undesired, unwanted, betrayed” (p. 142).

What do we know about ageism and technology? An analysis by Cutler (2005) proposed the following:

> It is useful to think of ageism and technology as having a reciprocal influence on one another. Ageism has important implications for how new technologies are developed and marketed, just as ageism can be a potent factor affecting the adoption of new technologies by older people. (p. 67)

Cutler further observed, “In what can then amount to a self-fulfilling prophecy, the older person may indeed have more difficulty using technology designed with a younger market in mind” (p. 68). It is possible, then, that older adults may question why technology is of benefit to them if it has been developed for and marketed to younger end users.

How older people view themselves in relation to technology is an important consideration. For example, a focus group study (Vaportzis, Clausen, & Gow, 2017) of older adults interacting with tablets found that participants initially “emphasized their concern and fear of using tablets and technology in general due to lack of knowledge or low confidence” (p. 5). However, after they interacted with tablets in their focus groups, participants “expressed interest in learning how to use a tablet” (p. 7).

Background for the Study

In 2017, Anderson and Perrin reported on an analysis of three telephone research surveys conducted by the Pew Research Center with adults 18 years of age and older (Anderson & Perrin, 2017). A survey on technology adoption was completed by 3,015 participants; 740 were age 65 or older. Results suggested that seniors were moving toward “more digitally connected lives”:

> Around four-in-ten (42%) adults age 65 and older now report owning smartphones, up from just 18% in 2013. Internet use and home broadband adoption among this group have also risen substantially. Today, 67% of seniors use the internet – a 55-percentage-point increase in just under two decades. And for the first time, half of older Americans now have broadband at home. (p. 2)

However, the report also acknowledged that “despite these gains, many seniors remain largely disconnected from the digital revolution” (p. 3).

What does this mean? Underlying the reported gains in digital activity among older adults is the other side of the usage data: 58% of the survey respondents did not report owning smartphones; 33% did not report using the Internet; and half did not report having broadband at home. Looking further into the data provided in the report (p. 3), it was clear that technology use decreased as adults got older. While 59% of the 740 participants age 65-69 said they owned smartphones, only 17% age 80+ reported owning a smartphone. While 82% age 65-69 said they used the internet, 44% age 80+ reported using the internet. And, while 66% age 65-69 said they had broadband at home, only 28% age 80+ reported having broadband at home. Furthermore, 73% of participants age 65 and older indicated that they needed help in using electronic devices (p. 4).

An earlier Pew Research Center study (Zickuhr & Madden, 2012) looked at use of social networking sites by adults age 18 and older. The study found that 34% of respondents age 65 and older reported using social networking sites while 86% of adults age 18-29 reported using social networking sites. Motivation for using social networking sites also differed. For adults over the age of 50, staying in touch with family was most important, and for adults under age 50, staying in touch with friends was more important (p. 11).

Adler’s report of a 2019 AARP survey (Adler, 2019) of grandparents’ use of technology noted that they are “taking advantage of options like video chatting, text messaging and social media to stay connected to their grandchildren” (para. 1).

However, of the 2,654 respondents 46% used phone to connect with their grandchildren, 28% used text, 24% used video chat, and 18% used Facebook (graphic mid-post). Adler's report also cautioned that "staying tech savvy can be a challenge" (para. 6). While grandparents are exploring texting, video chat, and social media, "keeping up with technology is difficult" according to 39% of the grandmothers and 36% of the grandfathers responding to the survey (para. 6).

Statement of the Problem

Czaja et al. (2006) observed that research since the mid-1990s indicated a direct relationship between less use of technology and clear social ramifications for older adults: "As technology becomes more integrated into everyday life, people with less use of technology are more likely to become more disenfranchised and disadvantaged" (p. 14).

The COVID-19 pandemic which reached the U.S. in early 2020 contributed to loneliness and social isolation for all people around the world. At the outset of the pandemic, Ezra Klein, American journalist, political analyst, and editor-at-large of VOX Media, observed that "countless businesses have moved to remote work and teleconferencing to balance social distancing and the need for continued collaboration" (para. 22). He noted the following:

> Make no mistake: The rapid implementation of social distancing is necessary to flatten the coronavirus curve and prevent the current pandemic from worsening. But just as the coronavirus fallout threatens to cause an economic recession, it's also going to cause what we might call a "social recession": a collapse in social contact that is particularly hard on the populations most vulnerable to isolation

and loneliness—older adults and people with disabilities or preexisting health conditions. (2020, March 12, para. 3)

Klein also reminded us that “sadly, the hardest-hit populations are often the least technologically savvy” (para. 23).

While more older adults are moving toward options for digital connection such as texting, video chatting, and social media, keeping up with and learning technology is challenging. In addition, older adults’ perceptions of the difficulty of learning to use technology may contribute to their hesitancy to adopt certain technology options (Barnard, Bradley, Hodgson, & Lloyd, 2013). Thus, older adults may need more training or assistance in learning to use technology (Mitzner et al., 2010).

Much of the research on technology use by older adults relies on surveys that do not often explore perspectives of older adults beyond age 70-75, and data that have been collected from this beyond 70-75 population indicated that technology use decreased as adults got older. We need to explore this population’s motivation to learn and use new technology, particularly technology that might contribute to enrichment, communication, and social connectedness. We also need to explore what assistance or supports may contribute to this population’s confidence and willingness to learn.

Purpose of the Study and Research Questions

The purpose of this study was twofold: (1) to explore the experiences of older/senior men learning and using technology for enrichment, communication, and social connectedness; and (2) to identify learning experiences and/or supports that aided these older/senior men in building knowledge, confidence, and comfort in technology use.

Two questions guided this study: (1) What stories do older/senior men tell about their experiences with learning and using technology for enrichment, communication, and social connectedness? (2) What learning experiences and/or supports aided these older/senior men in building knowledge, confidence, and comfort in technology use?

Importance of the Study

I have had a 20-year relationship with technology as a senior systems administrator, software deployment project manager, SaaS startup learning and design manager, and a technology entrepreneur. As a technology enthusiast, my personal mission is to improve other peoples' lives by helping them gain increased agency through confidence and knowledge in the use of technology. Since 2005 I have engaged in volunteer work with older adults on use of technology. I was drawn to this topic because of my relationships with the older adults I have met and what I learned from them.

I believe that older adults possess life wisdom, and the participants in this study provided insights into the technology they have used over time, their motivations for using or not using technology in their day-to-day lives, their perceptions of themselves as learners and consumers of technology, and their assessment of what works in supporting older adults as they engage with new technology. The study also provided an unanticipated perspective on reluctance in older adult learners and resiliency in adapting to technology change.

Overview of Research Design

This was an exploratory qualitative study utilizing in-depth interviews (Boyce & Neale, 2006). Qualitative research seeks to make the experiences of others visible

(Denzin & Lincoln, 2013), so that one may gain a deeper understanding of the way things are, why they are that way, and how participants in a context perceive them (Mills & Gay, 2016).

Qualitative in-depth interviews enable the qualitative researcher to gather detailed descriptions of interviewees' experiences, as well as their interpretations of the meaning of those experiences. In-depth interviewing is well aligned with a constructivist paradigm. From a constructivist point of view, "both reality and knowledge are constructed and reproduced through communication, interaction, and practice" (Tracy, 2020, p. 51). Constructivism is an interpretive stance which follows the "meaning-making activities of active agents and cognizing human beings" (Lincoln, 2005, p. 60).

As I have worked with older adults as a volunteer since 2005, I expected that in-depth interviews would be more conversational, and they were. I used my research journal as a tool for capturing my perceptions and reactions to participants' perspectives and experiences, as well as potential insights into how I work with older adults learning technology.

Delimitations

This study focused on older/senior men over the age of 70, living in the Greater Dallas/Fort Worth Metroplex in Texas. Other gender or age groups were not included in the study. Other locations were not included in the study.

The study focused on cloud-based technologies used today on PCs, laptops, smartphones, tablets, smart watches, etc. The study did not include questions about smart thermostats or device assistants like Alexa. In addition, the study did not include

the Internet of Things (IoT), artificial intelligence (A.I.), the semantic web, or mobile OS based assistants, which associate with Web 3.0 and beyond.

Assumptions

In focusing this study on older/senior men over the age of 70, I assumed that participants would be interested in participating in the study; have some experiences in learning about and using technology; be able to recall details of their experiences; and be open, candid, and truthful in their interview responses. I also assumed that I would be candid and truthful in noting my perceptions and reactions to participants' experiences in my research journal, as well as my insights into what assistance and supports found helpful to participants in learning and using technology.

Definition of Terms

The following terms are related to the research questions and were used throughout the study:

Ageism: "Negative attitudes and behavior toward older adults" (Levy, 2018, p. 226).

Cloud-based technologies: "Integrated digital and online ways to access and manage any kind of content or human actions." This includes computing, approaches, environments, and applications, "managing any kind of information…from a distance" (Vassilis, 2018, https://www.igi-global.com/chapter/learning-and-teaching-methodology/195270)

Communication: a process by which information is exchanged between individuals (*Merriam-Webster Dictionary*, https://www.merriam-webster.com/dictionary/communication)

Enrichment: The act or process of improving the quality or power of something by adding something else (*Cambridge English Dictionary*, https://dictionary.cambridge.org/dictionary/english/enrichment)

Older/Senior adult: An individual 65 years of age or older (National Institutes of Health, https://nexus.od.nih.gov/all/2018/08/07/human-subjects-and-clinical-trial-glossary-updates/).

Social connectedness: the experience of belonging and relatedness between people (van Bel, Smolders, Ijsselsteijn, & De Kort, 2009, p. 1)

Social Isolation: “Lack of social contacts and having few people to interact with regularly.” (National Institute on Aging, 2020, p. 5)

Social Media: “Forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as videos).” (*Merriam-Webster Dictionary*, https://www.merriam-webster.com/dictionary/social%20media).

Stereotype: “Positive or negative beliefs that we hold about the characteristics of social groups” (Tarry, 2012, p. 523).

Chapter Summary

This chapter provided an introduction, background for the study, and statement of the problem. The purpose of the study and research questions were identified, as well as the importance of the study. An overview of the research design, delimitations, and assumptions were described, as well as definitions of key terms. Chapter 2 provides a review of relevant literature related to the purpose of the study, as well as a brief description of the literature search strategy.

CHAPTER 2
REVIEW OF RELEVANT LITERATURE

The purpose of this study was to explore (1) the experiences of older/senior men learning and using technology for enrichment, communication, and social connectedness; and (2) learning experiences and/or supports that aided these older/senior men in building knowledge, confidence, and comfort in technology use.

This review of relevant literature begins with an exploration of the phenomenon of ageism. From this context the review moves to literature on social isolation and loneliness in older/senior adults. The review then explores literature on technology use and technology learning by older/senior adults.

Literature Search Strategy

The search for relevant literature to review was delimited to 2000 to 2020. A search for journal articles and books related to the purpose of the study was conducted, consulting USF Libraries databases, including JSTOR, Google Scholar, ERIC, Article First, and WorldCat. Keywords used in the search process were ageism, social isolation in older adults, social isolation and aging, loneliness in older adults, loneliness and aging, learning in older adults, learning and aging, older adults and use of technology. As search results were identified, additional searches for older seminal pieces and related literature listed in references sections of relevant sources were also targeted if these sources seemed to be foundational to the purpose of the study.

The review of relevant literature that follows is organized in four sections: ageism, social isolation and loneliness, technology use by older/senior adults, and technology learning by older/senior adults.

Ageism

In 1976 Robert N. Butler was awarded a Pulitzer Prize for a distinguished book of non-fiction by an American author - *Why Survive? Being Old in America* (1975). He opened his book with a profound statement: “Old age in America is often a tragedy” (p. xi). He noted that by 1975, ten percent of the American population was over 65, and average life expectancy had been extended to 71. He also noted the following:

> Old people are commonplace among us rather than unusual. Longevity is no longer viewed with awe and envy…The old are people caught in a cultural time lag—suddenly there are large numbers of them, and no one knows quite what to do. (p. xi)

Butler’s book portrays through statistics and real experiences of old people in the U.S. great contradictions in American attitudes toward the old. He stated:

> We pay lip service to the idealized images of beloved and tranquil grandparents, wise elders, white-haired patriarchs and matriarchs. But the opposite image disparages the elderly, seeing age as decay, decrepitude, a disgusting and undignified dependency. Our national social policies mirror these conflicts…Misunderstandings, inaccurate assumptions and stereotypes abound in the public mind. (pp. xi, xii)

Five years later, Butler (1980) described two types of ageism in people’s attitudes toward older/senior adults: benign and malignant ageism. Benign ageism was

represented as a discomfort with or fear of aging, but malignant ageism was represented as a “more damaging kind of stereotyping in which older people are characterized as being worthless” (p. 9). Furthermore, he concluded that ageist attitudes translate into a “systematic stereotyping of and discrimination against people because they are old” (p. 11).

Elder Stereotypes

Ashmore and Del Boca (1981) credited Walter Lippman as fathering ‘stereotype’ as a social scientific concept, but they noted that Lippman did not “provide a single explicit definition” of the term (p. 2). Ashmore and Boca explained, “For Lippman, in other words, stereotypes were cognitive structures that help individuals process information about the environment” (p. 2).

Lippman’s *Public Opinion* (1922) may not provide a definition, but it does provide several ideas to describe stereotypes:

- Stereotypes can be “so consistently and authoritatively transmitted in each generation from parent to child that it seems almost like a biological fact.” (p. 93)
- Stereotypes may be the “core of our personal tradition, the defenses of our position in society.” (p. 95)
- Stereotypes are not neutral; rather, they are “highly charged with the feelings that are attached to them.” (p. 96)

Some stereotypes of elderly people are positive; other stereotypes are negative. Hummert (1990) looked at college students’ perceptions of traits of young and elderly adults. Results of the study showed that young adults did not see negative stereotypes

as more typical of the elderly than positive ones, but they did view negative stereotypes as more characteristic of the older elderly.

Hummert, Garstka, Shaner, and Strahm (1994) further pursued this research on stereotypes of elderly adults by examining the perceptions of young, middle-aged, and elderly adults. The study resulted in a traits list representing different 'types' of elderly adults. Positive stereotypes were: perfect grandparent; golden ager; John Wayne conservative; liberal matriarch/patriarch; activist; and small-town neighbor. Negative stereotypes were: despondent; vulnerable; severely impaired; shrew/curmudgeon; recluse; mildly impaired, self-centered; and elitist.

When Coudin and Alexopoulos (2010) conducted a study of the effects of negative aging stereotypes with a sample of French older adults, they found that negative stereotypes had negative effects on older individuals' *self*-evaluation and functioning, including lower levels of risk taking, higher feelings of loneliness, and more frequent help-seeking behaviors – all of which may contribute to dependency among older people.

Discrimination

The United States Age Discrimination in Employment Act (ADEA) was established in 1967 by President Lyndon B. Johnson. The act was created in response to Congressional findings that (1) older workers were disadvantaged in efforts to retain or regain employment; (2) arbitrary age limits were common practice; (3) unemployment was high among older workers relative to younger ages; and (4) arbitrary discrimination in employment because of age existed (Age Discrimination

Employment Act of 1967, https://www.eeoc.gov/statutes/age-discrimination-employment-act-1967).

Maurer, Weiss, and Barbeite (2003) conducted a 13-month study of U.S. workforce employees (n = 800), looking at factors that contributed to their involvement in learning and development activities. They found that older workers received fewer resources for activities involving learning and development. Additionally, people who believed they were capable of improvement and acquiring new skills were more likely to engage in training activities along with those who saw a benefit from participation. At both an individual and situational level, the authors found that age was negatively correlated with participation in job development activity.

In 2006 the Anti-Ageism Taskforce at the International Longevity Center in New York Identified “seven major categories in which age discrimination is strikingly evident in the United States.” (p. 4). These were: (1) elder abuse; (2) health care discrimination; (3) discrimination in nursing homes; (4) discrimination in emergency services; (5) workplace discrimination; (6) discrimination in the media; and (7) discrimination in marketing. In the taskforce report, technology and ageism was mentioned only once. The report noted:

> Corporate studies show that older women employees have a low rate of turnover and absenteeism, and productivity equal to that of younger women. The U.S. General Accounting Office reports that older women workers are cost competitive with younger women workers. Yet older women who have worked for most of their lives find that, despite years of work experience, employers are reluctant to

> hire them…because of stereotyped attitudes that they are not adaptable to today's jobs and technology. (p. 43)

No similar finding was reported in relation to the adaptability of men to 'today's' jobs and technology in 2006.

In 2007 Dennis and Thomas noted, "Ageism is part of the social fabric of American life…When age biases negatively affect workplace decisions about employment, termination, retirement, benefits, and training and promotion opportunities, age discrimination is in action" (p. 84). In their review of ageism in the workplace, the authors found that age discrimination in employment continues, despite evidence that age is not necessarily a good predictor of performance, and performance does not predictably decrease with age.

In testimony before U.S. House of Representatives committees on education and labor, civil rights and human services, and workforce protections, Laurie McCann, Senior Attorney with AARP Foundation (AARP Government Affairs, March 18, 2021), stated:

> Certainly, the Age Discrimination in Employment Act (ADEA)—which has been in effect for over 50 years—significantly improved the employment landscape for older workers…Unfortunately, age discrimination in the workplace is still disturbingly pervasive. According to an AARP survey released in 2018, 3 in 5 older workers report they have seen or experienced age discrimination on the job…Distressingly, the Covid-19 pandemic has only amplified age discrimination…During the pandemic, older workers have exited the labor force at twice the rate they did during the Great Recession of 2007 to 2009. (pp. 2, 3)

McCann's testimony was on behalf of AARP's support of the Protecting Older Workers Against Discrimination Act (POWADA) that was introduced by the House of Representatives in March 2021 and passed by the House and sent to the Senate in June 2021. The bill (H.R. 2062) is currently in the US Senate.

Media Images

Miller, Lyell, and Mazachek (2004) used the Hummert et al. traits to analyze the presence of stereotypes of the elderly in 1,662 television commercials from the 1950s to the 1990s. The primary focus of their study was on 69 commercials that contained portrayals of elderly people as central characters. Their analysis resulted in seven stereotypes. Four of these were positive (Perfect Grandparent, John Wayne Conservative, Adventurous Golden Ager, and/or Productive Golden Ager). Three of the stereotypes were negative (Despondent, Mildly Impaired, and/or Shrew/Curmudgeon). Results of the study showed that over the decades examined television commercials more often portrayed the elderly positively. However, younger elderly were more likely to be portrayed as 'Golden Agers' while older elderly were more likely to portrayed as 'John Wayne Conservatives'.

More recently, AARP (Thayer & Skufca, 2019b) reported on an analysis of a random sample of 1,116 public digital and social content online images to ascertain how older people were represented. The study found that images of adults age 50+ were under-represented, and when they were used, they were "more likely to be portrayed negatively than those under age 50" (p. 1). In addition, "seven in ten images of adults over 50 show them removed from the rest of the world – alone, with a partner, or with a medical professional" and likely to be shown "dependent and seated with others who

are ‘taking care’ of them” (p. 2). In images that showed adults 50+ there was “usually no technology in sight,” or images showed “a younger person teaching an older person how to use it, or the younger person is using the technology as they guide the older adults” (p. 3). AARP concluded that the images reviewed “may exacerbate ageism in the workplace by rarely showing adults age 50-plus at work or with technology but rather as isolated or dependent on others for assistance” (p. 5). How older adults are portrayed affects how people treat them, what they expect of them, and, more importantly, how seniors see themselves and expect things of themselves.

System Justification Theory

System justification theory argues that negative stereotypes can be perpetuated and perceived as *just* by those who participate in them. Jost and Banaji (1994) stated that “people often will make sense of existing states of affairs by assigning attributes to the self and others that are constant with the roles or positions occupied by individuals and groups” (p. 20). So, not only can individuals or groups hold negative stereotypes of other individuals or groups, but stereotyped individuals or groups can hold negative stereotypes of themselves.

Cuddy, Norton, and Fiske (2005) used system justification theory to explain how disadvantaged groups are motivated to invest belief in the fairness of structural inequality, under the assumption that they might succeed by endorsing their own negative group stereotype(s). Cuddy et al. (2005) found that the negative elderly stereotype *incompetence* was perceived as *resistant*, whereas the positive stereotype *warmth* was viewed as more *malleable*. So, older adults were perceived as less warm when they tried to act counter to the incompetence stereotype. Cuddy et al. explained,

“Thus when an elderly man fumbles with a computer—confirming expectations of incompetence—he may be perceived as even warmer than the average elderly person, but not as less competent than the average elderly person” (p. 277). Cuddy et al. concluded, “While noticing someone’s age is not inherently offensive, acting on age-based stereotypes clearly is, sadly, prejudice against older people often goes unchallenged by mainstream society.” (p. 280)

A key danger for older adults accepting and projecting a negative stereotype on themselves is the loss of self-esteem and belief in one’s own competence and agency. More recently, Judith Graham wrote in the *Washington Post* (2017, November 4), “Dismal expectations can become self-fulfilling…If a person has internalized negative stereotypes, his or her confidence may be eroded, stress responses activated, motivation diminished (‘I’m old, and it’s too late to change things’) and sense of efficacy (‘I can do that’) impaired” (para. 3).

Critical to understanding ageism, elder stereotypes, and discrimination is that age is not a single experience across all older/senior individuals. The homogenizing effect of false or negative media images contributes to the perpetuation of stereotypes and discrimination. In addition, the degree to which older/senior adult internalize ageist attitudes and stereotypes about aging may influence their beliefs about themselves and their actions as they age.

Social Isolation and Loneliness

AARP’s study of online media images (Thayer & Skufca, 2019b) found that seven in ten images of people over 50 depicted them as “removed from the rest of the world,” disconnected, and often sitting alone (p.2). Thayer and Skufca (2019a)

concluded, “Visual representation of older people affects the attitudes, expectations, and behaviors of people of all ages. Inaccurate and stereotypical portrayals may have unintended consequences and contribute to ageism” (para. 9).

Based upon a review of literature on loneliness, ageism, ageist stereotypes, neglect, and social exclusion, Shiovitz-Ezra, Shemesh, and McDonnell/Naughton (2018) proposed that ageist negativity may contribute to social exclusion and loneliness through three pathways. *Social rejection* experienced in ageism may result in “negative feelings of being undesired, unwanted, betrayed” (p. 142). *Stereotype embodiment* may lead older adults to “internalize the prevalent age-related negative stereotypes and act accordingly” (p. 142). *Social exclusion* results from “ageist practices” that “restrict social opportunities for older adults, leading to reduced social engagement, and increased late-life loneliness” (p. 142).

Research suggests that one of the “unintended consequences” of stereotypes and the negativity of ageist attitudes is a context, an environment, that contributes to social isolation and loneliness in older adults.

Social Isolation

Social isolation is defined in psychology as “the voluntary or involuntary absence of having contact with others” (https://psychologydictionary.org/social-isolation/). Frank (2018) further explained, “Social isolation occurs when people withdraw and become disconnected from family, friends and community” (para. 2).

Cornwell, Laumann, and Schumm’s (2008) conducted a study of social connectedness of older adults based the National Social Life, Health, and Aging Project (NSHAP), an initiative by NORC at the University of Chicago. A population-based study

of noninstitutionalized older Americans ages 57 to 85 was conducted in 2005 to 2006. Five dimensions of connectedness in interpersonal social networks were considered: social interaction volume, network member closeness, density, network composition, and egocentric network size.

Cornwell et al. (2008) found that the oldest adults had the smallest networks but were also the most integrated in their community and the most likely to volunteer on a frequent basis. Additionally, those with larger networks and more social interaction with network members were more likely to volunteer (this group included the retired elderly). The oldest adults were also no less likely to frequently participate in organized group meetings compared to younger adults. Findings of the study were "inconsistent with the view that old age has a universal negative influence on social connectedness. Instead, life-course factors have divergent consequences for different forms of social connectedness" (Abstract, p. 185). Such "life-course factors" can include retirement, bereavement, and health problems.

In a subsequent study Cornwell and Waite (2009) constructed a social disconnectedness scale from National Social Life, Health, and Aging Project (NSHAP) data. The authors defined social disconnectedness as "characterized by a lack of contact with others" and indicated "by situational factors, like a small social network, infrequent social interaction, and lack of participation in social activities and groups" (p. 33). Results indicated that a "lack of social connectedness is not always accompanied by feelings of loneliness and isolation" (p. 38). However, older adults who can "withstand socially isolating circumstances or adjust their expectations" may do better than those who feel isolated (p. 44).

Cacioppo, Capitanio, and Cacioppo (2014) observed that “feeling socially isolated increases the explicit desire to connect with others, but it also appears to produce an implicit hypervigilance for social threats...” (p. 1467). This can lead to elevated anxiety and hostility, as well as social withdrawal.

Loneliness

De Jong-Gierveld (1989) described *loneliness* as an experienced lack of social contacts, intimacy, or support in social relationships. She noted that the “distinction between emotional and social loneliness may be particularly relevant for studies among older people because, due to the death of aging relatives and friends, the probability of having or finding an intimate attachment figure decreases with age” (p. 133). Van Baarsen, Snijders, Smit, and Van Duijn (2001) provided a distinction between emotional loneliness and social loneliness. They associated emotional loneliness with the absence or loss of a specific attachment figure; social loneliness was characterized as more a lack of companionship and social integration.

Hansson, Jones, Carpenter, and Remondet (1987) conducted a study with 177 older adults, using a revised UCLA Loneliness Scale. They found that “loneliness was related to poor psychological adjustment, generally, and to dissatisfaction with family and social relationships. It was also related to fears, expectations, and personality characteristics likely to inhibit the restoration of personal support networks after a stressful life event” (p. 41). Cattan, White, Bond, and Learmouth (2005) observed that group activities can provide social support and contribute to the reduction of loneliness.

In a meta-analysis of correlates of loneliness in late adulthood, Pinquart and Sorensen (2003) found that *quality* of social contacts mattered. They observed, “the

principle of ‘the more, the better’ is only somewhat supported by our data”; they suggested that “the more emotionally supportive, the better” as more reflective of their findings (p. 258). They also found that friendships generally had “high relationship quality”; in contacts with family members, however, “this was not always the case” (p. 259). The authors suggested that relationships with family may be “based more on obligation” or “burdened by caregiving responsibilities” (p. 259).

Feeling lonely can affect one’s interactions with the world. Cacioppo and Hawkley (2009) found that lonely individuals will usually have more negative social impressions of other people; they are also less charitable as compared to non-lonely individuals. A person’s negative social expectations can elicit reactions from others that in turn validate initial expectations, thus increasing the likelihood that a lonely individual will push the very people away who could fulfill their social needs (Murray, Bellavia, Rose, & Griffin, 2003).

Stereotypes of older adults project an expectation that isolation and loneliness is a universal outcome of aging. Cacioppo, Hawkley, and Thisted (2010) concluded, “In sum, the human need for social connection does not fade away in middle-age and older adulthood…[Loneliness] is not attributable to objective social isolation, general negative affectivity, stress, or social support” (p. 463). Furthermore, it is possible to have little human social contact without experiencing loneliness (Russell, Cutrona, de la Mora, & Wallace, 1997).

Approaching loneliness and isolation from a philosophical perspective, Rosedale (2007) posited, “Loneliness is (a) an essential element of human existence; (b) a consciousness of a person’s own isolation; (c) a motivating force for pursuing

connection, truth, and meaning; (d) a vital aspect of critical life transitions; and (e) a bridge for new possibilities" (p. 203). Rosedale's perspective suggests that older adults, like all human beings, have options and agency to influence how isolation and loneliness shape their lives. Stereotypes and ageist negativity do not have to be self-fulfilling prophecies.

Technology Use by Older/Senior Adults

In 2009 Charness and Boot drew attention to the prevalence in survey data in the U.S. that showed "use of the Internet falls off sharply with age" (p. 254). They illustrate, using graphs from the Pew Internet & American Life Project, that 85% of people, age 18-44, use the internet in 2007 compared to 39% of people, age 65-74. That usage declined further in older age groups (24% of people, age 75-84; 8% of people, age 85+). They identified several user barriers (e.g., access, interest, complexity of technology, anxiety, efficacy) but also noted technology design and user training as contributing factors. They proposed that "the lag in technology adoption between younger and older adults may lessen but will not disappear in future generations" (p. 253).

The AARP has been a consistent voice in advocacy for senior adults; the organization conducts research and provides information, both for members and s public service. Haederle (2011) provided perspectives on the "technophobic" phenomenon among older adults. He noted that 62% of people age 75+ "still don't own a computer" (para. 4). The aversion may be attributed to perceptual, motor, and cognitive skills changing with age—"a fact that computer designers and software engineers have not always seemed to recognize" (para. 6). Similarly, older adults may be more likely to use social networking if they saw real benefit from it.

The Pew Research Center (2014, April) issued a report of the results of a telephone survey with 6,010 adults, age 18 and older (including 1,526 adults age 65 and over). The report found that “America’s seniors have historically been late adopters to the world of technology compared to their younger compatriots, but their movement into digital life continues to deepen” (p. 1). The report further noted a distinct difference between two groups of older adults:

> Two different groups of older Americans emerge. The first group (which leans toward younger, more highly educated, or more affluent seniors) has relatively substantial technology assets, and also has a positive view toward the benefits of online platforms. The other (which tends to be older and less affluent, often with significant challenges with health or disability) is largely disconnected from the world of digital tools and services, both physically and psychologically. (p. 1)

Furthermore, the report found that internet adoption fell from 74% for age 65-69 to 34% for age 75-59 (p. 2). Use of social networking sites (27%) and smartphone adoption (18%) for older adults, age 65 and over, was also low.

The Pew report identified three “barriers” to older adults using technology: (1) physical challenges, (2) skepticism about the benefits of technology, and (3) difficulties learning new technology (p. 3). Interestingly, once older adults got used to engaging online, 71% of those age 65 and older were online every day (p. 3). An AARP study was conducted in 2010 (Wilson & Moulton, 2010) that also illustrated positive experiences with the internet. A survey of 3,012 adults, 45 years of age and older, revealed that respondents with a favorable view of the Internet, and who communicated

regularly with friends and family via telephone, email, social media or in person, tended to be less lonely.

In July-August 2019 AARP Research conducted a 15-minute online survey of 2,607 adults age 50 and over. The results of that survey (Nelson Kakulla, 2019, December) reported that adults age 50+ were adopting technology (e.g., smart phones, tablets, wearable technology, smart home technology) at a rate “comparable to younger generations” (p. 4). In addition, use of the adopted technology was high “with most owners using their technology daily” (p. 4). However, older adults “often do not take full advantage of their devices, and they are concerned about privacy issues online” (Nelson Kakulla, 2020, para. 1). So, while there is “expressed enthusiasm” for trying out new devices, older adults may not “always use the tech to its full potential” (para. 4). The report also indicated that smartphone use declined as age increased with 86% of adults, age 50-59, using smartphones, 81% age 60-69, and 62% age 70 and older (para. 6).

A qualitative study by Peek et al. (2016) involved home visits to 53 community-dwelling older adults, age 68-95, living in the Netherlands. A semi-structured interview explored participants’ reasons for level of use of technology. The authors found that the level of technology use in the context of aging in place was influenced by six major themes: challenges in the domain of independent living; behavioral options; personal thoughts on technology use; influence of the social network; influence of organizations; and the role of the physical environment. Authors concluded, “Technological interventions intended to support aging in place need to consider and address older individuals' specific personal, social, and physical context” (p. 236). Individuals who

supply technology support or assistance might be tempted to try to “directly influence older adults' technology-related attitudes and beliefs” (p. 236). The Peek et al. study provided insight into how much variation there was in participants’ ownership and use of technology, reasons for use, and perceptions of competency and consequences of use.

In 2010 Mitzner et al. conducted a focus group study with 113 community-dwelling older adults, age 65 to 85. Focus groups met at local senior centers and in university conference rooms at three sites. The authors indicated, “Most literature on older adults’ technology use stems from large-scale surveys” (p. 2). The goal of this focus group study was to “explore the details of older adults’ attitudes about technology broadly” (p. 3). Results indicated that participants appreciated the convenience of technology; key features like speed, access, storage, retrieval; and the support technology provided for their daily tasks and activities. Participants disliked the expense and interruptions from unwanted communications, and they had concerns about security, and reliability. The authors concluded, “Older adults’ relationship with technology is much more complex than would be suggested by the stereotype of older adults simply being afraid and unwilling to use technology” (p. 11).

A focus group study in a smaller setting was conducted by Vaportzis, Giatsi, & Gow (2017). Participants were 18 older adults, age 65-76, who were novice tablet users. The goal of the study was “to understand older adults’ familiarity with, and barriers to, interacting with new technologies and tablets” (p. 1). For participants there was too much technology, it was too complex, and they felt inadequate in trying to use it. Primary barriers were lack of instructions and guidance, lack of knowledge and confidence, health-related barriers, and cost. The authors concluded that it was

important to understand “older adults’ perceptions of technology” and their “concern about the process of learning” to use technology (p. 10).

Social Media and Social Networking

Given the importance of social connectedness for older adults as reflected in the previous section on social isolation and loneliness, the use of social media and social networking by older adults is of interest. Burke, Kraut, and Marlow (2011) observed,

> Social network sites are designed to connect people with friends, family, and other strong ties, as well as to efficiently keep in touch with a larger set of acquaintances and new ties. (p. 571)

The authors used longitudinal self-report surveys and Facebook server logs to look at differences in engagement among 1,193 participants with varying degrees of self-esteem and social communication skill. The study found little difference in Facebook use based on level of self-esteem or social communication skill. The authors noted that Facebook “may help to ‘level the playing field’ of self-expression and connection (p. 577). They also found that “receiving messages from friends and consuming those friends’ news increases their feelings of connectedness” (p. 577). Facebook’s “lightweight mechanisms” (e.g., the “Like” button, inline comments, photo tagging) signal some form of merit, so to speak, in a relationship (p. 571). Responding “Like” on a post says a friend has seen something meaningful in that post and has taken action to acknowledge that.

The Pew Research Center (Zickuhr & Madden, 2012) issued a report on older adults and internet use that was based on survey data from telephone interviews conducted by Princeton Survey Research Associates International from March 15 to

April 3, 2012, among a sample of 2,254 adults, age 18 and older. The survey found that 53% of American adults, age 65 and older, used the internet or email, with 70% of the users online daily. The report noted that social networking site use among seniors “has grown significantly” (p. 2) from 13% in 2009 to 34% in 2012, with 18% doing so daily.

Hutto and Bell (2014) conducted a survey study of social media use with 141 older adults, age 50-65+, enrolled in a long-term research program looking at aspects of the health and well-being. Results showed that maintaining familial contact was a primary motivator (51.1%) for using social media. For older adults who did not use Facebook, for example, lack of interest and/or lack of access to a computer were primary reasons for non-use. Concerns about security or identity theft, beliefs about social media being too complicated, or a lack of time were also expressed (p. 1759). Active social media users tended to be educated, married females.

Hutto and Bell (2014) noted that “older seniors had distinctly smaller social networks than younger seniors” (p. 1761). They also noted that social media “does not replace traditional channels of interaction for older adults; it complements them with different types of interactions” (p. 1762).

Chopik (2016) contended, “Despite the attention that the digital divide has garnered in recent years, a large proportion of older adults use technology to maintain their social networks and make their lives easier” (Section 2, Older adults and social technology use). He conducted a survey study to examine perceived benefits of using technology for social connection among older adults. Chopik found that “older adults recognized the benefits of technology use for social relationship” (Discussion, para. 2).

According to a 2019 survey by AARP Research (Nelson Kakulla, 2019, December), three in four adults (76%) age 50+ used at least one social media platform, most commonly Facebook (65% age 50+; 59% age 70+), followed by YouTube (32% age 50+; 23% age 70+ (p. 45). The study also found that among adults age 50+ an average of 58% (50%, age 70+) were likely to use social media weekly (p. 47). The most common reason for using social media was “to stay connected with friends and family,” but less than half (42% age 50+; 37% age 70+) used social media daily (p. 48).

Technology Learning by Older/Senior Adults

Czaja et al. (2006) observed that “less use of technology and computers among older adults have clear social ramifications. As technology becomes more integrated into everyday life, people with less use of technology are more likely to become more disenfranchised and disadvantaged” (p. 346). Rogers and Fisk (2006) further noted that older adults often fear moving to an assisted living or nursing home environment as it means losing their independence.

Cognitive Considerations for Elderly Learning

“The belief that all memory seriously declines with age is just an ageist stereotype that is contrary to the facts” (Palmore, Branch, & Harris, 2005, p. 225). While it typically might take a little longer, older adults are capable of learning new skills. It is important that they get more hands-on practice and support from their environment and that training strategies address the characteristics of the learner (Charness & Czaja, 2006, p. 16).

Rogers and Fisk (2006) stated, “Some capacities decline with age, such as certain aspects of memory-namely, working memory and retrospective memory” (p. 39).

Working memory is important as a quantity of information must be kept active while performing an activity. Rogers and Fisk described a scenario where an elderly person is listening to a long list of options on a telephone menu system. If the beginning options on the list are lost, for example, an overload in working memory is created. Stronge, Walker, and Rogers (2002) provide the example of surfing the internet where working memory is needed to keep track of a research topic, how many tabs are currently in use, and how to move back and forth between them. Having a deficit in working memory could result in a reduced ability to mentally navigate a structure that is conceptually just out of reach (Mayhorn, Stronge, McLaughlin, & Rogers, 2004).

Rogers and Fiske (2006) described retrospective memory as “remembering something that has occurred in the past” (p. 39). If older adult John has difficulty remembering if he took his medication, he may have difficulty with his immediate retrospective memory. An assistive technology like Alexa, for example, could be directed by John to remember that he took his medication at a particular time, and Alexa could be asked if John took his medication if he could not remember. Rogers and Fisk noted, “Although older adults may sometimes have retrieval problems, these memories are generally intact. Older adults are also able to take advantage of cues in the environment that direct their attention to relevant information” (p. 39).

In their study of distinctiveness and interrelationships among visuospatial and verbal memory processes in short-term, working, and long-term memories, Park, Lautenschlager, Hedden, Davidson, and Smith (2002) observed that is was important for elderly learners, and those that support them in a learning activity or opportunity, to understand the limits of memory in older age especially where task complexity

increases, or a new skill represents, a cognitive domain that is not as familiar to the learner.

Affective Considerations for Elderly Learning

Czaja et al. (2006) conducted a study of technology use among community-dwelling adults. The authors noted, “Although older adults in the United States are increasingly using technology, data indicate that they typically have more difficulty than do younger people in learning to use and operate current technologies” (p. 346). The study found that older adults had lower self-efficacy and more anxiety around computer use than younger adults (p. 346). Study findings also indicated that individuals with lower self-efficacy and higher anxiety were less likely to use technology or the Web in general (p. 347).

According to Mitzner et al. (2010), “Stereotypes suggest that older adults are unable, unwilling, or afraid to use technology” (p. 10). Positive attitudes were associated with number of features; speed; access, storage, and retrieval of information; and portability. Negative attitudes were associated with inconvenience (e.g., expense, interruptions like ads and unwanted calls); unhelpful features; and security and reliability.

Lee and Coughlin (2015) reviewed studies from various fields to identify factors influencing “older adults' perceptions and decisions around adoption and use of technology-enabled products and services” (p. 747). They found, “Older adults are more likely to adopt and continue to use technology that helps them remain independent, lets them have control and authority over its features and functions, and does not show signs of aging or frailty” (p. 753).

Training/Assistance Considerations for Elderly Learning

Previous research has demonstrated that education and training may increase technology adoption (e.g., Mozolic, Long, Morgan, Rawley-Payne, & Laurienti, 2011; Rogers, Cabrera, Walker, Gilbert, & Fisk, 1996). Crystallized intelligence (Cattell, 1963), or what we acquire through knowledge, past experience, and culture, can assist elderly learners to continue to learn about and use technology. However, if technology changes too much relative to past experience, the risk of being left behind increases (Barnard, Bradley, Hodgson, & Lloyd, 2013).

According to Findsen and Formosa (2011), a complex intersection exists between late life development and learning. The fields of psychology and neuroscience have developed separately with most research focusing on early years of a human's life course. This contributes to several potential challenges to late life learning: (1) while there are conceptual frameworks, there is less empirical evidence concerning the relationship between brain changes in aging and late life learning; (2) the normal aging process is sometimes hard to separate from cognitive decline due to diseases associated with older age; and (3) it is difficult to isolate unique processes associated with late life learning given the reliance on numerous cognitive abilities that emerge from an equally complex interaction of brain systems.

How can this affect late life learning? Findsen and Formosa (2011) noted that fluid intelligence (i.e., the ability to solve novel reasoning problems) (Cattell, 1963) peaks in early adulthood and then proceeds to decline; conversely, crystallized intelligence typically increases gradually, stays relatively stable across most of adulthood, and then begins to decline after age 65 (Cavanaugh & Blanchard-Fields,

2006). Personality can also influence maintenance and decline of cognitive ability, especially in relation to self-esteem, open-mindedness, self-efficacy, and autonomous attitude (Findsen & Formosa, 2011).

Training and assistance for technology learning in older adults needs attention to several potential needs. Because older adults can have difficulty in grasping concepts of new technology if they cannot refer to a previous or relevant experience, analogies and anecdotes that describe experiences which older adult learners in general have had may help an older adult learner to identify connections (Lee & Coughlin, 2015). Older adult learners also typically benefit from training formats that emphasize step-by-step instructions; longer procedures that contain a large number of steps may strain working memory (Mayhorn, Stronge, McLaughlin, & Rogers, 2004). Many cognitive and perceptual processes can be influenced by a cross modal effect of noise whereby processing noise interferes with processing other information in the brain. Training and learning assistance may be more effective if noise interference is minimized (Mozolic, Long, Morgan, Rawley-Payne, & Laurienti, 2011).

Chapter Summary

This review of relevant literature began with an exploration of the phenomenon of ageism. Negative aspects of ageism (Coudin & Alexopoulos, 2010) contributed to older/senior adults' *self*-evaluation and functioning, including lower levels of risk taking, higher feelings of loneliness, and more frequent help-seeking behaviors – all of which may contribute to discomfort and anxiety in learning technology and dependency on others for assistance.

Ageism may also contribute to social isolation and loneliness (Shiovitz-Ezra, Shemesh, & McDonnell/Naughton, 2018). Older/Senior adults can experience social rejection, feelings of being unwanted, reduced social engagement, and increased late-life loneliness. Internalizing negative stereotypes can lead to withdrawal.

Today's technology provides multiple opportunities for older/senior adults to engage with others through technology. Research has indicated that adults/seniors age 50+ were adopting technology (e.g., smart phones, tablets, wearable technology, smart home technology) at a rate "comparable to younger generations" (Nelson Kakulla, 2019, p. 4). However, while there is "expressed enthusiasm" for trying out new devices, older adults may not "always use the tech to its full potential" (para. 4). Research also indicated that traditional channels of communication, such as conversations over the telephone or face-to-face, were used rather than social media. Hutto and Bell (2014) found that social media does not replace traditional channels of interaction for older adults; it complements them with different types of interactions (p. 1755).

While it typically might take a little longer, older adults are capable of learning new skills, which will usually require more practice and support from their environment (Charness & Czaja, 2006). So, it is important for elderly learners, and those that support them in a learning activity or opportunity, to understand the limits of memory in older age (Park, Lautenschlager, Hedden, Davidson, & Smith, 2002), as well as potential for lower self-efficacy and more anxiety around computer use (Czaja et al., 2006).

A 2020 report (Horrigan & Cornwell, 2020), commissioned by AARP's Older Adults Technology Services (OATS) with the support of the Humana Foundation, found that (1) "nearly 22 million American seniors do not have wireline broadband access at

home"; (2) lack of internet access at home "threatens to widen already serious divides between the privileged and disadvantaged"; and (3) "existing programs to help seniors get online are showing promise but are still too fragmentary and limited" (pp. 4-5). The report concluded, "As a whole, being on the wrong side of the digital divide means older Americans are not using the tools that could help them live happier, healthier lives" (p. 3). Technology learning and use by older/senior adults is possible, increases their opportunities for engagement and connection, and contributes to reducing the debilitating effects of social isolation and loneliness.

The COVID-19 pandemic posed new challenges. Haase et al. (2021) conducted a phone/text survey of 400 older adults, identified through a random-digit dialing approach to call landlines and mobile phones within the province of British Columbia. Individuals who agreed to participate were asked to confirm that they were 65+ years old. Participants reported that they used technology differently to connect with others during the pandemic, and approximately 55% indicated they adopted new technology. Key barriers were lack of access, lack of interest, and physical challenges. However, personal knowledge, support from family and friends, and the "social pressures imposed by the pandemic" helped older adults persist in adopting and using technology (pp. 3-4).

Chapter 3 will describe the research design, selection of participants, data collection and analysis procedures, limitations and ethical considerations, researcher bias, and validation strategies.

CHAPTER 3

METHODS

The purpose of this study was twofold: (1) to explore the experiences of older/senior men learning and using technology for enrichment, communication, and social connectedness; and (2) to identify learning experiences and/or supports that aided these older/senior men in building knowledge, confidence, and comfort in technology use.

Two questions will guide this study: (1) What stories do older/senior men tell about their experiences with learning and using technology for enrichment, communication, and social connectedness? (2) What learning experiences and/or supports aided these older/senior men in building knowledge, confidence, and comfort in technology use?

Research Design

This was an exploratory qualitative study utilizing in-depth interviews (Boyce & Neale, 2006). Qualitative research seeks to make the experiences of others visible (Denzin & Lincoln, 2013), so that one may gain a deeper understanding of the way things are, why they are that way, and how people in a context perceive them (Merriam & Tisdell, 2015; Mills & Gay, 2016).

An exploratory study is an interpretive approach, well-suited to qualitative research. An exploratory study is focused on the nature of an issue or topic to gain a

better understanding of it; an exploratory study is not intended to provide conclusive solutions. Interviews are a common data collection method in exploratory studies (Saunders, Lewis, & Thornhill, 2012).

I approached this study from a constructivist paradigm, and in-depth interviewing is well aligned with constructivism. Lincoln (2005) defined *constructivism* as "an interpretive stance which attends to the meaning-making activities of active agents and cognizing human beings" (p. 60). From a constructivist point of view, "Both reality and knowledge are constructed and reproduced through communication, interaction, and practice" (Tracy, 2020, p. 51). In-depth interviews enable the qualitative researcher to participate in authentic conversation with participants and to gather detailed descriptions of interviewees' experiences, as well as their interpretations of what those experiences meant to them.

In-depth interviews are generally open-ended and discovery-oriented, allowing the interviewer to explore the respondent's feelings and perspectives. Morris (2015, p. 3) indicated several characteristics of in-depth interviews: (1) flexibility; (2) free-flowing interaction; (3) discreet direction of conversation by interviewer around key topics; (4) interviewees telling their stories in their own ways and words; and (5) probing by the interviewer for elaboration and explanation, clarity, and detail. Roller and Lavrakas (2015) further noted that in-depth interviews allow for tailoring questions, asking follow-up questions to clarify interviewees' responses, and using indirect questions to stimulate recall or reflection (e.g., do you remember if the larger phone screen changed anything for you?).

There are many ways a researcher's personal experience informs the research process. In-depth interviews created space for me to be purposefully conscious of my perceptions and reactions and to listen carefully for connections to my perceptions of older adult learners and how I assist them. In addition, I became more purposeful in approaching my research journal as a tool for capturing my perceptions and reactions to participants' perspectives and experiences, as well as potential insights into how I might better work as a volunteer with older adults learning technology.

Rationale for Research Design

An exploratory qualitative study was appropriate for this research. I have had a 20-year relationship with technology as a senior systems administrator, software deployment project manager, SaaS startup learning and design manager, and a technology entrepreneur. As a technology enthusiast, my personal mission is to improve other peoples' lives by helping them gain increased agency through knowledge and confidence in the use of technology. In addition, in working with older adults since 2005, I have been both amazed and frustrated as I tried to assist them. I was drawn to this topic because of my interests in the experiences of some of the older/senior men who I am assisting and what can be learned from them.

Also, in conducting a review of relevant literature, I noted that many of the research studies on technology use by older/senior adults were phone or online survey research. For example, the AARP Research report, *2020 Tech Trends of the 50+* (Nelson Kakula, 2019), was based on a 15-minute online survey of 2,607 adults over 50. The Pew Research Center report, *Tech Adoption Climbs Among Older Adults* (Anderson & Perrin, 2017), was based on analysis of three Pew Research Center

phone surveys of 7,287 adults over 16+. A recent study of older adults' experiences using technology for socialization during the COVID-19 pandemic (Haase et al., 2021) conducted phone/text surveys with 400 adults age 65+. Demographic breakdowns of age groups were not consistently reported.

In addition, Quinn (2010) cautioned that surveys of adults over the age of 55 may provide a limited view of older adults' adoption and use of information and communication technology. Older adults' concerns about the online environment may be different from the general population. Concerns about privacy may affect participation and responses in surveys. So, it appears that while we are continuing to learn more about older adults in general, details of their experiences are lacking.

In qualitative studies, focus groups were more common than individual interviews. For example, Mitzner et al. (2010) conducted focus groups with 113 community-dwelling older adults, age 65-85. Vaportzis, Giatsi, & Gow (2017) conducted focus groups with 18 older adults, age 65-76 who were novice tablet users. Peek et al. (2015) conducted semi-structured interviews with 53 community-dwelling older adults, age 68-95, living in the Netherlands to identify reasons for level of technology used. In-depth interviews were not conducted.

In selecting the research design for this study, I believed that an exploratory qualitative study, using in-depth interviews with a purposeful selection of participants from an age group less represented in research studies, would provide more nuanced insights into the experiences of older adults, particularly men over age 70.

Participants

I have been engaged in volunteer work with older adults around the use of

technology for over 15 years. I saw this study as an opportunity to capture the beliefs, knowledge, ideas, and experiences of older/senior men, particularly individuals who were over 70 and who were engaged in varying levels of learning and using technology. I found that men, age 70 and over, were less represented in the research studies that I had read for the review of relevant literature. Through my volunteer work, I had access to individuals who represented this population.

Participants were selected for this study guided by purposeful sampling strategies. Purposeful sampling is frequently used when the goal of a study is to engage a small number of participants who can be particularly informative around the focus of the study and who are illustrative of a wider population of interest (Neuman, 2006; Patton, 2015). The aim of purposeful sampling is to collect in depth information from the right information-rich cases/respondents. Patton (2015) observed:

> Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry, thus the term purposeful sampling. Studying information-rich cases yields insights and in-depth understanding rather than empirical generalizations. (p. 264)

Four participants were selected for this study. All four participants live in the Dallas/Fort Worth metroplex area in Texas. I knew two of the participants prior to the study, and they introduced me to the other two participants. Descriptive portraits, using pseudonyms, are provided in Chapter 4.

Participant 1 (Ben): Ben is 87 years old, a reserved, easy-going, no-nonsense, resilient, and very family oriented individual. Ben joined the Navy at 18 and served for 8 years for the Naval Construction Battalion, the Seabees. He worked in heavy equipment

in the private sector for 25 years. He did not use a calculator, typewriter, computer, or cell phone until the age of 60. I have known Ben for 10 years.

Participant 2 (Jack): Jack is 90 years old, a reserved, calm, and traditional man who enjoys life's simple pleasures. He has been retired for over 25 years. He and his brothers had a construction business that specialized in lathe and plaster. Jack has enjoyed being a golf course marshal for the last 20 years. Jack did not get into computer or smartphone use until after his wife passed away in 2004. I met Jack about a month before the time of the first interview.

Participant 3 (Jerry): Jerry is currently 81 years old and a proud pastoral member of the Baptist Church. Jerry leads a life group of older adults in his current church; he also mentors other pastors in Texas. Jerry spends a great deal of time visiting his church members in nursing homes, communicating through basic technology, and providing general emotional support to those in need. I did not know Jerry before the time of the interview.

Participant 4 (Randy): Randy is 73 years old. He was born and raised in Texas. He has always been curious about how everyday objects work, how to take them apart, and how to put them back together. Randy's professional career was in dentistry where he owned and operated a private practice. Randy still renews his dental practice license every year. I met Randy less than a year ago.

I was also a participant in the study as in-depth interviews enabled me to participate in authentic conversation with participants. In listening to their responses, I openly shared my perceptions and reactions to their perspectives and experiences, and they shared their reactions to my perspectives. We thought together about potential

insights into how I might better work as a volunteer helping them and other older adults learning technology. As I was listening to and observing them in the interviews, I also shared technology tips, or occasionally demonstrated a technology tool, as I worked with them.

IRB Approval

Approval to conduct this study was obtained through the USF Institutional Review Board (IRB) process for social/behavioral research. Required training and current certification for social/behavioral investigators were completed through the Collaborative Institutional Training Initiative (CITI). The study was approved as Exempt by the IRB on September 20, 2021 (see Appendix C).

Data Collection

Data were collected through in-depth interviews conducted in October-November, 2021. Each participant was interviewed twice. Interviews were audio-recorded on a Sony ICD-UX560 micro recorder attached to a Sony lapel microphone. I transcribed the audio recordings using Dragon Professional 15.0 transcription programming, generally within a week after conducting an interview. Table 1 provides an overview of the interview schedule and length of interviews and transcriptions.

The first interview focused on Research Question 1. Questions explored the technology the participants used most; how they used the technology for enrichment, communication, and social connectedness; technology they may want to know more about; and their attitudes about technology. The second interview focused on Research Question 2. Questions explored participants' experiences with specific technology (computers, tablets, smartphones); how they learned to use the technology; when they

Table 1

Interview Schedule and Length of Interviews and Transcriptions

Participant	Interview Number	Interview Date	Interview Length	Transcript Pages
Ben (P-1)	1	10/4/2021	71 minutes	17
	2	11/5/2021	58 minutes	16
Jack (P-2)	1	10/5/2021	72 minutes	24
	2	10/26/2021	44 minutes	15
Jerry (P-3)	1	10/11/2021	60 minutes	18
	2	11/1/2021	66 minutes	22
Randy (P-4)	1	10/11/2021	73 minutes	26
	2	11/21/2021	43minutes	20
TOTALS	8 interviews	7 days	487 minutes	158 pages

felt confident in using technology; how they solved problems in use; how their usage changed; what they were curious about; and what they felt supported them in learning to use technology. Interview guides for both interviews are provided in Appendix A. The relationship between the research questions and the interview questions is represented in Table 2.

Research Journal

I kept a research journal using the track changes comment function of MS Word in the transcripts of the interviews as I coded the transcripts. Using this function in the coding of the transcripts enabled me to capture my personal thoughts, reactions, and ideas right next to transcript passages that I coded. This was useful for identifying questions for clarification that could be handled prior to the second interview. It was also useful for identifying connections between participants' perspectives in the first interview and similarities or differences in the second interview. Using the track changes comment function to capture similarities and differences as I was coding the transcripts helped me to categorize coded text passages in themes. It also helped me to think

Table 2

Relationship between Research Questions and Interview Questions

Research Question 1: What stories do older/senior men tell about their experiences with learning and using technology for enrichment, communication, and social connectedness?	
Technology Use	• Tell me about the technology you use most. • What led you to selecting that technology? When did you first purchase that technology? • How do you use that technology? • Is there other technology you would like to know more about? Why does that technology interest you? • Is there other technology that you would not use? What concerns do you have about that technology? • How would you describe your attitude toward using technology in the beginning? And, today? • If you removed the technology you use from your life today, what would change? Why?
Use for Enrichment	• Tell me about a recent memorable experience in using technology to learn something. • What do you enjoy the most about using technology for enrichment? The least? • What has surprised you? • What was something that you found that led to you exploring more information?
Use for Communication	• Tell me about a recent memorable experience in using technology to communicate in an important task. • What do you enjoy the most about using technology for communication? The least? • What has surprised you? • What was something that you experienced that led to you exploring more technology use for communication?
Use for Social Connectedness	• Tell me about a recent memorable experience in using technology for social connectedness. • How do you feel about social media? • What do you enjoy the most about using technology for social connectedness? The least? • What has surprised you? • What was something that you experienced that led to you exploring more technology use for social connectedness?
Research Question 2: What learning experiences and/or supports aided these older/senior men in building knowledge, confidence, and comfort in technology use?	
Learning to Use Technology	• Tell me about your first experiences in learning to use a [computer, tablet, smartphone]. What was your reaction? • What drew you to learning to use a [computer, tablet, smartphone]? When did you see a significant increase in use? • Did you teach yourself? Did you take a class? Did you have assistance? How did you learn to use a [computer, tablet, smartphone]?
Knowledge	• When you would run into a problem or 'technical issue', how would you handle that problem/issue? • How has your use of a [computer, tablet, smartphone] changed over the years? What influenced this the most? • Is there more that you would want to know about using a [computer, tablet, smartphone]?
Confidence	• When did you first feel confident in using a [computer, tablet, smartphone]? What contributed to that confidence?
Comfort and Support	• What do you think would be most helpful to you if you pursued that new learning? Least helpful? • In what ways do you feel technology has enhanced your life over time? • What would this past year or so have been like for you without the technology you use? • What advice would you give to someone your age who is fearful of learning to use technology? • What advice would you give to someone who wants to assist/support technology learning by senior adults?

about the coded text passages as I organized them in tables and made notations in ‘Research Notes’ about what I thought a particular passage might mean. An example of my research journal notations in a coding table is provided in Appendix B.

In setting up my theme tables, I created a column for the theme, for the text passages that illustrated the theme, and for my notations of my thoughts and ideas about the text passage in relation to the theme. I also captured similarities and differences among the participants regarding how they thought about or portrayed themselves in the theme. In addition, I made notes about the connections I saw to ways that I have interacted with and assisted older/senior adults in learning to use technology. These notations made me think about what I could do to better support these older/senior adults with their technology needs and curiosities. An example of my research journal notations in a theme table is provided in Appendix D.

Data Analysis

Miles, Huberman, and Saldaña (2014) describe coding as “a method of discovery” (p. 73). A code is a label for a piece of text. I coded the transcripts by hand, using different colors to highlight coded passages in the transcript text (see Appendix E for an example).

Initial codes were generated from terms in the research questions. For Research Question 1, initial codes were: (1) technology use; (2) enrichment; (3) communication; and (4) social connectedness. In reading interview transcripts and coding for the four initial codes, I noted that there were responses that very clearly spoke to participants’ reasons for using technology. So, a fifth code was added for “motivation.” The coding

process generated 147 coded transcript passages. Table 3 provides a frequency count of coded passages across participants and interviews for Research Question 1.

Table 3

Frequency of Coded Passages Across Participants and Interviews for Research Question 1

Participant	Technology Use	Motivation	Communication	Social Connectedness	Enrichment
Ben (I-1)	6	9	3	9	5
Ben (I-2)	4	1	1	0	1
Jack (I-1)	5	7	2	1	0
Jack (I-2)	3	8	2	2	0
Jerry (I-1)	6	6	4	6	1
Jerry (I-2)	4	5	2	3	0
Randy (I-1)	6	7	3	4	2
Randy (I-2)	10	8	0	1	0
TOTALS	44	51	17	26	9

For Research Question 2, I followed the same process. Initial codes were generated from terms in Research Question 2. The codes were: (1) technology learning; (2) knowledge; (3) confidence; and (4) comfort and support. In reading interview transcripts and coding for the four initial codes, I noted that there were responses that were providing information for “knowledge” and “comfort and support” that was more nuanced than the more general terms. So, new codes were created for “curiosity” and “problem solving” (replacing “knowledge”) and for “letting go” and “external support” (replacing “comfort and support”). In addition, an additional code was created in relation to “Technology Learning.” As participants spoke about their personal experiences in learning to use technology, they were providing examples of what they were doing or what someone else was doing to train or assist them through a technology application or process. So, the code “Training/Assistance” was created to capture those insights.

The coding process generated 95 coded transcript passages. Table 4 provides a frequency count of coded passages across participants and interviews for Research Question 2.

Table 4

Frequency of Coded Passages Across Participants and Interviews for Research Question 2

Participant	Confidence	Curiosity	External Support	Letting Go	Problem Solving	Technology Learning	Training/ Assistance
Ben (1)	2	0	0	1	0	5	1
Ben (2)	0	4	1	0	1	7	2
Jack (1)	0	0	1	0	0	2	0
Jack (2)	2	2	1	1	1	5	0
Jerry (1)	0	2	3	1	0	5	1
Jerry (2)	2	0	1	0	2	6	3
Randy (1)	1	2	3	0	1	5	1
Randy (2)	2	2	4	1	0	7	1
TOTALS	9	12	14	4	5	42	9

Saldaña (2016) noted that “there is no standardized or magic number to achieve” when it comes to coding concepts or themes (p. 25). It is important that the final codes “should relate to one another in coherent, study-important ways; they should be part of a unified structure” (Miles, Huberman, & Saldaña, 2014, p. 82). The codes used in analysis of both interviews across all four participants also served as themes to organize participants’ perspectives, characterize their voices, and describe their stories and accounts of their experiences in using and learning technology.

A more detailed summary of the coding process is provided in Appendix F.

Limitations of the Study

In-depth interviewing is designed to invite authentic conversation. The quality of the conversation is dependent upon the two-way exchange of information and perspective between interviewer and interviewee. In the case of the interviewer, this

was my first attempt at in-depth interviewing. A more seasoned interviewer may have achieved a different level of conversation.

In the case of the interviewee, all four participants were over 70 years old. They were provided the interview questions prior to the interviews, giving them opportunity to think about the questions. Responses required the participants to provide information largely based on recollection over time. It is possible that at a different time in their lives, they may have provided different information. It is also possible that participants may have withheld some details about their experiences, particularly if those experiences recalled frustrations or difficult emotions.

As I knew two of the participants, it is possible that their responses may have been more positive or more in depth as we already had rapport prior to the study.

Ethical Considerations

It was important to maintain the anonymity of the participants. To that end pseudonyms were created, and all transcripts, research journal notes, and narrative examples in the study refer to the participants only by the pseudonyms assigned.

It was also important to maintain confidentiality. Interviews were conducted in the privacy of locations selected by the participants. Portraits created of the participants did not contain any specific information about location or names of places and people.

Most important was to maintain respect for the participants and for the perspectives and experiences they shared. Participants were given time to respond and flexibility to respond in ways that made sense to them. If they wanted to revisit a point or come back to a question, they were enabled to do so.

Researcher Bias

In a research study, both the participants and the researcher affect the research process (Patton, 2015). Qualitative research is grounded in interpretation (Creswell, 2014); thus, researcher bias and subjectivity are common and, as some would argue, inevitable (Mehra, 2002).

I knew two of the participants prior to the study, Ben and Randy. I met Ben over 10 years ago as a friend of the family. Ben was one of the first senior adults I began helping with technology on a recurring basis, and he is my longest running learning support relationship to date. He has become a very close person in my life, and we talk almost daily. I have helped Ben with Windows and Android OS and disinfected his computer whenever he got a virus. I also helped Ben with macOS and iOS now that he is exclusively an Apple customer. I have known Randy for over 9 months and have been assisting him with technology related questions ever since we met. I have worked with him side-by-side on technology projects, and I have an up-close view of his diverse technology interests, ranging from Microsoft Office and Windows OS scenarios to Apple iOS and basic networking questions.

Randy introduced me to Jerry as a potential participant in this study. I met Jerry and spoke with him briefly to make sure he understood the study and to ascertain if he would be a good fit as a participant. I did not contact him again until I received IRB approval for the study. Ben introduced me to Jack just after I was introduced to Jerry. I met Jack at Ben’s house about a month before the study began. I spoke with him briefly to make sure he understood the study and to ascertain if he would be a good fit as a participant. I did not talk to Jack again until I received IRB approval for the study.

I used my research journal to capture throughout the study my observations, reactions, perceptions, and interactions with participants during the interviews. This provided opportunity for “reflection and analysis of the ways in which researcher's self, including personal bias, opinions, beliefs, and values shine through the process of research” (Mehra, 2002, p. 16).

In reporting the findings of the study, I used participants’ original comments, using both short phrases and longer quotes, with attention to the context they were describing (Mehra, 2002). I committed to presenting participants’ experiences and perspectives in their words, capturing their feelings and reflections.

Validation Strategies

In qualitative research, credibility and trustworthiness are synonymous with validity (Creswell, 2014). Four strategies were used to increase the credibility and trustworthiness of the study: triangulation; member checking; rich, thick description; and peer review.

First, using data from multiple sources contributes to triangulation. Multiple interviews with participants provided opportunity for each participant to bring his own experiences and worldview to the study, as well as opportunity for me to identify commonalities and differences.

Participants were provided opportunity to comment on the accuracy of the portrayal of their thoughts, experiences, and emotions (Lincoln & Guba, 1985). Member checking was helpful in getting to an understanding of participants’ worldviews.

Rich, thick description in the use of participants’ own words to describe their feelings, ideas, and experiences contributes to opportunity for readers to determine

whether they see commonalities with their situations or settings (Merriam & Tisdell, 2016). I also addressed a negative case in the section, “Unexpected Insights” to examine more closely one participant who expressed perspectives very different from the other three participants.

Finally, my major professor and a peer reviewer were used to check data analysis process and the clarity and credibility of the presentation and interpretation of findings. Johnson, Adkins, and Chauvin (2020) noted, “The peer reviewer offers a critique of the study methods and validation of the conclusions drawn by the author as a thorough check on researcher bias” (p. 143).

Chapter Summary

This chapter provided a description and rationale for the research design. An overview was provided of the participants and rationale for purposeful sampling. The data collection and analysis procedures were described, as well as limitations of the study. Ethical considerations and attention to researcher bias were provided, and validation strategies were described. Chapter 4 will present portraits of the participants and findings of the study.

CHAPTER 4

FINDINGS

This qualitative study explored the experiences of older/senior men learning and using technology for enrichment, communication, and social connectedness. Two research questions guided the study: (1) What stories do older/senior men tell about their experiences with learning and using technology for enrichment, communication, and social connectedness? (2) What learning experiences and/or supports aided these older/senior men in building knowledge, confidence, and comfort in technology use?

Chapter 4 is organized in four sections. First, portraits of the four participants are provided, describing their backgrounds and motivations, their family and social ties, and their use of technology. Next, themes in participants' stories of using technology are described, followed by themes in participants' experiences learning to use technology. Finally, a chapter summary is provided.

Participant Portraits

Randy

Background and Motivations. Randy, a gentleman and scholar, is 73 years of age. He was born and raised in Texas. I met Randy less than a year ago. He has always been curious about how everyday objects work, how to take them apart, and how to put them back together. Whether restoring antique cars or taking apart a gadget

with a printed circuit board, it is nothing out of the ordinary for Randy to have a smart phone in one hand and a screwdriver in the other.

Randy's professional career was in dentistry where he owned and operated a private practice. Dentistry was one of three fields that interested him, but dentistry was his choice. He was always curious about new knowledge, innovation, and improvement. Randy jokingly assured his wife while they were unpacking boxes and setting up his first office, "If I don't find something…more interesting than this is, I'm out of here, and I'm back in physics.."

Family and Social Ties. Randy, a traditional, self-described patriarch, watches over both his nuclear family and his extended one. He reminds me of the wise owl sitting atop the highest tree branch. If I could describe him in four words, they would be: wise, dutiful, vigilant, and devoted. Randy stated, "What if somebody needs me? I'm the patriarch, not of a large family, but of one…So, I want to be connected to where I can help if I need to." According to Randy, he is "plugged in all the time." His daily morning rituals between 6am and 9am include several forms of technology, which involve text, email, current events, and several forms of home automation.

Randy is a practicing Christian who is very involved with a denominational church in a rural part of northeast Texas. While less reserved compared to his younger years, Randy enjoys church gatherings that are social in nature, from prayer to game play. When he is learning something, he likes to include some social facilitation as well. To Randy, technology, specifically electronic communication, enhances traditional communication, but it does not replace it. When asked about what he likes most and least about technology, Randy stated, "…Well, the most, it's instant gratification, instant

connection. For the least, it's not live." One motivation for using technology to communicate is that it may lead to more face time and live verbal exchanges. Randy is also involved with his high school classmates and recently celebrated his 55-year reunion.

Technology Then and Now. Randy's practice started in the 1970's with an IBM Selectric Typewriter, simply used for writing job descriptions, and a Texas Instruments calculator. A few years later, he bought his first DOS based PC (with 8-inch floppy disks) for insurance billing. It wasn't long after the initial release of Windows that he exposed the front desk to insurance billing and patient scheduling. When he reached a maximum of 40 to 50 PC's, Randy, also a small business owner, now knew how to fix and maintain them if a computer technician should fail to show. He also had a "brain bank" for related skills that facilitated his personal growth throughout the years. Initially, Randy had only invested in personal computing for his professional realm, but somewhere in the 1990's, he got his first PC for his residence.

Today Randy enjoys playing with all his Apple Ecosystem gadgets and his Windows PC's at home now that he is retired. He spends a lot of time researching various political topics, keeping current with his dental license, and taking in a random array of various interesting trivia. Randy has a chair in his den where he can leverage five informational sources simultaneously with two affectionate dogs crawling over him. I recently installed a mesh Wi-Fi system in his house; Randy has at least 35 active IP address leases running concurrently with three people in the house at any one time. Being connected is of high importance to Randy, whether staying current in the dental profession and maintaining his license or being accessible to his nuclear and extended

families. If Randy accidentally leaves his phone at the house, he turns around to go back for it without hesitation.

Jerry

Background and Motivations. Jerry is currently 81 years of age and a proud pastoral member of the Baptist Church where he served well over 40 years in various capacities. Some of Jerry's current duties include being a life group leader, managing prayer lists, and officially mentoring other pastors in the state of Texas. He has also written a series of books concentrating on lesser-known biblical figures. In addition to this, Jerry spends a great deal of time working with older adults whether visiting them in nursing homes, communicating through basic technology, or providing general emotional support to those in need. Jerry has kept his old landline number just to make sure that older adults are able to reach him. I did not know Jerry before the time of the interview; on introduction, whether describing his physical appearance or his highly extroverted energy, one might get the impression that he is a mere a "sixty-something." He is socially engaging, fast, "gung-ho," practical, and all heart.

A typical day for Jerry begins every morning at 6AM. A quick mind guided by tick-tock urgency, Jerry crams in a full day with a lot of windshield time among his various stops. Jerry shares the following about the quality of human contact, "Email does not bring a smile on the face like walking into the room…Well, it's no substitute for being there, and there's no substitute for an arm around the shoulders."

I discovered that Jerry very much enjoys wood working. He says, "I'm a woodworker, and in that woodshop are various tools. If I'm going to do a specific thing, I

know I have to have the right tool." Jerry's value for a pragmatic mastery of tools is certainly reflected in his approach towards technology.

Family and Social Ties. Separating a devout pastor's professional life from his personal life can prove difficult. At the time of our first interview, Jerry's iPhone address book contained 911 unique entries. Jerry is "heavily involved with the so many needs in the church family and…they communicate with me by phone." Jerry is also part of a state organization where he mentors pastors in small churches. A lot of phone and text communication occurs. One of Jerry's mentees is "a big hobby person" like Jerry with his woodworking; he and Jerry text and exchange pictures of projects done.

Jerry and his wife are up at 6 o'clock in the morning, "sitting in the swing, drinking coffee…At 8 o'clock we're reading the Bible together, praying together..." Jerry's "kids are gone…out of the house." He expressed, "You know that as a father, I wish I'd had this iPhone when my children were growing up." Jerry and his children phone and text a lot. He noted, "Cell phones for family usage is really good…I can get [them] immediately on cell phone."

Technology Then and Now. When Jerry was stationed near an IBM plant right after finishing seminary, a church member, who happened to work for IBM, exposed Jerry to the IBM Selectric Typewriter. Seven years passed before Jerry's assignment to a new church location introduced him to Macintosh computers. He was given his very first computer for his church office.

More than a decade would pass, and Jerry changed churches. It's the 1990s; analog cell phones and Windows computers had already begun invading consumers'

residences, and they were waiting for Jerry in his new church. Jerry got his first personal computer (a Windows OS) as well.

In terms of learning technology, Jerry needs to know what he needs to know to be efficient at the task at hand. He stated, “I have certain things that I do on it. I'm not too interested in going beyond that unless I have to.” What Jerry acquired and learned was dependent on what the church he was assigned to was using, the training the church provided, and any additional support depended on the resources of the church.

Jerry can be curious, but practicality is key. Jerry’s biblical research for his books strengthened his folder/file system custodial skills, expanded his Microsoft Office abilities (especially clipboard functions), and sharpened his Boolean search queries. By 2017 Jerry had his first smart phone, an iPhone 7, where he utilized “smart” features beyond email and texting. Whenever Jerry finds the time, he wishes to explore more of what the iOS app store has to offer.

Jack

Background and Motivations. Jack is 90 years of age and has been retired for over 25 years. He and his brothers had a construction business together that specialized in lathe and plaster. Jack has enjoyed being a golf course marshal for the last 20 years, and he still fulfills this role three times a week. In exchange for his services, Jack receives free tee times and golf balls along with some financial compensation, but playing unlimited golf while on a fixed income is his heart’s desire. Jack stated, “…but I get to play golf anytime I want to. You know, that’s all I want...I said, ‘All I’m going to do is worry about my golf game’…”

I met Jack about a month before the time of the first interview. Jack has a stoicism to his demeanor; he presents a reserved, calm, and traditional gentleman who enjoys life's simple pleasures with stress-free, uncomplicated rituals. Jack shared, "You know, I've never let myself get involved too much outside of what you're supposed to be doing." For Jack, having a pre-defined set of activities in his life brings him a sense of peace.

Family and Social Ties. Family is important to Jack. In 2004, Jack's wife fell terminally ill. It was her passing that prompted him to learn some computer basics on the HP desktop that he had never used. Knowing he would take over some of her duties, Jack started to play around on the HP desktop where it was necessary. It was an incident a few years later—when his daughter could not find him when he had left home to shop at Home Depot—that prompted his reluctant use of a cell phone. "Keeping my daughter happy, and she could get a hold of me" was important to Jack.

Today, Jack keeps in touch with his three daughters and a son. He texts them all the time: "I know I don't try to call my kids all that much because I know that they're busy…Well, I mean everything I've got on a phone, I guess, is the most important thing because of my kids." Jack also emails his golf buddies to exchange jokes and golf stories on an HP computer that he bought for himself in 2013. Jack will also "stroll through" Facebook to "keep up with what my grandkids are doing…Yeah, I just stroll through…because of my granddaughters."

Technology Then and Now. Jack grew up in a remote area where the nearest telephone was a mile and a half away; his childhood home got its first telephone when

he was a junior in high school. For entertainment Jack and his siblings would gather around their father as he read them western novels.

Given the many measurements that construction work demands, Jack's trusted technology was a calculator. He managed multiple job sites at once, spending significant time behind a windshield. Even when a brother who dabbled in IBM computer sales in the 1980s had an office next to the construction business, Jack didn't move to a computer. He explained,

> ...I think it would've taken more of my time trying to figure that computer out than I could spend on the road taking care of those jobs...all I had to do was walk on the job... and the guy that was running the job for us, I could talk to him for five minutes and know if we had any problems or anything.

Jack managed projects, enjoyed measurement, and has an affinity towards numbers, but he prefers to keep things simplified. Jack stated, "I mean, I've worked a long time setting up how I'm set up with my life…No, man I want no gravy on my meat!"

To this day, Jack intentionally keeps his email only on his HP computer and not on his cell phone. His cell phone is for calling and texting family. He notes, "Oh yeah. I mean, I spend many a week that I never turn it [the computer] on." Jack is enjoying retirement and his simplified life.

Ben

Background and Motivations. Ben is 87 years of age, and I have known him for over 10 years working closely with him around technology. Ben is reserved, easy-going, no-nonsense, resilient, and very family oriented. At heart, Ben is an explorer who wants to see the world to experience everything in it at least once, especially where history,

sports, food, and people are concerned. Organized sports played a lifelong role in shaping his problem-solving abilities. Ben strives to avoid getting too worked up over things that do not matter, thus making him an excellent peacemaker and mentor in daily matters. Ben had this to say, “If it's something you can control, you go work at it, and try and control it. But if it's out of your hands and you have no say into it, forget it...”

Ben began his professional career at 18 by joining the Navy where he proudly served for 8 years, active and inactive, for a Naval Construction Battalion called the Seabees. He then took his heavy equipment knowledge and went to work selling it within the private sector for the next 25 years. During this time, Ben did everything by hand, which excluded the need for a calculator, typewriter, computer, or cell phone until the age of 60. Speaking from his own personal experience, Ben observed, “You know, hey, you either move with the technology, or what’s gonna happen, where are you going to be? Who you gonna talk to, who you gonna contact?”

Family and Social Ties. Ben is a traditional patriarch that leads by a quiet example with his son and daughter. He gets excited whenever he hears from them, which is often; he also enjoys being a grandfather to all the younger relatives as well. Ben shared the following, “Both my kids, they like to keep close contact on me, and so we have phone conversations.”

Ben also keeps in contact with some other family members. He talks with his sister-in-law at least once a week. She lost her husband and is part of the family, so Ben makes sure to stay in touch with her. He talks with or texts his granddaughter and his niece as well. Both are “heavy into sports” activities, and Ben enjoys being able to

watch his granddaughter's volleyball games through live-stream and texting her after the games.

Less than 3 years ago Ben laid his lovely wife to rest, but that does not stop him from saying hello to her every morning, and it has not caused him to retreat from life. Ben estimates that he has about 40 to 50 friends who were schoolmates and who keep in contact by phone, some email, some texting, and some Facebook.

Ben is actively involved in keeping an eye on politics, reading things online, paying attention to what senators and Congressmen are saying about what is happening in the U.S. Ben has volunteered for many years during elections. Ben is an avid History Channel buff, and he noted, "I watch politics today; it blows my mind…we have taken so much away from our kids in school that they don't know how this country was built or what it is built upon."

According to Ben, Mahjong keeps his mind "sharp to this day rather than to be losing some of it." He likes to compete against other players online. Ben also likes Texas hold 'em poker, just for enjoyment.

Technology Then and Now. At the age of 59, Ben went to work at Hogan Systems, an IT company that built programs for the banking industry, but his role commanded zero technology experience. One year later they offered him a new position. Ben said, I had never been in front of a computer; I had no idea what the hell a computer could do." Luckily, the position included training.

Ben was promoted to assist the system administrators with LTO tape backup routines where his training "was constant." For Ben, the adventure began: "I just wanted to learn more and know more." The more he learned, the more he would "just get on

there and start looking for things and doing things." Through trial and error, Ben was "seeing what I can do, and eventually, you know, I found the steps that I needed to do to get it done."

When Ben retired, he got an HP desktop and an Android phone where he checked email and surfed some, "checking things out" and trying to learn from what he found. If he got stuck, he managed to find his way out, or call his daughter. Both of his children use Apple products, so they eventually switched him to a Mac mini and an iPhone. Usability began changing for Ben; he stated, "It was an adventure…I just wanted to learn more and know more about it, and the only way I can do that was…to continue to check things out."

Themes in Participants' Stories of Using Technology

Research question 1 asked, what stories do older/senior men tell about their experiences with learning and using technology for enrichment, communication, and social connectedness? Analysis of participants' responses to questions asked in the interviews was organized in five themes: (1) technology use; (2) motivation; (3) communication; (4) social connectedness; and (5) enrichment. Each theme is described through exemplars from participants' transcripts, and each theme concludes with a summary of the theme.

Technology Use

Participants have seen many changes in technology over their lifetimes. They have acquired and used technology in varying ways and with different levels of interest and skills.

Randy. Randy's go to technology at home is between a smart phone and a Windows device; he is still new to the iPad. In the past 30 years, he used cellular phones for making phone calls and depended on his PalmPilot to organize contacts and appointments. In the last few years Randy has come to enjoy his iPhones where he now manages all this simply using iOS. Randy stated,

> I like the fact that it all talks to each other…I don't have a PalmPilot anymore… [With the iPhone] I can look at the thermostat and see what that is and if I need to change it. Go to my phone. It's one of those automated deals. Adjust it or whatever. (I-1, P-4)

Randy's morning ritual from 6 AM to 9 AM includes a wide variety of tasks, most of which he can do from his iPhone. He likes to check in with his home automation devices, social media feeds, news feeds, and email. Randy enjoys a sense of control over his constant stream of information. He explained,

> I go to my cell phone and see if anyone has left any messages, particularly family, kids whatever…or neighbors…Most of the emails I get I delete there's a lot of political stuff…but I don't need to send money every day to all these people…I really just need to mark it SPAM. (I-1, P-4)

Once he has finished checking his phone, Randy moves to his laptop where he can check his finances. He distrusts financial management from the cloud, so he does not use iOS platforms for finances.

Randy bought his original iPads on a whim several years ago; he invested in the iPad Pro early in 2021. Having a bigger screen that linked to a keyboard held some

potential for aiding Randy's exploration of iOS. He commented on his purchase of the original iPads:

> First tablet – 10 years ago…a couple thousand bucks for iPads, new phones, and I don't know what all we bought. Just a bunch of stuff. It was the first Apple product we bought. I bought the iPad; I was fascinated with the quality of the camera, even 10-12 years ago, even compared to other stuff. And FaceTime, we could do Facetime…And calendars, we began to use that. I've still got my PalmPilot in there with a keyboard that works by Bluetooth…I had the PalmPilot in one pocket and a cell phone in the other one. Because they weren't really integrated very well. I mean the old flip phone. (I-2, P-4)

Regarding how much he used his first iPads, Randy stated, "Not nearly as much as we use these new ones. And we're still using a lot more of this [laptop] than I do the iPad." (I-2, P-4)

Randy enjoys his home gadgetry today, a minimum of 35 online gadgets active at any one time in his house. Originally, however, his investment in technology was strictly for professional and practical reasons in his dental practice. The first phase of growth began in the early 1980's after the IBM Selectric typewriter's usefulness could not continue to meet the demands of his growing practice during the 1970's. Randy noted,

> Commodore, TRS-80 - office got it first…Word processing. One of the things we did in the dental practice was we wrote descriptions of each job position and what all the pieces of it were. And we used to have…the IBM Selectric, but with

word processing it got a whole lot easier to type it, store it, print it, and so on. (I-2, P-4)

Digital work started with labels, job descriptions, word processing, and some light duty insurance billing. However, at that time scheduling could be an expensive, complicated task when coordinating additional features such as billing with concurrent users over a network installation. So, Randy started slowly building his infrastructure and training his staff to work from terminals rather than typewriters. He said, “When the DOS systems came about, the precursor to the Windows systems, we began to put them in the front office, and we had four or five stations… they helped all kinds of stuff…” (I-2, P-4)

Once Windows reached commercial success, Randy rolled out the second phase of his technology. He stated,

> Windows 98…started, and we changed software systems. We wound up putting computers in every operatory, every doctor’s desk, every front person place. We had 15 or 20 of them around the office tied together to a server…The floppy disk was like the main feature of the front. (I-2, P-4)

With more robust hardware in place, Randy acquired Practice Works, a tool he would use for more than 30 years. He worked directly with software developers. He explained:

> The guys that created it were absolute geniuses. They sat in a room for several days over a weekend…the room bigger than this with whiteboards all around, writing down what they wanted to do. They started with the question, What in the dental practice is everything tied to: Is it insurance? No. Planning? No. Billing

statements? No. It's the appointment book. Why don't we tie everything to the appointment book because that connects to everything? (I-2, P-4)

In Randy's eyes, this scalable tool was filled with potential and would change the way his practice was managed. He heavily invested in this tool through training and finances; he also forged relationships with the founders of the product across many years. Randy's son, now a practicing dentist, is still using the software today.

Jerry. Jerry identified himself as "a desktop and a cell phone person for the most part." (I-2, P-3) He further explained:

> Well, I think probably in the beginning, I was geared mostly to the office, but then I realized there is a giant resource at home. So, we have a computer at home, and then online ordering, all online purchasing, all of that, online record-keeping, all of that began to open up. (I-2, P-3)

Jerry owns an iPhone 10, a desktop PC, and a Kindle. At home Jerry and his wife "use Internet primarily…Just email and then online browser type services at the house. Pretty regularly, especially online and now online ordering things is big." (I-1, P-3) He and his wife also have cell phones. "We use a cell phone a lot," Jerry noted.

Jerry's wife appears to use the phone in more ways than Jerry does. He explained, "Texting [wife] uses; she's on Facebook. I'm not. She doesn't post a lot; she just uses it to keep up with various things going on with the family and so on." (I-1, P-3) Jerry also made it clear that there are aspects of what the phone can do that hold no interest for him. He said,

> I had never used chat…I never used Twitter or all of the little methods that you can speak to people and so on…Facebook? I'm not interested in that at all. I'm

> not interested in Zoom - that is so boring to me…That's what we all had for a while during the pandemic. (I-1, P-3)

Jerry's first exposure to technology was an electrical typewriter that had a small amount of working memory. This occurred in a professional setting shortly after Jerry finished seminary school. Jerry recalled the experience,

> When I finished seminary, I went to Lubbock to spend about seven years. We had a big IBM plant in Lubbock, and so we had the best IBM Selectric Typewriters because he was a member of our church. I learned the Selectric, I learned the little bitty font deals we put in…I thought, oh my goodness, this thing's got memory, and it will do letters for you. Fax was real big at the time, I had my very first fax machine. (I-2, P-3)

Maybe a decade later, Jerry went to his second location and encountered the Macintosh computer. Jerry reflected,

> I left there, and I went to Pampa to a larger church, and…all of the sudden, we were involved in computers, and the church provided me a computer, and we had a guy that came in to teach us the techniques and so on about the computer. And we were Macintosh at that time…And of course, when I came here, I also got my computer. (I-2, P-3)

Jerry's current church is much smaller than the church in Pampa. He uses his office PC "internet primarily for just work-related things, like we're doing today where people need to communicate to me office wise." (I-1, P-3)

Jerry also uses the iPhone as a critical communication tool for his pastoral responsibilities, but he still maintains a landline. He explained, “[iPhone] again vital, and in my work, I had to stay…pretty fluid in and balanced…We have a landline still.” (I-1, P-3) Jerry indicated that some of the senior adults in his church have limited access for communication. He said,

> [Some] don't have cell phones, and they just call my landline. Didn't have email. So, I had to keep phone conversation; I couldn’t text them or anything, just phone them. So, you can’t do away with the old completely, you have to keep it balanced. (I-1, P-3)

Jack. Just before we began our first interview, Jack asked me how I handled senior adult learners who did not have any desire to learn technology. After all, Jack was a teenager before his family owned a corded house phone. Jack noted, “Back then…I had gotten a few flip phones, the regular flip phone. And I had them for a little while.” (I-2, P-2) Jack’s experiences with flip phones were not always the best. He explained,

> The flip phones I had two or three of them you know, and you know I run over one of them with a golf cart…It fell out of my pocket. And then I lost another one, and a car run over it…They were too cheap, and they bust, then go buy you another one. (I-1, P-2)

Jack’s first iPhone was given to him by his daughter. His initial reaction was, as he recalled:

> So, what I got here? You know, I mean, I didn’t know squat about it…but of course, you know, for somebody that grew up with no phone…You know, I

> mean, we didn't even have a house phone…until I was in [junior] high school, I mean, we lived out in the country…The closest phone we had was a mile and a half away. (I-2, P-2)

So far, Jack's experiences with the iPhone have been "a good experience…they worked real good." (I-1, P-2)

Jack's current iPhone is an iPhone 11); it is very important to him – because of his family. One day Jack was out shopping, and his daughter could not get hold of him. Jack explained, "Everything I've got on a phone, I guess, is the most important thing because of my kids. My daughter gave me a phone - I didn't have one - because she couldn't get a hold of me one day." (I-1, P-2) Jack has grown to appreciate his iPhone. He noted,

> It's always been available for me to get the message. I mean, you know…I could look at it and see text…Usually, it's my kids, you know, and my daughter, I text her all the time…I know that she's busy all the time. So, I do text them a lot. A lot - cuz' that's the easiest. (I-1, P-2)

Jack has also browsed with Safari "some little bit," but he doesn't "really get bogged in it." Jack explained,

> You know, cuz' ever since I've had a phone or used the phone, I've been retired…I mean, I am amazed at the technology that they've got now… Everything I did was on a calculator…where I figured all of the jobs. (I-1, P-2)

Jack is impressed by the technological advancements over the last 30 years. He is clearly able to see potential value. He said, "I wished several times that when …me

and my brother was in business, you know, it would've saved us a lot of miles…If we had what's out there now…those are the time savin'st things." (I-2, P-2)

Jack has a computer but uses it less than his iPhone. His wife used the computer more than Jack did. He explained,

> We got [a computer], you know, around 2000, somewhere in there…my wife did as soon as they came out, and she got to messing with it, and I never did mess with it very much, so it would be kinda her thing, you know. Hell, all I was doing was playing golf. I wasn't worried about the computer, you know, I was out of business. (I-2, P-2)

Jack "first learned how to operate one of them stupid things" after his wife passed away in 2004 (I-1, P-2). He replaced that computer much later. He indicated,

> I bought it [HP computer]…about six or seven years ago. I just bought the cheapest one...I don't use that computer that much. All I do is get my emails and my stuff on it you know. I get emails on it from work [at the golf course]… I look at Facebook a little bit…I don't want nothing to do with Apple. (I-1, P-2)

Ben. Ben got a home computer [PC] when he retired from work. He noted, "I was home here, pretty much all the time. Then we got a small computer, but we didn't go large, just a small computer where we just used it for personal use…Most of that was just email stuff back and forth." (I-2, P-1)

Today, Ben enjoys his Apple ecosystem, the more homogenous the better. Ben explained,

> I think the iPhone came first and then the iPad came later…I was told that whatever I can do on the iPhone, I could pretty much do on the iPad…Trish

> [daughter] got me the iPhone; Jay [son] got me the iPad, and I had both of them together. Now I gotta learn them both. And so working with the iPhone, then I saw, you know, some of what I could do with the iPad, and the big thing I guess is…the screen size on the iPad, because you know when I traveled…on a flight or something, it's a little bit bigger to work with and see what you're doing than the phone is…A lot of things that I put off on the iPhone until I can either get to the iPad or to the PC [is] because of the larger screen and easier to read. (I-2, P-1)

Ben currently has an iPhone X (not the Max size). He is okay with this because he may start an activity on his phone but may finish it on his iPad or Mac mini. Ben shared the following,

A lot of the information that comes up on the phone is in such small print that I have a hard time reading it, and that's when I will set that aside for a bit, go through the rest of what I want, and then I go back to my Apple PC and get the information up because it's bigger, and I can read it better. (I-1, P-1) Ben uses the iPad more because of its portability. Ben described his rationale:

> I'm using [the iPad] more because when you saw it on that stand in there, I was watching movies on it…I wasn't using the iPad that much other than, you know, I could sit up there in bed and watch movies off of it…But, then I got so that I would carry that iPad with me if I go to a doctor's appointment or dentist appointment or something where I may have to sit in a lobby for a while. I take it, and I could work it, you know…I could still get emails, or I can send emails, or I could play a game on there. I can do any number of things with it. That's just like

> when I traveled, when I fly, you know. I used iPad because it's a bigger screen, and the only thing I can't do, like when I fly or go to a doctor's office or something, if they got Wi-Fi, I have a problem of learning how to pick that Wi-Fi up, so I have to have somebody help me. (I-2, P-1)

Ben also enjoys his Apple Watch, not only because it is an extension of his iPhone notifications, but also because of the many medical benefits including heart rate and automatic fall detection. Ben stated, “I got the [Apple] watch, I knew absolutely nothing about it. I had no idea what it can do. But…it’ll keep your heart rate, your blood pressure…all these medical things. Whoever would've thought a watch would be able to do all this?” (I-1, P-1)

Ben spends the majority of his day (4 to 6 hours) on his Mac mini, stationed in his office. Ben said, “Probably my [Mac] Mini is my go-to thing. I probably spend, well I know I spend, more time on my Mini than I do on the iPad, but my phone is with me all the time.” (I-1, P-1) Sometimes Ben is focused on a single task, and other times he takes comfort in knowing that there’s something else going on in the background while he is casually reading online. Ben noted,

> I have a TV in my office. I have it on just because there's something going on. I don't pay much attention to it, but I know something is going on. I concentrate more on what I am doing on the PC. Then when I get tired of the PC, I'll back it down, and I watch a little bit of what's going on, but there's a lot of history Channels on the TV also that you can watch. (I-1, P-1)

Technology Use Summary. Jack and Ben got a late start with technology compared to Randy and Jerry. Randy had primarily invested in technology for his dental

practice; he had not brought it into his home until the 1990s. Jerry started on an IBM Selectric typewriter in the 1970's and graduated to PC and smart phone over time, largely based on the technology used in the churches he served. He also did not get a home PC until later.

Jack first learned to use a computer in 2004 after his wife passed away, and he reluctantly accepted a smart phone from his daughter to alleviate her concerns about keeping in contact with him. Ben was 60 years old when he began learning to use a computer as a requirement for a new job in an IT data room. He switched to the Apple ecosystem just two years ago and became a comfortable explorer in the environment.

All four men primarily relied on a smart phone and desktop computer for daily life. They differed in their level of device sophistication and integration. Randy and Ben would typically start a task on one device and could finish it on another. Randy's strong organizational skills, learned in the operation of complex systems in a dental practice, carried into his 35 online gadgets at home. Ben leveraged the interconnectivity and flexibility of the Apple ecosystem from the Mac mini to the Apple Watch to diversify his day and multi-task.

Jerry approached technology as specialized tools; he insisted on keeping his smart phone completely segmented from his HP desktop, even for email. He was, however, curious about what apps on his smartphone might do for him. Jack used technology minimally and reluctantly, texting and calling on his smartphone and using his PC to check email and occasionally Facebook.

Motivation

Motivation is what guides us to accomplish a goal. Souders (2021) summarized, “The essence of motivation is energized and persistent goal-directed behavior. When we are motivated, we move and take action” (see What is Motivation? section). What motivated the participants to learn and use the technology they acquired?

Randy. Randy believes that being viewed as a patriarch is much more than a title or label. Vigilance is one of the ways that Randy handles the responsibility of leadership in his family. Using multiple gadgets to monitor what is important to him helps him stay informed. Randy expressed his feelings on the matter stating,

> Because I feel like, what if somebody needs me? I’m the patriarch, not of a large family, but of one, and I got a brother that’s got some issues going on. If he may need attention sometimes, I want to be connected to where I can help if I need to. (I-1, P-4)

Vigilance includes being in the know; Randy is comfortable offloading his attention to several devices that monitor what is important to him: system stats, temperatures, Ring doorbell neighborhood activity, Facebook, news feeds, email, and text. Randy just waits for the “bings”; he explained:

> Sadly, you would probably list me as addicted to technology because even when I'm sitting here with my wife or anybody else watching TV, you know the iPad's up and on, the laptop’s up and on, and if it “bings,” I see what’s happening on a cell phone. (I-1, P-4)

Transparency and accountability are important to Randy, and he leads by example. His family always know when he is leaving the house and where he is. This

way he can be of service and prevent any unnecessary worry. Randy expressed the following:

> If I'm gone anywhere, I tell her when I'm leaving, I tell her about when I'm going to get back and make sure she's got her cell phone by wherever she happens to be, and I'm always available. You know, that's just one of the things about marriage and family. I told my son, when you get married, it's important that your wife always can get in touch with you. You don't ever want to be where they wonder where you are. You'll notice that when I leave, I tell somebody where I'm going, what I'm doing, and when I'm going to be back. It's called accountability. That's important for trust, and you don't just go somewhere and sneak off and don't say nothing. That's terrible because it starts the brain working, and that's not good. I'm really good about that. So, I'm trying to instill it in my son because he's single and doesn't have anybody, except us. (I-1, P-4)

Randy enjoys the technological integration between any two Apple devices. He can begin reading an article on one device and resume reading it on another. What he likes the least about technology is the potential spread of disinformation. Randy will dedicate parts of his day to investigating sources of news information. Randy shared the following:

> An Apple [iPhone] because I was ready to change because Apple integrated with this thing, the iPad. There is so much available so quickly. There's a wide variety of stuff. The least I guess is trying to figure out who's telling the truth. I don't want this to get political, but in fact, it is because of the COVID stuff and the vaccine stuff and both sides of the argument on I do or don't. And does it work or does it

> not? We get sick or not, or we die or not. Do these inexpensive drugs work or not? Where's the money or not? I spent a lot of time trying to investigate what's really going on, who's telling the truth?... How fast you can get information through the technology without having to go to the library and check out physical books. (I-1, P-4)

In the beginning, Randy felt that Facebook was a "huge, tremendous waste of time". A few years passed, and he received a friend invite from a former patient who had won a smile makeover contest. Randy then realized that Facebook held untapped potential—a semiprivate online address book that assisted people in finding others. Randy had a change of heart, and now he uses Facebook daily, or as he puts it, he's "hooked." Randy commented,

> I thought [Facebook] was a huge, tremendous waste of time. But there is an interesting story as to how I got onto it. I had an account, I don't know why I even set up the account, but I never did anything with it until I got a request one day from a young lady that I had done a full mouth makeover rehab on, changed her smile. She was in fact there as a marketing promotion with the local newspaper, a smile makeover contest, and it was associated with, what was some kind of meeting downtown. The local newspaper agreed to provide the smile makeover charge, what we were after was the exposure and marketing and stuff, so I did it. A couple years later I got a friend request from her, and it said, "Dr. Hawkins would you be my friend? I don't know if you remember me." So that's when I got hooked on Facebook. (I-1, P-4)

When Randy began dentistry, there was a moment where he questioned whether dentistry would fulfill him intellectually. Providing advanced dental techniques that required additional specialized training was one way he ensured dentistry would remain stimulating. With advanced techniques comes advanced equipment; this was another avenue that would mentally stimulate Randy all the way to retirement. Randy explained,

> 5 or 6 thousand bucks for a damn printer, and it was pretty fast, so from there though it has evolved through digital radiography computer and computer systems, chartless, not paperless but chartless, and I guess because much of it was my personality. That's what kept industry interesting. It was going to be the same thing for 36 years, with no improvement, no change still the same old put the same stuff in it and do the same stuff. I would have been bored. So, it was fun because it was challenging; it was new. It was like, "Alright how can we make this better?" (I-1, P-4)

Randy's interest in technological innovation would not stop with his retirement. One of his sons professionally followed suit and opened his own private dental practice. A loving father, Randy is always there to lend a helping hand, and maybe to check out the newest technological innovations for his son's practice. Randy stated,

> Our son has got all the latest technology, a relatively new digital panoramic topographic expensive system, and I think it's about $100,000. The thing that he doesn't have yet that he will eventually get is, you remember the impression you would take of your teeth, you still use something like that. There is now a digital system that will do that…They use that light driven scope bar that takes probably

10 to 50,000 images and combines them and can take up to 10, 15 minutes to process once you send that back to the lab. (I-1, P-4)

Jerry. Jerry is a pragmatist, a practitioner. For Jerry, if he is able to keep up with the flow of technology and still use a tool for what it is designed to do, he is content. Jerry uses phrases like “sharpen my skills,” and “I want to know enough” to navigate successfully. In other words, Jerry wants to know what he needs to know and nothing more, and tomorrow the process will repeat if necessary. Jerry said,

> I want to sharpen my skills to a point. I don’t want to know everything about my phone or everything about the computer or anything, but I want to know enough where I can navigate through the process on so on. So, I think it’s just a matter of keeping it up. (I-1, P-3)

Jerry, being practical, may not thirst for each new technological release by Apple or by Windows, but he is self-reliant and independent. When Jerry envisions his future, he sees it like this:

> So, you’re pressed into this, and I didn't want to be a senior adult who was living back in, where somebody else was doing all this for them. I wanted to be the senior adult who was wanting to do it. (I-2, P-3)

Jerry’s work spans a large part of the state of Texas, it also spans a wide age range. Jerry uses words like “balance” and “diversity” between the different groups of people he serves. That means being open to all forms of communication styles and technologies. Jerry expressed the following:

> So almost all of these numbers here in this directory are out of date because people have dropped their landline and got a cell…Some people haven't dropped. Some of these numbers are still the same and will still be the same until they go to be with the Lord. They're not going to change. So, there's a balance because I work with senior adults, primarily. So, I have to be pretty balanced. I've got to say, okay, I'm going to communicate with Nancy because she still has her old landline. She doesn't do email. She doesn't do anything else. And so, I got to keep that line to her, so you have to be diversified a little bit because you have all these people. And then some people, man, they got their cell phone, and that's all they do, and you call them on the cell phone, or you text them all this stuff. So, you know, for senior adults it's just really interesting. (I-1, P-3)

Jerry further noted that there are older adults who to this day only have a landline, so Jerry has maintained his landline to make sure that he makes every avenue available to anyone he watches over. Jerry explained,

> We want to expand our knowledge and awareness of things. We don't want to be antiquated back there somewhere. I know I've seen senior adults who have no email and no way of communicating, that still had their landline, but we kept a landline because of them…It was at a little smaller church, little bit different people in it. Here, almost everybody here has email; almost everybody here has an iPhone or smart phone. (I-2, P-3)

Jerry takes his self-reliance seriously while also prescribing it for others, especially senior adults. Jerry exclaimed, "Senior adults' safety and care is a big

thing…so I would always try to stretch people to take care of themselves, to take care of what you can take care of. Don't depend on someone else." (I-2, P-3)

Jerry acknowledged that while his desire is to remain independent, as a society we are growing more dependent on our technological tools; after all, Jerry can call his wife anytime he wants to with the help of modern technology. Jerry stated, "We are more dependent, we grow in our dependence on these tools, and they become…a great part of our life. And the cell phone has just been wonderful…If I just want to call [my wife], she's got her cell phone." (I-2, P-3)

In the not so recent past, Jerry had a cell phone that simply flipped open and handled nothing but voice communication. Both personally and professionally, learning new uses for his iPhone is a constant journey for him. Jerry explained,

> I visualize it this way, first of all when we first got a phone we could carry, it was just a communicating device, just a phone. And as things progressed when I got the flip phone, I don't think I did any other function except flipping it up and calling. So, when I got the [iPhone] seven, it expanded my usage beyond the phone communication. I'm finding I'm using it for information, using it for business things, and then of course just so much more for taking a picture. (I-2, P-3)

Jerry stressed that technology cannot replace a hug nor is it always a suitable replacement for a voice conversation where tone is concerned. Conversely, sometimes a casual text can prevent a situation from escalating when used properly. Sometimes a text takes the pressure off having to immediately look at the phone and respond. Jerry shared the following:

> I think people are much quicker to text now than they were before because it's so easy, and that you don't have to do anything immediately. You text someone, and then you wait so it releases that pressure. Plus, if there's just something that's a little bit sensitive that you are trying to feel it out, you can text someone, "Say, I just heard this, is this true?" I think it just softens things a little bit. (I-1, P-3)

As a pastor, Jerry understands his responsibility to take care of how he speaks both written and verbal, even in the text message. While he appreciates the power of electronic communication, he also appreciates the responsibility that comes with it. Jerry stated,

> Of course, you and I both know that you need to be really careful about what you put in print, email, or texting, because it can be very damaging if the wrong choice of words. Or you're pointing this direction, but they think you're going this direction, and they misinterpret what you're saying. So, you got to be careful. (I-1, P-3)

Jerry does not want to stop growing, learning, or being useful to society. Studying the Bible with others and organizing a group is a way to continue moving forward with his personal growth and development. He is also concerned about what "happens sometimes to senior adults," and by providing a Bible study group, it serves older adults in a protective way. Jerry shared the following:

> I think…something that happens sometimes to senior adults…where they're through, and I don't ever want to be that way. I want to continue…I'm excited about coming and studying [the Bible]. I have 13 people in class, just as if I have

500 in my class. I'm as excited about that because you go into an area, you learn the Bible was such a wonderful book because you read the verse over again, and [it] still has new meaning every time. (I-1, P-3)

Jack. One day Jack was shopping in Home Depot when his daughter suddenly could not get a hold of him. So, his daughter gifted him a hand-me-down phone from her household directing him to "put this is your pocket" and "answer it" if she called. At first Jack did not see the value in it. Jack stated,

> I went to Home Depot and Janet, my daughter, she could not find me…She had bought her daughter that phone about a month before you know, and she had a year contract, still had a year's contract. She said, "Put this in your pocket. If I want to get a hold of you, you answer it. You know that's my experience with getting a cell phone…[It] was just a regular phone that her daughter had had, but anyway that was my starter phone, and I've had one ever since. (I-1, P-2)

Jack's attitude began to change as he continued using the phone. As an object, the phone morphed from being an emotional appeasement to a personal asset, and finally a "necessity" when he realized he could get a hold of anybody he wanted. Jack shared the following:

> Basically, all that I ever thought about that stupid phone…Keeping my daughter happy, and she could get a hold of me. I could get a hold of anybody I wanted to, I mean, you know with the few that I had in there. So, I thought it was basically a necessity that I needed. (I-2, P-2)

While talking, Jack held in his hands a recent model iPhone. He described this as being different from previous phones. Jack stated,

> This phone that I've got now it's a brand-new iPhone. And I don't know squat about it, you know. I have, I mean, you know it's so different from my other one. So, I don't have anything on it except just texts and…I think it's the easiest and the least, I mean it's the least problems of anything, and I use the text all the time, and I really like it. (I-1, P-2)

Jack had also tinkered a bit with online shopping, but he was not comfortable with it. He stated,

> …well, I bought a lot of things on it, and then there I had a couple of… somethings that I didn't really want, you know, so I better cool that order off of that thing, or I was liable to buy a house somewhere you know. (I-2, P-2)

Jack and his brothers had a construction business that specialized in lathe and plaster. Jack depended on a calculator for his measurements; one brother had a computer business in the adjoining office suite. During the 1980s, Jack told himself that the investment of time in learning the computer would be greater than any time savings on the job site. Jack reflected,

> We never did have a computer…when we were in business…At that time, I don't know, I think it would've taken more of my time trying to figure that computer out than I could spend on the road taking care of those jobs that we had going. I could see a problem we had; all I had to do was walk on the job, you know, and I could see the guy that was running the job for us. I could talk to him for five

minutes and know if we had any problems or anything. And if we didn't, man, I was going to the next job. (I-1, P-2)

Sometime during Jack's retirement, he thought to himself about how computers might have "saved us a lot of miles." Jack said, "It wasn't until later after I'd retired, and I realized, you know, that it would save us a lot of miles…I could understand back then…what was happening a lot better than I understood how to operate one of them machines, you know." (I-1, P-2)

In general, in his second interview Jack admitted that he had no interest in technology overall. Jack stated,

> So, it was something that I just didn't have an interest in…I don't know…I guess I just don't have the confidence in it, you know, because I didn't pay much attention to it…So, you know, I mean, it's not that important to me. I guess you'd say, I mean, maybe I don't realize it because I didn't take the time to study the phone and do that, or just like the computer, you know. (I-2, P-2)

Jack explained his low level of confidence as a function of his previous exposure to learning computers; in his mind, he did not have enough experience to be comfortable with using technology.

Jack does not question the value that technology has brought the world at large, but Jack asks himself, what will be the return on my investment of time? Jack stated:

> I'm not knocking technology…I mean technology is, aww man, that's what makes the world go round. I mean, you know. I mean, it educates the world…But it's gotta be your situation. I feel like, or you know, for my situation do I need it? Do I

want to put the time and effort into learning it? And, you know, I don't mind putting the time in, you know, to learn new things. But if it's not going to help me out, if it's not going to help me, I mean, I'm not doing myself anything worth anything. (I-2, P-2)

Jack further shared the following:

Well, I'll tell you what. In all this technology, I mean, there are so many appeals, here and there. It's something that each individual has got to decide, you know. I mean, they got to analyze whatever, realize what they want, and what they're after. I mean, there's so much technology out there right now. I mean, the world is open. I mean, you can learn anything you want right now. If you want to...The thing about it is, it's all available now, you know. You can. As far as I'm concerned, I've got what I need, so I don't need, you know, I don't need to do the headaches. (I-2, P-2)

At the age of 90, Jack bravely admitted that his memory is not what it used to be, and he assessed that memory is important in learning, or as he puts it, a task of "connect the dots." Jack explained:

The guys your age is out there right now. I mean, there's so many things that you could capture, you know. I mean, I don't have time to put the effort into it, and my brain is about scattered anyway now. So, you know, I mean, I can't…I've noticed that my memory is not as good as it used to. I used to remember everything sent to me and done to me, you know everything, but I don't… You got to connect the

> dots everywhere, see, and that's what that takes - memory like I don't have any more. (I-2, P-2)

Ben. When Ben began constructively using the computer at home, it was a PC, and his cell phone was Android-based. His children were using Mac OS and iOS and had been for some time. It was difficult for them to assist him remotely, so they provided him with Apple products and put him in their Apple family membership. Ben was no longer getting infections, and they found they could help him over the phone. Ben quickly acquired other Apple peripherals to complement his new iPhone and Mac mini. Ben shared the following:

> We had a hard time, they had a hard time helping me with problems that I had, so both of them decided that Dad needs to get online with us, so that we can all communicate the same, and so that was how that came about. I got the iPhone from my daughter, and I got the watch from my son because, as I have gotten older, they wanted to keep better track on me, and the Apple Watch does that and the iPhone. If I run into any problems or anything, I could contact either one of them, and [being as] they have the same phone, we are all on the same page with that. (I-1, P-1)

Ben embraces the Apple ecosystem wholeheartedly despite an initial rejection of a few of the peripherals like the iPhone and Apple Watch. Ben had successfully switched from Windows and Android after using Apple for just two years. Ben explained, "My initial action to that was, I don't need it. And their comeback was 'yes, you did need it' because we can't service that Android phone as well as we can with an Apple phone." (I-1, P-1)

Ben wasn't utilizing his Android phone beyond voice text and email, and he had never accessed Google Play for apps. With Apple Ben now enjoys several cloud connectivity services and their notifications that keep Ben and his family connected no matter where he is. Ben eagerly stated, "If I'm not around the house or I'm out on the road or something, it all comes through my iPhone. (I-1, P-1)

Ben loves learning. He may not always know where he is about to go, but at the end of the day, he is astonished at how much ground he was able to cover and, in the process, has enjoyably lost track of time. Not wanting to miss an opportunity, Ben is open to suggestions for new avenues of learning. Ben stated,

> It was an adventure…I just wanted to learn more and know more about it, and the only way I can do that was…to continue to check things out in there, you know. If something would come up, I'd go check it out. And then I was talking with, well with my daughter and [son], you know, and then they came up with, you know, well if you go out to this site, you can do this, and if you can go out to this site, you can do that. So, I started checking them out, and that's how I expanded. (I-2, P-1)

Ben spends a portion of his day researching political statements and motivations. Ben may start from a post on Facebook or something he sees on the news, but several hours later he has been to several websites. He is just "keeping up with, trying to keep up with, that…Although I think some of them [politicians] are liars, I still listen to both sides of the story." (I-1, P-1)

After avoiding technology for 60 years, Ben encourages others that have abstained from technology to reconsider based on his discoveries later in life. Ben noted that “electronics is here to stay” and had the following to say,

> Well, it’s something new, electronics is here to stay. It’s not going to go anywhere, you know. I'm here to stay as long as I can. And so, just over the years, so much has changed from what I came along with, and either you learn about it, you know, or you get lost.” (I-2, P-1)

Motivation Summary. Participants’ iPhones were important to them because they helped them to stay connected to people who are important to them, particularly family. For Randy, Jack, and Ben their initial motivation to move to iPhones was to accommodate their children who were concerned about them. As family patriarch, Randy also felt a responsibility to be available for his family: “What if somebody needs me?” Jerry had always used phones to keep in contact with his church members. His transition to iPhone accommodated Jerry’s need to keep in contact with his wife and the senior adults in his current church, as they had “so many needs.” As all four participants learned to use the iPhones, they came to appreciate the convenience of texting. Even Jack, who generally has little interest in technology, liked texting; it was “the easiest and…least problems” as well as time saving.

Beyond calls and texts, Randy, Jerry, and Ben have explored iOS apps to varying degrees. Randy and Ben, always motivated by their curiosity and willingness to learn new things, embraced cloud inter-device connectivity, whether multi-tasking on multiple devices or monitoring home and human environments. Jerry will try an app if he

sees someone else use it and if he finds interest in what the app can do for him. Jack did tinker with online shopping, but he is happy to leave that to his daughter.

Motivation to use computers, whether desktop, laptop or tablet, also varied among the participants. Randy, Jerry, and Ben all have general curiosities that are explored online. They grew to appreciate “how fast you can get information through the technology,” and all three feel a need to “keep up with” what is going on whether in advances in the dental profession, research on biblical text, or politics and the state of the world. For Randy and Ben exploration of issues and topics is “stimulating” and “an adventure.” Jack only uses his computer for email, and he may not turn his computer on for weeks.

At the extreme ends of a spectrum, so to speak, Randy is a “technology addict” who will consume what’s new in technology for its own sake. Jack, on the other hand, says he has “no interest” in taking the time to study how technology “is going to help me.”

Communication

Communication plays an important role in meeting needs in everyday life, facilitating exchange of information, contributing to personal and professional relationships, community involvement, social and leisure activities. “Many of these functions change with typical aging,” as noted by Yorkston, Bourgeois, and Baylor (2010). What motivated the participants to communicate using technology?

Randy. Randy takes comfort in knowing that he is “wired in.” To Randy his cell phone is another appendage. Randy stated,

I’m wired in because it's an easy way to communicate, and I have concerns

> about family, loved ones, brother, sister-in-law, what's going on in their lives, and the easiest way to communicate is by text. So, I'm, you know, I'm plugged in all time. If I start out the door and forget my cell phone, I've actually gone as far as the ends to the neighborhood and forgotten it and turned around and come back and get it. (I-1, P-4)

As the patriarch of his family, Ben carries the responsibility of leadership, and texting allows him to reach out without fear of burdening other people until they are ready to respond.

One of Randy's sons followed in his professional footsteps. He is a dentist and is beginning to take on more complex cases, some of which involve three-dimensional reconstruction of the mouth when a person's oral geometry is out of alignment. Randy's son will contact him during and after business hours with questions. Many of the conversations between father and son start with a text. Randy shared the following:

> My dentist son is beginning to do complex cases, full mouth rehabs, and I used to do a bunch of those…He's got another one he showed me the other day. Sent me pictures via text, so I started asking questions about what I saw in some pictures…from a professional point of view. That kind of case is a whole lot more productive and easier…We start with a text that says, "Hey dad, here's the pictures of the guy, here is the X-ray." And then I have specific questions about specific teeth or wear patterns. You need to look at the bite that makes it more complex and complicated. There's an awful lot of geometry involved; this is an interesting fascinating joint; it translates it and rotates it. (I-1, P-4)

Jerry. Jerry leads a fast-paced life, and his grown children are also busy. At

times coordinating conversations with family during peak work hours may be difficult. Jerry also tends to the “many needs" of his far-reaching congregation. Whether relying on voice or text, Jerry’s iPhone is instrumental in coordinating all his informational exchanges. Jerry said,

> It’s the way we keep up with family of course; the cell phone has been a tremendous, tremendous help…It’s a reliever because you have ready contact with people…I was involved with the so many needs in the church family, and that was the way they communicate with me by phone. (I-1, P-3)

Jerry appreciates texting for handling a quick exchange of information or for opening a dialogue that may lead to a voice conversation when it is appropriate. Jerry’s calendar keeps him moving at a fast pace; a text message can be a very useful bookmark and a way to get an important thought out of his head and into the hands of someone he cares about. For Jerry, texting is not an impersonal act but rather a way to show that he cares when no other form of contact is possible at that moment. Professionally speaking, Jerry will use email in a similar manner while at the church office. Jerry explained,

> Texting is the heaviest with the people that you're in contact with more often like family…My daughter…works outside the home, and so when I text her, I know if she's at work. I say, “Hey, call me when you can.” Then when there’s something that needs to be worked out, I know they're going to call me on the phone and say, “Hey, call me when you can” like I did…In our office [church], so I don't call them. I will just text them and say, “Hey, when you have a minute call me or come by.” That type of thing. So, of course, emails. I do the same thing interoffice

> emails, and that's easier than calling. And then they can deal with it in their time because it’s not an emergency. So, I would say family and friends and then of course business where you are in the office. (I-1, P-3)

Jerry’s previous church was not as technologically savvy as his current station. Jerry’s “online ministry,” which serves senior adults, relies on communication protocols such as text and email but also web page and mobile app functionality. Jerry noted this with a sense of relief,

> Almost everybody here in our online ministry here is almost a hundred percent. All senior adults…can go on my phone, on the computer. I can send them a short message…But, all of the class of which I have 13 people, they are all savvy enough that I can send them a text. I can send an email, and they’re going to respond back and forth. (I-1, P-3)

Having peace of mind that his immediate family and extended family are OK allows Jerry to focus on his workday. Jerry’s schedule commands a respect for time. When out in the field, Jerry will use his cell phone to call and to text, in order to let his wife know where he is and when he will be home mid-day or at day’s end. Jerry stated,

> At home I will text her when I’m coming home for lunch, when I’m leaving here, and so on because she’s on the speed dial. I'll just either send her a message on the speed dial, or I will call her, or I will text her. (I-1, P-3)

Recently, a new digital communication platform in his church office left quite an impression on him. The church uses an app that serves many purposes. The app replaces the need for a church directory for the congregation, but it also has different

groups of users with different access rights to other forms of information that drive the church from an administrative standpoint. One of the features that Jerry appreciates is the fact that a church member can reach out to another church member via text, email, or phone to lend assistance or ask for help from another church member. Jerry even uses the platform to take attendance in his life group. Jerry shared the following:

> The app…tells you all the events and everything. Then I got another one that was called the Lead app which gives me access, limited access, and you would limit access to every person who's a member of the church…When it pulls up a person's name, you have about five different choices you can make on that person. You can send them the text, you can send them an email, you can call them, you can find out where they live, you can find out how long they've been a member of the church, of their age, you know…Every Sunday I check my attendance and go right on. (I-2, P-3)

Reflecting on his days as a parent, Jerry admitted that his cell phone would not have compromised the rearing of his children but facilitated it. Jerry stated,

> As a father, I wish I'd had this iPhone when my children were growing up because I had to be in contact with them. And so, being in contact with my family now…safety features…If somebody is traveling, you say, "Okay, where are you now? Okay, we got somebody… just keeping up." It's like you're there. (I-2, P-3)

Jack. While Jack is very family oriented, he also understands that his adult children lead busy professional lives. Being able to text to his children with the understanding that there's no pressure for them to get right back to him is quite a relief.

Jack uses email less often for this task, but he will check for his golf course email to make sure there are no schedule changes. Jack said,

> My son, you know, when he needs a question or something, he'll just text me now, and I'll text him back with whatever information I have, you know. And because I know I don't try to call my kids all that much because I know that they're busy…I'll check my emails every day to make sure I haven't gotten something from golf course. (I-1, P-2)

A few years back, Jack and wanted to help an aspiring writer who was publishing stories about golf experiences concerning everyday ordinary people. Jack, now comfortable with email, decided to help her out by distributing those stories to his golf friends. Jack explained:

> I would take out part of those [stories], and I'd leave all of the stuff out and just use the basic story and send it to different people…I forwarded an email…I was trying to help her, and I would make sure that they knew who the story was written by, and I was just telling, say I just kind of send it as a casual deal. Hey, here's a story that a friend of mine wrote, catch this. I done it the simple way, you know, I mean, I didn't take any credit for it or anything. I just sent the story on to where it came from, trying to help her get started. (I-2, P-2)

While Jack will occasionally window shop online, the primary purpose of turning his PC on at home is to get his golf work schedule; this arrives every 30 days assuming there is not a need to change it. Jack is more comfortable with printing out the PDF schedule and putting it on his refrigerator than leaving the PDF on his desktop.

Sometimes he looks forward to finding an email from one of his golf buddies containing a golf joke. Jack shared the following:

> They started, we started getting all of our information from…the golf course that I worked at. We got our schedules, you know, our work schedules every month, and it made it a lot easier for the guy that was making out these schedules, just put it all on the computer and send it to us once every 30 days. Yeah, you know all we had to do, just print out our scheduling and throw it on the refrigerator, you know. That's basically what I used a computer for, is to get my schedule and all that…So, I just basically used it to get my schedule and get all of the information from work you know. And get a few funny emails every once in a while. And I get a lot of golf stories. (I-2, P-2)

Ben. Ben is an early riser and will spend the first hour of his day gently waking up and enjoying the silence. After that, he is on his Mac mini checking his Facebook feed for data about friends and various social and political news. For fun, Ben will occasionally post on Facebook when the activity gets too quiet just to see which one of his friends will reply. Ben stated, "Facebook, checking on my mail, and on things that I talk to other people with that I get a reply." (I-1, P-1) Ben enjoys reading email more than composing one. For informal communication he prefers text. Ben shared, "I don't do a whole lot emailing; I do some texting…more consumption than transmitting." (I-1, P-1)

Ben enjoys the Apple ecosystem from his Mac mini. Here he can take phone calls and reply to texts. These communications are associated with pet sitting. Ben stated, "Most of the text that I get on the PC in there is from people that I watched their

animals for them, and we text back and forth. Rather than calling, they just text, and I text them back." (I-1, P-1)

Ben's children are fully grown and have a lot of responsibility professionally. Ben is very grateful to have technology such as text and email to fill in the gaps when his children can't be there in person. Ben expressed his gratitude saying,

> [Technology] helped me a lot because it's helped me to communicate with people…[This past year], without it, I would probably been lost a lot because I wouldn't know what the hell they were doing, you know. I couldn't, you know, she's busy, so I can't pick up the phone and call her and talk to her because she's busy doing her job, and I can't find out, so the only time, you know, the only time I can talk to her would be probably on the weekend when she's not working. And the same way with my son [when he] is flying. (I-2, P-1)

Ben doesn't mind texting, especially if he knows that it is not going to bother someone who is in the middle of something. At heart, Ben is a family man, and texting eventually leads to a voice conversation. Ben's daughter lives in the same town; he sees her more often face-to face. Ben's granddaughter is a senior with a double major and a full scholarship athlete, so the best way to talk to her right now is through text. Ben's conversations with his son tend to be in longer phone conversations. Bottom line, Ben connects with family in ways most convenient for them. Ben had this to say,

> Well, close communication comes with my son…I'll get a phone call…[My daughter] and I, it's phone, once in a while we text. Both my kids they like to keep close contact on me, and so we have phone conversations. My conversations with [my son] can run up to an hour or longer. My conversations with [my

daughter] may run 15 to 20 minutes…Well, my granddaughter and I the only way we really communicate is through text message. (I-1, P-1)

Communication Summary. All four participants use texting and appreciate it as an unintrusive way of communicating with their busy loved ones outside real-time, especially their children. It is important to “alleviate concerns,” keep up with “what’s going on in their lives,” and quickly exchange information. A text, or sometimes an email, can lead to voice conversations later in the day or week. Texting is an easy way to communicate “I care” but “no pressure to get back to me right away.” Randy will sometimes communicate complex dental strategies with one of his sons via text. Jerry takes advantage of a comprehensive digital directory on his iPhone, enabling him “quick access” to expanded information about each of his church members and ability to communicate event statuses for church functions.

Jack uses email to check his golf course schedule and to send the occasional golf joke or story to his golfing buddies. Ben regularly checks his Facebook data feeds and will sometimes "ping" his Facebook friends all at once just to see who will answer back.

Social Connectedness

Social connectedness has been described as a feeling of “the extent to which one has meaningful, close, and constructive relationships with others” (O’Rourke & Sidani, 2017, p. 43). The COVID-19 pandemic provided challenges to participants, and they handled social connectedness in different ways.

Randy. Randy is actively involved in a RV motorhome club that he helped

colonize; it is socially driven and meets several times a year at various campsites. Additionally, members can exchange ideas and solutions to obstacles they encounter regarding their RV. While group members may communicate and coordinate via text or email, socially facilitated, face-to-face interaction motivates Randy more. He stated,

> I'm a member of…Tiffin motorhome club…a group [of] 35 or so family members, so 35 Tiffin motorhome rigs, and about 70 some odd people. And once a month during the warmer months, we go camping somewhere around here for a 3-, 4-, or 5-day weekend. Most of us are retired, and we communicate about that kind of stuff. So, it's fun, it's kind of like a little church group. You play games and talk about problems with the rig and how you fix this, what happens with that. (I-1, P-4)

When Randy and his wife were under COVID lockdown during 2020, they would sometimes get in the car and drive, using GPS, to a remote location since they were unable to socialize in face-to-face interactions. Reflecting on this event, Randy sounded relieved when he shared the following:

> COVID…you can't just go to Sunday school, and you can't go to church, and you can't do this, and you can't do that. There were days when all this crap was going on, we would get in the car and drive 45 miles or so to a little town somewhere that way for a Coke at McDonalds. just to turn around and come back, just to get the hell out of the house. With my cell phone with me, had a GPS on it taking me where I wanted to go saying, "Go to a McDonalds near me." (I-1, P-4)

Also, during the COVID lockdown, Randy and his wife would meet with a few select couples from church to play select board games; additionally, he would interact

with some of the gentlemen on his cul-de-sac, engaging in various fraternal banter. Randy explained:

> [A] couple of the couples at church, we used to get together a couple times a month and play dot 42, play dominoes. Well, you can't do that anymore because of COVID and fear, and actually that was the couple I got COVID from. But I had a mild case, and they got it and didn't, weren't as lucky as we are. So, a lot of the social interaction, we don't do anything for a couple reasons. [T]he first one is family…I guess the next one is probably the neighborhood, these 4 or 5 guys in the cul-de-sac here. When I moved in, one of the neighbors said when that guy over and this guy over here get together, be sure you wear your hip boots, and you got your shovel because there will be a lot of…. (I-1, P-4)

Despite the prolonged isolation from COVID and living in somewhat of a remote location, Randy was grateful to still have the Internet to connect with those he cares about, to cope with some of his cabin fever and loneliness. Randy stated, "We were forced to stay home because of all the garbage the last year and a half or two…It was lonely enough and still having the internet. (I-2, P-4)

Jerry. In speaking with Jerry, it was clear that family is important to him, and he values mobile technology. Phone calls are frequent means of connection. Jerry stated, "I have a son-in-law who has a sprinkler business…His whole business is on his phone. All his clients, his billing, everything is on his phone. Business wise, it's just a super asset." Jerry is also very proud to have military in his family, especially a Marine. Jerry shared the following,

> You know I've got a son whose visiting California; he's got a son that's in the Marine Corps…Keep up with him, because I don't have to know where he's staying or what he's doing, I can get him immediately on cell phone. So, cell phones for family usage is really good. (I-1, P-3)

Jerry also relies on texting to coordinate with family. He stated, "We use texting a lot. I'm fixing to have to babysit the 'grandog'; here is the reason he's calling 'bout tomorrow, but I said it's a tremendous thing for family." (I-1, P-3)

Jerry uses texting to coordinate with friends as well; he even has a personal call list. Jerry stated, "Our call list - primarily friends and some staff here at the church and so on." (I-1, P-3) Jerry talked about how useful texting was in connecting with a friend who needed a little support. He said,

> A friend…that had to be in assisted living because his wife is suffering from some mental problems. He's there, he's captured too because he's there with her. And so, I text him, and it's just really easy because I don't know what he is doing or what [his] schedule is. So, I just text him and say, "Hey just thinking about you" and that type of thing. (I-1, P-3)

Jerry knows that if he ever has a worry about the welfare of his family or friends, he has only to text or call, no matter where they are.

Jerry is part of a statewide initiative where he is responsible for mentoring other pastors at small churches in the state of Texas. A chief method of communication for maintaining relationship with one of these members is also heavily text based. Jerry explained,

> I'm part of a…state organization, and where I'm a mentor to other pastors in small churches where they need a little help and so on. So, one of my primary persons that I was assigned has a house church, and so all our communications is by text. He texts me; he's a big hobby person. I'm a woodworker, and so he takes me back, shows me pictures of what he's done, all that. We do that all on the phone. (I-1, P-3)

While Jerry dislikes using social media and conferencing platforms for himself, he appreciated the availability of such resources during the isolation associated with COVID. Jerry noted, "Technology made COVID more, more acceptable, more endurable. Because people who were isolated were really isolated, and so the Zoom, the technology we were able to do online, telecast, phone service, all of this kind of stuff. It was a great help." (I-2, P-3)

Jerry further commented that he was able to start a life group for older adults during this time. He explained, "I started a life group from scratch. I had nobody, had prospects, and that's who I got. I have now 13 in there, and every one of them I can communicate with them by email or text or whatever I need." Jerry was grateful that the older adult members of his life group were technologically savvy enough to participate in external classroom aids such as text, email, and mobile apps. He acknowledged that such platforms are the way of the future, providing people many options for social connection. Jerry vehemently stated, "And the thing is, you know, Campbell, we're not going backwards, we're going forwards. So, either we get with it, or we go without it, and so on." (I-2, P-3)

Jack. While Jack had admitted to being able to go as many as three weeks without turning his PC on, he does, on occasion, enjoy sharing the occasional golf joke with some of his golf buddies and keeping in touch with lifelong friends. Jack stated,

> I had an email address, and, every once in a while, I'd watch. I'd get a bunch of emails, and it was kind of fun, you know, talking to people that you hadn't seen in a long time…Get a few funny emails, every once in a while. And I get a lot of golf stories.
>
> (I-2, P-2)

Jack uses Facebook intermittently. He put it off joining after its initial public debut in 2006, and for a small period, Jack participated in some basic Facebook functions. Today, he considers himself less a participant and more of a "silent watcher" where he is primarily motivated to check on his grandkids' postings. Jack had this to say:

> Facebook? No, I just, it's there, you know…the thing that I use Facebook for, I keep up with what my grandkids are doing…Yeah, I just stroll through a deal because of my granddaughters…It's kind of like a text message, it's already there waiting for you. And it doesn't mean you have to immediately respond or do anything but check in. It's nice. My grandkids, all my grandkids are on Facebook. You know, they always putting out something. (I-1, P-2)

Jack will also check up on old friends dating back 40 years. He explained,

> Now I've got old friends that I never had seen in 40 years, but still alive, and they put stuff up there and funny stuff, you know, and old stuff. One guy, haven't seen him since he was 26 years old, but I see his name on Facebook every day. And so, you know, it's kind of interesting to keep up with older friends like that and,

you know, and stuff. Everyone used to put stuff on Facebook, but I don't anymore. Once in a while, I'll just put ‘like’ on. You know a lot of stuff that I like you know; I don't really participate in it. I'm a silent watcher. (I-1, P-2)

During the COVID lockdown, Jack found himself texting more often with his golf buddies because of isolation. However, now that things are getting back to normal for him, he is enjoying more face-to-face time with them. Jack shared the following, “I used to do a lot more [texts] now because it was new, and everybody did it, whatever I guess, and now I see more of them all the time…[During COVID] probably texting more. You know you don't see them a lot. (I-2, P-2)

Ben. Everyday Ben pulls up the “Find My” app on his iPhone, just to see where his son and daughter are. Likewise, his son and daughter do the same thing with him. But for Ben, when his son is traveling around the country, he could at least see where he was on the map and feel connected to him. Ben stated, “Both [son and daughter] on Apple, everything connects well connect together...I can find him and my daughter with that plan on my service anytime. It shows where they are.” (I-1, P-1)

Ben doesn’t get out to California very often, and his granddaughter and niece are finishing up college as full-time students and athletes. Given their busy schedules, Ben navigates to the Facebook pages of their athletic events and attends live streams of their games. Often Ben will have feedback for their performance; he was a competitive athlete himself during his youth. Ben explained,

I have niece that I keep in contact with. She's in college, and I keep in contact with her a lot about her sports activities. Well, I keep in contact with my granddaughter also because she's heavy into sports, but if wasn’t for her mom, I

would miss out on a lot of what my granddaughter is doing…When she plays volleyball and stuff, her mom streams all that back to where I can watch so I can keep track of her that way, but then I can text her about it. (I-1, P-1)

One of Ben's high school classmates created a Facebook page several years ago. Because the graduating classes were relatively small, the Facebook page includes a few of the sequential graduate years, clustered together to form one cohort. Ben uses his iPhone and Mac mini to participate with his classmates from the Facebook app. Ben shared the following:

> Probably Facebook when it comes to…about 10 of them. There is more becoming Facebook because we had a young lady that had opened up a Facebook page for the class that I graduated with of '52. So, we can put a lot of stuff on that page where everybody sees it on Facebook…I can go out there and put a lot of information that I want and punch on it, and all those people that are from class of '52 that have signed up for that program there, they'll message. (I-1, P-1)

While Ben makes full use of texting, he prefers speaking over the phone to maintain his relationships; friends in his age group tend to initiate conversations by voice. Ben said, "I talked to a lot of my people on the phone. I keep contact with them on the phone." (I-1, P-1) Ben also talks with his sister-in-law by phone at least once a week. Ben smiled as he shared the following:

> Well, I have sister-in-law that I am very close with, and her and I communicate probably more than I do with anybody else really at this point; you know, we're that close. She lost her husband, and I lost my wife. We was all part of the family

> at one point, and so her and I talk a lot…I talk to her all at least once a week on the phone. And when we talk, we're there for an hour. And I really, I really miss seeing her. She was the one in the family that, boy, just took everything with a grain of salt. (I-1, P-1)

Ben appreciates his sister-in-law's ability to take things in stride under adversity and still be in the moment. She is the same relative age as Ben, but she chooses not to invest in technology preferring traditional voice conversations. Ideally Ben prefers voice over text and talks to her at least once a week. So, she and Ben talk by phone. Ben further explained,

> The most education [she] got was her high school education. She got married shortly after high school. That was the whole intent. She wanted to be married, and she wanted to have a family. So, her education level is not, although she's bright, she's bright, but her education level is not real high, but out of the three kids that she had, all of them has got college degrees - you know she made sure they had what she didn't…I just love being around [her] because she has always got that happy go lucky feeling. You know? You are not going to discourage her much. (I-1, P-1)

Social Connectedness Summary. Randy and Jerry are the youngest of the four participants; they are married and active in circles outside the family. Randy maintains his connection to his professional field; he renews his dental practice license annually. His motor home club and cul-de-sac neighbors communicate and coordinate activities through email and text, but during COVID-19, they maintained some careful face-to-face connections. Jerry's ministry requires him to be accessible and to provide comfort and

support when needed. During the pandemic Jerry found himself using a wider variety of technology that his go-to phone calls and text. Even though he dislikes social media and conferencing platforms, he used them to keep in contact with his church members, particularly his senior adults.

Both Jack and Ben have been retired for some time, and they are both widowed. Their primary connections are with family, and outside of the COVID-19 pandemic, both often used text and voice calls in lieu of face-to-face interactions due to their children's work schedules. Jack found himself using text more frequently to connect with his golf buddies. He also had Facebook where someone was always "putting something out there" and where could participate, mostly as a "silent watcher." Ben did not address his experiences with COVID-19. Being online, checking up on his family, using Facebook to see what friends were doing, and engaging in phone conversations were already everyday occurrences for Ben.

Enrichment

Our society expects that cognition will decline as we get older, but research has shown that engaging in intellectually stimulating activities can contribute to better cognitive functioning in senior adults (Hertzog, Kramer, Wilson, & Lindenberger, 2009). All participants saw some advantages in technology use, but only some intentionally engaged in enrichment for mental stimulation and new learning.

Randy. Even though Randy is retired, he still maintains his dental license, which requires a number of continuing education and training courses and class hours annually to be compliant. Randy has the freedom to choose more of what interests him in meeting the requirement. Randy shared the following:

> In my professional career…there are requirements for continuing education that because of COVID are now pretty much available exclusively online, and some are actually courses you get credit for; some of them are just informational…I look at those, one of the many categories of emails I get from different organizations. It's a learn about this, learn about that. I don't do all of the pop up, but I do the ones that interest me…That's what kept industry interesting…It was fun because it was challenging, it was new. (I-1, P-4)

Randy also makes use of YouTube for tutorials that aid him with projects in his garage and around the house, as well as Google searches for information that would be otherwise time consuming in a conventional print form. Randy said, "I've got a water heater that's going out, so guess where I went first. What's the best water heater to buy?...You can get the history of…vehicles, parts, replacement, repairs all kinds of stuff, you know." (I-1, P-4) Using the computer, even for seemingly mundane tasks, can be "fun, something new to learn and mentally stimulate." (I-2, P-4)

Jerry. Bible study is a large part of Jerry's life. Jerry will sometimes use a digital Bible app for reading at night; however, he primarily enjoys the feel of an original copy in his hands, free of technical "glitches." Jerry compared reading the print version of the Bible with the digital version. He stated,

> Bible app I have on my phone, and I will read it some at night in the dark, so I don't disturb, and I have the black background, but there's nothing like onion paper in my hand at certain times for sure…This is a study Bible. I still like to have the paper…I like the Kindle, but if my battery fails a bit and I really want to get into that, then I've got to charge my battery. I don't like to be disturbed like

> little technical glitches or something, so I still like the paper…I love the Bible study. (I-1, P-3)

When Jerry was working on his books that were commissioned by the Church, he had “a ton of research to do,” and he found internet searching to be both “painful” and exciting as he learned from “a wealth of things that other people have done” regarding how to ask the right questions when pursuing a search. (I-2, P-3) Jerry shared,

> So, I thought, oh my goodness, this is really wonderful…I learned very quickly when I find something to make my notation of it…Now, of course, that’s what’s so valuable because that's what you’re looking for. You’re looking for websites that are going to help you. (I-2, P-3)

Jack. Jack’s general position is that he is not interested in technology, but there were times when he admitted to some tinkering with it. For example, Jack has browsed the internet via Safari “some little bit,” but he does not “get bogged in it” (I-1, P-2). He relies on his smartphone because it is the easiest for texting, and he uses his PC for email. Jack had noted that he was “amazed at the technology that they’ve got now.” (I-1, P-2) He also acknowledged “that’s what makes the world go round…I mean it educates the world.” (I-2, P-2)

Jack perceived that learning new technology required time and effort that he was not willing to give. He explained,

> I don't have time to put the effort into it…I don't need any more frustration, I mean, because I don't know how they work, and I don't care how they work. I

have no use for them, I mean, for my personal use, so…I just never did delve into taking the time to sit down and study it out you know. (I-2, P-2)

Ben. Ben is a firm believer that you can "teach an old dog new tricks." (I-1, P-1) He has constructed his Facebook home feed not only for social interaction but also for political news, information and research. Each morning Ben turns to his feed to see what surprises await him from his carefully constructed categories: "Things on Facebook from the government, from the Senators and Congressmen talking about what's happening to our country." (I-1, P-1) Ben is also an avid history buff, and History Channel is a go-to source for him. Ben observed,

> I watch politics today, it blows my mind as to what our country is doing, and, you know, I go back to saying that we have taken so much away from our kids in school that they don't know how this country was built or what it is built upon. And a lot of the stuff that I get into is the History Channel. (I-1, P-1)

Ben was introduced to technology later in life, and in some ways the delayed exposure to the World Wide Web has filled him with a gut sense of wonderment. He takes both a sense of satisfaction and empowerment in knowing that whatever he wants to find, he can find it. Ben explained,

> Just going out there and being able to find what I want and what I am interested in, you know, it's yeah! If I wanna go out there and find sports, I can find sports, or go out there, and I can find about history on there…I can find anything I want…to me it's all brand-new, it's all coming out. I was never exposed to it before, and so what am I comparing it to? You know, like I was almost 60 years old before I got introduced to this stuff. (I-1, P-1)

Ben can get lost in time pursuing topics that interest him, but that's OK as far as he is concerned. He said, "Next thing you know an hour has passed by, and you're somewhere else. You just go on the next experiment - I'll go here and see what the hell I come up with. That's just a good experience." (I-1, P-1)

Ben also finds enrichment in competitive gameplay online, particularly Mahjong and Texas hold 'em poker. Ben stated,

> The enrichment was the thing that I liked about it. I played mahjong on there [PC], which helped keep my mind sharp, and then I got to playing Texas hold 'em on there, another one kept my mind sharp, you know. Something to do - whether just sitting there watching, I was participating. (I-1, P-1)

Ben is engaged in some form of enrichment every day. Whether working on his Mac mini in his office or spending time in his Lazy Boy with an iPad to break up his day, whether deep into political research or competitive gameplay online, Ben engages for mental stimulation and growth. He noted, "It's still a learning process for me. I'm not a young kid anymore. I don't pick up things as quick as I used to." (I-1, P-1) However, Ben's attitude about his discovery of technology is: "Well, dammit, I'll try it, you know. I'll learn it. It's not that I can't do it. It's do I want to learn, and how much do I want to learn?" (I-2, P-1)

Enrichment Summary. Randy, Jerry, and Ben seek mental stimulation in their day-to-day pursuits, some digital, some not, and they approach enrichment in different ways. Randy has maintained a connection with his professional field. Renewing his dental license annually provides him with opportunities to engage with "interesting" and "challenging" education and training courses. With Randy's curiosity about how things

work and penchant for do-it-myself problem solving, any Google search is an opportunity for mental stimulation and new learning.

Jerry's technology and research skills were both challenged and strengthened while performing theological research for his books. Skills in file organization and storage, informational source tracking, and proper citation grew as he amassed his scholarly data. Jerry's confidence received a serious boost as he passionately pursued how to form good questions to guide online searching.

Ben, on the other hand, has broad interests, and he is empowered by his love of learning and experimenting in searching the world wide web. Ben has an intentional and random element to his daily discovery. He may start off with a specific topic of choice from his Facebook feed or the History Channel, but he will let the journey lead itself to some extent during his daily 4-6 hours of exploration. Even though Ben describes himself as "not a young kid anymore," he is confident that he can, and will, learn.

Jack acknowledges that technology is amazing, but he is reluctant to engage in anything beyond what is practical and easy for his minimal needs.

Themes in Participants' Experiences in Learning to Use Technology

Research question 2 asked, what learning experiences and/or supports aided these older/senior men in building knowledge, confidence, and comfort in technology use? Analysis of participants' responses to questions asked in the interviews was organized in six themes:: (1) confidence; (2) curiosity; (3) external support; (4) letting go; (5) problem solving; and (6) training/assistance. Each theme is described through exemplars from participants' transcripts, and each theme concludes with a summary of the theme.

Confidence

Confidence in one's capabilities for accomplishing a task or goal is important for learning. Anderson and Perrin (2017) found that many older adults are not confident in their own ability to learn about and use technology. Three of the participants expressed some level of confidence.

Randy. Randy's 30 years of experience in integrating technology into his dental practice has built his confidence in technology and in his ability to learn how to use it. Over time he learned the value of repetition. Randy stated, "And as you do anything more, and repeat it successfully, you get more confident…whatever is next, what's new and what's coming." (I-2, P-4) Randy also learned that "a computer is] fun, something new to learn and mentally stimulate." (I-2, P-4)

Randy has only had his iPhone for the last two years. The confidence he gained in learning the PC contributed to his learning the iPhone. He noted:

> …I feel comfortable with it [iPhone], I like it - you know you don't know what you have until you get it, and then once you get it and find out, you know what all could be done with it…damn how was I so dumb, but you know I'm still learning a lot about that phone and what it can do. (I-2, P-4)

Randy's overall confidence can easily be seen in his statement: "I'm still not afraid to open them up and look at them…All kinds of technology fascinate me…"(I-1, P-4)

Jerry. Once Jerry learned to move text and pictures using the clipboard function on his PC, he began to make more headway in his publications. Jerry explained,

> So, the first time I realized that I can paste something without retyping it…Where's this been all my life? They did this a long time ago before I realized it, so yeah, it was a steady unfolding, and this is what you need to do…okay. And now it was going all the way from highlighting something and changing the font on it to copying and pasting it and putting it into something else, you know. (I-2, P-3)

Like Randy, learning and building skill in one technology made moving to a new technology less daunting. Jerry expressed his confidence in learning the iPhone. He said, "When I got [the iPhone], I knew how to turn [it] on and turn it off and charge it and make sure it's charging. I felt confident that I can do the various functions that I knew." (I-2, P-3)

Jack. Jack lacks confidence in himself and in technology. Jack does not believe he is capable of learning new technology. He explained,

> I've noticed that my memory is not as good as it used to [be]. I used to remember everything sent to me and done to me, but I don't…You got to connect the dots everywhere, see…That takes memory like I don't have any more. (I-2, P-2)

In addition, in some way Jack is not confident in technology. He has trouble trusting something he does not understand. Jack said,

> …it was, kind of a challenge I guess you'd say, you know, because you'd hate to think that machine was smarter than you was, you know, which it was - twice as smart as you was, but you know, you wasn't going to admit that to anybody. (I-2, P-2)

Ben. When Ben moved into his new position at work, he was certain he could be taught the computer. Ben shared the following:

> I was a little bit apprehensive in the beginning, but when I went up there and she introduced me to the person that I was going to be working with, I liked him right off the start, he didn't tell me what all he knew or anything…You know, I knew I didn't know a damn thing about it, but I knew that I can learn. And the big thing was [my co-worker] had the patience. He had the patience to teach me…I was willing to learn, and I was not afraid to go out there and try various things on the PC or whatever it is that I was working on to see how it worked and what I could do with it. (I-1, P-1)

Ben got his first iPhone two years ago, and he is confident in what he can do with it. He commented:

> I feel comfortable with it [iPhone], I like it. [Y]ou know, you don't know what you have until you get it, and then once you get it and find out you know what all could be done with it…damn, was I so dumb, but you know I'm still learning a lot about that phone and what it can do…I learned how to do [texting]. Teach an old dog new tricks. (I-1, P-1)

Confidence Summary. Randy expressed high confidence; his experiences in learning new technology in dentistry and personal use contributed to his risk taking, seeking new knowledge, applying old knowledge to new problems, and understanding the value of repetition. For Randy “something new to learn and mentally stimulate” builds that confidence.

Ben's confidence comes from his belief in himself. When faced with his first technology learning experience in a new job, Ben knew he "didn't know a damn thing about it." However, Ben knew that he could learn, and he was willing to learn. Ben embraces positivity and openness to new experience; he does not worry about what might happen – there is always more to learn.

Once Jerry understood the operating principle of a function like clipboard, for example, he then felt confident in moving text, pictures, and files for research and publication. Unlike Randy and Ben who jump all in, Jerry needs properly ordered steps that yield solutions to the task he is trying to complete. Then he is confident in using technology.

Jack doesn't "pay much attention" to technology. He is not confident that he is capable of learning, and he is not "confident in" technology and what it can do for his life (I-2, P-2).

Curiosity

Curiosity is a natural interest or inquisitiveness, considered to be a key factor for learning and memory (Gruber, Valji, & Ranganath, 2019). Research has also found that maintaining curiosity in older age is associated with better memory and well-being (Sakaki, Yagi, & Murayama, 2018). Three of the four participants expressed being curious about technology, but in different ways and for different reasons.

Randy. Randy's curiosity in how things worked became evident from an early age with the tinkering and disassembly of available household objects to better understand form or function. Randy explained:

> I grew up wondering, how does that work? I drove my dad nuts asking questions…[H]e said, “I don’t know. Take it apart and figure it out.” So, I did. And I mean I tore up more stuff. [M]ost of it I got it put back together, but I did figure out how it worked. (I-1, P-4)

In his early professional years as a dentist, electric typewriters and digital calculators comprised most of his exposure to tech devices. This changed in the early 1980's when he bought his first PC for the office. While this computer was not mainly used by him to perform daily tasks, he was aware of what uses it provided. Shortly thereafter, there was a PC in every room in his dental office, and he began investing in specialized contacts for technical support and training. But, Randy even took a two or three-day weekend class so that he could handle basic repairs himself where needed. He commented, "…computer software systems…I was always curious about how those work, and what makes part of what works is what makes it better" (I-1, P-4). One of his greatest professional assets was his billing software. Complex and scalable in nature, he developed a close working relationship with the software authors. They would write up a program and tell Randy, “Here run this, and it will tell you what you need to know.” (I-2, P-4).

Now that Randy has retired, his house is stockpiled with Windows devices complimented by an Apple Ecosystem of peripheral gadgets. From his sprinkler system to his air conditioner control unit, the Internet of Things is ever-present at his residence. Yet, Randy is still curious: "I know what I know, but there’s a whole lot more that I don’t… A question that comes to mind - what else will it do, or what else can I do with it? And I don’t know all of that." (I-2, P-4)

Randy's curiosity, and perhaps his brief but formal training in basic computer repair, contribute to his state of mind when approaching novel situations with PC's and other similar hardware. He noted, "Learning to use a computer - I was never afraid of them…I wasn't afraid to play with it and punch a button. The worst thing I could do was crash it and reboot it." (I-2, P-4)

Jerry. Jerry's first exposure to Apple computers immediately trailed the IBM Selectric typewriter. Jerry does not have much interest in knowing the technical details of how computing devices work. He wants to know what is useful so that it benefits others, especially older adults.

A portion of Jerry's learning is guided by his service to others in his ministry. He is selfless, proactive, and practical in his technological needs where public service is concerned. He described his work with senior adults:

> [T]here's a balance because I work with senior adults, primarily. So, I have to be pretty balanced. I've got to say, okay, I'm going to communicate with Nancy because she still has her old landline. She doesn't do email. She doesn't do anything else. And so, I got to keep that line to her, so you have to be diversified a little bit because you have all these people, and then some people, man, they got their cell phone, and that's all *they* do, and you call them on the cell phone, or you text them all this stuff, so you know for senior adults, it's just really interesting. (I-1, P-3)

Jerry recently arrived at his new church home where everything is digitally controlled and communicated. Mobile OS apps are his desired area of future exploration. Speaking about a recent digital resource at his new location Jerry stated,

> “[T]hey installed these things in my phone, and it is amazing…it pulls up all my [life group] membership, and I can punch on anyone of them, and sometimes some don’t have pictures in there, but almost everybody does. [I]t will tell me everything, their birthday, where they live, how long they been a member, everything on there and check my [group] attendance by this…So, it was a learning curve…They showed me and then I kind of navigated through it.” (I-1, P-3)

Jerry’s curiosity about what’s out there in apps and their utility has also creeped into is private life:

> Okay, there’s apps for everything you know. I’m going to expand my knowledge of that…[W]e went to Branson for a week, flew up there, and I installed a barcode reader on my phone…[W]e got some place up there that didn’t take any cash, you had to have a card you know, so everything is moving to this technology. (I-1, P-3)

Jack. Jack’s first question to me in our very first interview was, “How do you help certain seniors with technology if they are not the least bit interested?" (I1, P2) Jack's first exposure to technology was in the late 1980's; however, he did not have any direct experiences at that point. He commented,

> [Y]ou know, when I figured a big old job…I’d be there all night in that office, you know. Figuring it up…[O]n the computer, you probably could’ve done it in two hours…if you knew how to operate it and had the knowledge to do it…I messed around with it a little bit later, but then I never did delve into getting to know that computer as much as I could. (I-2, P-2)

Jack isn't that curious about technology. He commented:

> I don't need any more frustration, I mean, because I don't know how they work, and I don't care how they work. I have no use for them, I mean for my personal use, so I mean I just never did delve into taking the time to sit down and study it out, you know." (I-2, P-2)

Jack does have an iPhone that was given to him by his daughter. He uses the Phone primarily for texting and recognizes its value for quick communication. He reflected on what the iPhone might have contributed to his business:

> I wished it several times that when I was in business, you know, that me and my brother was in business, you know, it would've saved us a lot of miles…If we had what's out there now…Those are the time savin'st things. (I-2, P-2)

Is Jack curious about learning more about the iPhone? No. He stated:

> I didn't know squat about it [iPhone]…Is there more I would want to know about a smart phone? No…I mean, now I can see it in a younger family, I mean, you know that's growing and everything, and I mean they're great. It saves so much time and you know saves a lot of lot of miles. (I-2, P-2)

Ben. Ben wants to know the world through exploration, even if only one time. Ben was not exposed to modern or mobile operating systems until the age of 59; he is 87. Ben invests anywhere from 4 to 6 hours per day on his Mac Mini scouring the internet for politics, stories, and history. If a close friend or relative tells him about a website he has not heard of, he simply visits it for himself over the next few days. Ben explained:

> I just kept playing with the computer, going in there and finding different things and trying to learn from that, and it was just a question of trial and error, you know, until I found where I wanted to go eventually… just trial and error, going out trying, getting and seeing what I can do, and eventually you know I found the steps that I needed to do to get it done…I saw there was more to it. And then I started...just, you know, checking things out that was out there. Things that pop up…on the screen, and I'd read it. And hell, I'd click on it to go out there and see what it was offering. (I-2, P-1)

Today Ben makes full use of the Apple Ecosystem, easily handing off tasks from his Apple Watch to his iPad and terminating back to his Mac Mini. He did not find Apple technology; each Apple peripheral was gifted to him by his family. Piece by piece, he now has a working set. He can share a picture from his cellphone in an electronic message or manage lists on his computer. And, Ben is still curious: "It's still a learning process for me…there is so many damn things…and man, there's a lot more out there to learn…I'm not a young kid anymore. I don't pick up things as quick as I used to." (I-2, P-1)

I asked Ben what advice he would give to seniors who haven't experienced any form of modern computing in the last 30 years and who, like Jack, may see no need to know. Ben had this to say,

> It's going to take time to convince some of them [older people] that, hey, learn this, you'll be happy. You'll be able to communicate with your kids and communicate with a lot of other people out there. It's just that simple…[D]on't let

the world pass you by. You've got [to] go along with what is happening, and if you don't, you're going to be lost…. (I-2, P-1)

Curiosity Summary. Randy was curious by nature; he enjoyed taking things apart to see how they worked from an early age, including computers and computer software systems and especially in relation to his dental practice. In retirement, Windows devices and Apple gadgets are everywhere. He is not afraid of technology; he wants to know what more it can do and what he can do with it.

Jerry's curiosity is framed within his work as a pastor. His primary focus is technology that assists him in communicating with his church members, many of whom are senior adults, and managing his schedule and commitments. He wants to know more about Mobile OS apps for easier access to his church family, and he sees everything, even at home, moving toward this technology.

Ben is an explorer. He came to technology later in life, and he just keeps playing with the computer and his Apple ecosystem, going in there, finding different things, and trying to learn whatever he finds. Unlike Randy and Jerry, his curiosity is not bounded by connection to work or profession. Ben simply wants to know everything he can find or that finds him.

Unlike Randy, Jerry, and Ben, Jack isn't that curious about technology. He uses his iPhone to keep in touch with family and to lessen their concern for him because they can get him at any time. He recognizes the value of texting on his iPhone for quick communication, but he's not interested in knowing what else the device can do.

External Support

Seeking support or assistance when learning something is not unusual. For older

adults learning to use technology, Anderson and Perrin (2017) found that seniors were more likely to ask for others to show them how to use new devices than other age groups (p. 11). All participants had “go to” support individuals, but they differed in the degree to which they depended on them.

Randy. Starting from the 1970’s, Randy continued to rely on professionals to gain knowledge for the proper education, operation, and maintenance of his technology. This “brain bank” as he refers to it consists of competent generalists, specialists, and even friends directly involved in a related field. In recalling past learning opportunities for his technological roots, Randy stated, “Learned from friends - one worked for TI, one worked for IBM…they coached us [Randy and his office staff] through how they worked and what they did.” (I-2, P-4)

Randy would probe and tinker with a novel piece of technology first, attempting to solve an issue on his own or trying to properly frame the trouble accurately before presenting it to others. “Start with Google…If I couldn’t find the answer there, then I would call.” (I-1, P-4)

However, before technology was put into his professional practice, he would likely check in with an authoritative source. Randy noted, “I found other people that knew stuff, and I would call them and talk to them, and they would come coach me or show me whatever…And if I got in trouble, I had someone I could call.” (I-1, P-4)

Randy found a tool that became central to his practice. He highly invested in its growth for himself, his employees, and the developers, resulting in a 30-year relationship that involved reoccurring opportunities for gatherings. Randy explained:

> The guys that wrote Practice Works, I've had two of the three of them come to the dental practice and spend a week…it was expensive, but they taught the whole staff. They taught me, they taught everybody…We went to meetings across the country, we did a cruise for the week with Practice Works users…It was amazing. And you know we had practices from all over the country to share ideas about how they did this, that, and the other. (I-2, P-4)

Jerry. Before search engines became widely available, Jerry relied on having a computer tech in his former church that possessed an intimate working knowledge of his computer. Jerry stated,

> [In Pampa] I had computer guy that I could call all the time and he would take, walk me through things (I-1, P-3)…[He] came in to teach us the techniques and so on about the computer…[H]e was my go to person because he could tell, he knew my computer. He could say, you know, the reason your image is upside down is this, that, and the other. [Now] I have to call him…or do something to learn to do for myself. (I-2, P-3)

Jerry's reliance on a singular go-to person with an intimate working knowledge of his computer lasted for many years. When he migrated to a different church further away from his previous supports, this was no longer the case. Jerry explained,

> [In] the little bitty church right here in North Texas, I didn't have that [people and resources], I had to learn for myself, and I'm glad to do that. I don't want to have to depend on them to walk me through everything, but the growth, always grow, you grow, you grow. (I-1, P-3)

Having to do things for himself sparked Jerry's need to know. Today Jerry uses texting to keep up with family and those he cares for in his congregation. Jerry humorously noted, however, "[M]y grandchildren - I mean I have to go to the dictionary to figure out what abbreviations they're using." (I-1, P-3)

Jack. For himself, Jack is openly against investing in computer learning beyond anything necessary; therefore, he is reliant on people he trusts, especially specific family members, to remove technological obstacles. Jack shared the following:

> [My] grandson that was going to school for it, anytime I had trouble with my computer, I just called him…I'd just turn on my computer and give him the password, and he could take over that computer and fix it. You know, so I didn't have to, I didn't have to know anything. I had kinfolk you see…and he still takes care of my computer. We still, he still has access to my computer. You know with, online. (I-1, P-2)

While Jack has a PC at home and an iPhone, to him it is easier to let someone he trusts to get the needed item for him. Jack stated,

> …both my daughters was close too. [T]hey had computers, you know, so I had all the help I needed…I look at one of my daughters that lives over here that takes care of my phone most of the time. She does everything with that phone. I mean she orders everything from everywhere. And, you know, if I want anything, I just call her and tell her to order me this, and it's so easy. (I-2, P-2)

Ben. When Ben is not exploring or trying things out for himself, a frequent support is his daughter. He explained:

> [I]f I can't come up with what I need, then…I would call my daughter, and you know, she would either come over and help me through it, or she would walk me through on the PC…and, you know, she can generally figure it out and get it done. She's my right arm. (I-2, P-1)

External Support Summary. Randy will probe and tinker with novel situations and attempt to solve issues on his own, knowing who he will call if something should happen. In his professional practice, Randy's "brain bank" was a network of talent that he sought out to support technology integration.

The support that Jerry has had depended on the resources of the church he was serving. In his larger church, he had a "computer guy" that he could call all the time to walk him through things. In his small church, Jerry has had to learn to do things for himself, and he is glad that he doesn't have to depend on someone to walk him through things.

Jack has very clearly defined supports and does not attempt to solve problems on his own. He relies on family members, a grandson to fix his computer and a daughter to fix his iPhone and order things online for him. As Jack noted, "I didn't have to know anything. I had kinfolk you see."

Ben explores first, and then contacts his daughter if he can't figure something out. In his job, company trainers and a co-worker were on hand, but Ben was willing to learn and was not afraid to try something new.

Letting Go

Habit is powerful and one of the strongest features of humanity (Callahan, Kiker, & Cross, 2003). At varying points in our lives, we come to terms with letting go of

what has become comfortable and familiar. All four participants experienced a time and/or situation that contributed to their letting go of technology they used, or didn't use, to acquire use of something new.

Randy. Randy had used a cell phone as a cell phone and his personal digital assistant for his contacts and calendar. Randy prefers his routines, and sometimes leaving that behind was uncomfortable. Randy shared the following:

> It [iPhone] was a different learning curve than the Samsungs were, the Androids were. It took a little while to get used to the way the thing functioned. And it's a little frustrating once in a while because I was used to the Android because I had been with Android as long as we had cell phones up until two years ago…I was so used to the PalmPilot - it was hard to give that up. (I-2, P-4)

Jerry. Jerry 's curiosity was sparked by Mobile OS apps that were put on his phone by church office staff. To learn more, Jerry was willing to let go, to explore. He realized that the world would keep changing even if he decided to stop. He noted:

> [W]e live in a technological, changing, demanding world, and I've got to say, okay, am I going to want somebody to spoon-feed me the rest my life, or am I going to try to catch up? I can determine how to use this just like I can determine how to use my pickup or my tools. [B]ut I want to learn to use my tool correctly and efficiently so that I can produce the product I want to produce…I don't want the tool using me. I want to use the tool. (I-1, P-3)

Jack. Jack had convinced himself that while computers had value, they did not have any value for him personally. When Jack's wife passed away, the PC in his home suddenly became a priority. Jack said,

> After 2004, I just sit down, and I just learned how to…email other people…[O]nce I had the system down, you know, I didn't delve into reaching out and studying the world on it. I just basically used it for the things that I needed…it [email] made it so much easier, better than trying to mail it to somebody. (I-2, P-2)

Ben. For 60 years Ben did not have his mind made up in any direction about owning a PC or really investing time and effort into learning basic computer skills. Then Ben found himself in a position at work that required computer use. Ben explained:

> I really didn't have my first computer, first PC until I was about 60 years old…I got into that [PC] in a company that I worked for. They moved me into a position, and I never used a computer before. I had never been in front of the computer; I had no idea what the hell a computer could do…Well, my attitude was, I don't know a damn thing about it…[F]ortunately the young lady that wanted to hire me and put me into this position said, “We’ll train you.” (I-1, P-1)

Ben’s initial response was, “I didn't know anything, so I was dumb as hell” (I-1, P-1), but Ben was willing to learn. He said:

> They moved me into a position, and I never used a computer before. I had never been in front of the computer; I had no idea what the hell a computer could do…Well, my attitude was, I don't know a damn thing about it…I was a little bit apprehensive in the beginning, but when I went up there…the person that I was going to be working with, I liked him right off the start. He didn't tell me what all he knew or anything…You know, I knew I didn’t know a damn thing about it, but I knew that I can learn. And the big thing was [my co-worker] had the patience. He had the patience to teach me…I was willing to learn, and I was not afraid to go

out there and try various things on the PC or whatever it is that I was working on, to see how it worked and what I could do with it. (I-1, P-1)

Letting Go Summary. Randy had a cell phone solution that worked for him for a long period of time. His Android phone was his personal digital assistant for his contacts and calendar, and “it was hard to give that up.” Even though he knew the iPhone could do a lot, it was “a different learning curve” and “a little frustrating” – so interesting, given his integration of progressive technology in his dental practice.

Jerry became curious about Mobile OS apps because his church office staff put them on his iPhone so that he had access to membership directories and calendar. When he saw some advantages in the apps, he was willing to let go and use them. He doesn’t seem to want to know everything the tool can do; rather, he wants to “use the tool” to produce what he wants to produce.

Jack placed no value on computers, but when his wife passed away, he modified that perspective and just sat down at his wife’s computer and learned a few basics, like email. Jack, however, is not interested in “reaching out and studying the world on it.”

Ben let go of his general nonchalance about technology because he had to learn to use a computer as a job requirement. While Ben was “apprehensive in the beginning,” soon he was “not afraid to go out there and try various things.” Ben was, and still is, willing to learn.

Problem Solving

Everyday problems can have a clear goal to work toward or be less defined. If a problem is seen as not personally meaningful, we may be less motivated to persist in finding solutions (Mienaltowski, 2011). Senior adults tend to be very task-oriented and

need to understand the personal benefit of technology before they are motivated to use it (Callahan, Kiker & Cross, 2003). All four participants experienced situations where they had to rely on themselves to work through a technology problem or problems.

Randy. By the time Randy had expanded his dental practice beyond a single PC that was dedicated to insurance billing, outages would become more frequent with a computer in every operatory and office. While he continued to learn from his "brain bank," he found himself having to be a hands-on problem solver. Randy stated,

> When computers came into our business…we had guys who would come and fix it, but sometimes they couldn't come and fix it fast enough, so I enrolled in a two or three-day weekend course on computers…I needed [to] know: A) how they worked, and B) how to change out a power supply or add more memory or a hard drive that failed or whatever. (I-1, P-4)

Jerry. Jerry sometimes found himself in situations where there was nobody to call for help, so he found his own solutions by taking a step-by-step approach while using relevant, available instructions. Jerry said,

> Read the instructions…[Y]ou learn a lot when nobody's there to give you tutorage, you learn a lot yourself. And you learn to read, and you learn that they didn't give these little descriptions of things that are telling you how to do something, a program, without knowing what they were doing. So, you go step, step, step by step and so on. (I-2, P-3)

While Jerry was writing his first book, he performed online research on lesser-known biblical historical figures. He began with some experimentation and fell back on trial-and-error reasoning to develop his ability to ask the right search questions. For his

second book, he began leaving notes to where he had been in order to navigate back to a site if the situation called for it. Jerry recalled his experiences:

> Well, as you know, there's a ton of research that [I] had to do [for my book]. I have a file of illustrations that now I can go to the computer and get up-to-date things quicker than I can to go there and look through my file. So, it was a tremendous asset to be able to do this…The research, people who are really good at research know exactly what to ask for, so that the computer gives them back…you get a little trial and error there but knowing the right questions to ask is really important. So, as you're doing that, one thing leads to another, and it's just a wealth of things…So, I thought, oh my goodness, this is really wonderful, but I learned very quickly when I find something to make my notation of it…Now of course that's what's so valuable because that's what you're looking for. You're looking for websites that are going to help you...So, it is painful sometimes, it really is, but it's filled with a lot of question marks. (I-2, P-3)

Jack. After Jack's wife passed away, he found himself having to learn the home computer. Jack explained,

> I didn't really mess with it much until after my wife had passed away…she had put some stuff on the computer, you know, when she was taken [ill], to have control of everything…to have it all in one place rather than in a desk drawer…so I thought I might as well pay attention and see what she's done…what's where. (I-2, P-2)

Ben. Ben's first step is to try and simplify the problem to figure out what is being asked of him from the user interface. If he cannot accomplish this, he will resort to trial-

and-error reasoning but not to the point where he is unable to retrace his steps. He will then seek information from people before he resorts to random navigation. Ben said this about his problem-solving strategy,

> I'll go out there first and try and solve whatever I'm doing, and if I can't come up with what I need, then I will [ask for help]…[Today] probably, if there was a class to be had, I would probably want to get involved in that class. (I-2, P-1)

Problem Solving Summary. For Randy the "fix it guys" were not always available, and his dental practice depended on his office system. He took a basic computer repair skills course, so he could handle the fixes himself.

When Jerry was working on a project and there was "nobody to call for help," he would "read the instructions" to help him break the problem down into steps to follow. Jerry also found trial and error helpful in his online research for his books.

Jack, who didn't really "mess" with computers, found himself having to "pay attention" to important information his wife had put on a home computer before she passed away. So, he just got on and "learned how to operate it," but he doesn't use it much.

Ben approached everyday technology problems as an opportunity "to go out there first and try and solve whatever I'm doing." He persists with trial-and-error, and if that falls short, then he will ask for help.

Training/Assistance

Many older adults acknowledge advantages to today's technology, and many can and will learn to use it. Zheng, Hill, and Gardener (2013, p. xiv) noted that while older adults "experience a predictable set of constraints," cognitive and affective factors in

learning can be leveraged to support older adults learning and using technology. Three of the four participants provided specific suggestions from experiences that were helpful to them.

Randy. Randy listens more than he speaks, and he does not rush into problems. In his dental practice, he provided training, supported, and built a technology integrated office suite and operatories. When Randy's son went into his dental practice, Randy (once a student of Practice Works) found himself teaching the system to his son who was following in his footsteps. Randy stated,

> The computer software systems we use in our office is probably 30 years old. When [my son] started 15 years ago, I told him, even though it was 15-20 years old, that it was still the best there was because it was…scalable. You could teach it. And you could get anything out of it you wanted. And he is still using it. (I-1, P-4)

Randy's son has expanded the technology in the dental practice. Randy explained:

> Our son has got all the latest technology, a relatively new digital panoramic topographic expensive system, and I think it's about $100,000. The thing that he doesn't have yet that he will eventually get is, you remember the impression you would take of your teeth? You still use something like that. There is now a digital system that will do that… they use that light driven scope bar that takes probably 10 to 50,000 images and combines them and can take up to 10, 15 minutes to process once you send that back to the lab. (I-1, P-4)

Even though Randy is retired, and his son has been in practice 15 years, Randy provides consultation and coaching as his son encounters more complicated cases. Randy noted,

> My dentist son is beginning to do complex cases, full mouth rehabs, and I used to do a bunch of those…He's got another one he showed me the other day. Sent me pictures via text, so I started asking questions about what I saw in some pictures…from a professional point of view. (I-1, P-4)

When asked what helps senior adults learn technology, Randy provided the following observation: “Be patient, take your time, speak slowly, watch their body language, and ensure they are getting it, and don't be afraid or ashamed or frustrated if you have to repeat it a few times.” (I-2, P-4)

Jerry*.* In both religion and technology, Jerry is a student and teacher in his daily living. While he possesses a technical mind, his motivation focuses on practicality and usability rather than theoretical limits and potentials. Jerry said,

> I don’t care about measuring the space on computers. I don’t care about how old. I don’t know that any more than you would want to know about music theory…I just want to know, can, will this do the job that I have? That’s all I want to know. (I-1, P-3)

At the same time, Jerry’s curiosity can be piqued when he is made aware of technology possibilities that may be useful to him. This was true in the case of his exposure to iPhone apps that his office staff had installed on his phone. Jerry noted,

> I realized there’s a lot of functions that are way beyond this…I knew there was a lot of things that I didn’t really care about…but then there are those things that

> are exciting to learn how to do because then I learn how to do it and teach it to [my wife], and she knows how. (I-2, P-3)

An added bonus for Jerry was that he could then teach his wife how to use what he had learned.

What does Jerry think helps senior adults learn to use technology? For himself, Jerry shared the following observation, “I don’t want someone doing something that I can learn to do. [I’m] okay asking them to help me learn…[S]how me what I need to do step by step to do this, and then I don’t ask anymore.” (I-2, P-3)

One of Jerry’s suggestions was to share knowledge that is “palatable”, and Jerry believes that smaller segments of information and a step-by-step presentation are the keys to success. He explained,

> [For senior learners] make sure that you formulate [information] in a way that would be understandable by senior adults, palatable by senior adults. It’s not going to turn them aside. If it seems unmountable, they're gonna say, I ain’t got time for this. (I-2, P-3)

Jack. Jack did not overtly respond to questions about what helps senior adults learn technology. After all, as Jack noted, “…I don't know how they work, and I don't care how they work. I have no use for them, I mean for my personal use.” (I-2, P-2) However, Jack provided some insights into how he learned some technology.

The passing of Jack’s wife in 2004 created a need to know what she had been putting on a home computer that he did not use. So, Jack determined, “I thought I might as well pay attention and see what she's done…what's where.” (I-2, P-2) Jack learned

to use the computer by ‘messing around’ with it: “I messed around with it…but then I never did delve into getting to know that computer as much as I could.” (I-2, P-2)

Jack also learned email similarly: “I just sit down, and I just learned how to…” (I-2, P-2) Jack found that email “…made it so much easier, better than trying to mail it to somebody,” and he could “…check my emails every day to make sure I haven't gotten something from golf course.” (I-1, P-2)

Jack got his first cell phone from his daughter because he went to Home Depot one day, and his daughter could not find him. Now he has an iPhone, and he has learned texting by communicating with his family “because I know I don't try to call my kids all that much because I know that they’re busy.” (I-1, P-2) In fact, Jack admitted liking texting. He said, “I think it’s the easiest and the least, the I mean it’s the least problems of anything and I use the text all the time and I really like it.” (I-1, P-2)

> Jack is, however, somewhat intimidated by learning technology. He commented:
>
> …it was, kind of a challenge, I guess you’d say, you know, because you’d hate to think that machine was smarter than you was, you know, which it was - twice as smart as you was, but you know, you wasn’t going to admit that to anybody…kind of like a school challenge, you know, when you was younger. (I-2, P-2)

In addition, Jack has family to do things for him, so he feels he does not have to learn too much: “I didn’t have to know anything. I had kinfolk you see.” (I-1, P-2)

Ben. At 87 Ben loves learning: “[I]f there was a class to be had, I would probably want to get involved in that class.” (I-2, P-1) When asked what helps senior adults learn

technology, Ben stressed the importance of step-by-step, hands-on-learning over a lecture format. Ben explained:

> [T]ake it a step at a time, and you learn a little bit about each of it…with me it's if you show it to me, I'll keep it up here a lot longer than if you just tell it to me. Words don't hang with me…You explain it to me and show me how it's done and then let me do it…[L]et me do it hands-on, I'm better off. You know a lot more will stick with me. Let me work on it, and I'll pick it up, and if I got problems, I know where to go to find the answer. (I-1, P-1)

Patience was also important, as well as understanding that learners have different levels of skill and motivation. Ben prescribed the following,

> With the older people…you have to have a lot of patience, you know, you're going to have to listen to them. Listen to what their wants and their needs are and have patience because it's not going to line up with yours. And how much patience do you have, can you handle that? There are some you're going to go out there and probably some out there like me that's going be like me, and I want to learn. Well, those guys that want, will learn. Fine, you can probably sit them down at a table with a PC, and I don't think you can take and flash it up on the screen or stand up there in front of the class…I think you're going to have to go person-to-person and hands-on teaching them…it's something they may never have done. (I-2, P-1)

Ben also observed that there are older adults in our society that have yet to experience technology and who have no familiar skill or field that they may be able to

draw on to aid them if they chose to pursue technology. Ben addressed this possibility in a classroom:

> Some of these old people out there, old guys like me, may have never had their hands on a typewriter, so you put extra keyboards down there in front of them, and it's like, what am I going to do with this?…[Y]ou're going to have to be patient and teach them how to type or say there's nothing wrong with the hunt and peck system...you go through there and find your letters and find what you want to type. (I-2, P-1)

Training/Assistance Summary. Older adults need opportunities to learn what is important to them, individually. Jerry and Ben noted that information, processes, or actions should be explained in small bits and step-by-step. Learning that "stuck" with them included demonstration and hands-on practice, and Jerry noted the importance of accepting that there will be a lot of things older adults may not care about learning.

Randy and Jerry emphasized the use of real tasks and how important it is that older adults have time to learn. Jerry also suggested that it is important to ask how much time an older adult is willing to give to learning to use technology.

Both Randy and Ben stressed the importance of patience and repetition. Randy noted it is important to check to be sure that the older adult learner is getting what is being presented. Ben further noted it is important to recognize that some older adults may not have life experiences that relate to technology use, so they may not have a point of reference that they can draw on in learning something new.

Jack did not directly address what helps senior adults learn technology, but he did pose an interesting problem: What do we do when an older adult does not want to

learn to use technology? Jack stressed that he doesn't know how technology works, nor does he care. He did "mess" a little with a computer when his wife passed away, and he learned iPhone basics because his daughter gave him one and insisted that he use it. He admitted that email and text made some things "easier." However, Jack is fine with not having to know anything because he has "kinfolk" who take care of things for him.

Chapter Summary

Through this study, I aimed to uncover experiences of older/senior men learning and using technology for enrichment, communication, and social connectedness, and to identify learning experiences and/or supports that aided these men in building knowledge, confidence, and comfort in technology use. This chapter provided portraits of the four participants, capturing their backgrounds, motivations, family and social connections, and brief history with technology. Next, detailed descriptions of the experiences and perspectives of the participants were presented in relation to themes that emerged through analysis of interview transcripts. Chapter 5 presents a discussion of the findings, implications for further research and for learning supports and assistance, and a closing reflection.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

This qualitative study was conducted to gain insight into the experiences of four older/senior men regarding their learning about and using technology. In this chapter the findings of the study are discussed in relation to relevant literature reviewed for this study. Then, implications for further research are presented, followed by implications for assisting and supporting older adults in learning and using technology. The chapter closes with reflections on what I have learned personally from the study.

Discussion of Findings in Relation to Relevant Literature

In this section, I revisit the review of relevant literature presented in Chapter 2 and discuss the findings of the study in relation to the perspectives presented in previous literature. The discussion is aimed at exploring similarities, differences, and insights.

Ageism

Participants in the study were not asked directly whether they felt they had been treated in ways that were reflective of ageism, “negative attitudes and behavior toward older adults” Levy (2018). There was no assumption made that they had such experiences. Rather, the concept of ageism represented a context in which the study took place. Both the World Health Organization (2017) and the U.S. Census Bureau (2018) projected growth in the number of adults aged 65 years and over to 22% of the

world and U.S. populations in 2050. The International Longevity Center in New York had concluded in 2006 that ageism has been around for a very long time and is embedded in our society and its institutions. So, it is possible that someone might experience ageism and be unaware of its effects.

Butler (1980) proposed the perspective that ageist attitudes and behaviors could be "held by the elderly themselves." One thing I noticed in some participants' interview responses were very subtle nuances of negative attitudes that participants expressed about themselves as older adults. Jack, for example, told himself and others that he was retired; therefore, he did not need to learn how to use a computer. When Ben retired from work, he intentionally got a small computer. "We didn't go large" because Ben expected that he would be home, "pretty much all of the time." Email was pretty much sufficient. No direct evidence emerged during the interviews indicating that these comments may have been directed towards the participants by other people in the past.

Coudin and Alexopoulos (2010) found that ageism can affect older adults' self-evaluation of their knowledge, skills, and competence and perhaps contribute to more dependency on others. Cutler (2005) proposed that stereotypes can become "self-fulfilling prophecy" (p. 68). Jack revealed that he found learning to use technology a challenge because he hated to think a computer was "twice as smart as you was," and even if it was, "you wasn't going to admit that to anybody." Today, Jack has noticed that his memory is not as good as it used to be. The younger generations can "capture" so many more things, but Jack feels he does not have that kind of memory anymore. Ben, on the other hand, began using a computer at age 60, and even although he admits, "I

don't pick up things as quick as I used to," he is a firm believer that you can "teach an old dog new tricks."

While media images often portrayed older adults with "usually no technology in sight" (Thayer & Skufca, 2019), all four participants were currently using technology. In regard to their smartphones, all four carried one with them wherever they went and used texting for communication in addition to phone calls. Jerry, Randy, and Ben used their computers regularly for everyday tasks, and Ben was a daily explorer beyond typical usage in everyday life.

Dennis and Thomas' (2007) assessment that performance does not predictably decrease with age holds true in varying degrees among the four participants. Ben and Jack began their technological journey after the age of 60. Randy, Jerry, and Ben will try to resolve technical or usage problems themselves before turning to external supports, and they will use trial and error to explore something new.

In the past, Jack was confident in using his calculator as he "figured all of the jobs," handling the many math functions involved in surface area as it pertains to lathe and plaster. Jack's confidence then, however, did not transfer to using a computer. He did not want to feel like the computer was "smarter" than himself, a function of self-esteem. According to Cutler (2005), ageist attitudes and technology share a "reciprocal influence" with each other. Jack told himself that he was "retired"; therefore, there was no need for him to learn about computers.

Coudin and Alexopoulos (2010) also noted that ageist attitudes can contribute to lower risk-taking and higher help-seeking behaviors, which could contribute to dependency. Just prior to Jack's wife's passing, he "checked out" her HP computer

because he knew she had been putting things on it to leave household information behind. Jack knew he had to be able to access that information, so he learned a few computer basics like accessing files and email–and kept it simple as he was retired.

Judith Graham wrote in the *Washington Post* (2017) that “dismal expectations can become self-fulfilling.” Stereotypes can affect both the older adult and the people around them. For example, it is possible that volunteers and caregivers can be overly helpful, enabling dependency. Jack felt he was better off having his technology problems solved for him by “kinfolk”; and as far as could be seen in Jack’s interview responses, his family consistently handled all those problems.

Social Isolation and Loneliness

Participants in the study were not asked directly whether they felt they had experienced situations of social isolation and loneliness, and no assumptions were made that they had such experiences. Social isolation was described in the literature as a lack of social contacts (De Jong-Gierveld, 1989) and as a lack of companionship and social integration (Van Baarsen et al., 2001). All four participants had social contacts and companionship. Randy was active in his church and in his network of high school friends. He was also connected to his professional field, maintaining his dental practice license annually. By the nature of Jerry’s work as a pastor, he was connected to church and community members. He was also a big woodworking fan and connected to other craftsman, exchanging tips and pictures of projects. Jack was a golf course marshal at least three days a week, keeping him well connected to a golf course community. He also had several golf buddies and exchanged golf jokes and stories with them. Ben had about 40 to 50 friends who were schoolmates and who kept in contact by phone, some

email, some texting, and some Facebook. He had also served as an elections volunteer for many years.

Research on social isolation emphasized that older adults might withdraw or become disconnected through their own actions (Frank, 2018) or through social rejection or social exclusion (Shiovitz-Ezra, Shemesh, & McDonnell/Naughton, 2018). However, according to Cornwell, Laumann, and Schumm (2008), getting older does not have a universal negative influence on social connectedness; rather, as we age, we tend to have smaller social networks than younger adults. The participants in this study were age 73 (Randy), 81 (Jerry), 87 (Ben), and 90 (Jack). The younger participants appeared to be more socially active, connecting with groups outside of the family. Both Randy and Jerry had professional connections, and Jerry was in active service in a pastoral role and in elderly outreach. Both Jack and Ben engaged in volunteer work; Jack as a marshal at the golf course, and Ben as an elections volunteer.

Adler (2019) reported that grandparents were exploring digital communication avenues to stay connected with their grandchildren. Both Jack and Ben talked about their grandchildren and how they kept up with them via technology. Jack used Facebook intermittently “as a silent watcher” to check on his grandkids’ postings. Ben also navigated through Facebook to check on his granddaughter and his niece who were both into sports; he also caught their activities on livestream. While Adler also found grandparents noting that “keeping up with technology is difficult,” Jack and Ben appeared to have the technology they needed.

Ezra Klein of Vox media was legitimately concerned that COVID-19 would foster a “social recession” which would affect parts of the population, particularly those “most

vulnerable to isolation and loneliness—older adults and people with disabilities or preexisting health conditions." All four participants were able to connect with their families and friends via smartphone or computer. Randy was certainly frustrated with the COVID lockdown and admitted to experiencing feelings of loneliness at times, but he "still had the internet." Jerry found that technology made the pandemic "more endurable" as he had phone service and online options to support his church members. Jack found himself doing more texting to family and golf buddies. For Ben, being online, checking up on his family, using Facebook to see what friends were doing, and engaging in phone conversations were already everyday occurrences.

Research on loneliness distinguished emotional loneliness from social loneliness (De Jong-Gierveld, 1989; Van Baarsen et al., 2001). Emotional loneliness was associated with an absence or loss of a specific attachment figure (Van Baarsen et al., 2001). Both Jack and Ben were widowed, Ben more recently than Jack. Neither expressed loneliness in this context during their interviews, and it was clear that both were well supported by family.

Pinquart and Sorensen's (2003) study suggested that loneliness may be a function of quality over quantity. From that perspective, all four participants experienced social integration at some level and were satisfied with their connections. Randy, for example, regularly met with his RV group and church friends to play board games. Jerry met with his Bible study group and regularly connected with fellow woodworking fans. As golf marshal, Jack had many opportunities to enjoy golf course activities. Cattan, White, Bond, and Learmouth (2005) observed that group activities provide social support and contribute to the reduction of loneliness.

It is, however, also possible to have little human social contact without experiencing loneliness (Russell, Cutrona, de la Mora, & Wallace, 1997). Across all interviews, only Randy expressed experiencing loneliness, and that was associated with his cabin fever during the COVID-19 pandemic. Looking at social isolation and loneliness together, participants' experiences would support Cacioppo, Hawkley, and Thisted's (2010) conclusion, "In sum, the human need for social connection does not fade away in middle-age and older adulthood…[Loneliness] is not attributable to objective social isolation, general negative affectivity, stress, or social support" (p. 463).

Technology Use by Older/Senior Adults

The scope of technology addressed in the interviews used in this study was computers, smartphones, and tablets. While other gadgets like wearables (e.g., Apple watch) or personal home assistants (e.g., Alexa) were not a specific focus of the study, participants may have mentioned them in an interview, and there references were retained in the data.

A consistent perspective in the research was that older adults tend to be "late adopters" of technology (e.g., Pew Research Center, 2014). Randy (73) and Jerry (81) were gradually exposed to technology starting in the mid 1970's, almost solely in relation to their occupational settings, whereas Jack (90) and Ben (87) were not exposed to any technology until leaving their life-long trades behind. So, yes, Jack and Ben could be considered "late adopters" in terms of personal use of technology. At the same time, Randy and Jerry's earlier adoption of technology reflected their use of technology required for their work. For both adoption of technology for personal use followed their engagement with technology in their work.

By 2019 AARP research (Nelson Kakulla, 2019, December) showed that older adults age 50+ were adopting technology at a rate “comparable to younger generations” (p. 4). In addition, use of the adopted technology was high “with most owners using their technology daily” (p. 4). Around 2015 three of the four participants were using a smartphone. By 2019 all four participants had a smartphone, and all four participants used their smartphones daily at the time of the study. Randy had his morning “tech addiction” ritual from “6am-9am”; Jerry kept his iPhone close as it contained his “911” contacts among other church operations apps; Jack now enjoyed his iPhone because it kept him connected anywhere he went; and Ben spent “4-6 hours a day” between smartphone, tablet, and Mac mini exploring what the world had to offer. Except for Jack who wished to maintain a simple lifestyle, all other participants had either wearable technology, voice assistants, and/or tablets.

The AARP study also found that older adults “often do not take full advantage of their devices” (p. 4). In the findings of the Peek et al. (2016) study, there was considerable variation in participants’ ownership and use of technology, reasons for use, and perceptions of benefit. Randy’s home was “wired”; he had computer, smartphone, tablet, and about 35 other gadgets. He checked in daily with his home automation devices, social media feeds, news feeds, and email because he liked a sense of control. At the same time Randy had not explored options that might assist him with managing the constant stream of information he enjoyed. Jerry had an iPhone 10, a desktop PC, and a Kindle. He used the internet mostly for email and online browsing and ordering. Jerry had not explored apps for his iPhone, nor had he explored Microsoft Office applications that might enhance his research activities. He adapted to online

communication (e.g., Zoom) during the pandemic because he could not see his church family face-to-face. Jerry was not interested in pursuing that further. Jack had a smartphone and a PC that he used minimally. From Jack's perspective he had all the technology he needed, and the technology he had did what he needed it to do. Ben had a solid Apple ecosystem – MacMini, iPhone, iPad, Apple watch. Ben was the most adventurous of the participants in terms of desire to explore and willingness to learn.

Social Media and Social Networking. According to AARP (AARP Research, 2019, p. 48), 3 in 4 adults use a social media platform like Facebook to keep up with friends and family, but less than half use it "daily for that purpose." Social media use among the four participants varied widely with one participant abstaining completely and another casually observing with little to no participation. For the two participants who used Facebook routinely, activities included casual research, politics, posts to elicit reactions from friends, Facebook fan groups, sporting events, and general social curiosity amongst their friends.

Hutto and Bell (2014) noted that social media "does not replace traditional channels of interaction for older adults; it complements them with different types of interactions" (p. 1762). Participants in this study preferred text and voice conversations over social media for both real-time interactions and passive interactions. No participant mentioned Facebook Messenger as a source of communication. Customized news feeds were common for both Randy and Ben; watching family sports activities was important to Ben.

Mitzner et al. (2010) concluded, "Older adults' relationship with technology is much more complex than would be suggested by the stereotype of older adults simply

being afraid and unwilling to use technology" (p. 11). There were four participants in this study; each of them used technology to varying degrees and in ways that made sense to them, given their view of the life they wanted to lead.

Technology Learning by Older/Senior Adults

Technology learning by senior adults is multifaceted. There are cognitive, affective, and training/assistance considerations that should be evaluated within the context of technology. Barnard, Bradley, Hodgson, and Lloyd (2013) observed that the perceived difficulty of a new technology could "contribute to their [older adults] hesitancy" on whether to adopt "technology options." Examining Pew research data, Anderson and Perrin (2017) found that 73% of participants over 65 years of age "needed help in using electronic devices." Even in cases where outside help may not be necessary, Vaportzis, Clausen, and Gow (2017) observed inexperienced participants moving past their initial fear of operating a tablet once they had a chance to explore them; afterwards the participants "expressed an interest in learning."

For me learning supports play a crucial role in everyday situations, whether they solve complex technology obstacles or simply reveal hidden opportunities obfuscated by a misunderstanding. I believe that every adult learner, regardless of age, carries necessary, sufficient, and precedented traits within them to enable goal attainment. Jack, for example, when prompted by external events, discovered his internal resolve, and he decided to "just sit down, and I just learned" the computer and texting on his own. Randy had his curiosity and his "I wasn't afraid to punch a button" attitude. Jerry had his drive to find proper step-by-step instructions. Ben had his thirst for exploring

daily, “finding different things” to learn. All these traits contributed to those moments of learning to use technology.

Cognitive Considerations for Elderly Learning. Previous findings in other research asserted that “environmental cues” can direct the attention of older adults in the absence of information that would be salient to more experienced users (Fisk, 2006). It was clear from my conversations with some study participants that cues were only useful when they were accessible. Jerry, for example, made his own “instructions” for internet searching from bits and pieces that he learned from other authors. There were no clear, step-by-step instructions in one accessible place – a frustration for Jerry. Ben was an avid consumer of information he found on the internet. Mobile technology had popularized smaller screens, so Ben used three separate devices at times to be able to read what he found.

Mobile technology had also popularized apps in the last 15 years, and the use of compressed labels and symbols in mobile OS’s and applications had grown to conserve space. People of any age may have trouble accessing cues that could help them. For example, there is a universal symbol depicting a box with an arrow piercing through the top in Apple’s iOS. If you know what it means, you can share anything. There is no easy way to access a name or definition because the symbol is nameless, and there are no visible tool tips.

Some cognitive faculties “decline” over time such as “working memory and retrospective memory” (Fisk, 2006). More than one participant referenced age as an inconvenience; however, none of the participants directly attributed age to an inability to perform a specific task involving one of their devices. Jack referenced a decline in ability

to store information or what he calls “connecting the dots.” Ben also noted, “I don't pick up things as quick as I used to.” So, it is important to understand memory limits in older age with respect to increasing “task complexity” or a new skill that “represents a cognitive domain that is not as familiar” (Park, Lautenschlager, Hedden, Davidson, & Smith, 2002).

Affective Considerations for Elderly Learning. People who possess “lower self-efficacy” and have “higher anxiety” are less likely to engage technology (Czaja et al., 2006). Randy, Jerry, and Ben all had moments when they described themselves as “dumb” when it came to using new technology, but none of them were stopped in doing so. They had a positive outlook, shared a belief in persistence, and asked for support when needed. When Jack was working in his lathe and plaster business, he measured entire rooms in both planning and implementation, armed only with a calculator. He was content, confident, and effective in construction. However, when it came to using a computer or expanding use of a smartphone, Jack saw no need to learn. He was retired; he liked “no gravy with his meat.” Life was good when it was simple. Attitude made a difference. Findsen and Formosa (2011) found that self-esteem, open-mindedness, self-efficacy, and autonomous attitude can influence maintenance and decline of cognitive ability.

Older adults are less likely to use technology if it will “show signs of aging or frailty”; conversely, if they have “control and authority over its features” adoption will increase (Lee & Coughlin, 2015). Ben was initially resistant to adopting the Apple watch; his first response was “I don’t need it.” However, his children insisted, and so he accepted it. Once he began using it, he was a little awestruck and a little anxious. The

device's untapped potential felt limitless and a little scary: "I had no idea what it can do." For at least six months, each time he would go to learn a new feature atop his wrist, that anxiety would return. It reminded him of how much he did not know; a watch, after all, was traditionally just a small device that simply tracked time.

Training/Assistance Considerations for Elderly Learning. Mayhorn, Stronge, McLaughlin, and Rogers (2004) found that older adults benefit from "training formats that emphasize step-by-step instructions"; however, too many steps may "strain working memory." Jerry strongly suggested that learning new technology would be helped by a step-by-step protocol with hands-on practice. Ben suggested a similar approach but emphasized the importance of letting older adults try something first rather than doing a task for them and letting them watch.

Some of the participants suggested using "real problems" that are unique to the learner's life experience such as a hobby, trade, or other interest—all forms of "crystalized intelligence" (Cattell, 1963). This specific intelligence can aid "elderly learners" in order to "use technology" (Barnard, Bradley, Hodgson, & Lloyd, 2013). Also suggested were small class sizes, which affords an instructor time to craft individual scenarios for each learner to provide environmental cues. Crystalized intelligence remains intact; learners can draw on previous experiences (long term memory), and ordered steps and increased rehearsal can be a strategic advantage.

The four participants represented an age range spanning close to 20 years, each with a different professional background. Some were more curious, motivated, sequential, and hands-on than the others. Findsen and Formosa (2011) asserted that given "numerous cognitive abilities," it can be "difficult to isolate unique process" aligned

with older adult learning. The variability across just four participants serves to strengthen this assertion. Jerry, 81 years of age, was the most cerebrally quick and order dependent; he also prefers clear instructions to avoid unnecessary cognitive overload. Randy, age 73, could make large, intuitive leaps, but he was the most careful in his thinking. Ben, age 87, approached problems using common sense; therefore, he was less likely to get overwhelmed by seeing too many possibilities but could struggle with the occasional high-level concept. Jack, age 90, admitted that his memory storage and retrieval had changed over the decades; however, he preferred to keep things simple throughout his adult life.

For me, participants' personality, problem solving approach, and life experience may account for more in the group variation than simply age. Randy and Jerry did not complain about a decline in ability in or outside the interview process. Whether it was practical assistance or academic growth, Randy stated that he always had a "brain bank" for support. Jerry appeared consistent in his independence during his three occupational technology growth spurts. Ben insisted on trying technology on his own; he saw it as an "adventure." Jack was comfortable letting his family conquer his technology barriers for him.

As noted by Vaportzis, Giatsi, and Gow (2017), it is important to understand "older adults' perceptions of technology" and their "concern about the process of learning" to use technology (p. 10). The challenge for those who support or assist older adults in learning new technology is to unlearn the elder stereotypes and ageist negativity that are embedded in our society and to respect what older adult learners want to learn, why they want to learn, and how they want to be assisted and supported.

Unexpected Insights

Jack

In qualitative research there occurs upon occasion what is called a “negative case” (Merriam & Tisdell, 2016). The term "negative" here is not derogatory. A negative case is one in which respondents' experiences or viewpoints differ from the main body of the data. For me Jack was unexpected.

The *digital divide* refers to “the gap between those who have easy access to computers and the internet and those who do not due to various demographic factors” (Longley, 2021). Age is considered one of those factors. Adler (2019) published a report from an AARP survey on grandparents using technology. For those above the age of 80, results showed that only 17% reported owning a smartphone, 44% reported using the internet, and only 28% reported having broadband at home. Reduced access to technology can be a barrier to learning, and older adults’ appraisal of difficulty of use may contribute to hesitancy to adopt specific technologies (Barnard, Bradley, Hodgson, & Lloyd, 2013).

Jack had me puzzled from day one. Right before our first interview began, he asked how I handled senior adult learners who did not have any desire to learn technology. Jack was 90 years old, owned a smartphone, and operated a computer that he purchased for himself in 2013 when I met him. He initially had access to a home computer since 2000, but at that time, Jack’s wife was the sole user of the computer. It was not until 2004 when his wife fell terminally ill that Jack decided to learn some of the computer functions that his wife was maintaining. He said, “Whenever I first learned how to operate one of them stupid things, you know…that was probably after 2004.

After my wife passed away that I took over the computer." Later, his daughter "forced" him to take a cellphone, and eventually a smartphone, because she could not find him one day when he took an unannounced trip to Home Depot. In describing his current smartphone, Jack noted, "So, I don't have anything on it except just texts and…I think it's the easiest…the least problems of anything, and I use the text all the time, and I really like it."

With each technology introduction, outside pressure was behind Jack's adoption. Interestingly, Jack was very good with math and measurement; his favorite jobsite tool in his lathe and plaster business was a calculator. The more I talked with Jack, the more I wondered: Why would a man who routinely and confidently performed calculations of building materials and job cost accounting consistently polarize towards technology avoidance? Jack's perspective was clear to him: "…I don't know how they work, and I don't care how they work. I have no use for them, I mean for my personal use."

Jack appeared to shy away from computer use despite having access to both hardware and "kinfolk" with enough skill to teach him how to use the technology he had over a 20-year span. Jack simply chose minimal use: "I just basically used it for the things that I needed." Those things included email where he got "a few funny emails every once in a while. And I get a lot of golf stories." He also got his work schedule from the golf course once every 30 days: "Yeah, you know, all we had to do, just print out our scheduling and throw it on the refrigerator." Jack liked getting email because "it made it so much easier better than trying to mail it to somebody…Oh yeah, I mean, I spend many a week that I never turn it [the computer] on."

Professionally, Jack never wanted to invest the time to learn to use the computer despite having a brother selling IBM PCs in an adjoining office to his construction company during the 1980's. Jack felt that "it would've taken more of my time trying to figure that computer out than I could spend on the road taking care of those jobs that we had going." Jack's visits to the different job sites were important to him: "…all I had to do was walk on the job…I could see the guy that was running the job for us, I could talk to him for five minutes and know if we had any problems or anything. And if we didn't, man, I was going to the next job."

In our conversations about technology, Jack reflected on those days and commented, "…it wasn't until later after I'd retired and I realized, you know…I wished it several times that when I was in business…me and my brother…you know, it would've saved us a lot of miles…If we had what's out there now."

Jack hated to think of computers as being smarter than him: "You'd hate to think that machine was smarter than you was, you know, which it was, twice as smart as you was, but you know, you wasn't going to admit that to anybody." Jack also mentioned his grade school experiences with computer learning where he required additional help. He described that experience as "kind of like a school challenge, you know, when you was younger…you had a project you had to do, and you had to do it, so I just, I had a lot of help, too."

I would describe Jack as intelligent, diligent, and sensitive, but Jack was not confident where technology was concerned. He taught himself the basics of email, texting, and powering on a machine, but he stopped there. Jack explained, "I don't know…I guess I just don't have the confidence, you know, because I didn't pay much

attention…So, you know, I mean it's not that important to me. I guess you'd say, I mean maybe I don't realize it because I didn't take the time to study the phone and do that or just like the computer, you know."

Ageist attitudes can also contribute to lower risk-taking levels and higher help-seeking behaviors (Coudin & Alexopoulos, 2010). When I asked how he handled computer problems, I gained insight into his help-seeking behaviors. When Jack had a computer problem, he contacted his daughters who were close by or his grandson who was studying computers. His grandson had remote access: "Anytime I had trouble with my computer I just called him…I'd just turn on my computer and give him the password, and he could take over that computer and fix it. You know, so I didn't have to, I didn't have to know anything."

Smartphone problems were handled by his daughters, particularly the one who lived closest to him: "One of my daughters that lives over here that takes care of my phone most of the time. She does everything with that phone. I mean she orders everything from everywhere. And you know, if I want anything, I just call her and tell her to order me this, and it's so easy."

So, I began to understand a little about Jack's technology world. What started out as low confidence and needing help with a computer in youth was perpetuated within Jack as technology became more prevalent. Jack's work in lathe and plaster could be completed with a calculator, site visits, and face-to-face interactions with personnel at job sites. Jack's realization that a computer and smartphone might have save time and miles then did not occur until he was well into his retirement.

Technology came into his post-retirement life in relation to two key events, his wife's passing and his daughter's concern for him after her death. Jack loved his family, and his family needed to know he was safe. When he ran into problems with his computer or smartphone, he just called family members—"it was so easy."

Jack now performs all of his basic technology functions without help. I could see segmentation between devices, for example, with web browsing, email, and Facebook are reserved for the PC and voice and text are strictly for smartphone use. Training is easily transferrable cross platform, so with some instruction and guidance, Jack could gain some efficiency between the devices. But, I have learned what is important to Jack. He is retired, and he planned his simple lifestyle in advance. From Jack's perspective, does need more? He shared the following:

> Do I need it? Do I want to put the time and effort into learning it?...There's so much technology out there right now, I mean, the world is open…I mean you can learn anything you want right now…As far as I'm concerned, I've got what I need, so I don't need, you know, I don't need to do the headaches.

Jack set out to engage technology in a stress-free manner to complete the tasks he wanted to do with plenty of kinfolk to assist him. Jack puzzled me because he challenged my belief that everyone can, and should, keep up with current technology and use it well. I did not expect Jack.

If Technology Was Gone

Participants were asked what they would do if their technology was suddenly removed from their homes. Younger generations have grown up in a world where technology was waiting for them; some may have grown dependent on digital devices

before their speech fully developed. Three of the participants responded in a similar fashion; Randy's response was somewhat different.

When **Jerry** was asked how technology removal would affect his life, his mind first went to "time". For Jerry, there simply are not enough hours in the day to accomplish everything he wants to do. His phone, which has his appointments, calendar reminders, 911 contacts, the church activity apps, text messages, and phone calls, would immediately vanish. Jerry noted that his anxiety levels would be increased similar to his experiences with the COVID-19 lockdown. Jerry shared his state of mind in the following:

> If all the technology went away? I think the time factor would really be affected. I think my time, my allotment of time, would really be affected because you have the same commitments…It's just going to take you longer to fulfill it. You'd have to have more time to fulfill it. I can send out an email message to all my group using this app. I can send out all prayer needs just in an instant. I mean it's gone. If I've got to call on all of them, I would do that. I would just go back because the end result is what you're after so, to get the end result you're going to have to do whatever mountain you got to cross…But, just keeping up with family, friends, the needs. I think it would produce a certain amount of anxiety just like the pandemic. (I-1, P-3)

Soon after realizing how technology removal would affect him in the immediate, Jerry paused and remembered where, when, from which he came. Jerry did this before, and he could do it again both with his faith and his previous experience during his youth. Jerry said:

> I think…my generation, we've gone through so much change, we would just have to revert back and kind of shift gears to get back here…But we would make it because we've made [it] this far. Some of the younger kids, I don't know…If it was gone, I don't know what they would do! And here, here's another thing. I think one of the things has happened is that this has created a liability of social interaction…They don't know to communicate with another person face-to-face, and…it's created some bad habits. It's created some very unhealthy habits, especially in the dating world. (I-1, P-3)

Asked how he would handle technology removal, **Jack** paused for a moment and went back to an old memory. It was a scene where his father read Western novels to him and his siblings. Jack understood that his children lead busy lives, and without phone, text, or email, he would simply wait in solitude while reading those old Western stories he grew up on. Jack explained:

I got boxes of Western novels…I mean, I've got a box left. I need to get rid of it, you know, take it to the used bookstore, give it to them, but I grew up. Well, my dad used to read when I started reading them Western novels. When I first learned to read probably six, seven years old to me. I mean at that time, I mean, there was no TV or anything, you know, and nothing to do for kids, you know, and that's when I started reading them Western novels. Because my dad read those Western novels, a lot, you know at home like we didn't have TVs or nothing so he would come in and say, "Awright, where's my dang book?" He'd say, "What did you do with it?" (I-1, P-2)

When Ben was asked how he would handle technology removal, he simply smiled and asked for a fishing pole and a radio for news updates. Ben humorously shared the following:

> Just give me a radio...So, I can get news and stuff, and I'd be fine. (I-1, P-1)
>
> You see these things on Facebook asking, could you go live in this place for $1 million and not have a cell phone or TV? Yeah, I could, it wouldn't bother me at all, six months to a year without a TV or cell phone. They put me out there on the lake or along down the stream like they show these houses and stuff, hell, I'd be up in the morning with my fishing pole in the water. (I-2, P-1)

Ben recalled a time where important phone numbers were kept in his head, and if technology were to be removed, looking for a phone book that is immediately available would be problematic. Ben admits to becoming too dependent on his iPhone contacts app. He stated:

> We have become so used to having something like the iPhone in our hand where all the information is there, and phone numbers is a thing, remembering phone numbers is a thing of the past because I got it here on my phone. Hang on I'll pull it up, you know? And before you couldn't do that. (I-1, P-1)

At first in responding to the notion of technology gone, **Randy** noted the same coping plan as Jack – reading. Randy had this to say:

> If all the technology went away? I'd catchup on a lot of reading. I've got a lot of books that I've started and haven't finished. They are good books, but it's just easy to sit down, tired, just mow the yard, watch TV or movie, or something than it is to read. It's not good, but it's true. (I-1, P-4)

Later in his second interview, Randy revisited the question and noted that he would experience some levels of depression and anxiety from losing communication with family and friends. Randy recalled his family's isolation during COVID-19 in 2020, stating that "it was lonely," but he "still had the internet." This time his thoughts went to "more personal interaction." Randy shared the following experience about a trip to McDonald's during the COVID lockdown:

> We were forced to stay home because of all the garbage the last year and a half or two. It got so bad at times, she and I would get in the car and drive 45 minutes to a town somewhere else to get a coke at McDonald's and sit there and drink it and turn around and drive back, just to get out of the house and do something different… It was lonely enough and still having the internet. [If] you lose that, you lose all your communication with family, friends, whatever. You've got to go to payphones or dialups something at home. So yeah, that would be terrible. (I-2, P-4)

Jerry's response did not surprise me. His responsibilities as a pastor and his dependence on his digital resources would be disrupted. So, his initial response reflected the anticipated anxiety. However, Jerry was strong in faith. If the day came where technology disappeared, Jerry took comfort in the thought that that he would return to what he first knew as a child, teenager, and young adult, the strength of face-to-face contact. As Jerry once observed, "…an email does not bring a smile on the face like walking into the room… there still is no substitute for the face-to-face encounter. (I-1, P-3). Jerry did it once, and he could do it again.

Jack and Ben, the oldest of the participants, did not so much as flinch in responding to this interview question. Both ‘discovered’ technology later in their lives, so they lived without it for quite some time. Both had already experienced emotional loneliness associated with loss of a specific attachment (Van Baarsen et al., 2001), and both continue to live forward, despite the loss of their wives. They both are connected to family and friends through technology, but they are both out there in face-to-face contact. Each spends a lot of time in solitary activity. Their experiences of living independent of the technology they have are closer at hand. So, returning to those times does not appear to be that disturbing for them.

Randy’s response surprised me. He described himself as “addicted to technology” and “plugged in all the time.” His daily morning rituals were orchestrated by some 35 tech gadgets. His initial response, “I’d catchup on a lot of reading,” caused a little gasp on my part. I expected that Randy would experience the largest adjustment to having all his tech toys gone. But, he went in an entirely unexpected direction, a solitary activity taking care of some loose ends that piled up, books.

It was Randy’s second response that caused me to think more deeply. Of all the participants across all the interviews, Randy was the only participant to mention loneliness. He expressed this in relation to his family’s isolation during COVID-19. It was in recalling this that it hit home for Randy; losing technology meant “you lose all your communication with family, friends, whatever.” Having the internet during the pandemic made what could have been “terrible” somewhat tolerable for Randy.

Implications for Further Research

This study was conducted with four older/senior men. Repeating the study with a

sample of older/senior women with similar age demographics would be one way to extend the study. Conducting another study with both men and women in the same sample would be another way to extend the study. The study could be further extended by including other demographics in the sample (e.g., race/ethnicity, social class, profession).

From a methodological standpoint, participants differed in the length of their interview times, transcript length, and number of coded exemplars from each participant. It might be interesting to look at whether these differences might provide additional insights into the findings of the study.

Occupational backgrounds appeared to contribute to participants' technology development either by limiting the availability of technology or perhaps biasing them to investing in what was already deployed in their work environment. Participants were not directly asked to reflect how their environments helped to shape their understanding of or use of technology. Further exploration could be conducted into the relationship between personal technology adoption and experiences with technology in a work environment.

Two of the participants did not begin acquiring technology for personal use until after retirement. Further research could be done on the experiences of late-life technology adopters. While survey research has described what technology is used and what basic uses are for people age 65+, this study demonstrated for me the importance of getting at the nuances of individual experiences, getting into their life worlds and states of mind.

I found it interesting that the four participants had multiple devices which they expected should be compartmentalized. Device switching and data handling were foreign to them. From a training/assistance perspective, an intervention study could be constructed. For example, an older adult could be asked to perform a text and data handling task between multiple devices. Interviews could be done prior to the task and after the task. The task could be repeated after some instruction and guidance, and a post-instruction interview conducted.

In talking with the participants, I learned about their personalities and temperaments. It would be interesting to construct a study with older/senior adults to look at varying factors in personality (e.g., organization, attention to detail, goal setting, task completion, levels of confidence, motivation) in relation to learning to use varying types of technology.

People cope differently with social isolation and loneliness. Human beings are genuinely social creatures. What about people who need social interaction and cannot access it? How can technology provide salient alternatives to social interaction? Research on people's experiences during COVID-19 are starting to appear in the literature around aging adults, and this area could be worth exploration. Participants in this study shared a few observations about their experiences. Exploration could be extended into their COVID experiences to look deeper into what they did to cope and why, and how technology may have provided more opportunity if they had known how to access and use what was available.

Implications for Training/Assistance

At the end of the second interview, the four participants were asked for their

advice to anyone wanting to facilitate technology learning as it applies to senior adults. Their advice and what I see as insights into training/assistance follow.

Randy

Randy initially spoke from a place of controlled, prescriptive enthusiasm; it was learner-focused and began with a sales pitch: "You have everything to gain and nothing to lose." His perspective was usefulness: "It saves time, it saves work, saves effort." Randy himself is both utilitarian and passionately curious in nature, so his perspective was not surprising.

He then shifted to talking about what a facilitator should do: "Be patient, take your time, speak slowly, watch their body language, and ensure they are getting it." His advice reflected in some ways how he handled training for his employees in his dental practice. Randy also spoke to a facilitator's demeanor: "…don't be afraid or ashamed or frustrated if you have to repeat it a few times." This hit home for me. In my experience, it is not uncommon for technology trainers to want to move quickly through training, assuming everyone will get it. Randy's strategy for facilitators focused on patience, confirmation of learner understanding, and controlled facilitator frustration with time and repetition.

Jerry

Jerry's advice was offered in a careful yet passionate tone; his approach was facilitator-focused. Jerry's initial caution was "…if it seems unmountable, they're gonna say I ain't got time for this." Then, it become obvious to me how seriously Jerry took himself as a teacher. His goal was to minimize avoidance behavior and provide a

learning experience that would be palatable for seniors, especially where relatability was concerned.

Jerry described what a “helpful” facilitator would be like, based on his experiences in another field: "Okay, I had an opportunity to visit with a guy who was leading music part-time in his church and is the reason I met him. But really what he did for a living, is he wrote instructions. He wrote instructions for various things to put together. For example, they would send him a product, he would assemble it, and then he would write a manual for assembling that product. Really important to know who you're writing for. My suggestion would be, you know you have a real good grasp of all the technology to make sure that you formulate that in a way that would be understandable by senior adults, palatable by senior adults. It’s not going to turn them aside."

Jerry felt that a certain caliber of instructions was needed from someone who would be highly skilled in a specific way. That person would need a firm grasp of technology in general, intimate knowledge of the specific product that would be used, and ability to formulate information and support that would speak to and engage seniors. Jerry’s strong sense of independence in acquiring his own technology skills emerged through his advice; he has learned the value in exploring resources that already exist on the web. Clear, step-by-step instructions are essential for keeping a classroom on the same page. Not everyone interprets instructions the same way. The more precise and concise instructions are, the lower the opportunity for unwelcome deviations in classroom performance.

Jack

Jack's advice was learner-focused and conservative. He accepts that technology is "what makes the world go round…it educates the world." However, expecting that older adults should learn technology simply because it's there, may not be the right motivation. Jack was strong in his perspective: "…it's gotta be your situation." Jack added, "…if it's not going to help me out…Do I need it? Do I want to put the time and effort into learning it?" Considering utility, considering the time and energy that an older adult may want to invest in learning specific technology is sound advice.

Jack also suggested that facilitators should know the limits of older adults where memory is concerned. Considering an older adult's cognitive faculties is important. Creating cognitive overload by structuring learning supports that are complex, confusing, or frustrating is not going to meet older adult learners on comfortable or sustainable ground.

Ben

Ben's advice was trainer-focused and emphasized patience and listening: "…with the older people …you have to have a lot of patience …you're going to have to listen to them…Listen to what their wants and their needs are…" He also recommended a hands-on approach, avoiding lecture where possible: "Nope. it's got to be hands-on…I don't think you can take and flash it up on the screen." Ben also expressed preference for a "one-on-one environment." A facilitator needed open-mindedness to meet the older adult learner in where he or she is, even if it meant accepting the "hunt and peck system" of two-finger typing on a keyboard.

Ben knows the value of being able to try new technology himself. The hands-on experience and problem solving is where memory muscle has a chance to develop. Ben enjoyed organized sports, and he swears that learning how to win and how to lose are equally important. Older adult learners need to feel safe in the learning environment. Mistakes happen in learning. One of Ben's strengths was his persistence; if something did not work, try it again. No shame.

Not everyone learns the same or has the same style in execution, so it is important that everyone be able to perform in their own way that makes sense to them in an environment that is both accepting and tolerant. Facilitators and learners have to be good team players for a learning environment to work properly. Ben understands this which may reflect in his emphasis on the importance of having a student-teacher ratio that is as close to one-on-one as possible.

Closing Reflections

For over 15 years, I have volunteered to work with older adults in assisted living facilities. I have worked with residents in nursing homes, for example, teaching them to use Apple iPads. I assumed that older adults may be alone and, perhaps, under stimulated, either socially or mentally. This was upsetting to me. I knew through my professional and personal experiences with technology how many opportunities there were for social connection, enrichment, and communication through technology.

I also assumed that each participant in the study would have some technology—at least one digital communication avenue or possibly an electronic game to pass the time—and some interest in learning technology. I also assumed that even if they initially

failed to see the value of learning technology, I could show them something, no matter how insignificant.

Prior to engaging in this study, I had written a proposal for a 10- to 12-week training course for 20 or so participants, covering a rudimentary topic in technology skills and applications each week. Older adult students would get to choose which courses they wanted to attend, provided they attended the first and last weeks. I would have them sign a learning contract on the first night of class. I would also hold a 6-month follow-up meeting to check on their progress in relation to their learning contracts. I had even developed a generic document strictly for grant proposals.

I have worked with many older adults. During my nursing home visits, I had conversations with people who all wanted to talk to me as a group or as individuals, who all wanted to learn what I had brought for them. So, in retrospect, I may have entered the study with a preconceived notion of what a training course for older adults would look like, and I think a part of me was looking for the participants to prove my training approach was right.

The four participants together illustrated variety in the technology they used and different levels of complexity in their use of technology. Their perspectives on what would help older adults learn technology challenged by assumptions about a 10- to 12-week training course for 20 or so participants. I am now re-thinking that training course with their perspectives in mind: (1) utility focused and based on learner's wants and needs; (2) hands-on, real-time, problem-based learning; (3) patience, slower pace, and repetition without shame; (4) clear, precise, and concise instructions; (5) sensitivity to

older adult's cognitive strengths and limitations; (6) checking for understanding; and (7) small or one-on-one, safe learning environments.

Jack's relationship with technology violated certain of my assumptions. During his first interview, I was privately intimidated by my ignorance of Jack's position. How could an older adult like Jack not want to learn new technology? I recognized that Jack was 90, but there was Ben who at 87 was open and curious and adventurous. I certainly knew from the research literature and technology used tended to decrease as one aged. I had early in my thinking about this study thought of doing a survey; they were common in the literature. A survey captures well the scope of a population of respondents, but the nuances of personality, knowledge, experiences, attitudes, beliefs, and expectations in just these four participants' interviews was not something I had fully anticipated.

The in-depth interview process was a learning experience for me. I had to learn to listen, to be present, and pay attention in every conversation. My thoughts can often be way ahead of the conversation I am in. The transcript reading and analysis process slowed me down. In working with the transcripts, I had to focus and get past just reading the words. I had to hear the conversation in the words, recalling the tone and emphasis cues. With each transcript, I got better at recalling conversations and making connections between them. More specifically, I can listen in a way that I could not before. Moving forward I will components from the narrative inquiry to make better decisions in business as well as academic pursuits.

The possibility that one could have little human social contact without experiencing loneliness (Russell, Cutrona, de la Mora, & Wallace, 1997) was something

I had not really considered where older adults are concerned. I was struck by Jack and Ben, both of whom had experienced significant loss and who very much recognized that their children had busy schedules. There were times that they were alone, but that did not mean they were lonely. They each had their own ways of making connections, and they were satisfied with their lives.

The responses of the four participants regarding what would happen if the technology went away provided, for me, a real insight into their resiliency. They would be OK if they had to go back to a time without the technology we have today; they had once lived full lives without it. They left me wondering if our younger generations could do the same – if I could do the same.

I certainly expected that all older adults could, should, and would learn technology, simply because it's there and simply because I know it can enrich their lives and enhance their communication and social connectedness. I learned from these four older/senior men that when healthy, motivated older adults want to learn something that technology can provide, they will seek it, and one way or another, they will learn to use it for their purposes.

The challenge in engaging older adults in technology use and learning is designing technology, programming, and applications that suit their wants and needs, and in developing training and learning supports to assist them in meeting their goals, in their way, and in their own time.

I believe even more that older adults possess life wisdom.

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APPENDIX A: Interview Questions

INTERVIEW #1 Guide

Thank you for meeting with me. Let's talk today about the technology that you use and how you use that technology. You have had a chance to look over the questions prior to today. As we talk about those questions, I may ask you for an example or clarification so that I can fully understand what is important to you. Are you ready to begin?

Technology Used Most

- Tell me about the technology you use most.
- What led you to selecting that technology? When did you first purchase that technology?
- How do you use that technology?

Use for Enrichment

Think about enrichment as learning something, exploring a hobby or topic of interest. How do you use technology for enrichment?

- Tell me about a recent memorable experience in using technology to learn something.
- What do you enjoy the most about using technology for enrichment? The least?
- What has surprised you?
- What was something that you found that led to you exploring more information?

Use for Communication

Think about communication as using email or chat for a specific outcome or task. How do you use technology for communication?

- Tell me about a recent memorable experience in using technology to communicate in an important task.
- What do you enjoy the most about using technology for communication? The least?
- What has surprised you?
- What was something that you experienced that led to you exploring more technology use for communication?

Use for Social Connectedness

Think about social connectedness as using email, chat, or video call to connect with friends or keep in touch with people you care about. How do you use technology for social connectedness?

- Tell me about a recent memorable experience in using technology for social connectedness.
- How do you feel about social media?
- What do you enjoy the most about using technology for social connectedness? The least?
- What has surprised you?
- What was something that you experienced that led to you exploring more technology use for social connectedness?

General Closing Questions

- Is there other technology you would like to know more about? Why does that technology interest you?

- Is there other technology that you would not use? What concerns do you have about that technology?
- How would you describe your attitude toward using technology in the beginning? And, today?
- If you removed the technology you use from your life today, what would change? Why?

INTERVIEW #2 Guide

Thank you for meeting again with me. Let's talk today about how you learned to use the technology that we talked about in our last interview: a computer, tablet, and/or smartphone. You have had a chance to look over the questions prior to today. Again, as we talk about those questions, I may ask you for an example or clarification so that I can fully understand what is important to you. Are you ready to begin?

[Note: Questions may vary depending on the respondent's individual usage.]

Computer

- Tell me about your first experiences in learning to use a computer. What was your reaction?
- What drew you to learning to use a computer? When did you see a significant increase in use?
- Did you teach yourself? Did you take a class? Did you have assistance? How did you learn to use a computer?
- When did you first feel confident in using a computer? What contributed to that confidence?
- When you would run into a problem or 'technical issue', how would you handle that problem/issue?
- How has your use of a computer changed over the years? What influenced this the most?
- Is there more that you would want to know about using a computer?
- What do you think would be most helpful to you if you pursued that new learning? Least helpful?

Tablet

- Tell me about your first experiences in learning to use a tablet. What was your reaction?
- What drew you to learning to use a tablet? When did you see a significant increase in use?
- Did you teach yourself? Did you take a class? Did you have assistance? How did you learn to use a tablet?
- When did you first feel confident in using a tablet? What contributed to that confidence?
- When you would run into a problem or 'technical issue', how would you handle that problem/issue?
- How has your use of a tablet changed over the years? What influenced this the most?
- Is there more that you would want to know about using a tablet?

- What do you think would be most helpful to you if you pursued that new learning? Least helpful?

Smartphone

- Tell me about your first experiences in learning to use a smartphone. What was your reaction?
- What drew you to learning to use a smartphone? When did you see a significant increase in use?
- Did you teach yourself? Did you take a class? Did you have assistance? How did you learn to use a smartphone?
- When did you first feel confident in using a smartphone? What contributed to that confidence?
- When you would run into a problem or 'technical issue', how would you handle that problem/issue?
- How has your use of a smartphone changed over the years? What influenced this the most?
- Is there more that you would want to know about using a smartphone?
- What do you think would be most helpful to you if you pursued that new learning? Least helpful?

General Closing Questions

- In what ways do you feel technology has enhanced your life over time?
- What would this past year or so have been like for you without the technology you use?
- What advice would you give to someone your age who is fearful of learning to use technology?
- What advice would you give to someone who wants to assist/support technology learning by senior adults?

APPENDIX B: Example of Coding Table with Researcher Notes

COMMUNICATION CODE

PARTICIPANT 4	TEXT	CHARACTERISTIC	RESEARCHER NOTES
	I have concerns about family, I'm wired in because it's an easy way to communicate and loved ones, brother, sister-in-law, what's going on in their lives and the easiest way to communicate by text. So, I'm you know I'm plugged in all time. If I start out the door and forget my cell phone. I've actually going as far as the ends to the neighborhood and forgotten it and turned around and come back and get it. (I-1, P-4)	Personal use – cell phone use for ease of communication (particularly text) with family, loved ones; Interested in what's going on in their lives; won't leave home without it – plugged in all the time.	It seems P4 uses the smartphone **because** he is concerned about his family. Texting is an easy way to check in. [Motivation?] Interesting that P4 will travel across the neighborhood to retrieve his phone if he has forgotten it at home. Suggests importance and dependence.
	My dentist son is beginning to do complex cases, full mouth rehabs, and I used to do a bunch of those…. He's got another one he showed me the other day. Sent me pictures via text, so I started asking questions about what I saw in some pictures so and I get this next one and, from a professional point of view, that kind of cases is a whole lot more productive and easier…[W]e start with a text that says, "hey dad, here's the pictures of the guy, here is the X-ray." And then I have specific questions about specific teeth or wear patterns, you need to look at the bite that makes it more complex and complicated. There's an awful lot of geometry involved, this is an interesting fascinating joint, it translates it and rotates it. (I-1, P-4)	Professional use – uses text messages to convey ideas to son about advanced dental procedures.	Remains connected to his profession through his son who will text him pictures of a complex case. P4 will ask questions about what he sees. They even have a 'code' for such messages to alert P4 to the text.

APPENDIX C: IRB Exempt Determination

UNIVERSITY of SOUTH FLORIDA

EXEMPT DETERMINATION

September 30, 2021

Emerson Hardy
7616 W Courtney Campbell Cswy
Unit 416
Tampa, FL 33607

Dear Mr. Emerson Hardy:

On 9/29/2021, the IRB reviewed and approved the following protocol:

Application Type:	Initial Study
IRB ID:	STUDY002991
Review Type:	Exempt 2
Title:	An Exploratory Study of Technology Use by Older/Senior Men For Enrichment, Communication, and Social Connectedness
Protocol:	• Emerson Hardy;

The IRB determined that this protocol meets the criteria for exemption from IRB review.

In conducting this protocol, you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Please note, as per USF policy, once the exempt determination is made, the application is closed in BullsIRB. This does not limit your ability to conduct the research. Any proposed or anticipated change to the study design that was previously declared exempt from IRB oversight must be submitted to the IRB as a new study prior to initiation of the change. However, administrative changes, including changes in research personnel, do not warrant a modification or new application.

Ongoing IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities impact the exempt determination, please submit a new request to the IRB for a determination.

Sincerely,

Jennifer Walker
IRB Research Compliance Administrator

Institutional Review Boards / Research Integrity & Compliance
FWA No. 00001669
University of South Florida / 3702 Spectrum Blvd., Suite 165 / Tampa, FL 33612 / 813-974-5638

APPENDIX D: Example of Theme Table with Researcher Notes

Motivation Theme – Participant 4

TEXT	CHARACTERISTIC	RESEARCHER NOTES
Sadly, you would probably list me as addicted to technology because even when I'm sitting here with my wife or anybody else watching TV you know the iPad's up and on the laptops up and on and if it bings I see was happening on a cell phone. (I-1, P-4)	Personal reasons – gadgetry addiction & information connectivity to multiple sources.	"addicted to technology" – Interesting – check the Hazelden Betty Ford Foundation take on the concept: https://www.hazeldenbettyford.org/articles/prevention/teen-technology-addiction Would this be an extreme end of the 'learning' concept?
5 or 6 thousand backs for a damn printer and it was pretty fast so from there though it is evolved through digital radiography computer and computer systems, chartless, not paperless but chartless,	Professional reasons – technological innovation, process improvement – "how can we make this better?"	Still connected to dentist profession; still thinking about improving practice.
and I guess because much of it was my personality. That's what kept industry interesting. It was going to be the same thing for 36 years, with no improvement, no change still the same old put the same stuff in it and do the same stuff, I would have been bored. So, it was fun because it was challenging, it was new. It was like, "Alright how can we make this better?" (I-1, P-4)	Personal reasons – "my personality"; "fun because it was challenging, it was new."	"my personality. That's what kept industry interesting" – possible connection to the "addicted" perspective? Addicted to newness, innovation.
[O]ur son has got all the latest technology is relatively new digital panoramic topographic expensive system and I think it's about $100,000. (I-1, P-4)	Professional reasons – technological innovation	

APPENDIX E: Transcript Coding Example

Color Code: Yellow=Technology used; Pink=Communication; Green=Social Connectedness

R: So let me ask you this. how do you use Facebook to maintain connection? How has that developed from here?

P-4: Well, my high school class has a Facebook page as well as their khs66.org webpage.

R: Right.

P-4: So, there's communication with that.

I'm a member of, how many groups, we started a different Tiffin motorhome club about three years ago. She and I literally started it. And so, there's a group there there's 35 or so family members so 35 Tiffin motorhome rigs and about 70 some odd people. And once a month during the warmer months we go camping somewhere around here for a 3-, 4-, or 5-day weekend. Most of us are retired, and we talk about that kind of stuff. So, it's fun, it's kind of like a little church group, you play games and talk about problems with the rig and how you fix this what happens with that.

R: Christian tailgating camping style.

38:55

P-4: There's a Facebook page for our Sunday school class and we communicate through that some. There's one for the church, jeez I don't know.

R: If you were to self-assess your Facebook user level in terms of intensity, frequency, duration of use, would you say you're light, moderate, or heavy?

P-4: I hate to confess but probably heavy.

R: Heavy on the observation or heavy on the interaction?

P-4: Yeah.

(Both laugh)

R: That's a yes to both. So, you are definitely on Facebook… What was something that you experienced that led you to exploring more technology use for communication?

P-4: Well, COVID, probably.
Because you can't just go to Sunday school, and you can't go to church, and you can't do this and you can't do that. There were there were days when all this crap was going on, we would get in the car and drive 45 miles or so to a little town somewhere that way for a Coke, at McDonalds just to turn around and come back just to get the hell out of the house. With my cell phone with me, had a GPS on it taking me where I wanted to go saying, "Go to a McDonalds near me."

APPENDIX F: Summary of Coding Process

Analysis of First Interviews

First Step

- The first interviews focused on Research Question 1. Before reading the transcripts, I created initial codes from key terms or ideas in Research Question 1. The codes were: (1) technology use; (2) enrichment; (3) communication; and (4) social connectedness. This *a priori* coding scheme made sense as the interview questions were well-aligned to the research questions (see Table 2). I then read the first interview transcripts and coded text passages, using these four codes.

Second Step

- I noted in doing the first coding step that there were responses that very clearly spoke to participants' *reasons* for using technology. I made notes of these instances in the coding tables for the first interviews (see Appendix B). Creswell (2013) recommended being "open to additional codes" that may emerge in an analysis using a priori codes (p. 185). I reviewed the first interview transcripts and found sufficient notes around reasons for using technology. I created a fifth code, "Motivation." I then re-read the first interview transcripts and coded text passages for "Motivation."

  These steps resulted in the final coding scheme for the first interviews: (1) technology use, (2) motivation, (3) communication, (4) social connectedness, and (5) enrichment.

Analysis of Second Interviews

First Step

- The second interviews focused on Research Question 2. Before reading the transcripts, I created initial codes from key terms or ideas in Research Question 2. The codes were: (1) learning to use technology; (2) knowledge; (3) confidence; and (4) comfort and support. Again, this *a priori* coding scheme made sense as the interview questions were well-aligned to the research questions (see Table 2). I then read the second interview transcripts and coded text passages, using these four codes.

Second Step

- I noted in doing the first step with the second interviews that there were responses that were providing information for "learning to use technology," "knowledge," and "comfort and support" that were more nuanced than these more general terms. I had made notes of these instances in coding tables for the second interviews.
- When I reviewed the coded passages for "learning to use technology" and my notes on what the participants were saying, I saw that participants spoke more specifically about learning to use technology, giving examples of what they were doing or what someone else was doing to train or assist them through a technology application or process. So, I created an additional code for "Training/Assistance." Then, I re-coded those examples that I had found in the interview transcripts.

APPENDIX F, continued

- Similarly, when I reviewed the coded passages for “knowledge” and my notes on what participants were saying, I saw that participants talked about looking to know more about technology out of curiosity or need to solve a problem. So, I created codes for “curiosity” and “problem solving” (replacing “knowledge”). Then, I re-coded those examples that I had found in the interview transcripts.
- Finally, when I reviewed the coded passages for “comfort and support” and my notes on what participants were saying, I saw that participants were comfortable with technology when they let go of their assumptions or anxiety around technology and when they had some form of support from others. So, I created codes for “letting go” and “external support” (replacing “comfort and support”). Then, I re-coded those examples that I had found in the interview transcripts.

  These steps resulted in the final coding scheme for the second interviews: (1) confidence, (2) curiosity, (3) external support, (4) letting go, (5) problem solving, (6) technology learning, and (7) training/assistance.

- **Reconciling Overlapping Codes.** If a text passage was initially coded with more than one word, I followed Creswell’s (2015) advice and asked myself, “What is the main idea being conveyed?” (p. 160). My peer reviewer and I would talk about the passage and then determine a single code. This did not happen more than three times.

Writing Up the Results

- The codes used in analysis of both interviews across all four participants also served as themes to organize participants’ perspectives, characterize their voices, and describe their stories and accounts of their experiences in using and learning technology.

- **Themes in Participants’ Stories of Using Technology**. Research question 1 asked, what stories do older/senior men tell about their experiences with learning and using technology for enrichment, communication, and social connectedness? Analysis of participants’ responses to questions asked in the interviews was organized in five themes: (1) technology use; (2) motivation; (3) communication; (4) social connectedness; and (5) enrichment. Each theme was described through exemplars from participants’ transcripts, and each theme concluded with a summary of the theme.

- **Themes in Participants’ Experiences in Learning to Use Technology.** Research question 2 asked, what learning experiences and/or supports aided these older/senior men in building knowledge, confidence, and comfort in technology use? Analysis of participants’ responses to questions asked in the interviews was organized in six themes: (1) confidence; (2) curiosity; (3) external support; (4) letting go; (5) problem solving; and (6) training/assistance. Each theme was described through exemplars from participants’ transcripts, and each theme concluded with a summary of the theme.

ABOUT THE AUTHOR

Emerson Campbell Hardy attended the University of Florida and University of North Florida and received a bachelor's degree in Psychology with a minor in Sociology. He earned a master's degree in Adult Education from the University of South Florida.

He began his technology career in 2003 and became a senior systems administrator by 2007 for corporate America. During this time he worked with older adults, teaching technology in structured settings. In 2012 he transitioned to a technology startup software company where he created training programs, acquired new business, and maintained the production server environment for several years. Once the company sold, he pursued his doctoral degree and received a graduate teaching assistantship for over two years.