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Keeping in Touch While Sheltering in Place: A Comparative Case Study on the Complex Emotions Experienced by Older Adults When Introduced to ICTs and Video Conferencing Services

by

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requirements for the degree of

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Abstract

Currently, COVID-19 poses a threat to the US and the rest of the world, which has created the need for many people to establish physical distance from others. This need for physical distance is perhaps most important for those most vulnerable to COVID-19, which includes the older adult population. Through this time of physical isolation, most people need to keep in touch with each other while sheltering in place. Advances in digital communication have offered new avenues to help people maintain communication, and these advances have made the lives of many easier and more efficient. These new avenues for communication include video conferencing services such as Zoom, Skype, Apple FaceTime, Google Hangouts, Microsoft Teams, and other similar video-based communication services. Although many older adults have reliable access to the Information and Communication Technologies (ICTs) required for video-based communication, many older adults are not yet skilled in using them. ICT use can be dangerous without the right skills, because ICT use can allow people to become susceptible to forms of digital exploitation and/or abuse. However, it is increasingly becoming both a hazard and a hardship to not use ICTs as life continues to transition online. As is the case with anyone, the older adult population may feel different emotions depending on their past experiences with technology, the digital divide, and ageist beliefs. Although the participants came to this study with rich life experiences, nuanced wisdom, and countless successes in their lives, these emotions are perhaps one of the most

significant and harmful barriers that may keep some older adults from participating in the digital world. The purpose of this study was to learn more about the emotions older adults experienced when introduced to ICTs, such as a video conferencing service, and what caused those emotions to manifest. A qualitative multiple-case study was used for data collection and analysis. Through the use of interviews, observation, and document review, this study explored the experiences and emotions of eleven older adults with ICTs, and specifically, video conferencing services. Data analyses included inductive analysis of qualitative data, within-case analysis, and cross-case analysis.

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Chapter 1: Introduction

The Problem

In his novel *Everyman*, Philip Roth (2006) said, "Old age is not a battle. Old age is a massacre" (p.156). This may not be a universal truth, but Roth, in his 70s at the time, believed it just as many others in their senior years do. The United States is a country in which we isolate many of our older members of society by putting them in a series of anonymous facilities (Gawande, 2014), so the end of their days are often spent isolated from their families. This is the message our society sends to our aging population: one of invisibility, isolation, and shame. The writer Florida Scott-Maxwell said in her 80's, "Age only defines one's boundaries," (Scott-Maxwell, 1979, p. 17). These boundaries have created a strong discourse of fear and embarrassment in the US among older adults around using Information and Communication Technologies (ICTs) because of ageist beliefs and the existence of a digital divide. However, advances in the digital world have created new avenues of communication and made the lives of many easier and more efficient.

Information and Communication Technologies, or ICTs, include computers, smartphones, tablets, PCs, and any other digital device through which someone communicates with others in the digital world. Many see ICTs as a necessary part of life due to the 21st century literacies they assist with, such as technological literacy, financial literacy, and health literacy, to name a few. People who do not currently access the internet may be considered "digitally excluded," according to Barnard et al. (2013).

Using this definition, about half of the world's population remains offline, according to the United Nations, which also says the digital divide is becoming the "new face of inequality" (United Nations, 2021). More specifically, according to a Pew Research survey, "Older Adults and Technology Use" (2014), internet use and broadband adoption percentages drop off dramatically in those ages 75 or older in the US. And, as of 2021, a quarter of US adults 65 or older say they do not use the internet at all (Pew Research Center, 2021). Finally, according to a 2021 Pew Research Survey, adults who need someone else's help to set up or show them how to use a new electronic device and adults who have little to no confidence in their ability to use these devices to perform online tasks are said to have "lower tech readiness." Two-thirds of adults 75 and older and 54% of adults ages 65 to 74 fall into this group of having "lower tech readiness" (Pew Research Center, 2021). ICTs can be incredibly useful for all populations as aspects of daily life rely on technology, yet many adults 65 years and older have not fully embraced ICT use. Why is this the present reality?

At the time this study was conducted, COVID-19 was threatening the US and the rest of the world, which created the need for many to establish physical distance from other people. Through this time of physical isolation, most people wished to keep in touch with each other while sheltering in place. That meant relying on video conferencing services such as Zoom, Skype, Apple FaceTime, Google Hangouts, Microsoft Teams, and other similar services. These services are the "closest facsimile to in-person interaction" (Blount, 2020, p. 59) and roughly eight-in-ten Americans, or 81%, say they have talked

to others using video calls since the beginning of the COVID-19 pandemic (Pew Research Center, 2021). According to TechTarget.com, video conferencing is a live, visual connection between people in separate locations in order to communicate (Rouse, 2019). Video conferencing provides transmission of video images and audio between multiple locations. While the proportion of older adults who go online and use ICTs is climbing, their use still lags behind all other age groups (Choi & Dinitto, 2013), especially when it comes to video conferencing services. According to a 2021 Pew Research Survey, just 7% of those 65 and older say they have connected with others on video calls once a day or more often (Pew Research Center, 2021). Many older adults remain "divorced from digital life" (Pew Research Center, 2017b, p. 2), and this is a problem for many older adults both in the time of COVID-19 and with the technological transformation of our society as ICTs "facilitate older adults' access to health services, social connectivity with family and friends and enhance involvement in leisure and their completion of routine activities" (Vroman et al., 2015, p. 156).

As we age, our attitudes toward technology may change for a variety of reasons. One reason is that technologies being marketed directly to older citizens are generally only assistive technologies (Bowen, 2012), in contrast to proactively engaging technologies, due to the physical and cognitive conditions or circumstances that older adults may experience. In a Pew Research study, "Barriers to Adoption and Attitudes Towards Technology" (2017a), the participants in the study (individuals who were 65 years or older) are described as "digitally unprepared," while those who are "digitally

ready" tended to be under the age of 65. In the same Pew Research Study (2017a), about three-quarters of those 65 and older said they needed someone to help them set up their electronic devices. This is because ICTs are not necessarily intuitive or designed for older users. While technologies exist to foster independence, the emotional responses of older adults to technology may be getting in the way of their use. According to Mordini (2007), "History teaches that paranoia about technological change rarely stops it" (p. 546), and many older adults are fearful of the changes and emotions that technology brings. Fear of technology is nothing new as "New electric media were sources of endless fascination and fear" in the late nineteenth century (Marvin, 1988, p. 4) and "changes in the speed, capacity, and performance of communications devices" (p. 4) continue as all older technologies were new at some point in time. It seems as if the fear of technological change may never go away.

Mordini (2007) argued that a fear of technology emerges from a lack of meaning, for both individuals who use and do not use technology, surrounding the technology revolution. The ongoing technology revolution is contributing to feelings of powerlessness and of vulnerability in many older adults, which can then lead to feelings of fear and anxiety, exclusion, and embarrassment. There are a variety of psychological factors and complex emotions associated with technology use, including those stated above, and older adults may confront these emotions on a regular basis. The extant literature identifies many of these emotions, and I will discuss them later in this chapter.

Around the turn of the 21st century, smartphone use was uncommon. Now (2022), about half of people in the US (53%) above 65 years of age and older own a smartphone, according to Gretchen Livingston's Pew Research study (2019) on older Americans and screen time. But the problem is not owning smart devices: the problem is using them. As is the case with anyone, the older population may experience different emotions depending on their past experiences with technological devices. These emotions are perhaps one of the most significant and harmful barriers that keep some older adults separate from the digital world. So what emotions might older adults be feeling? From where do these emotions stem? What is pushing some older adults away from technology, while pulling others toward it? It is important to look at these questions and to understand how the messages our society sends to this age group impact their participation with ICT use. The internalization of certain messages of exclusion or danger has kept many in our aging society from moving aspects of their lives online, and that can lead to dangerous consequences at the individual and societal levels. Older adults may wish to use ICTs to find information and they have a need and desire to communicate with others (Meneses Fernández et al., 2017), but a range of complicated emotions may get in the way of this use. The purpose of this study was to examine the emotions older adults experienced with the introduction of ICTs, like a video conferencing service, to communicate in their daily lives.

Personal Experience

Before I continue, I want to address my own identity and positionality in this dissertation. I am a formally educated White female, from a lower middle class background, in my early thirties. I have had many opportunities in my life, which eventually led me to both volunteering and later establishing my career in libraries for the past ten years. As a public librarian, I understand how important technology and ICTs are to current life in the US and other technologically developed countries. One important aspect of my job for the past several years has been assisting older adults with their technology needs and questions. I have borne witness to many older adults grappling with fear and other negative emotions while learning to use technology. These older adults are terrified of looking stupid, breaking their device, or not understanding the information I give them after multiple repeated sessions or appointments. They may feel overwhelmed, confused, stressed, and do not work with their devices independently. They want someone, like me, to watch what they are doing with their device and to reassure them that they are making the correct choices before trying new steps or skills.

However, I understand that not all older adults are afraid of technology; many are embracing it, especially now (with COVID-19) when communication is largely dependent upon technology. I have spoken to many older adults in my community about their fear of technology that stems from ageist beliefs and the fact that the digital divide has pushed them out of view. My experience with this community is relevant and it is the reason I chose to study older adults in the first place. Older adults are a wise but

vulnerable group that seem to be left behind as technological advances move forward. My experiences working with this group have made it clear to me that our society will not be able to fully implement beneficial uses of technology unless every age group is on board.

Context

The world is experiencing a "demographic turning point in history" (Schäffer, 2007, p. 29), as life expectancy and the number of elderly people is increasing. According to the World Health Organization (2015), most developed countries have accepted the age of 65 years or older as a definition of "elderly" or "older person," as it is often associated with retirement age. For the purposes of this study, I will be using the term *older adults* and that term will refer to those 65 years or older.

Older adults are becoming a larger piece of our population pie, yet digital exclusion is a real and serious threat to this group. Digital exclusion "reflects the deprivation of access to ICTs, whether it is due to political, socio-economic, cultural or even environmental reasons" (Carvalho et al., 2012, p. 128). New technological inventions are alienating some of our elderly people and distorting "the old familiar rules of social standing and solidarity" (Vacek & Rybenská, 2016, p. 455). In her Forbes article on older adults embracing technology (2019), Robin Jefferson found that many older adults do not feel comfortable using devices they purchase for themselves. Additionally, according to a recent (2019) study published in *Healthcare* that analyzed older adults' perspectives on technology to support aging in place, Shengzhi Wang and his co-authors

(2019) note a mismatch between technologies and older adults' needs, as these smart devices are created by and for younger age groups. Aging in place is defined as "the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level" (CDC, 2013). While many studies show that older adults can benefit from well-designed technologies in their lives, few of these studies actually address user-related issues in their design process (Jefferson, 2019). "Frustration appeared to be a significant barrier, which led to a lack of self-confidence and motivation to pursue using the technology," Wang said (Wang et al., 2019, p. 5). This mismatch between technology and older adults' needs is just one barrier to more robust ICT adoption for the older adult population.

The digital landscape is changing quickly, and according to Gawande (2014), "Increased longevity has brought about a shift in the relationship between the young and the old[er]" (p. 18). This shift has brought about certain beliefs about older adults and technology use that some older adults seem to have internalized, with a variety of different emotions that commonly appear with the introduction to ICTs. Although some may experience curiosity and delight, there is significant evidence of older adults experiencing *fear* and *anxiety* with the introduction of ICTs (Buchanan-Oliver & Cruz, 2011; Gatto & Tak, 2008; Hogan, 2009; Mason et al., 2014; Rosenthal, 2008; Stewart & Segars, 2002; Turner et al., 2007; Vacek & Rybenská, 2016; Vroman et al., 2015). There is also evidence of *exclusion* (Helsper & Reisdorf, 2013; Seale & Dutton, 2012), *vulnerability* (Mordini, 2007; Shapira et al., 2007), and *embarrassment* (Aminzadeh &

Edwards, 1998; Hamilton, 2011; Sokoler & Svensson, 2007). For many people, the generation gap is deep and may cause strife between the younger and the older. Older generations may want to keep things the way they are, staying away from technology, while the younger generations may want to move in a different direction, usually toward technology.

We are in an "age of ageism" (Nelson, 2016), also described as negative attitudes or behaviors toward an individual based on age (Greenberg et al., 2017). Many in US society see aging as a disability due to a deficit model of age (Schäffer, 2007), and in so many cases, we do not value input from our elderly community members. "New technology creates new occupations and requires new expertise which further undermines the value of long experience and seasoned judgement" (Gawande, 2014, p. 18). We have made old age into a disease, a condition to be dreaded, neglected, and denied (Aronson, 2019). Florida Scott-Maxwell, in the book she wrote well into her 80's, *The Measure of My Days: One Woman's Vivid, Enduring Celebration of Life and Aging*, said "We who are old know that age is more than a disability. It is an intense and varied experience…" (p. 7) that leads to greater knowledge and wisdom. Overall, US attitudes toward the aging population are negative and pessimistic, and ageism (to include internalized ageism) is one of the primary reasons why many older adults have not crossed the digital divide (McDonough, 2016).

The digital divide, as a concept, is being recognized more within academic literature (Carvalho et al., 2012). So what is the digital divide? The definition I will use in

this research comes from *The Framework Act on National Informatization in 2001*, enacted by the government of South Korea, wherein the authors defined the digital divide as "the inequality in the opportunities to access and use ICT services through information and communication networks due to differing economic, regional, physical, or social conditions" (Hong et al., 2016). Explained more plainly, the digital divide is the gulf between those who have direct access and the ability to use technology and/or the internet and those who do not. One of the main ways that many people in the US engage with society now is through digital media, whether it be on smartphones, computers, tablets, or televisions. We know now that "new technologies of communication continue to demand new literacies . . . computers and mobile phones not only have created different ways of interacting with others, but also have changed how individuals spend their time in particular spaces--whether physical, online, or both" (Jocson, 2014, p. 107). We use our phones and computers to read the news, communicate with those inside and outside of our social circles, and perform activities such as monitoring our bank accounts or contacting our doctor's offices. Looking ahead, it is likely that more and more of our everyday activities will take place through digital devices.

As time has continued to move forward, those in the US with reliable access to and comfort with ICTs have moved their lives increasingly online. Many older adults have had a difficult time transitioning their lives from a physical to a digital space, as they may have little to no help with the transition; these digital spaces were not designed to welcome and accommodate them. Adults learn differently than children, and older

adults may learn differently than younger adults. The digital divide is a "worldwide phenomenon with global consequences" (Carvalho et al., 2012, p. 130) that stems from issues of access. The increasing reliance on ICTs by various industries (including medicine and banking) are redefining what it means to be literate (Chen, 2018), and online literacies, namely digital and critical literacy, are needed in order for individuals to make the transition successfully and safely with the appropriate knowledge (Costa et al., 2019).

Technology and literacy are deeply intertwined, which is where the construct of digital literacy comes into play. "Each medium, mode, or technology brings with it distinct possibilities for exploring subject matters and learning literacies" (Ranker, 2015, p. 568). Digital literacy, the term coined by Gilster (1997) in the 1990's, encompasses many issues, including "cognitive authority, safety and privacy, creative, ethical, and responsible use and reuse of digital media" (Meyers et al., 2013, p. 355). Many people have the opportunity to learn digital literacy skills in school or in their work setting. So where are older adults (who may be retired) supposed to learn these skills? And if an institution exists that teaches these skills, is the institution prepared to teach these skills in an accessible way to older age groups?

Critical literacy, which is a facet of digital literacy and many other literacies, involves the ability to evaluate information for quality, relevance, accuracy, authenticity, value, credibility and bias (McNicol, 2016) to name a few, and it is not about reading texts in isolation, but developing an understanding of the contexts, cultural, ideological

and sociolinguistic, in which those texts are created and subsequently read (McNicol, 2016). I contend that critical literacy is essential for everyone at any age, as it is about engaging with information so that people can make informed decisions to lead society and our individual lives forward. Without critical literacy skills, moving life online or performing daily tasks in a digital space can be dangerous and can make one susceptible to countless forms of digital exploitation and/or abuse, such as scams, fraud, phishing, and other cybercrimes (Lee, 2018). Based on the information provided in 791,790 cyber crime complaints in 2020, 28% of the total fraud losses were sustained by those over 60 years old, resulting in about $1 billion in losses to older adults (Federal Bureau of Investigation, 2020). “We are living in an age when some of the greatest threats we face daily are unseen and poorly understood,” (Lee, 2018, p. 464). These threats include fake news, misinformation, and many forms of fraud that follow those online. Being an active member of society in a digital space is quickly becoming a necessity in the US and other technologically developed countries, yet this is not an idea that many older adults have embraced.

A key construct to consider when exploring the topic of older adults’ engagement with ICTs is active aging. Active aging means optimizing opportunities to enhance the quality of life as people age (Gardner et al., 2012). However, older adults may see ICTs as a threat to the current (and more familiar) state of their lives. Older adults may feel shame, according to Tangney et al. (2014), which may lead to feelings of being “diminished, worthless, and exposed” (p. 799). Older adults may tend to avoid social

contact and public evaluation of their digital practices or skills that could result in others witnessing their behavior (Stearns & Parrot, 2012), which in this case, would look like the inability to use the ICTs that many younger people know how to use. Older adults may feel a desire to use technology, which is coupled with a fear of being judged for either not knowing how to use ICTs, or for not being quick enough to learn even if they are interested. Many older adults are what Prensky (2001) termed *digital immigrants*, or "those of us who were not born into the digital world" (p. 1). "Digital immigrants" turn to the internet for information second rather than first, or they read the manual for a program rather than assuming that the program itself will teach them how to use it (Prensky, 2001). We must remind ourselves that older adults were not born into this digital age (Vacek & Rybenská, 2016), which underscores the idea that the concerns they may feel regarding technology are sincere and worthy of being addressed.

Existence of the Problem and Its Boundaries

The relationships between age, gender, education, and job choice with the use of computers and the internet cannot be ignored. Schäffer (2007) explored how the relationship between one's salary, education level, and chosen profession influenced their digital literacy skills and access to technology in general. Most older adults in the US are retired, living on a fixed income, and are far removed from any sort of formal education (Schäffer, 2007). As stated earlier, ICT use can be dangerous without the right skills, because ICT use can allow people to become susceptible to forms of digital exploitation and/or abuse. However, it is also becoming both a hazard and a hardship to *not* use ICTs

as life continues to transition online. For example, individuals who do not access online banking services are limited to specific days and times that financial institutions are open in order to access their money, and exposure to COVID-19 is a possibility. The purpose of ICTs are to make life easier, quicker, safer, and more accessible from wherever the user may be, and those without access are denied this level of flexibility. Overall, technologies can enhance older adults' independence as in allowing them to shop, pay bills, bank, and learn and engage with people in their lives (Charness & Boot, 2009; Kiel, 2005). However, we must consider the consequences of technological development for those who have trouble adapting to new technologies (Kottorp et al., 2016).

Those who have trouble adapting to new technologies are those who find themselves on the wrong side of the digital divide, and both the digital divide and the need for digital inclusiveness are two of the biggest challenges identified by internet service providers (Carvalho et al., 2012; Godfrey & Johnson, 2009) and older adults alike. This problem is a powerful and potentially embarrassing one for many who want to use ICTs, but who struggle with feeling intense emotions associated with technology and ICT introduction. The participants in the Vroman et al. (2015) study on ICT use and participation for those 65 years of age and older in a region of New England reported that their activities associated with ICT use did not change over time because of the complex emotions that never seemed to resolve or dissipate. The emotions that come with ICT use for older adults may strongly contribute to the digital divide, potentially making it

increasingly difficult for older adults to engage with ICTs in ways that may benefit their lives.

Dangers of Disengagement

My research topic is important because it centers around older adults and emotions that keep them from adopting new technologies such as video conferencing services. COVID-19 has forced many aspects of our lives online, pivoting from in-person encounters to a variety of digital platforms that many were unfamiliar with at the start of the pandemic. Now more than ever we are realizing how dangerous a lack of knowledge and skills centered around digital literacy and digital landscapes can be. Many banks have closed their physical locations, moving much banking online. It is expensive for institutions to have in-person tellers, and it is increasingly unsafe to do so, especially with COVID-19. Many physical or in-person doctor visits have transitioned to virtual telehealth appointments. In-person health care visits (instead of telemedicine/telehealth) may threaten older adults' health---as well as possibly infect other folks, too. Schools have made the move to remote learning, with many children having to use laptops, iPads, webcams, and video conferencing services such as Zoom or Google Hangouts for the first time. As so many primary caregivers (parents) of school-age children are working, many grandparents are shouldering the remote school load for their grandchildren, and many Americans are working from home for safety reasons. COVID-19 may not be a permanent fixture in our lives, but its consequences have been serious, and they will continue to impact future decisions that companies, businesses, and institutions make.

Digital exclusion causes “economic, social, health, and political disparities” (Barton, 2018, p. 252) that influence daily operations and livelihood. The digital divide is scaring many older adults away from digital engagement. The ability to access the internet or specific ICTs is creating noticeable disparities today. Differences in income and literacy are the most significant contributors to the digital divide, but these differences only explain part of the ethnic and racial disparities in home and workplace technology access (Steele, 2018). Effects of the digital divide and digital disengagement are acutely felt in education, communication, politics, consumer satisfaction, health, government, and job opportunities. Digital engagement is important for entering (and maintaining a presence in) the job market, accessing information and services, taking advantage of learning opportunities, and engaging with social networking, while digital disengagement will lead to increasing levels of exclusion as technology evolves (Devins et al., 2002).

The general absence of older adults in the digital landscape is a problem for the older adults and for society as a whole. Older adults are consistently denied access due to the steep learning curve and other forms of inaccessibility, and this denial may lead them to become increasingly isolated in ways that can have cascading impacts. Being lonely can impact physical health; not having access to one’s bank might mean no groceries for the week; or not knowing how to use a computer or laptop, not to mention a video conferencing service, means telehealth appointments are not a possibility. “Considering the importance of technology in the development of a country, it is exceptionally essential

that developing countries seek ways of bridging the digital divide" (Steele, 2018, p. 1). Failing to address the digital divide will lead to further and longer digital disengagement, which could have more consequences if another pandemic-like disaster were to hit the US.

Educational Significance

This problem of ICT access and adoption among US older adults impacts our society as a whole in multiple ways. My goal in this dissertation is to explore this important issue, while also filling a gap in the knowledge base around the experiences of older adults who are 65 years of age and older and no longer participating in formal education or the workforce. The ability of older adults to participate in the digital world is not only important for their individual quality of life, but it is also important for the economic, social, and intellectual well-being of society (Hong et al., 2016). ICTs help older adults stay informed, connect to friends and family, shop, bank, communicate with their healthcare professionals, and make travel plans or reservations for transportation, in addition to promoting successful aging. Many of us in the US use ICTs to communicate with family, friends, work, and our educational institutions, and having the skills and literacies needed to use these technologies allows us to be connected and respond to life's challenges. As noted, in the wake of COVID-19, many people are turning to video conferencing services to keep in contact with their family and friends without running the risk of exposure to or transmission of the disease. For many people, "Internet-based communication with other people is convenient and affordable, thus enabling social

needs to be met more easily and directly" (Shapira et al., 2007, p. 477). ICTs are often inaccessible to older adults due to text size, number of options available that can easily seem overwhelming, and technology-specific problem solving skills that are not taught, to name a few. The inaccessibility of ICTs keeps many older adults on the wrong side of the digital divide.

Ageism and the digital divide have led to a discourse of fear and embarrassment in the US among many older adults when it comes to ICT use. ICTs have the potential to help older populations live a more independent but connected life. "Computer and internet use seem to contribute to older adults' well-being and sense of empowerment by affecting their interpersonal interaction, promoting their cognitive functioning and contributing to their experience of control and independence" (Shapira et al., 2007, p. 477). ICTs and digital media provide us with ways to make and take meaning, and we can use them to produce meaning (Gee, 2013). However, as Gee (2007) said, learners must be "willing to see themselves in terms of a new identity, that is, to see themselves as the kind of person who can learn, use, and value" (p. 59) technology. Older adults must transition to this way of thinking in order to help rid of the internalized ageist beliefs that are brought about through the existence of a digital divide.

It was my purpose in this dissertation to gain a greater understanding of the lived experiences of older adults with the introduction of ICTs, and specifically, video conferencing services. Without the foundational skills to engage and confront the range of emotions associated with ICT use, the digital divide will continue to widen as services

increasingly migrate to the digital world (Hill et al., 2015) and leave our aging populations behind. As such, the following research questions emerge, which I aim to address with this dissertation, through the use of multiple-case study:

R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?

R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?

R3: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?

Methods and Research Questions

The approach best-suited for the problem I have outlined is the comparative or multiple-case study. In the case study approach, "the researcher develops an in-depth analysis of a case, often a program, event, activity, or process, or one or more individuals" (Creswell & Creswell, 2018, p. 14). Cases are "bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time" (p. 14). Case studies seek to illuminate a decision or set of decisions by looking at why the decisions were made, how they were implemented, and what the final result was (Schramm, 1971). Data is derived from interviews, field observations, and documents (Merriam & Tisdell, 2016). The signature component of a multiple-case study, or comparative case study, is the fact that it involves

"collecting and analyzing data from several cases," which enhances the "external validity or generalizability of your findings" (Merriam & Tisdell, 2016, p. 40). Collecting and analyzing data from several cases and then offering both within-case analysis and cross-case analysis is another signature component.

Dyson and Genishi (2005) told us that "cases are constructed, not found, as researchers make decisions about how to angle their vision on places overflowing with potential stories of human experience" (p. 2). There is an "interplay between the detailing of local specificity and the probing of a more abstract phenomena" (p. 3). The case being studied is not the phenomenon itself. In case studies, "researchers are interested in the meaning people make of their lives in very particular contexts" (p. 9). Researchers "aim to construct interpretations of other people's interpretations--of others' 'real worlds'" (p. 18). Therefore, it is my job to interpret the experiences that older adults have with ICTs and video conferencing services.

The specifics of the design all hinge on my conceptual and theoretical frameworks, which is looking at this problem through the lens of Appraisal Theory (Arnold, 1960) and the Technology Acceptance Model (Davis, 1986), both of which I will discuss in detail in Chapter 2. The internalization of negative thoughts and attitudes coming from the existence of the digital divide and ageism may cause older adults to have apprehensive or otherwise negative reactions to situations in which they are using or being introduced to ICTs. Attitude is clearly important, and the Technology Acceptance Model tells us that attitude towards technology is a key predictor of whether or not an

individual will use any given technology. Many older adults experience negative emotional reactions to ICTs, especially when being introduced to them, so through this research design, I will address these emotions.

Older adults may have limited access to ICTs for a variety of reasons, and their emotional responses to the introduction of ICTs vary. In order to better understand these emotional responses, I performed a multiple-case study, as opposed to a single-case study, because analytic conclusions independently arising from multiple cases were more powerful and robust than those coming from a single-case alone.

Again, my research questions are:

R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?

R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?

R3: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?

Conclusion

The structure of the remainder of this manuscript is as follows. In Chapter 2, I situate this study in the available scholarly literature on older adults and ICTs. In Chapter 3, I delineate the research design and methodology to answer the research questions. I also speak to validity. In Chapter 4, I discuss the findings resulting from data collection

and analysis, as well as the strengths and limitations of the chosen method. And finally, in Chapter 5, I summarize the findings by theme and discuss limitations and recommendations for future research.

Chapter 2: Literature Review

In this chapter, a review of the literature, I argue the timely importance of this dissertation by situating it in the research literature and addressing a research gap. Having surveyed the body of scholarly literature that has accumulated over the years on older adults' use of ICTs (Information and Communication Technologies) and the emotions older adults experience when being introduced to ICTs, two key ideas have emerged. First, there is a gap in the literature related to older adults and how their feelings and emotions may shape their choices about engagement with various communication technologies. While some studies do speak to this topic in general ways, there remains a missing element in this conversation, which I seek to address. Second, there exists a gap in the literature as related to the identification of ways to better support the older adult population with ICT use by addressing the emotions involved when ICTs are introduced into their lives. The engagement of older adults in the digital world is not only important for their individual quality of life, but, as noted in chapter 1, it is also important for the economic, social, and intellectual well-being of society (Hong, Trimi & Kim, 2016). Older adults' inclusion in the digital world has a multitude of significant positive outcomes that I intend to illuminate in this dissertation.

In this review of the literature, I begin with discussing the theoretical framework for my problem, followed by a critique of the theoretical framework. My review will then move into a discussion on what has been termed "the digital divide" and how it is affecting the older adult population in a variety of negative ways. I will follow this with

an introduction to ICTs, including video conferencing services, and the literacies involved with their use. I will then discuss ageism and what ageism has meant to this older population and their use of technology. I will introduce the literature related to the emotions involved around older adults and ICT use. Finally, I will review the research methods that have been used in the existing literature around similar topics. All of these pieces fit together to establish the foundation for the research questions that I have posed.

R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?

R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?

R3: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?

Theoretical Framework

There is one theory and one model that will act as lenses through which I will be looking at this research problem: Appraisal Theory (Arnold, 1960) and the Technology Acceptance Model (Davis, 1986). Taken together, Appraisal Theory and the Technology Acceptance Model comprise the framework I will use to understand the problem outlined in Chapter 1. Together, Appraisal Theory and the Technology Acceptance Model may help explain why older adults make their choices regarding technology.

Appraisal Theory

Magda Arnold is recognized as one of the pioneers of modern cognitive approaches to the study of emotion (Cornelius, 2006), and she has been called the ‘‘founding mother of modern appraisal theory’’ (Roseman & Smith, 2001, p. 9) for her work in the 1940s and 1950s. Arnold considered appraisals to be ‘‘sense judgments” that are ‘‘direct, immediate, nonreflective, nonintellectual, automatic, ‘instinctive’, [and] ‘intuitive’’’ (Arnold, 1960, p. 175). Further clarifying the meaning of the term appraisals, Roseman and Smith explained, “In its simplest form, its essence is the claim that emotions are elicited by evaluations (appraisals) of events and situations” (Roseman & Smith, 2001, p. 3). Arnold’s Appraisal Theory addresses several constructions, including how we account for different emotional responses, how we can account for the range of situations that evoke the same emotion, and the identification of what starts the process of emotional response, to name a few (Roseman & Smith, 2001).

For almost five decades, Richard Lazarus also contributed to Magda Arnold’s research with his own parallel work. “According to Lazarus, emotions are ‘constantly in a state of flux,’ which means that the cognitions shaping the emotional reaction are affected by the interaction between emotion-eliciting conditions and coping processes” (Schorr, 2001, p. 23). An example of this could include an older adult learning how to use a computer for the first time. If the initial experience is positive and this older adult understands what they are learning, then they might feel happiness, joy, excitement, or anticipation, because they have appraised this experience as one that could have positive

long-term effects on their life. On the other hand, if an older adult perceives the experience negatively, then their emotions might include sadness, emptiness, or fear (Scherer et al., 2001). These emotions may further impact the choices they make about technology in the future.

The Turner et al. (2007) qualitative study focused on the ways older people account for their experiences with interactive technology. While the original purpose of the study was to look at how older people familiarize themselves with interactive technology, Turner et al. (2007) also studied how the participants accounted for their experiences with the technology, and in doing so, the ways the participants attributed causation. "These acts of attribution reveal frequent references to such things as lack of agency, alienation and challenges to personal identity all of which have significant consequences to how we approach introducing older people to such technology" (Turner et al., 2007, p. 287). Technology is a tricky subject in the lives of many older adults, because as noted previously, they are "digital immigrants" (Prensky, 2001) who did not grow up with technology, and as such, their usage generally falls far behind that of other age groups. Appraisal Theory is a useful lens because it highlights the ways emotions come about through the ways individuals evaluate and perceive their experiences, and in the case of this study, with technology.

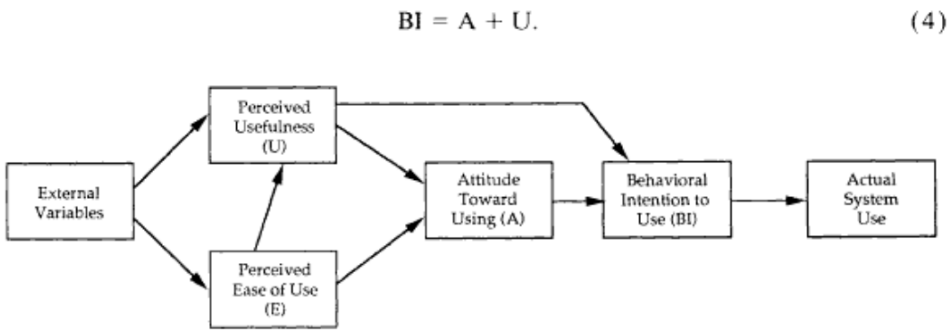
Technology Acceptance Model

Related to Appraisal Theory, the Technology Acceptance Model (TAM) offers a useful layer when considering the engagement of older adults with ICTs. The TAM is one

of the most widely used frameworks to explain and predict the individual acceptance of new technology (Castilla et al., 2018), and it is one of the lenses through which I look for my research. The TAM describes the ways in which a potential user's overall attitude toward using a given system, in this case video conferencing services, is “hypothesized to be a major determinant of whether or not the user actually uses it” (Davis, 1986, p. 24). One’s attitude toward using the technology, in turn, is a “function of two major beliefs: Perceived usefulness and perceived ease of use. Perceived ease of use has a causal effect on perceived usefulness. Design features directly influence perceived usefulness and perceived ease of use” (Davis, 1986, p. 24). Davis developed the TAM (see Figure 1) with certain objectives in mind. The most important objective is that the TAM should improve our understanding of user acceptance processes so we can better design and implement different information systems or technologies. According to Davis et al. (1989), a key purpose of the TAM is to “provide a basis for tracing the impact of external factors on internal beliefs, attitudes, and intentions” (p. 985).

Figure 1

Technology Acceptance Model



Note. From "User acceptance of computer technology: A comparison of two theoretical models," by F. Davis, R.P. Bagozzi, and P.R. Warshaw, 1989, *Management Science, 35*(8), 985.

The TAM has two main constructs: Perceived Usefulness (U) and Perceived Ease of Use (E) as shown in Figure 1, both of which are of primary relevance for computer acceptance behaviors. Perceived Usefulness (U) is the user's subjective probability that using a specific technology will increase their job performance or life in some way (Davis et al., 1989). Perceived Ease of Use (E) is the degree to which the user expects the technology to be effortless, intuitive, or easy to use (p. 985). The Technology Acceptance Model suggests that computer usage (or some other technology) is determined by Behavioral Intention (BI), but that Behavioral Intention (BI) is also jointly determined by the person's Attitude Toward Using (A) the system and Perceived Usefulness (U).

Therefore, BI = A + U. All three of these factors must work together if a person is to continue using a technology.

There are two additional theories that I want to mention before moving on. The first is the Theory of Structural Lag. In US society, due to advances in science, technology, and education, people are living longer. However, numerous social structures, roles, and norms have lagged behind, stifling progress and much needed change. Many social institutions have been very slow to accommodate the needs of the current older population, and this lag indicates many missed opportunities for that population and the society in which they live. The concept of "structural lag," discussed by Riley et al. (1994) originally suggested that in the late twentieth century, there was a mismatch between the increasing number of willing and capable older adults and the relevant and important roles available to them in society. This phenomenon of "structural lag" now suggests a mismatch between the amount and characteristics of people of a given age group and the current patterns within the social structures that those groups must fit into. This mismatch happens because changes in people's lives and changes in social structures are not usually simultaneous. When these social structures fail to adapt to the new people or groups with different characteristics than the previous people or groups, we see this "structural lag" (Riley et al. 1994). This gap between structures and the lives of those in those structures can create disorganization, tensions, inefficiencies, and other similar issues in US society. So, changes in people's lives often do not coincide with changes in

social structures, which usually means that people act as the catalyst in trying to align structures with their changing lives, rather than the other way around.

The second theory I should mention is the Theory of Planned Behavior, first introduced by Ajzen in 1985, which is a theory designed to predict and explain human behavior in specific contexts. One of the main factors in this theory is the individual's intention to perform a given behavior. Ajzen (1991) said:

> Intentions are assumed to capture the motivational factors that influence a behavior; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior. As a general rule, the stronger the intention to engage in a behavior, the more likely should be its performance. (p. 181)

As such, the Theory of Planned Behavior provides a useful conceptual framework for addressing many of the complexities of human social behavior. Ajzen (1991) also said:

> Attitudes toward the behavior, subjective norms with respect to the behavior, and perceived control over the behavior are usually found to predict behavioral intentions with a high degree of accuracy. In turn, these intentions, in combination with perceived behavioral control, can account for a considerable proportion of variance in behavior. (p. 206)

Applying the Theory of Planned Behavior to a particular area of interest, like older adults and their use of technology (or lack of use), can provide us with both information that is

useful in attempting to understand their behaviors and information that can help us implement certain interventions to change those behaviors.

Although the Theory of Planned Behavior and the Theory of Structural Lag can be seen as relevant here, in the end, I chose to look at my problem through the lens of Appraisal Theory and the Technology Acceptance Model. Many different aspects of my study connected to the two theoretical frameworks I looked at this problem with, and that is because both Appraisal Theory and the Technology Acceptance Model have to do with emotions and the process by which people express those emotions. Therefore, both Appraisal Theory and the Technology Acceptance Model allowed for a more structured vision for my study, in addition to helping guide and support my study in better ways.

Critique of Theoretical Framework

While there is a great deal of literature on both Appraisal Theory and the Technology Acceptance Model, both pieces of this theoretical framework are part of a larger, more complicated puzzle. Appraisal Theory has often been critiqued by researchers for failing to capture the dynamic nature of emotion. Critics have depicted Appraisal Theory as overestimating the importance of thought as the core process in emotion elicitation (Zajonc, 1984), when emotions could be attributed to a variety of other factors. Zajonc (1984) asked about the minimal information process that is required for emotion and if all emotions depend on appraisal. These inquiries have different responses from different researchers. What most seem to agree with is that, “It is emotional reactions that categorize the environment for us into safe and dangerous

classes of objects and events" (Zajonc, 1984, p. 122). We do not need complete stimulus information to react emotionally. However, the question is "not how much information the organism requires from the environment but how little work it must do on this information to produce an emotional reaction" (Zajonc, 1984, pp. 121-122). Based on my previous experiences in working with older adults in their use of ICTs, I knew that the older adults who engaged in my research would have what Roseman and Smith (2001) call "emotional responses" (p. 3) to being introduced to and learning how to use technology while in the very early stages of the learning process and beyond.

There have been many attempts by researchers to expand the TAM in order to adapt it to the constantly changing technology environment, with some leading to unclear or confusing conclusions (Benbasat & Barki, 2007). A key critic of the TAM, Brett Lunceford, argued that the framework of perceived usefulness and ease of use overlooks other important issues, such as cost and structural imperatives that force users into adopting the technology (Lunceford, 2009), which it does. I addressed these other important issues and/or barriers, including cost, with my interview questions while conducting my multiple-case study. In spite of criticism of the TAM in the extant literature, it remains widely used in multiple contexts, which is why I use it in the context of this multiple-case study.

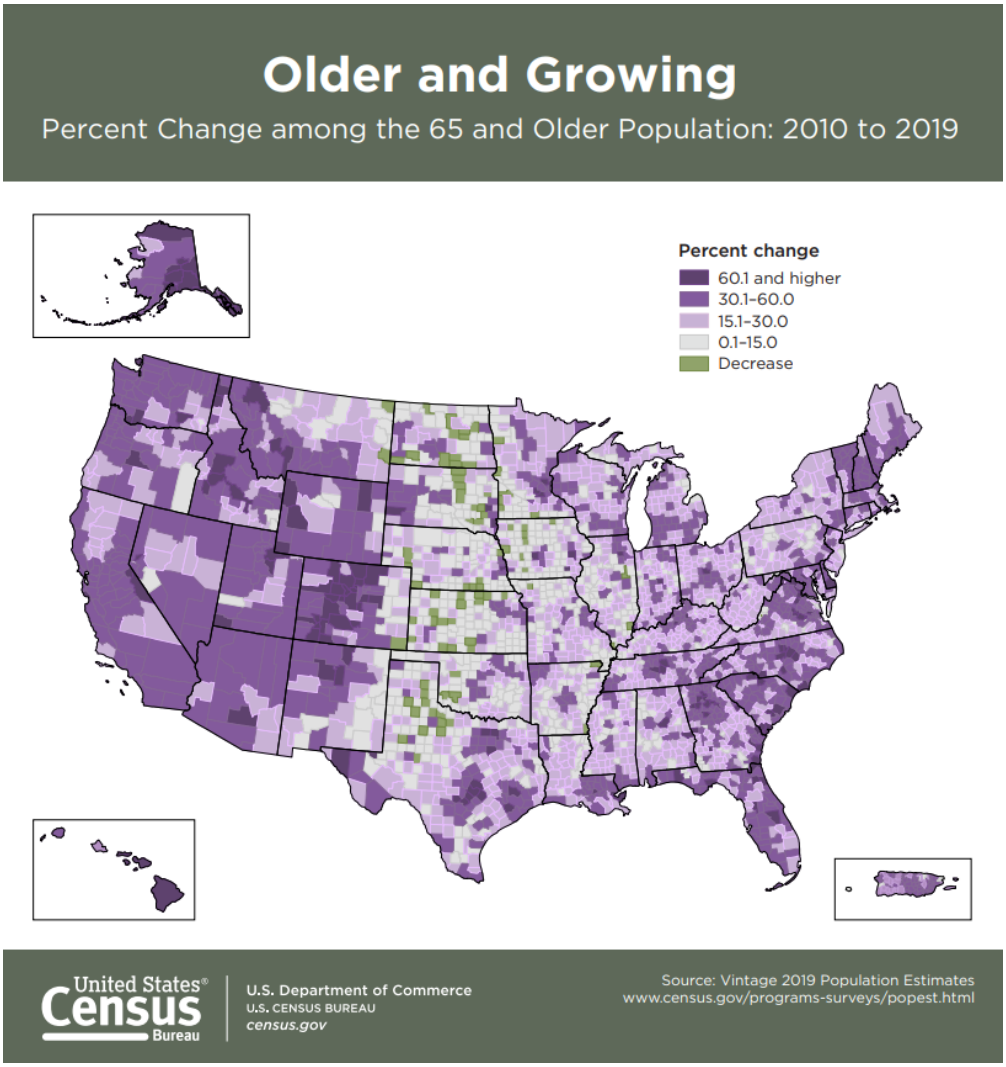
Review of Research Literature and Conceptual Framework

The Digital Divide

The world is experiencing a "demographic turning point in history" (Schäffer, 2007, p. 29), as life expectancy, and the amount (as well as proportion) of elderly people, is increasing. "The first Baby Boomers reached 65 years old in 2011," said Dr. Luke Rogers, chief of the Census Bureau's Population Estimates Branch. "Since then, there's been a rapid increase in the size of the 65-and-older population, which grew by over a third since 2010. No other age group saw such a fast increase. In fact, the under-18 population was smaller in 2019 than it was in 2010, in part due to lower fertility in the United States" (see Figure 2).

Figure 2

Older and Growing: Percent Change Among the 65 and Older Population, 2020



Note: This is the most recent census data available at the time of this writing. From U.S. Census Bureau, 2020 (https://www.census.gov/newsroom/press-releases/2020/65-older-population-grows.html).

More and more people are living longer, and the ability to effectively use digital technologies is an important aspect of active aging (Gardner et al., 2012). “Not every sector of society has crossed the digital divide” (Nedovic-Budic & Williams, 2013), which involves access (or lack of access) to the internet, leaving large populations excluded. Essentially, as noted in chapter 1, the digital divide is the gulf between those who have direct access to technology and the internet and those who do not. The term “digital divide” was first used to mean “information divide,” and, as stated in chapter 1, *The Framework Act on National Informatization in 2001*, enacted by South Korea, defined the digital divide as “the inequality in the opportunities to access and use ICT services through information and communication networks due to differing economic, regional, physical, or social conditions” (Hong et al., 2016). As a vivid example of this inequality, older adults in the United States are, in many ways, an isolated group from the rest of their community, and the digital divide has further separated many members of the older adult community from the rest of society (Friemel, 2014; Helsper & Reisdorf, 2013). This exclusion, isolation, and division is a problem that needs to be addressed.

Many falsely assume that the digital divide is limited to a particular age demographic, but for older adults and younger populations, the ways the digital divide manifests may be different for each group. It is beneficial to question some of the assumptions about the digital divide that have been accepted by many older adults and society alike. Ito et al. (2001) wrote that the digital divide debate is tied up in the notion of information access as the main reason for using ICTs. ICTs are not simply about

looking for information; they are also about looking for "affiliation, support, and affirmation" (Sproull & Faraj, 1997, p. 38). ICTs are used for interpersonal communication and social ties, in addition to information access, according to Kraut et al. (1998). In short, there are a multitude of reasons for using ICTs that are not simply about accessing information.

Another false assumption about the digital divide is that there is a single moment of transition where the divide is crossed by an individual. In reality, individuals may have to cross the divide many times in the course of their lives because of the rapidly changing nature of ICTs (Ito et al., 2001). The digital divide is a construct that exists for everyone, yet younger generations tend to cross it with minimal effort because they never knew a life without technology. The digital divide is an invisible barrier that is most likely to affect those from a lower socioeconomic status, those who live in rural areas where internet access is sporadic, those who have chosen to not rely on technology for a variety of other contextual factors (like older adults), or those who are in their older adult years. The digital divide is a real threat, but crossing it can take time, patience, and continuous effort that not all older adults have or wish to invest.

Finally, the US's digital divide is not simply a matter of geography. In a *Time* article, Vick (2017) discussed how there is a "collective deficit in opportunity, education and prospects–everything implied in 'being connected'" that separates those in this country into haves and have-nots. Access to the internet and technology is tied to many different factors, such as job, socioeconomic status, education, and location to name a

few (Barton, 2018). It is a real possibility that some citizens in more urban communities, where access is more readily available than in many more rural contexts, are still on the excluded side of the divide and do not have access to the internet or connected devices due to their societal status.

The existence of this digital divide has been well documented, especially in the last two decades. Surveys and mixed-method studies are common when it comes to researching the existence and consequences of the digital divide (Eynon & Helsper; 2011; Friemel, 2014; Loges & Jung, 2001). However, many are asking if the digital divide is a problem. Loges and Jung (2001) said that if we continue to transfer more of our lives, like politics, education, and commerce online, without thinking about the consequences for those who do not use or do not know how to use technology for those purposes, then the digital divide will be an even bigger issue than we are now realizing.

In a study on digital participation, Reneland-Foresman (2018) discussed how digital and social exclusion are intertwined to cast older people to the margins of society. By interviewing eighteen older adults about their everyday encounters with digital interfaces, the findings showed that older people in their study accepted exclusion when it came to using digital interfaces. This phenomenon only seems to be worsening as time moves forward, this population continues to age, and the number of older adult folks continues to increase. Accepting something, such as digital exclusion, without putting in any effort to fix the circumstance, is a dangerous precedent that can lead to further exclusion in other settings for older adults. Digital exclusion causes “further economic,

social, health, and political disparities" (Barton, 2018, p. 252) resulting from the exclusion. It is important to help those on the disengaged side of the digital divide see and understand the consequences of remaining digitally excluded.

This points us to the concept of digital inequalities, which continue to emerge in our information society (Friemel, 2014; Williams & Durrance, 2009). Helsper and Reisdorf (2013) found that ex- and non-users of digital technologies have a multifaceted range of reasons for not using the internet and accepting the digital divide, starting with a lack of interest as the greatest reason, followed by a lack of access, lack of skills, and cost. In another study, Friemel (2014) used a survey in Switzerland to find that internet use is strongly skewed downward in those 65+ years of age, leading to strong implications of the presence of digital inequality. Older adults, according to Friemel, tend to be rather polarized in their views, either being intense, eager internet users, or non-users, with only a few in-between. "With every additional year of age, the likelihood of Internet usage decreases by 8%, though, in fact, it decreases nearly exponentially in five-year differences. When considering a range of 65–90 years or more, this leads to huge inequalities" (p. 328). This conversation about digital inequalities must continue if we are to fight the digital inequalities present today that burden and exclude older adults.

Before concluding this discussion, I must mention the *grey digital divide*, or the exclusion of older adults specifically from the information society (Millward, 2003). The grey digital divide is a more recent conceptualization of the digital divide, and scholars researching the grey digital divide have found that older adults continue to fall behind

younger generations with technology. Olphert and Damodaran (2013) called this "digital disengagement," (p. 564) and their research on this topic highlighted many recent studies that are now looking beyond a lack of access, skills, or motivation. Digital disengagement studies are now looking at the "previous but not current" user category (Olphert & Damodaran, 2013) due to the fact that older adults are falling away and separating themselves from technology for reasons other than those stated above. In this dissertation, I aimed to find a possible reason as to why this population is embracing the grey digital divide and what that means for them in a digital society.

The digital divide and/or the grey digital divide is an important piece of discussion here. While the digital divide is perhaps not apparent to all members of society, it is an ever-present concept that must be addressed as the inequalities involved have serious consequences for this country. Crossing the digital divide happens fairly quickly for younger generations as they are provided opportunities to use ICTs and other digital technologies in multiple aspects of their lives, particularly through work, school, and social connections. However, older adults are having to look at the divide from a distance, and those that do have access tend to be much less motivated to connect with technology because the digital world changes so quickly and so often. Those that do not have access have even more issues with crossing the divide. In order to understand the digital divide a little bit more, we will now turn our attention to ICTs, video conferencing services, and the literacies involved with both.

Information and Communication Technologies (ICTs)

As noted, Information and Communication Technologies are everywhere, and they are used for a variety of purposes. ICTs include computers, smartphones, tablets, PCs, and any other digital device or application in which someone communicates with others in the digital world. Video conferencing services such as Zoom, Skype, Apple FaceTime, and Google Hangouts fall under the umbrella term of ICTs, and I will discuss them here as well. ICTs are associated with an improved quality of life, decreased feelings of loneliness and depression, and increased feelings of independence and personal growth (Tsai et al., 2015). Multiple studies done in the US, which will be discussed below, focus on how ICTs improve the quality of life, which is necessary to consider. Although important, quality of life as a whole is not the focus of this dissertation, which will instead more tightly focus on the emotions involved with the introduction of ICTs, and more specifically, video conferencing services, which in many ways mimic in-person communication. Kappas and Kramer (2011) note, "Nowadays, when people either are forced to interact via a computer, or they wish to do so, they increasingly use new technologies that at least partly incorporate aspects of everyday face-to-face communication" (p. 1). It is useful to walk through the empirical studies that have been done on ICTs and older populations in order to understand the benefits they provide for the individuals that use them, as well as benefits provided to society on a larger scale.

Quantitative methods such as questionnaires and surveys have been widely used

to study the effects of everyday ICT use on older adults and older adults' lives (Gonzalez et al., 2015; Helsper & Reisdorf, 2013; Hong et al., 2016; Klimova et al., 2018; Selwyn et al., 2003; Slegers et al., 2007). Most studies end with the same conclusion: ICT use has the potential to enhance the quality of life, but the older population experiences too many barriers, both physical and affective, that impact their use of and success with ICTs. Many in the older adult population wish to use ICTs, but there are many interconnected barriers in the way of their understanding or effective implementation.

Quantitative methods used to study this issue of older adults and lack of ICT use do not get at the problem of addressing their emotional responses to learning how to use ICTs or present any possible solutions. The only information these studies tend to provide us is that high numbers of older adults do not use ICTs, even though ICTs have great potential to improve older adults' lives in different ways. While this broad overview is useful and establishes a context and background, I want to know more about the emotions experienced by older adults when being introduced to ICTs such as video conferencing services. To this end, qualitative research is more useful, because we can study this older population in a natural setting and attempt to make sense of and interpret the issues present, and we can provide a more holistic and humanizing portrait as a means to work towards improvements.

On the qualitative side, ethnographies, observations, interviews, and focus groups have been the norm to learn about older adults and their ICT use. Meneses Fernández et al. (2017) explored the social impacts and benefits of using digital visualization

technologies in an adult day care center, and they found that all participants were very enthusiastic about the tablets they used and enjoyed the workshops in which they participated. They noted that we see older adults becoming more isolated from modern society in which understanding different forms of communications and technologies has become vital, which is also supported by other studies done by Antunes et al. (2019) as well as Chen and Schulz (2016). Tsai et al. (2015) engaged in 21 interviews with older adults in an independent living community and found that digital tablets helped increase digital inclusion for the participants. Similarly, Richardson et al. (2005) used focus groups to explore perceptions of barriers with ICT use by older New Zealanders. Both studies found emotional and material barriers that are shaped by both age and gender. Some of the barriers include fear, anxiety, lack of ability to purchase and maintain a technology, and learning environment barriers such as a lack of support or too much technological jargon used in ICT courses. The qualitative studies available on ICT use and older adult populations tend to focus on why this population does not use ICTs and the barriers associated with these reasons, but the studies do not cast a wider net to see the variables involved here. It is my belief that the research gap centers around the emotions and the factors that influence these emotions when being introduced to and learning how to use ICTs, and qualitative methods will help address this gap.

Several mixed-methods studies have also been done using a combination of surveys, focus groups, observation, and interviews. Gardner et al. (2012) used surveys, ethnographic fieldwork, and interviews to demonstrate the positive impact of a specific

computer training program on older adults and their ICT abilities. Neves et al. (2013) used surveys and interviews to study adoption, usage, and non-usage of ICTs by Portuguese older adults, and they found that the main reasons for non-usage were functional (ie. no home computer with internet access and/or lack the necessary digital literacy skills) and attitudinal (ie. participants did not feel self-confident using an ICT or did not grasp the benefits of the technology) despite the fact that most respondents had a positive perception of ICT use. This means that many of the older adults they studied were aware of the benefits of ICTs, but they continued to stay away from technology anyway. These mixed-methods studies speak to the idea that qualitative means add additional dimensions to any quantitative data, because ICT use and non-use with the older adult population is a complicated issue with many different factors involved.

Video Conferencing Services and Older Adults

Older adults' preferred communication methods remain under-investigated (Yuan et al., 2016). Face-to-face contact, communication via written documents, and talking on landline phones were the main modes of communication prior to the general public adoption of the internet and mobile phones (Dickinson & Hill, 2007). Now, there is a range of other options beyond the previous forms of communication, now including video conferencing services. As previously described, video conferencing, according to TechTarget.com, is a live, visual connection between people in separate locations in order to communicate (Rouse, 2019). It provides transmission of video images and audio between multiple locations. Video conferencing services are keeping people connected in

the wake of the COVID-19 health crisis, and these services will continue to allow for people to communicate with each other without physically being in the same room as those with whom they are speaking. Blount (2020) said, "If you can't be there face-to-face . . . the next best thing is video call" (p. 59). Blount also noted, "Video is more personal than any other form of virtual communication. Because people can see you, emotional connections, relationships, and trust are established faster" (p. 60). Older adults are an especially vulnerable group during the COVID-19 crisis, and video conferencing services allow them to continue communicating with the people in their lives. While there is a lack of research on older adults using video conferencing services, a small body of research does exist, which I will address here. Opportunities to strengthen the base of the research literature will be addressed by this dissertation and will hopefully lead to new and continued research on this topic.

As many today will attest, Ames et al. (2010), Judge et al. (2010), and Yuan et al. (2016) said that video communication has been shown to be instrumental in bringing together geographically dispersed family members. Video communication has also been used by older adults to stay connected with family at home (Kirk et al., 2010) and during travel (O'Hara et al., 2009). Airola et al. (2020) conducted a case study focused on older people in Finnish Lapland and a video conferencing service for promoting social connectedness and well-being. The authors found that some users experienced inconvenience in using the specific service and negative feelings due to technical problems they had with the service's use. Users also reported barriers relating to the

"learning and use of the service included negative perception of oneself as a technology user and cognitive and physical difficulties" (p. 258). In addition, Chen and Schulz (2016) reviewed the effects of ICT interventions on reducing social isolation in the elderly, and they concluded that more research is needed on how best to generate quality communication between the elderly and others (like videoconferencing) in order to reduce social isolation and/or intergenerational communication. Emotional and psychological factors can get in the way of older adults' successful use of video conferencing services, and the research that is available so far is incomplete and sometimes contradictory. Before moving on to the next concept, I will discuss the literacies involved with ICTs, to include both digital and critical literacy.

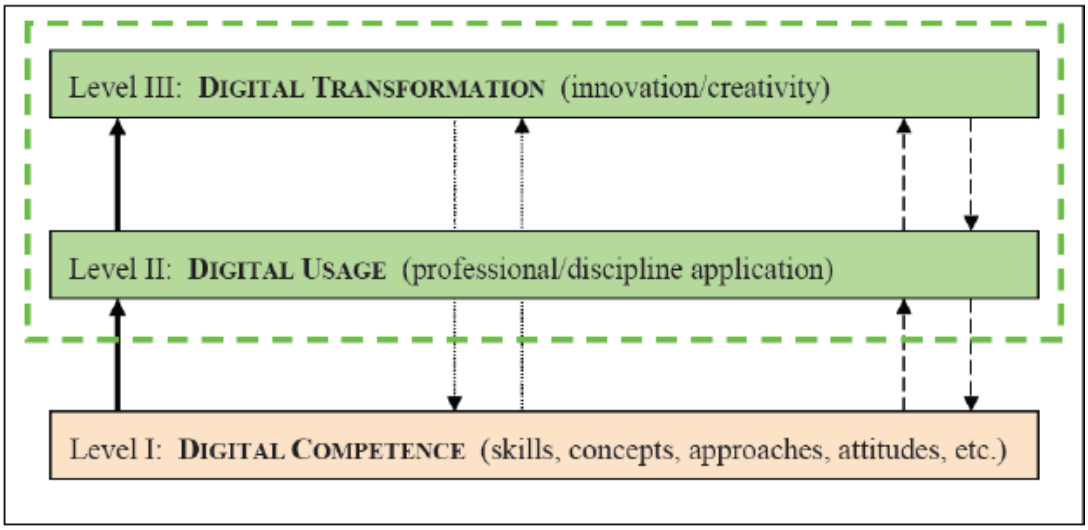
Digital Literacy and Critical Literacy

Before completing the discussion on ICTs, it is important to discuss the specific types of literacies involved, and why they are a piece of this ever-evolving puzzle. Digital literacy in particular is an essential skill for everyone that requires accessibility, both physical and emotional, and relevant ICT education (Naumanen & Tukiainen, 2009). Being digitally literate, the term coined by Gilster (1997) in the 1990s, encompasses many issues, including "cognitive authority, safety and privacy, creative, ethical, and responsible use and reuse of digital media" (Meyers et al., 2013, p. 355). Martin (2009) described one model of the levels of digital literacy (see Figure 3). Those levels are Level I, or *digital competence* (a precursor to digital literacy), such as skills, concepts, and attitudes specifically related to digital technologies; Level II, or *digital*

usage, as the ability to successfully apply the technology; and Level III, or *digital transformation*, which leads to innovation and creativity with said technology. We can only talk about digital literacy at Level II or Level III, which is why these levels are highlighted in Figure 3 (see below). Level I, digital competence, is a precursor of digital literacy, but it can not be described as digital literacy (Martin, 2009). In short, digital literacy, according to Martin (2009), is a means of engagement between an individual and society. It is a medium for creation and change, and the social order evolves because of digital literacy. However, as noted, many older adults do not see most ICTs as user-friendly, intuitive, or helpful for a lot of their needs. This needs to change.

Figure 3

Levels of Digital Literacy



Note: Level I is a precursor of digital literacy, while Level II or Level III, involve digital literacy. From "Digital literacy for the third age: Sustaining identity in an uncertain world," by A. Martin, 2009, eLearning Papers, 8.

Both digital literacy and critical literacy are involved with ICT use and education. Critical literacy involves critical thinking, and critical thinking (rather than technical competence) is the core element of digital literacy (Gilster, 1997). The earliest scholarship on critical literacy is "grounded in Freirian pedagogy" (Bishop, 2014, p. 52). While Freire and Macedo initiated an important dialogue in their extensive volume on literacy and critical pedagogy in 1987, it was not until 1993 that Lankshear and McClaren published what was to become the foundational text devoted to critical literacy, *Critical Literacy: Politics, Praxis, and the Postmodern.* In *Critical Literacy,* Lankshear and McClaren suggested how the best elements of both modernist and postmodernist theories of literacy can be fused together to provide a more robust conception of literacy that will bring theoretical, ethical, political, and practical benefits for all. A 2015 publication from the International Literacy Association noted the benefits of literacy which include less poverty, lower early mortality rates, stronger economies, more community involvement, and improved personal well-being to name a few. But there are countless more benefits that come from possessing literacy skills, including specific literacies such as digital literacy, health literacy, and/or financial literacy. The world of literacy is vast.

Critical literacy involves the ability to evaluate information for quality, relevance, accuracy, authenticity, value, credibility and bias (McNicol, 2016) while developing an understanding of the contexts in which those texts are created and read (McNicol, 2016). Critical literacy is connected to equity, inclusion, and social justice, because it teaches us to challenge what we read and what we see. Critical literacy is about serious engagement

with information so informed decisions can be made to lead society forward. And critical literacy is needed when engaging and communicating through the use of ICTs; otherwise, those who use ICTs may be susceptible to the acceptance of fake news and misinformation, phishing, scams, and fraud (Lee, 2018). Contemporary critical literacy skills must be taught with ICT education in order to protect those who are learning how to use said ICTs.

As noted, critical literacy and digital literacy are interconnected. US culture privileges the literacies and literate activities of young people, and often marks older adults as digitally deficient (Bowen, 2011, p. 587), even when this is not always true or correct. Bowen said, “Through recognition of the ways literacy is a part of our emotional and even physical selves, we can recognize the richness of what literacy in digital times really is, what it does, and what it means--at any age” (p. 602). ICTs are used for many different purposes, and they have the potential to help older populations with problems that they did not know could be fixed with technology.

In summary, digital literacy and the use of ICTs can help individuals become more innovative so that they can make new meaning in their everyday lives and, in the time of COVID-19, maintain some of the important and necessary connections to those outside their physical bubble. However, many older adults do not see themselves as individuals who can or should use technology, due in part to the society in which we live, which may see older adults as deficient and cautious. This brings us to the next part of our discussion that colors the ways in which older adults view and are viewed through the

world of technology: ageism.

Ageism

Many younger individuals believe that older adults have outlived their usefulness because older adults may become dependent on others (Bowen, 2012) as they age. For those holding ageist beliefs, old age is looked at as a problem, and aging and disability are seen as one in the same--an attitude that is common in the US, as well as in other parts of the world. We are in an "age of ageism" (Nelson, 2016, p. 191), with ageism, as defined by Greenberg et al. (2017) being negative attitudes or behaviors toward an individual based on age. Attitudes of those in the US towards aging are pessimistic and negative. Ageism can take many forms, including stereotyping individuals on the basis of age, patronizing the elderly, discriminating against people because they are perceived as too old, speaking with or about the elderly in a condescending tone, or elder bashing and abuse (Kagan, 2017) as a few examples. Jonson (2013) discussed the paradox of "nonold" people discriminating against their future selves, as they will surely (or hopefully) age just like the people they are discriminating against. The view of our younger populations about those older than them is dangerous, unjust, and discriminatory, in that this younger group will surely age themselves and experience the same discrimination. We must pay attention to the stories we tell ourselves and other people.

Modernization in the US has pushed the perception of older adults as invisible, useless, irrelevant and incompetent (North & Fiske, 2017), which is not how those in many other countries see their elderly. Generally speaking, the US is a more

individualistic culture, whereas in general, Eastern cultures are more collectivistic as members of these communities may appreciate connectedness and bonding (Bodner, 2017, p. 292). In the US, many families and communities slowly push elderly folks away as they age, into nursing homes and other living situations that do not involve their family, whereas many cultures outside the US are more likely to take care of their elderly and keep them within the family household. Many older adults in the US have internalized this view, that they do not belong in society once they get to a certain age. In US culture and media, it is common to joke about older adults having "senior moments" and other memory problems, as well as jokes about being "over the hill," meaning the best years are behind us (Nelson, 2016, p. 191). "Ageism is much more institutionalized" than other forms of prejudice (Nelson, 2016, p. 191) and it presents itself in different ways.

US society frequently perpetuates a deficit model of age and aging (Schäffer, 2007). This model tells us that natural and developmental changes that happen as a part of aging are taking away, or limiting the ability to do, from the person to which it is happening. Societal ageism hinders individual agency when it comes to ICT use. Fears such as breaking the machine or of not being smart enough or appearing stupid, are fears shaped by ageism (McKee & Blair, 2006). Technology support services, such as ICT education courses, need to transcend ageism and embrace the agency of elders, because digital literacy skills can increase the capacity of older adults to use technology for themselves and the communities in which they live (Lenstra, 2017).

As it currently stands, people in the US may have limited views of what technology can do for older adults in their everyday lives. Bowen (2012) talks about "rhetorics of gerontechnology," which includes the notions that technologies in the lives of older adults are primarily about bodily repair and function (ie. hearing aids, smart bath tubs, smart sleep chairs, LifeAlert buttons). If one looks through any issue of AARP magazine, most, if not all, of the advertisements that are technology-related are assistive in nature and not intended for any reason beyond making someone's life functionally easier. While a variety of assistive technologies have been adopted to help older adults in their daily lives, such as robotics, sensors, and computers (Khosravia & Ghapanchi, 2016), there are a myriad of reasons to use technologies beyond those assistive in nature.

Technology is simply not represented in activities beyond health maintenance or improvement, and through the systematic marketing focused on their demographic, older adults are being implicitly told that they are only supposed to be using assistive technologies once they reach a certain age or level of functionality (or impairment). A great deal of the research that focuses on older adults and technology is focused on assistive technologies (Antunes et al., 2019). The theory of disengagement suggests that because many elderly people may see their death as being in the relatively near future, they "disengage themselves from their social roles and do not get involved with any of interventions associated with social connections that are often facilitated by the internet" (Vichitvanichphong et al., 2018, p. 415). These older adults are buying into the notion that they should only be using assistive technologies, and not technologies that could be

beneficial in other, non-assistive ways. Barnard et al. (2013) studied older adults who used a specific device, the Samsung Galaxy Tab handheld touchscreen tablet, to support their walking. Barnard et al. found that older people who have prior experiences with learning new things showed better attitudes toward adopting the technology. Barnard et al. also suggested that older adults who have ideas about how difficult it would be to learn a new technology would more readily learn how to use and adopt the technology. This illustrates the point that older adults can and are willing to use technologies beyond assistive technologies if the right factors are in play.

One of the many reasons why older adults may stay away from technology involves the fact that they are receiving the implicit message that all other technology is for younger generations. This message has been internalized by many older populations, and they do not see a way out of this thinking. In summary, ageism and its effects may color older adults' view of themselves inside the world of technology. Ageism has a large part to play in the next part of our discussion around the emotions involved with ICT introduction.

Emotions and ICTs

The purpose of this study was to examine the emotions older adults experienced with the introduction of ICTs and a video conferencing service to communicate in their daily lives. In a culture like that of the US that values youth, to be labeled as old may have negative consequences (Crow, 2006, p. 35). Common expectations and stereotypes of older adults may include a "reduction in competence but a rise in warmth" (Cuddy &

Fiske, 2002). This reduction in expectations of competence most certainly applies to the use of technology, and as stated earlier, these negative attitudes may become internalized by our nation's older adult population. The technology revolution is creating immense emotions in many older adults' lives, and this is an idea that begs to be discussed as there is a great deal we have yet to learn about older adults, emotions, and communication technologies.

Two of the many emotions that are being felt by older adults are feelings of powerlessness and vulnerability when it comes to using ICTs. Cox (1988) described the phenomena of powerlessness as a,

> subjective experience caused by mental and physical stress, the loss of economic security, deterioration in the ability to influence and to make a social or political difference, greater dependency on others and increasingly negative attitudes in society toward old age. (Shapira et al., 2007, p. 477)

Mordini (2007) discussed the technology revolution and how it should empower people, when in reality, it has created feelings of disempowerment. This disempowerment can lead to loneliness, which in turn can lead to feelings of discomfort and fear. People can appreciate the benefits of technology, but "they would like to have the benefits without paying any price and running any risk" (Mordini, 2007, p. 546). The price, in this case, would be the negative emotions felt by older adults when using or learning to use technology. We "cannot stop technology changing because people are no longer able to make sense of it and therefore cannot justify the risks entailed by technological

advances" (Mordini, 2007, p. 546). Therefore, learning more about the complex feelings of powerlessness and vulnerability older adults may experience is essential.

Shapira et al. (2007), on the other hand, employed a quasi-experimental research design to test the psychological impact of learning how to use computers and the internet in old age. Shapira et al. found that computer and internet use enhanced psychological factors important to the quality of life of older people, including (but not limited to) psychological processes associated with experiences of personal empowerment and enhanced interpersonal communication. Technology is a powerful tool that can help older adults feel empowered if it is used and used correctly.

Another pair of emotions that come into the conversation are feelings of fear and anxiety. *Computer anxiety*, according to Parasuraman and Igbaria (1990), is the tendency of individuals to be uneasy, apprehensive, or fearful about computer use. Computer anxiety, and its consequences, were studied extensively (Bear et al., 1987; Brock & Sulsky, 1994; Maurer, 1994; Reznich, 1996; Slegers et al., 2007; Woodrow, 1991) in the late 1980's and 1990's, and it is still being studied today. Stewart & Segars (2002), for example, performed an empirical examination of technology consumers' concern for information privacy. While the "information age" (p. 36) holds great promise in terms of providing a wealth of information, the exchange of electronic information also brings the threat of untoward or illicit access to personal information by those seeking to harm or exploit others. Many older adults experience feelings of fear and anxiety because of this threat. Gatto and Tak (2008), in their study on the barriers and benefits of computers and

the internet, also found that many older adults are rightfully fearful of identity theft and worry about being victimized by online predators. Anxiety and fear are two emotions that come about through technology use for many US citizens, but especially for older adults.

Another related term to computer anxiety is *technophobia*, which is discussed at length in Hogan's (2009) "Age Differences in Technophobia: An Irish Study." Technophobia, according to Rosen et al. (1992), refers to,

> anxiety about present or future interactions with computers or computer-related technology; negative global attitudes about computers, their operation or their social impact; and/or specific negative cognitions of self-critical internal dialogues during actual computer interaction or when contemplating future computer interaction. (Hogan, 2009, p. 118)

Approximately half of the older adults in Hogan's (2009) study showed moderate to high levels of technophobia, as measured by their anxieties with using technology and the internet. This result is supported by other studies done by Ellis and Allaire (1999) and Zhang (2005). However, in contrast, Bozionelos (2001) and Dyck and Al-Awar Smither (1994) found that older adults experienced less anxiety than younger adults, which contradicts what most studies have found. The latter two studies are in the minority. There is most certainly a relationship between computer anxiety, technophobia, and the motivational factors that influence behavior, which can then lead to these feelings of fear and anxiety.

Turner et al. (2007) presented a qualitative study of older people and the challenges they faced when learning to use interactive technology such as personal computers and the internet. They found that older adults experienced anxiety, which then led to feelings of helplessness, alienation, and exclusion, which is also supported by studies done by Helsper and Reisdorf (2013) and Seale and Dutton (2012). One of the participants in the Turner et al. (2007) study voiced their concern, stating, “This is not my world at all” (p. 291). Another participant then concluded that they have “come to this stage in my life without computers ever. So I could do without them for the rest of my life” (p. 291). Voiced anxieties are frequently named in the researchers' interview transcripts, which underscores the point that these feelings of stress and anxiety are widespread and common in the older adult populations. Vroman et al. (2015), in studying older adults’ dispositions toward ICTs, also found that non-users felt intimidated and anxious with technology. To make matters worse, those non-users with negative attitudes toward technology in general had no interest in engaging with ICTs in the future. Decisions to avoid ICTs may be intentional, due to the “affective and psycho-social elements” (p. 165) involved with ICT adoption and use.

In contrast to studies of older adults who have not yet successfully engaged with the digital world, Rosenthal (2008) looked at the motivations and obstacles of computer-literate older adult women. Using a survey, Rosenthal focused specifically on women, because they outnumber men in their later years. The two main obstacles reported by respondents that were huge stumbling blocks when it came to learning how to

use computers were anxiety or stress and lack of self-confidence. In Rosenthal's study, 48% of the women, nearly half, reported feelings of anxiousness or stress when beginning to use a computer, and 36% experienced a lack of self-confidence. In related ways, Vacek and Rybenska (2016), in their qualitative research study on the difficulties encountered by older adults with ICTs, discussed the psychological issues stemming from learning new skills in old age. Both studies found that respondents were very willing to learn how to use computers and other ICTs, but the emotional and psychological obstacles they endured were difficult to get through.

Fear and paranoia are real feelings that older adults can experience with ICT introduction and consumption. Buchanan-Oliver & Cruz (2011), in their study "Discourses of Technology Consumption: Ambivalence, Fear, and Liminality," discussed how technology consumption "evokes such primal reactions in consumers" (p. 287). Similarly, Mason et al. (2014), studied *cyber-paranoia* and fear. Cyber-paranoia refers to "unrealistic fears concerning threats via information technologies whereby individuals perceive themselves to be open to be 'attacked,' persecuted or victimized in some way" (p. 1). Interestingly, cyber-fear/paranoia increases with age and decreases with knowledge and/or use of technology, which tells us that the feelings of fear and paranoia may only get worse as older adults age, unless these adults practice using technologies.

Another key emotion that many older adults may feel when it comes to adopting technology is embarrassment. Hamilton (2011) used group discussions, interviews, and photographs to examine older adults' changing experience of technology and what

motivated their engagement. One participant voiced her thoughts saying, “I have felt embarrassed on the off occasion someone has taken the trouble to try and help me” (p. 30). As noted previously, it certainly does not help that the range of products being marketed to older adults are mostly assistive, which in and of itself may be embarrassing and insulting to this group (Aminzadeh & Edwards, 1998; Sokoler & Svensson, 2007). Older adults are less likely to use the internet because they feel their efforts might be futile or embarrassing (McDonough, 2016). The possibility for older adults to feel embarrassment related to technology use remains a vivid and important aspect to consider.

The digital divide, paired with ageism, generates a discourse of fear around older adults and ICT use. Fear of technology might be a response to the physical changes related to aging, like anxiety about being harmed or victimized, or a sense of physical or mental vulnerability in old age (Bowen, 2012). This population may have internalized an “I can’t do it” or “I can’t learn it” attitude, due to the complicated emotions older adults are feeling, which may be getting in the way of their ability to learn to use new technologies. Learners need to feel that their actions have intended consequences that will eventually lead to success in accomplishing their goals (Gee, 2013). Unfortunately, the emotional barriers that many older adults experience may block them from learning how to use ICTs, even when they know of the benefits of ICTs in helping them meet their everyday needs.

Review of the Methodological Literature

The best approach to address the questions I have posed is the comparative or multiple-case study. The case study method can be used to focus on a contemporary phenomenon in depth and within its real-world context, especially when the "boundaries between the phenomenon and context may not be clearly evident" (Yin & Campbell, 2018, p. 15). This means that case study goes beyond what histories, surveys, and experiments can do by asking "how" and "why" questions that deal with the "tracing of operational processes over time" (p. 10). The goals of my research were to understand what emotions older adults felt when introduced to ICTs such as a video conferencing service (such as Zoom, Skype, Apple FaceTime, Google Hangouts etc.) and to learn more about why they felt these emotions and where they came from.

The multiple-case study approach was the best match for the questions I explored primarily because emotional responses to events or situations are incredibly individual, and they vary from person to person. Because emotions are so personal, it was beneficial to look at each older adult who participated in this study as their own case, with a range of information about each individual and their experiences. Every participant came into this study with a different background, experience, and attitude when it came to technology, and this multiple-case study approach allowed me to make sense of all of those factors. Interviewing each of the eleven older adults twice also helped me to focus on their individual cases by immersing myself in each individual's reality. I then

compared cases to "build abstractions across cases" (Merriam & Tisdell, 2016, p. 234) in order to make sense of all the information.

Taken as a whole, the case study methodology draws on diverse methods, wherein researchers select the methods that will best help them understand the case or cases being studied. As noted, the methods I chose to use were interviews, observation, and document review. Observation allows the researcher to observe and experience life in real-time (Hammersley & Atkinson, 1995). Suchman (1987) found that up-close analysis of how people use technology in social settings shows how those people blend it into their lives.

Interviews can provide the opportunity for deeper, more structured conversations between the researcher and the participant. Interviews can also allow the researcher to learn more about the feelings, experiences, and knowledge of those being interviewed (Holstein & Gubrium, 1995; Kvale & Brinkmann, 2015). Interviews may assist in revealing the complex ways in which older adults learn and practice digital literacy skills across time (Bowen, 2011). Because I was not looking for generalizability, as each individual's experience with technology is unique and complicated, interviews provided a rich window into the unique experiences of each of my participants.

Finally, document review involves reading and analyzing documents to understand social processes at play over a period of time (Hammersley & Atkinson, 1995). Many individuals use documents and resources such as books, handouts, notes, and email when learning how to use a new technology. I encouraged my participants to take and share notes with me before, during, and after learning how to use a new ICT like

a video conferencing service, not only for their own benefit as learners, but also as a means to gain a window into their thinking. While documents can be incomplete and not as helpful as observation and interview, documents can aid in recording and transmitting information from a past event to the present moment in which the study is taking place. The email exchanges I had with each participant were helpful to me in understanding each participant and their feelings about ICTs.

Researchers in the field of technology and ICTs employ a variety of different methods in their research. Quantitative methods such as surveys and questionnaires are popular, as are qualitative methods such as interviews and observation. The case study method can help get at the problems that quantitative methods and certain qualitative methods do not get at. Barnard et al. (2013) constructed two case studies of older adults using handheld touchscreen tablet devices. Similarly, Carvalho et al. (2012) used the case study method to understand if digitally excluded individuals were able to interact with a multi-touch game that would encourage them to use important everyday equipment such as ATMs. In related ways, Lenstra (2017) used a case study approach to ethnography to analyze the information infrastructure of older adult digital learning. Case studies are a well-used methodology in order to understand older adults and their habits related to technology use.

In summary, case study has been used extensively to study the technological practices and habits of individuals, including older adults. Because multiple-case study affords the opportunity to focus on a contemporary phenomenon, like the use of ICTs and

video conferencing services, in depth and within its real-world context, this method was a strong choice for my research. I hope to continue this conversation and lend more of an understanding to the world at large revolving around this issue.

Summary

Active ageing means optimizing opportunities to enhance the quality of life as people age (Gardner et al., 2012), and ICTs provide that enhancement. We know that ICTs are not one-size-fits-all as the forms of participation in their use are varied and diverse. The world of technology is immense and complicated for everyone involved, but especially for those who may find themselves on the excluded side of the digital divide: older adults. The digital divide is enveloped in a language of deficiency (Ito et al., 2001, p. 20), and older adults are often experiencing marginality due to ageist beliefs that they are unwilling and unable to use technology in their lives. The digital divide, ICTs such as video conferencing services, digital and critical literacy, ageism, and emotions are all pieces of a complex puzzle that need to be addressed to find a path forward that will provide equitable access to all members of our society.

In this literature review, I have provided a summary of the research around this topic as a background for my own research study. ICTs, and more specifically video conferencing services, have the potential to drastically change the lives of those who use them by keeping them connected to each other, their friends and family, and society.

Chapter 3: Methodology

While the proportion of older adults who go online and use ICTs is climbing daily, their use of said ICTs still lags behind other age groups. There exists a strong discourse of fear and embarrassment in the US among older adults around using ICTs because of ageism and the existence of a digital divide (McDonough, 2016; McKee & Blair, 2006). There are a variety of psychological factors and complex emotions associated with technology use, and older adults confront these emotions regularly. While technologies exist to foster independence, the emotional responses of older adults to technology may be getting in the way of their use. The purpose of this study was to learn more about the emotions older adults experienced while learning how to use ICTs and video conferencing services to communicate in their daily lives. I was interested in the meanings older adults attach to learning how to use technology, and specifically video conferencing services, because there will always be someone turning 65 and there will always be new technologies that older adults would benefit from learning how to use.

Research Questions

The following research questions help address the gap in the extant research literature, and these questions were well-matched to get at the problem that I aimed to address:

R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?

R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?

R3: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?

I find it important to state here that I used an interactive approach with my research questions, discussed by Maxwell (2013), which very clearly makes the case for adjustments and changes as one moves through this process. My original set of research questions were edited and molded into the research questions presented in this study. Maxwell's justifications for this interactive approach are perfectly attuned to the decisions I made about amending my research questions. Maxwell (2013) says, "qualitative researchers often don't develop their final research questions until they have done a significant amount of data collection and analysis" (p. 73). My early questions framed this study in important ways, guiding my decisions and influencing my conceptual framework, preliminary results, and validity concerns. However, as Maxwell (2013) states, "well-constructed, focused questions are generally the result of an interactive design process" (p. 73), so that is why my research questions changed from the beginning of this study to the end.

Type of Design: Multiple-Case Study

Through this study, I employed qualitative methods to best learn about the emotions experienced by older adults as they learned to use ICTs, and specifically, video

conferencing services. The specific approach best-suited for my problem of practice was multiple-case study. In the case study approach, "the researcher develops an in-depth analysis of a case, often a program, event, activity, or process, or one or more individuals" (Creswell & Creswell, 2018, p. 14). Cases are "bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time" (p. 14). Through case studies, researchers seek to illuminate a decision or set of decisions by looking at why they were made, how they were implemented, and what the final result was (Schramm, 1971). The signature component of a multiple-case study, or comparative case study, is that it involves "collecting and analyzing data from several cases," which enhances the "external validity" of your findings (Merriam & Tisdell, 2016, p. 40). Collecting and analyzing data from several cases and then offering both within-case analysis and cross-case analysis is another signature component.

For the purposes of this study, it was my plan to establish and build each individual case, as Dyson and Genishi (2005) tell us that "cases are constructed, not found, as researchers make decisions about how to angle their vision on places overflowing with potential stories of human experience" (p. 2). There is an "interplay between the detailing of local specificity and the probing of a more abstract phenomena" (Dyson & Genishi, 2005, p. 3). In other words, the case being studied is not the phenomenon itself. In case studies, "researchers are interested in the meaning people make of their lives in very particular contexts" (p. 9). In case studies, strategies for data

collection include interviews, field observations, and documents (Merriam & Tisdell, 2016), and strategies for data analysis include both within-case analysis and cross-case analysis using the observation notes, interview transcripts, memos, and documents collected.

To best address my research questions, I employed a multiple-case study, as opposed to a single-case study, because having more than one case helped provide insight into a more nuanced and robust set of experiences. With this approach, I did sacrifice a bit of depth for some breadth by carefully selecting cases in order to develop a better understanding of the issue and context surrounding the issue of older adults, emotions, and ICTs like video conferencing services. “Analytic conclusions independently arising from two cases, as with two experiments, will be more powerful than those coming from a single-case (or single experiment) alone” (Yin & Campbell, 2018, p. 61). The multiple-case study approach was the best match for learning about the emotions older adults experienced when engaging with ICTs and video conferencing services because emotional responses to events or situations are incredibly individual and vary from person to person. Emotions are tremendously personal, and it was beneficial to see each older adult as their own case, with a variety of experiences and perspectives to share. Every participant came into this study with a different background, experience, and attitude with technology, and this approach allowed me to gather and understand all of those factors and how they influenced ICT and video conferencing service use.

The multiple case-study approach best illuminates the personal nature of the

problem, which is the emotional responses felt by older adults. Each individual has their own past experiences with technology, and it was important to treat each individual older adult as a separate case before comparing them with others. I focused on each individual case by immersing myself in each individual's experience. I then compared the experiences of the individuals (the cases) to "build abstractions across cases" (Merriam & Tisdell, 2016, p. 234) in order to make sense of all the information they shared.

The finer details of the design all pivoted on my conceptual and theoretical frameworks, which involved looking at this problem through the lens of Appraisal Theory (Arnold, 1960) and the Technology Acceptance Model (Davis, 1986). In some (or even in many) cases, the internalization of negative thoughts and perspectives stemming from the existence of the digital divide and ageism can lead older adults to underestimate or doubt their capacity or ability to use ICTs. Attitude or perspective regarding technology is important, and several studies have shown attitude to be a key predictor of whether or not an individual will use any given technology (Al-Gahtani & King, 1999; Kelley et al., 1999), as people with positive attitudes toward technology are more likely to use technologies. Many older adults experience feelings of reluctance or avoidance when it comes to ICTs, especially when being introduced to an ICT for the first time, so my research aimed to explore these emotions and where they came from.

My goals in using a multiple-case study were to learn more about the emotions the older adults in this study felt when introduced to ICTs, and more specifically, a video conferencing service (such as Zoom, Skype, Apple FaceTime, Google Hangouts etc.),

why they say they felt these emotions and where the emotions came from, and what factors the older adults said influenced their emotions and shaped their choices about ICT use. I wanted to discover contrasts, similarities, or patterns across cases that would allow me (and the broader community) to understand the emotional responses enough to ensure they were taken into account in future trainings that I (and others like me) could later facilitate in my role at the public library. Conceptualizing each older adult and their experiences as a distinct case afforded a deeper understanding of how and why older adults may experience strong emotions when being introduced to ICTs and video conferencing services. I interviewed each participant twice, about one to two months apart, and then I analyzed documents such as email exchanges by the participants and memos I wrote throughout the study. This study included eleven older adults, each an individual case, because I wanted to look at each individual's past and present experiences with ICTs that shaped their future choices.

Participants

Participant recruitment involved multiple avenues. In the US, public libraries are one of the few settings where people come to learn about and ask questions pertaining to technology, and the public library is also the setting many older adults rely on to use the internet and learn how to use technology. This made the public library a natural recruitment site for this study. For a period of six weeks, I made a flyer (see Appendix A) available inside the curbside holds pick up room (the library was closed to the public due to COVID-19 restrictions) to library patrons at the Canby Public Library as a way to

recruit participants. The flyer asked a series of three questions, and if a patron said yes to all three questions, then they had the opportunity to reach out to me to participate in this study. As a second way to recruit participants, I also posted the flyer on the Canby Public Library social media accounts and on my personal accounts. Finally, I was also able to recruit participants by word of mouth.

I recognized the need to build rapport and trust, especially as I tried to facilitate conversations about emotions. As is the case in all my interactions with library patrons, it was important for me to establish productive relationships with my participants, as they helped to illuminate ideas related to my research questions. My participant selection decisions also took into account the feasibility of access and data collection. In future research, as a means to extend insights from this study, I would like to include more cases at different public libraries, in different cities, in the greater Portland Metro area.

Researcher's Role

As noted earlier, I have been volunteering or working in libraries for the past ten years. I strived to address my subjectivity/researcher role throughout the process of data collection and analysis. My role as a researcher weaved together with my role as a librarian, because my role as librarian is inextricably present in all of my work. My identity as a formally educated White woman, from a lower middle class background, in my early thirties, also influenced my work. My identity markers influenced my work in a myriad of ways, and given the demographics of the local community, I believe my identity markers allowed many adults to find comfort and trust with me. My Whiteness

and my gender match many of the older adults I assist in the library. However, my education level is higher and my age is lower than most older adults that frequent the library. On the positive side, both my education level and age allow patrons to trust me and the advice I give when it comes to their technology-related questions. This is because they understand that I grew up with technology and could not have continued on my educational journey without technology. It was my goal to bring the insights from my role as a librarian and connect that with my role as researcher in order to understand what older adults go through with technology and how I can help their transition to the digital world.

Data Collection Techniques

The following data collection techniques helped illuminate the experiences of eleven purposefully selected older adults when being introduced to ICTs such as a video conferencing service. After obtaining IRB-approved informed consent, I collected data from two, 30-90 minute interviews per participant, observation, and document/artifact review. I managed and recorded data by taking thick, descriptive field notes, recording the interviews for each participant, and writing memos before, during, and after each interview.

First, I ensured each participant was fully clear about the expectations for participation in the proposed research. Because the comfort and safety of each participant was a priority, I ensured each participant had access to the informed consent

documentation in the form they preferred (electronically and/or as a hard copy), and I thoroughly answered all questions they had before the research began.

Second, once participants were comfortable with the study process, I set up two interviews per participant that lasted 30-90 minutes each. I elicited responses using the method of *stimulated recall,* first mentioned by Benjamin Bloom in 1953, which allows the subject to "relive an original situation with vividness and accuracy if he is presented with a large number of the cues or stimuli which occurred during the original situation" (p. 161). Essentially, I wanted each participant to walk me through their past and current experiences with ICTs and video conferencing services, paying attention to their tone and overall vibe. I also wanted to pay attention to my own possible emotional reactions as the interviewer so that I may understand how librarians, tutors, and teachers can better help and support older adults with technology assistance. Here, I also collected demographic data including gender, age, level of education, and time since last formal employment or formal educational experience.

Third, I followed the interviews by transcribing them and then reviewing documents/artifacts, emails, and other communications between the participants and I. See Table 1 for analysis plans and justification.

Table 1

Plan of Analysis and Justification

Research Questions	Why do I need to know this?	Data collection methods	Data analysis
R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?	To understand their language when it comes to technology use; to understand their experience as older adults	Interview: structured and open-ended; participants personal notes, email exchanges	Single case coding; cross-case themes
R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?	To understand the different kinds of emotions that older adults feel when using/being introduced to a new technology or service; to understand the range of emotions; to understand each individual's personal experiences	Interview: structured and open-ended; participants personal notes; writing memos	Single case coding; cross-case themes; analyze interview notes and memos
R3: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?	To understand the factors involved that contribute to an emotional response with technology use; to understand how emotions and attitudes affect past and future technology use choices	Interview: structured and open-ended; email exchanges	Single case coding; cross-case themes

Data Analysis

I organized the information according to each individual case, with a final segment of the dissertation that addresses the cross-case analysis. I analyzed the data during and after data collection. I also wrote memos and made connections during data

collection, while also transcribing the interviews directly after each interview took place so I could begin to analyze the data during data collection. After data collection and transcription were complete, I analyzed my data from the interviews and documents collected.

After transcribing each of the twenty-two interviews, it was time to code, reduce, and sort the data (Sandaña, 2016). I performed two rounds of first cycle coding for each participant interview. For the first round of coding, I printed all of the interview transcripts and went through them one by one. I started with attribute coding, in which I logged essential information about the data and demographic characteristics of participants. Attribute coding is the notation of "basic descriptive information" that is usually at the beginning of a data set (Saldaña, 2021, p. 112). Then I performed some initial coding, highlighting phrases, sentences, and passages that stood out to me, while taking special note of emotion words that participants used. "Initial coding breaks down qualitative data into discrete parts, closely examines them and compares them for similarities and differences" (Saldaña 2021, p. 148). This initial read through and coding helped me understand what I would be looking for in the next cycle of coding. It also allowed me to gain more familiarity with the data and each participant case.

For the second round of coding, I went through each interview transcript three times, line by line, and I used three different coding methods described by Saldaña (2021). The first time I went through with descriptive coding, and used one word or phrase to summarize the basic topic of a passage. The second time I went through with

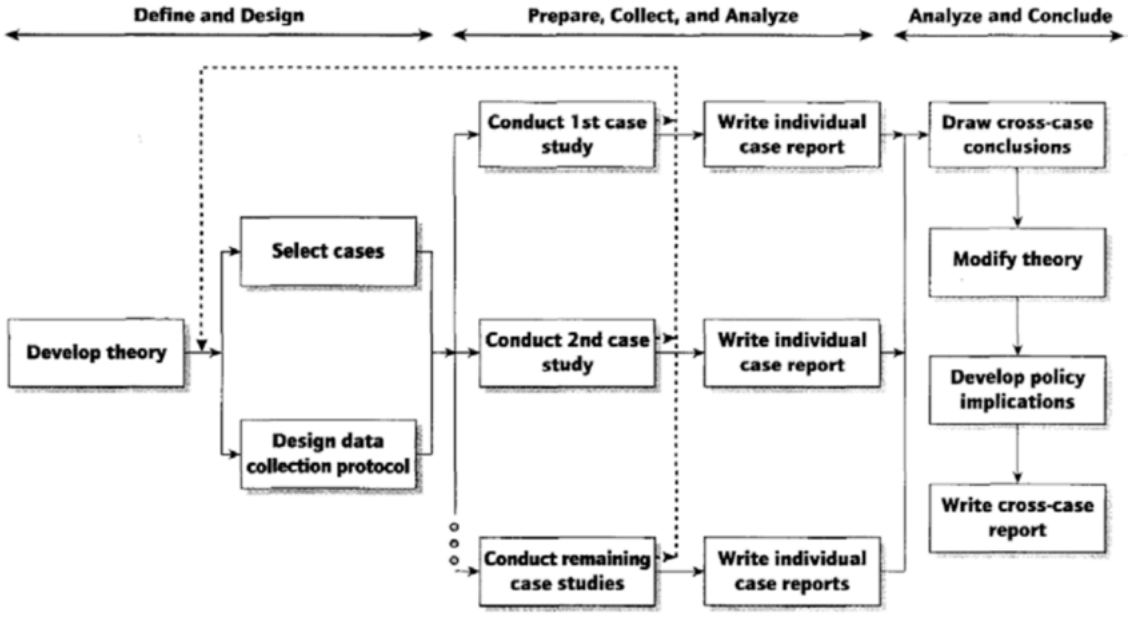
InVivo coding, in which I pulled out codes using terms and phrases used by the participants in quotes. InVivo coding has also been labeled as “verbatim coding” or “literal coding” (Saldaña 2021, p. 137). The third and final time I went through the interviews was for emotion coding, where I labeled the feelings participants experienced. I did attempt to use the participants' own emotion words, while also including some of my own interpretations of their emotions as I witnessed them occur.

After performing two rounds of first cycle coding, I moved on to second cycle coding, and specifically code mapping, which documents how the list of codes get categorized, recategorized, and conceptualized throughout analysis (Saldaña 2021, p. 285). First, I put all of the descriptive, InVivo, and emotion codes into a list. Then I organized those codes into categories. Third, I recategorized the categories with subcategories. Finally, I formed themes/concepts from those categories that helped explain and answer the research questions I have stated. In the end, I concluded with five major themes that respond to my research questions in a myriad of ways, and I will discuss those in the following chapter.

See Figure 4 for the multiple-case studies procedure I followed.

Figure 4

Multiple-Case Studies Procedure



Note. Reprinted from *Case Study Research and Applications: Design and Methods* (p. 58), by R.K. Yin., 2018, Sage. Copyright 2018 by COSMOS Corporation.

Validity

Validity is much harder to establish in qualitative research than in quantitative research (Maxwell, 2013). However, I worked to ensure ethical collection of data. First, I worked to remain aware of my own bias and reactivity as a public librarian and researcher. My own notes and memos proved useful here. Second, I triangulated my insights by using multiple sources of data such as interviews, observation, document review, and memo writing. Performing a meaningful multiple-case study meant that I

needed to collect and interpret data from all the sources available to me in order to accurately represent each case, which I have done. Third, I engaged in member checking or respondent validation by taking the information I gathered back to the participants and asking them if the data and interpretation was true for them and their experiences. I did this by staying in contact with the participants, communicating with them during and after the data had been gathered and analyzed, and then by asking them to look over the information and approve or clarify what they read. With emotions being at the forefront of this study, I certainly wanted to make sure that the participants felt heard and that their experiences were expressed and documented in ways that matched their interpretations and views. Fourth, I engaged with data collection until I felt the data was saturated. I felt confident with data saturation at the end of the twenty-two interviews. Fifth, I looked at my positionality and reflexivity by undergoing critical self-reflection regarding my assumptions, worldview, and biases. I did this by keeping a journal of my experience and reactions during the data collection process and writing memos for each interview. Sixth, I established an audit trail by keeping detailed accounting of methods, procedures, and decisions I made. Seventh, and lastly, I provided rich, thick descriptions of the participants and all the factors surrounding the interviews. These data collection strategies allowed me to bolster the validity of my findings to ensure the ethical collection of data and interpretation of that data.

Chapter 4: Findings

Introduction

Through this qualitative study, I explored the experiences that eleven different participants had with the introduction of ICTs and video conferencing services. The research questions that guided this study were:

R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?

R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?

R3: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?

On the whole, the participants offered a window into their rich experiences, their nuanced wisdom, and their countless successes in life. With these assets as the foundation, there are five themes that emerged from this study and the cases presented. In this chapter, I will introduce each theme and the participants that spoke to each theme in deep and reflective ways, letting the participant voices mix together around aspects within the themes.

Participant Profiles

Before the cross-case analysis, I will briefly introduce each participant as their own case. I will detail their age, education, career journey, and experiences with

technology throughout their lives so far. In the table below (Table 2), I provide an overview of the participants in this work, which includes their key characteristics as related to this study.

Table 2: Overview of Participants

Pseudonym	Age	Highest Level of Formal Education	Career	Technology Used	Reasons for Tech Use	Video Conferencing Services Used
Samuel	75	Associate (Drafting Engineering Design)	Fire captain	Smartphone, laptop	Information, social media, communication, watching videos, shopping, directions	Zoom
Kimberly	69	Bachelor's (Organizational Communication)	Manager of several companies	Smartphone, tablet, desktop computer	Email, information, shopping, financial, reading	Zoom, Google Duo, FaceTime
Bonnie	73	Master's (Education)	Elementary school teacher, high school secretary	Laptop, smartphone	Directions, information, communication, yoga	Zoom, Google Duo, FaceTime
Andrea	74	High school	High school secretary	Desktop computer, smartphone, tablet	Communication, finances, medical	Skype, Google Duo, Zoom, Medical VCS
Wyatt	74	Bachelor's (Human Resources Management)	Many jobs: computers, construction, business management, organic agriculture	Desktop computer phone	Email, communication, information	Zoom
Janine	74	Some high school (left in the middle of senior year)	Real estate broker	Desktop computer, tablet, phone	Information, news, social media	Zoom
Sadie	74	Two years of doctoral work	Social services	Laptop, phone	Communication, writing	Zoom
Eve	72	Bachelor's (Healthcare Administration)	IT Director in healthcare	Tablet, smartphone	Information, games, emailing, shopping, book clubs, medical	Zoom, Medical VCS

Pseudonym	Age	Highest Level of Formal Education	Career	Technology Used	Reasons for Tech Use	Video Conferencing Services Used
John	72	Bachelor's	Real estate broker (not retired)	Tablet, smartphone, television	Information, communication, work, research, shopping, medical	Zoom, Real Estate Association VCS
Karen	70	Master's (Community Health and Physical Education)	Middle school secretary; fire emergency business owner	Tablet, phone, desktop computer	Communication, reading, information	Zoom, Google Duo, Skype
Ramona	73	Some college courses	Office manager (accounting, bookkeeping)	Laptop, smartphone, television	Information, communication	Zoom

Table 2 shows us that the average age of participants was about 73 years old. The oldest participant was 75 years old and the youngest was 69 years old. In addition, eight participants were female and three were male, and all participants identified as white.

Samuel, 75

Samuel was one of the first participants I interviewed. For our first virtual meeting on February 2, 2021, he wore a white sweatshirt, black glasses, and his long gray hair in a ponytail. The deep lines in his face were a clear sign of a lifetime of smiling and laughter, of being in the sun, as well as being in stressful situations for his job. He set up for our interview in a small room and used earpods to hear. For our second meeting on March 10, 2021, he wore his hair up again, with glasses and a gray sweatshirt.

At the time of our interviews, Samuel was a 75 year old retired Fire Captain. He did not complete his formal high school education, but he earned an associate degree in Drafting Engineering Design. Samuel worked for Hughes Aircraft for two years drafting

radar site installations before he eventually got into the fire department, where he worked for 30 years. Twenty years into his career with the fire department, he also decided to teach fire academies at the community college level. It seems like he was required to use ICTs at multiple points in his career, which may have led to him embracing other ICTs during his life.

Kimberly, 69

At the time of our meetings, Kimberly was a 69 year old woman who wore a black long-sleeve top, glasses, and small hoop earrings during both of our interviews on January 26, 2021 and March 12, 2021. She had short white-gray hair and seemed confident in her age. She had a bachelor's degree in Organizational Communication, and the last job she had was managing several companies (ie. aviation department, cattle ranch, charter yacht, HR, insurance, health benefits, several small financial LLC's).

Kimberly claimed to be "so old," but she felt very young. She had all of the latest ICTs, like a smartphone, tablet, and computer, and she used these devices to email, perform internet searches, shop online, and track her life using spreadsheets. She was comfortable with ICTs to a point, and she was much more comfortable than others I know that were her age. She considered herself an "early adapter" of technology, which was a term no other participant used in their interviews.

Bonnie, 73

At the time of our interviews, Bonnie was a 73 year old woman who I interviewed on February 22, 2021 and March 23, 2021. For our first meeting, she wore a purple

sweater, light purple scarf around her neck, earrings, and had short gray hair. For our second meeting, she wore a magenta long sleeve shirt and a purple scarf around her neck. Immediately after meeting her over Zoom, I could tell she was a very kind and thoughtful person simply by the way she carried herself through the screen.

Bonnie possessed both a bachelor's and master's degree in Education. She was an elementary school teacher for almost thirty years, and her formal working career ended with a job as a secretary in a high school counseling office. Overall, Bonnie was a calm, kind, educated woman who I really enjoyed speaking to. She, too, was obligated to learn how to use ICTs because of her past career, and I find this theme running through so many of my interviews. Bonnie's most used devices included her smartphone and her laptop, both of which she used daily.

Andrea, 74

At the time of our meetings, Andrea was a 74 year old woman who I interviewed on February 9, 2021 and March 16, 2021. For both interviews, she wore a black shirt, glasses, and small hoop earrings next to her short white hair. Andrea struck me as a calm person who enjoyed a simple life. She was a woman of relatively few words, but her interviews were filled with concise tidbits of valuable information.

Andrea graduated from high school and started her career as a school secretary working with student services and special education right away, and she did that job for twenty-eight years. She said that she and her coworkers were "guinea pigs" when they began working with computers. At the time of our meetings, she used a desktop

computer, smartphone, and tablet on a daily basis to document her personal finances, communicate with doctors, and talk with her friends and family.

Wyatt, 74

At the time of our interviews, Wyatt was a 74 year old male who I interviewed on January 27, 2021 and March 15, 2021. For his first interview, he wore blue and white striped overalls and a red shirt. He had a full white-gray beard and the same colored hair. For his second interview, he swapped his red shirt for a blue one. Wyatt was an incredibly knowledgeable, reflective, and jolly man who I spent the most time with during our interviews. He had a questioning personality and seemed to truly understand how technology worked because of his background working in the tech industry.

Wyatt's formal education included two associate degrees, one in Trades and Industrial Technology and another in Adult Education, and a bachelor's degree in Human Resources Management. He had all kinds of jobs, some of which included working for Apple when the first MacIntosh computer was released, working for Nike when it was still called Blue Ribbon Sports, and teaching at several colleges and universities as a specialty teacher. When we talked in January and March of 2021, he was a farmer who specialized in organic agriculture, although he said he technically retired some time ago.

Wyatt used a desktop computer, a tablet as a hotspot, and a flip phone to communicate with people on a daily basis. He also mentioned that he knew a lot about technology, but that his knowledge was no longer current. "So I have a background in contemporary technology, but I don't have a lot of technical expertise that's up-to-date,

simply because I find no need to use it most of the time." Wyatt used the bare minimum technology he needed to get by.

Janine, 74

At the time of our meetings, Janine was a 74 year old woman who I interviewed on February 22, 2021 and March 23, 2021. For her first interview, she wore a blue shirt, and a navy blue wrap around her head. For her second interview, she wore a white shirt with a black and pink pattern and the same hair wrap from the first interview. Janine was both kind and funny, while at the same time projecting a deep voice with a tired disposition. She let me know in our email exchanges before the first interview that she was undergoing chemotherapy and radiation treatments for cancer. It was obvious from our interactions how much her diagnosis and treatments weighed on her physically and mentally. One would think that video conferencing services would be a huge benefit for her, but I had the feeling that she may have lost energy and enthusiasm for many things she may have previously cared about.

Janine's formal education ended in the middle of her senior year of high school when she got married and it "completely shut down any chance of further education" in her mind. She did, however, take some college courses for her employers over the years. She worked for a telephone company, where she says she received her "real education in technology." That was until she opened her own real estate brokerage business which ran successfully for twenty-six years, until her retirement. "So my education has mostly been

through the school of hard knocks and the adventures that you find living a life that is different from where you started."

Janine used a desktop computer, tablet, and a smartphone on a daily basis. Currently, she was no longer involved in many of the activities, like volunteering, that she was involved in before her cancer diagnosis. Janine was also a very blunt, tells-it-like-it-is person, with a flat affect in her responses to some of the interview questions. Janine was a very willing person when it came to learning how to use new ICTs.

Sadie, 74

At the time of our interviews, Sadie was a 74 year old woman who I interviewed on March 22, 2021 and April 19, 2021. For both interviews, she wore a red sweater and her short white hair combed. Sadie was funny, intelligent, and eloquent. I thoroughly enjoyed interviewing her because her words about ICTs and video conferencing services seemed to sum up many of the participants' own feelings. Sadie was aware of herself and her abilities when it came to technology. She had "antique experience with technology," which is a phrase I find somewhat endearing. Sadie was aware that learning how to use technology involved a lot of "detective work," but she still struggled to be that detective. Her self-described "short fuse" probably didn't help her here.

As far as formal education, Sadie had a bachelor's and master's degree, and she also completed two years of a doctoral program that she did not finish. Career-wise, Sadie built a career in social services and she worked in that field somewhere between

fifteen and twenty years. Her last job was as a part-time secretary for a church, but now, at the time of our interviews, she was spending her time writing and publishing articles for organic-oriented publications as she and her husband were now farming.

Sadie used a laptop to write with, a tablet for a hotspot, and a flip phone on a daily basis.

Eve, 72

At the time of our interviews, Eve was a 72 year old woman who I interviewed on March 8, 2021 and April 20, 2021. She had short gray hair, wore a gray shirt for the first interview and a light blue shirt with a pink pattern for the second, and earphones. Eve was a kind, quiet, and calm woman who I enjoyed speaking with.

Eve had a bachelors in Healthcare Administration, and she worked for thirty years in healthcare, most notably as the director of the IT department at a not-for-profit, Medicare Advantage, health maintenance organization. Although Eve was the director of an IT department for 30 years, she had little experience with technology like those she supervised. This is noteworthy in that many jobs in this country require experience to move up into a leadership position like director.

She used a tablet and a smartphone on a daily basis to search the internet, play games, email family and friends, and shop online.

John, 72

At the time of our meetings, John was a 72 year old man who I interviewed on March 8, 2021 and April 20, 2021. For our first meeting, he wore a navy shirt, glasses,

and earphones. He was mostly bald with some white specks of hair, and a light, short mustache and beard. In our meetings, it was obvious that he valued efficiency as he was still very busy with work. For our second meeting, he wore a magenta shirt, as well as his glasses and earphones.

John did not want to share about his past in great detail and he did tend to be concise and to the point with his answers. He told me that he took about 140 credits of college throughout his life and that he had been and still is a busy real estate broker. Because he was still formally working, he used multiple technological devices daily such as a computer, tablet, smartphone, and television.

Karen, 70

At the time of our interviews, Karen was a 70 year old woman who I interviewed on February 4, 2021 and March 15, 2021. She wore a gray sweatshirt over a black shirt and glasses next to her short white hair and bangs for both interviews. My first impression of Karen was that she was kind, positive, funny, and generally a happy person.

Karen had an undergraduate degree from a university in Colorado and a master's degree in Community Health and Physical Education from the University of Oregon. She had many jobs including bartender, dishwasher, cook, middle school counseling center secretary, and business owner for a fire emergency business in which her company sold the red buckets that helicopters dump over areas dealing with wildfires. Karen clearly had a lot of working experience with all sorts of jobs.

On a daily basis, Karen used a tablet, desktop computer, flip phone, and a smartphone.

Ramona, 73

At the time of our interviews, Ramona was a 73 year old woman who I interviewed on February 26, 2021 and March 29, 2021. For our first interview, she wore a red and white striped shirt, turquoise dangly earrings, red lipstick, and she had fiery red hair. For our second interview, she wore a black shirt and a green hat with a sparkly "Las Vegas" written on it. Ramona truly made me laugh. Her energy, excitement and humor were wonderful to experience.

Ramona graduated from high school in Kansas City, Missouri and then she moved to California where she took some college courses, although she did not earn a degree. She started out her career as a billing clerk before moving to accounting, bookkeeping, and office management. She "fell in love with numbers" early on and followed numbers for the rest of her career.

She used her phone and her laptop daily, and she enjoyed watching television with her phone by her side so she could look up new information about the people, places, and events she watched. Ramona loved gathering new information and this fact led her to accept and be grateful for ICTs, especially the devices and software that she used to connect with those around her.

Cross-Case Analysis

In the section that follows, I address the five primary themes that emerged through my interviews with the participants. First, however, I must emphasize the tremendous wealth of experiences each participant brought to our conversations. Each of the eleven participants, in their own way, offered remarkable evidence of their life-long tenacity, willingness to learn, and history of success and fulfillment. It is upon this remarkable foundation of insight and lived experience made clear by each participant that I offer my findings from our conversations.

As such, Table 3 below illustrates the code mapping process that allowed me to go from codes, to categories, to themes. The table also includes what research questions are answered by each of the five themes. This cross-case analysis is organized by the final five themes that resulted from the code mapping process. While each of the twenty-two interviews focused on the individual research questions, I created themes across interviews and the data from each research question emerged from two rounds of interviews. I divided themes among the three research questions.

Table 3: Code Mapping

Codes	Categories	Themes	Research Questions Answered
Older versus younger adults Society dismisses older people Cost matters Fear of technology Isolation Frustrations with technology Nature versus technology Memory issues	Barriers associated with aging	Theme 1: Challenges or problems with ICTs led to feelings and sometimes expressions of frustration and avoidance of technology in	R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically? R3: To what do the older

Codes	Categories	Themes	Research Questions Answered
“Operator errors” Resistance Connection issues Lacking skills and knowledge Tech avoidance Technology is constantly changing Comfort with tech takes time Tech jargon Privacy Connection versus privacy Everything refers you to technology	Technology challenges or problems lead to emotional responses	older adults	adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?
Medical Online shopping Banking Communication Obligation Career choice COVID-19	Reasons for technology use “Forced” into using technology	Theme 2: Career choice or COVID-19 required older adults to use ICTs and video conferencing services	R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically? R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services? R3: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?
Social aspect Body language Conversation Etiquette	Technology and video conferencing services as a tool	Theme 3: ICTs and video conferencing services serve as	R1: How do the older adults in this study describe and explain their experiences learning how

Codes	Categories	Themes	Research Questions Answered
Convenience Right equipment Modes of communication Common connection in the present	 Communication or connection	a tool to help older adults connect while aging in place	to use ICTs in general and video conferencing services specifically? R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?
Learning style Learning curve Problem solving “Trial and error” “Learn by doing” “Guinea pigs” Try “Detective work” “Play with it” Experiment Attitude Mindset Openness to technology	Learning	Theme 4: Learning how to use ICTs is trial and error	R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?
Support Family Friends Guilt asking for help Self-sufficiency Sharing knowledge	Help/support from family, friends, or other source Shares knowledge with others	Theme 5: Having access to support with ICTs from family or friends is important	R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically? R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services? R3: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video

Codes	Categories	Themes	Research Questions Answered
			conferencing services?

Theme 1: Challenges Led to Feelings and Frustration

The first theme to emerge was that challenges or problems with ICTs led to feelings and sometimes expressions of frustration and avoidance of technology in older adults. This emerged as the most important theme that answered Research Question 1: "How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?" as well as Research Question 2: "What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?" This theme also offered insight into Research Question 3: "To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?" Six participants spoke to this theme of challenges leading to frustration in complex ways.

Feelings and Frustration

When Samuel had to transition from teaching in-person fire academy classes to Zoom classes, he tried to run in the opposite direction of technology:

> When I was teaching, when I was doing the Zoom classes, once I understood it… I was very apprehensive when I had to learn how to do this, I mean, at my age. And avoiding technology to that extent, I avoid it like the plague. And then when

> I really had to do it, once I was comfortable...I only ended up doing six classes. And that was the end of the semester, and I had already decided to retire from teaching that semester. So it was one of those, "Do I really have to learn this and do it for six classes?" And they said, "Yeah, you do." And I did. And I'm glad I did. I impressed myself. [My wife] couldn't believe I put it together and it actually worked. Because I'd be sitting at the computer yelling and screaming and using profanity. 'What am I doing? I don't have any idea!'

Samuel used words and phrases like "apprehensive" and "avoid it like the plague," which were clear markers of his feelings about technology. His frustrations later appeared as he was trying to set up his Zoom classroom for the first time, and he admitted to cursing and saying he had no idea what he was doing. The issues that Samuel had with his Zoom classroom led to strong emotional responses in front of his wife. I got the sense from Samuel that he was not proud of the way he handled himself while learning how to use Zoom to teach, but he seemed to be more aware afterwards that he could figure things out on his own with practice.

Sadie also dealt with feelings and frustrations, and she was perhaps the main participant who communicated her frustrations and issues with ICTs so clearly through our interviews. From trying to sign up to get a COVID-19 vaccine to attempting to participate in a poetry class on Zoom, she detailed nothing but problems in her interviews. And those problems led to multiple emotional outbursts.

The first situation she discussed had to do with the COVID-19 vaccine rollout:

> I get frustrated with the COVID vaccine rollout where there's this supposed website and supposed phone number blah blah blah. I think it has been a complete disaster. And I'm sure if you were interviewing [my husband] about me and my technology approach, he would probably mention that I have a, I just, I think, let's see, what's an example? I got a couple poems accepted into a book that came out last month and the organization sent out an email to all the authors who put stuff in saying here is the link to...purchase copies. We were sent a free copy as contributors and then, you know, here's the link if you want to buy more or your friends want to buy some. It didn't work at all, and I probably got a little bit heated.

Following this part of the conversation, Sadie interrupted herself to tell me that she got a pop-up on her laptop telling her that her internet connection was unstable. Before continuing, she told me that she "will rely on you to reconnect if it goes away… cause I don't know how to do that." She seemed afraid that she would not be able to fix the issue on her own, so I comforted her by letting her know I would re-establish the connection if it were lost.

Sadie continued,

> But to learn a new piece of software is very challenging for me, and to run into things that don't work drives me crazy. Whereas [my husband] is much more likely to work his way through the logic of a problem. You know, do I need to call

> some sort of support? Do I need to try something different or poke a different button? And I just go kind of right into… angry.

Sadie talked about her "short fuse," how she "probably got a little bit heated," how learning new software was "challenging," and how she went "right into...angry" when she couldn't figure out her next step. Even while Sadie was sharing these things with me, I could feel her anger and frustration through the screen as she recalled her experiences. This was a woman who wanted to try to incorporate technology into her life, but she felt as if she was going in with limited experience and with a patience level close to zero. By the end of our second interview, she still had not been able to figure out how to sign up for a COVID-19 vaccine and I truly felt her despair. After trying multiple times, she gave up, like many others in her situation probably did as well.

Later, I asked Sadie about one piece of technology she used most frequently:

> And the phone, I'll hold it up for you [flip phone]. That's my un-smartphone and I'm frustrated with it, but I'm not willing to buy… I mean I don't even know what smartphones cost…What I don't like the most about the phones is the time delay in talking. I find talking over people...it's hard to avoid and really frustrating and I just, it makes me unhappy. So I don't do a lot of phone calls, but it is a handy way to reach somebody. You know, for long chats, it kills the relationship a bit. And I try to avoid Zoom whenever possible.

One of the more frustrating experiences for Sadie was when her in-person poetry class was moved to Zoom due to the pandemic.

> Oh that's right, I didn't mention that I had taken a poetry class live before COVID hit. I had really enjoyed it and I met people there who I'm still friends with and it really was a wonderful piece of my life and then COVID hit. And they put the class on Zoom, and I found it completely went dead emotionally for me. It just...there wasn't any of that energy of personal connection and the teacher seemed to have lowered her standards…it was a waste of time so I quit. And that was too bad, because it was one of my, you know, one of my fun social things, and of course, COVID has killed a lot of those.

Sadie continued to talk about her Zoom poetry class experience in her second interview:

> But that class I was a part of for several meetings really was very irritating. I mean, you want feeling words, so I'm looking for, you know, gee whizz I wanted to poke somebody in the nose kind of thing. 'Cause the teacher hadn't gotten wised up about Zoom and so she wasn't able to be an effective leader, and you know, we talked over each other, people talked while they were muted. People would have the camera aimed at the ceiling or under their chin or, you know, it was just...if you can think of a list of things to do wrong on Zoom, I think we all did them… I thought she was leading us, I guess I don't know maybe she thought someone else was. It seems like the participants all have to have some introduction to, almost like, etiquette. You know, like you don't pick your nose or eat chips and you know pick up the phone with your microphone going and take a phone call…it was really just very irritating and I didn't find the class, probably

because those irritations, the class wasn't much use either. It was distracted and I find writing works best when I am not angry!

She then expanded on aspects of Zoom etiquette. Just like there is accepted etiquette in work meetings and in school classes, video conferencing services are also more enjoyable for most participants when participants pay attention to this. Zoom etiquette refers to things like having your microphone muted when not speaking, paying attention to the teacher or speaker, raising your hand before talking, and not having a distracting background.

You know, I wasn't the one who was eating peanuts with my microphone unmuted. I did find that the lack of the teacher's technological savvy meant that no one was riding herd on the participants, and so people were floundering around with cameras too close or too far away or aimed at the ceiling and muted or unmuted, it was too chaotic and it was kind of insulting really, to not have the group all have some joint understanding of what we were doing. You know, anyway I was angry with the management, or unmanagement, of it…

It was clear to me that Sadie valued formality and structure. She had a history of being a hard worker who expected the same from others she chose to be around. In her eyes, Zoom etiquette felt important because it helped others focus and participate in a more useful and robust way. It is difficult to listen to what someone is saying while someone else is crunching on a bag of chips in the middle of the lesson. While etiquette

was mentioned by other participants, Sadie was the one participant who truly believed it was necessary to successfully run a Zoom meeting.

Her final words about the class were, “I dropped out after, I think, maybe after the third session because it wasn’t getting better...so I just bagged it. You know, it wasn’t working for me.” Sadie was incredibly negative and critical of Zoom, her professor, and her classmates. Transitioning from an in-person class to a Zoom class can be difficult under normal circumstances, and perhaps especially so during a global pandemic as an older adult who does not use a lot of technology. She talked about how the class “went dead emotionally for me,” noting that,“it was a waste of time so I quit,” and that the class was “very irritating,” so she “wanted to poke somebody in the nose kind of thing,” and repeated, “it was really just very irritating.” Sadie gave the class a chance, but the challenges she was having to deal with outweighed her willingness to stay in the class, and Sadie pushed technology away in the process.

Similar to Sadie, Kimberly was aware of her capabilities when it came to technology. She made a good point of how she felt connected when she used Zoom with family but that she felt disconnected when she used Zoom for work meetings. Seeing family and friends over Zoom because they were far away felt like a connection because she wouldn’t be seeing them otherwise. She got to see their body language while listening to their voice at the same time. However, for Kimberly, Zoom in a work setting felt different. She knew everyone was close by, so in pre-COVID times, they could meet in person. But with COVID-19 an ever-present threat, many workers had to meet via

Zoom with their coworkers who might have been in the same building. Technologies like Zoom are certainly convenient when worldwide pandemics are at play, but depending on the reason for using a video conferencing service, one might feel connected or disconnected.

Kimberly was more comfortable with technology than many other older adults around her age, but that did not stop her from having feelings of frustration.

> I feel pretty comfortable with most technology and find most of it to be fairly intuitive, but there is a frustration with the constant change. So you get one thing down and then it needs an update. And then the update doesn't work and you don't know what to do, and lack of help… I actually give kudos for Apple, even though it can be difficult to schedule appointments...I give kudos to them for the Genius Bar, because there is actually a place to go to ask questions. Versus trying to call some place, trying to get an answer, and just getting an automated voice attendant and/or going online and getting a chatbot that will just, "What can I help you with?" Yeah.

Even for someone who happened to enjoy using technology for different reasons, Kimberly dealt with the same frustrations and issues that plagued other older adults. She was confident in her ability to troubleshoot issues or to ask for help when she needed it, and it was that confidence that allowed her to continually adopt new ICTs for everyday use.

Like Kimberly, Bonnie used many different ICTs on a daily basis. Bonnie was an open individual who prided herself on wanting to try new things and doing just that when the opportunity arose. However, even Bonnie had to deal with multiple challenges with technology and she shared a few of those instances with me.

> I did try to switch a Google Duo meeting from my phone to my laptop, and I got to a certain point and I could never get the audio on my laptop that I had on my phone, so I essentially gave up trying. With that conferencing I tried to get the support online, like go to the support, like how-to for Google Duo, and I just, I couldn't figure it out. So I revert back to my phone.

Here we see one instance in which Bonnie could not figure out how to use Google Duo on her laptop. She proceeded to seek support online, but even then, she could not figure out how to fix this issue she was dealing with. So, what did she do? She gave up trying to use Google Duo on her laptop and instead she reverted back to using it on her phone.

Later, Bonnie attempted to explain why she reacted the way she did when Google Duo did not work on her laptop:

> I think we tend to be perhaps overwhelmed because people like you have grown up with it from the very beginning; it's second nature. Just as it is not really second nature to us older people. And yeah, but I think if you're willing, it's all in the willingness to try it. It's easy to get frustrated for people. They just don't

understand it, and I think sometimes we don't really have to understand it. Just follow the steps.

Bonnie used words such as "overwhelmed" and "frustrated" to explain how she and other older adults felt when learning to use technology. These two feeling words were repeated in many of my conversations with participants, which told me that these feelings were common. Bonnie later said, "And I think what they're [older adults] fighting is not really the reality of the conferencing tool. I think what they're fighting is just technology. It seems like a stumbling block for a lot of us." Technology is certainly a major stumbling block for many older adults because they did not grow up with technology like younger generations are right now.

Resisting Technology

As noted previously, all participants in this study revealed tremendous evidence of their previous learning, persistence, and willingness to continue to strengthen their skills. However, in spite of this incredibly robust base of experience, there were times when resisting technology was part of the narrative, as well. For example, in the late 1970s or early 1980s, Samuel was first introduced to technology in his work as a captain via a "little black box they put on my desk." What he was referring to was a computer. He was told repeatedly by his bosses, "It will make your life so easy!" His fire reports used to take him an hour to write using pen and paper, but the first report he wrote on a computer took him four hours. Samuel believed learning how to use the computer was difficult

because he saw himself as a terrible student in school and had a difficult time learning material during those years. He resisted technology for a long time. Samuel said,

> And it's, you know, I put it off, I put it off, I put it off, because I just kind of looked at it interestingly, you know, what goes on with all this technology stuff, and I went, 'This is just too much for me, to even bother with.' So I stuck with in person classes and that worked out, you know, very well… Until the very end, when I decided to quit, and they decided to make things change when COVID showed up.

Samuel spoke candidly about how he resisted technology at different points in his life and career. His negative experience using a computer at the fire station certainly led to his later avoidance of technology when it was put in front of him. "I put it off" and "This is too much for me" were phrases he used to show his level of discomfort with technology and ICTs. That discomfort continued to emerge for Samuel in other situations related to technology, as well.

For example, he talked about his experience with Google Maps after he moved from California to New Mexico recently:

> Google Maps...when you move completely into a new area, you have no clue where you're going… I resisted Google Maps for a long time and [my wife] uses it all the time. So when we're together, she'll bring it up on hers and we won't get lost. But I use that...you know since I moved here [New Mexico], I use it a lot!

Samuel's reasons for resisting certain ICTs, like Google Maps, he didn't explicitly mention, but I did get the sense that he simply did not have the patience to keep learning how to use new technologies. At the time of our interviews, he was officially retired, from both his career as a fire captain and as a fire academy teacher, and he wanted to live a simpler life. However, with his daughters and grandchildren close by, they were teaching him how to use his smartphone in more sophisticated ways, and they were opening his eyes to all the different things it could do.

Sadie also resisted technology because of her experiences with her Zoom class, which turned her off to other Zoom meeting opportunities. She explained,

> So when other people have sent me invitations I kind of avoided even signing on… So I keep getting these invitations and I don't join...it's partly COVID and the life that I've lived for so many months has so little going on, and one of the groups is meeting around fiber art and I haven't touched fiber during the entire COVID year. I don't know what happened with that, I just wasn't interested. And so I feel like I don't really have anything to share with them, and the writing group is still going, and somebody checked in with me recently about if I was gonna sign up again. And it was an email, so I just emailed back and said no. And this is again not Zoom direct. It's more a combination of Zoom and COVID.

Later in her interviews, Sadie continued to talk about her avoidance of technology. "I think I could easily wash up on a deserted shore technologically if [my husband] weren't around. I just, would probably just give up at some point and say, 'Too

many things need to be updated.' I get notices that software needs to be updated or needs to be deleted and I sort of ignore them." She then said,

> I'm dreading the day that my current laptop needs to be replaced, because the idea that you can improve something for a person like me, you know, in terms of software, it's not true. Every little improvement that some programmer makes sends me into a tizzy 'cause I don't quickly pick up on what it is they've done. And so it frustrates me and makes me angry and, you know, that's that.

Sadie made a great point that she did not need nor was she excited about new devices, new software, or new games, as opposed to some others. Each and every "little improvement" can lead to more confusion and frustration for older adults. It can be difficult to keep up. And for someone that values privacy and caution on the internet, new is not always better.

Bonnie also voiced ideas about how personality may play a role in the ways older adults respond to challenges with and resistance of technology. She explained:

> No, I think it's more the personality. I really do… I have a friend who does the same thing, she said, 'No, I used my technology when I was at work, and now I'm retired. I was tired of using that computer.' Well, guess what? She's lost in the dust. She can't communicate with… she doesn't text, she doesn't communicate with technology, and with COVID, she's isolated.

Bonnie's story about her friend choosing to avoid ICTs like her computer after retirement was an interesting one. Her friend chose to be "lost in the dust," but at the

expense of what? Her friend was choosing to no longer have access to her friends and family unless she saw them in person. This friend chose to isolate herself because she would have rather been alone than use ICTs to communicate. I can't say for certain what specific challenges or issues this friend experienced with the ICTs she used at work, since Bonnie's friend was not a part of this study, but I can ascertain that those issues were clearly frustrating enough to lead her to nixing technology altogether.

Before we move on to the next case, Bonnie made a good point about how everything refers us back to technology, which makes life difficult for those attempting to resist or avoid technology. She spoke about an issue she had with Comcast,

> Every time you try to solve something or to get information, the people always refer you to go online. They always refer you to go to technology, like that's your go to. And I want to say to them, you know, the reason I'm calling is because I've been online and I can't...I need help. I don't want to get the information...it's [the reason for calling] because I can't get it online… And what's wrong with just talking to the people? What's wrong with it? It makes it feel like a course and you can't get the answer unless you go online… I've tried everything online, but you can't always get your answer. And what's wrong with a little customer service?

Extending her idea about the ways technical support has generally moved online, Bonnie noted, "Technology is such a part of our lives now." Once you start using technology, it is almost impossible to go backwards or to go without. Everything you do refers you to technology. Do you need help with your Comcast account? Go online. Can't find what

you're looking for? Call someone and they will tell you to go online. "And what's wrong with a little customer service?" Bonnie had a great point here, which is why I think she didn't mind trying to learn or asking for help. People she knew, however, felt guilty asking the same people in their lives over and over for help. This makes me sad, that older adults feel valued until they need help. Older adults really need someone around them who can be patient, kind, and reassure them when it comes to learning how to use new technologies. That is a part of what matters to them. I will discuss the need for this kind of support in more detail in the next chapter.

Like Bonnie, Karen had a positive outlook and attitude on life which was refreshing to witness. However, she still experienced negative emotions while learning how to use video conferencing services like Zoom. Karen repeated the words "frustration" and "frustrating" several times. She said, "But, so as far as Zoom, I felt good about downloading it… The frustrations came when I, like today, I hit the wrong, I still hit the wrong buttons to do the mute and the video." Karen then talked about how she enjoyed using Google Duo, another video conferencing service, as well. "Now, the frustrating part is I tell people, 'Hey, we can Duo.' So they have, most of them, they have iPhones. Well I've only had three people who want to download Duo." Karen's frustrations had to do with hitting the wrong buttons on Zoom and with her friends not wanting to try other video conferencing services like Google Duo. The difference between Karen and other participants who dealt with frustrations due to technology issues was that she was willing to try again. She did not let her negative feelings get in the way

of solving the issues she faced. I admired her attitude and her knowledge about her own abilities. Issues did not get in the way of her using technology. She simply worked to overcome them by trying again.

Finally, one of the reasons Andrea resisted technology was because of the tech jargon she confronted every day. Tech jargon was a primary barrier to technology use for many older adults besides Andrea as well. There are countless devices, software, and ways of using technology that the average younger adult can have issues with understanding. Technology jargon certainly does not help older adults with understanding how to use new technologies, so it may seem as if we are setting older adults up to fail with technology. Andrea said, "...the language should be easier for older adults that don't have that technology training." She also said "...trying to work with say telephone companies and cell phone companies 'cause sometimes they are more technologically above me. So sometimes it's hard to understand what they're trying to tell you to do or they don't understand what I'm asking." Communicating a technology issue can be very difficult for older adults who do not have the vocabulary that those in the tech industry use.

Many older adults need help with technology, yet they don't know what questions to ask. Getting help from someone can only go so far if the person needing help doesn't understand what they are asking and/or doesn't understand their device and its parts. So what do we do? Technology is a tool, which Andrea mentioned like some other

participants. If we want everyone to have these tools, how do we fix this broken system that can leave older adults confused and hesitant to try other technologies?

During our first interview, Andrea and I had some issues connecting due to sound trouble on both ends. We ended up leaving the meeting and rejoining without any issues, which was obviously a simple fix. It is worth noting here that Andrea did not panic or decide to quit altogether. Instead, she did the oldest trick in the book with me, which was to turn off whatever was not working and then turn it on again. This issue could have led to an emotional response or feelings of frustration, but Andrea stayed calm and we were able to resolve the issue quickly. Unfortunately, many older adults are quick to react to issues, and sometimes those negative reactions or feelings can lead to quitting technology altogether.

Cost

Each participant in this study brought experience in being thoughtful with their finances, particularly given that each of them had lived through various financial contexts as the money landscape in the US has changed through the years. In speaking to the ways money may play a factor in ICT use, Sadie mentioned how cost prevented her from buying technology, so that was one reason she still used a flip phone. Cost can certainly be a major barrier to older adults adopting more technology. Sadie then mentioned how the time delay in talking over the phone frustrated her and made her unhappy. "...it kills the relationship a bit," as did Zoom, in her eyes. Sadie was fed up with technology issues

and she subsequently avoided the more modern forms of technology as much as she could.

Sadie demonstrated tremendous awareness of her attitude toward technology and the barriers she confronted on a consistent basis. One of Sadie's final emails to me came on April 22, 2021. She wrote,

> I've had a follow up thought about old folks and technology, and it goes beyond zoom. I'm probably not the only 'mature adult' who is hesitant to get into new stuff, like smart phone, U-Tube [YouTube], podcasts, Ted Talks, and even Facebook. Who knows what I and others like me are missing because we're not sure A) how to access any of these, B) why I might want to, and C) how to evaluate the risks that I hear about in terms of exposing personal data. I even wonder if I'll find I need a newer car and get lost in all the gadgets I'm not familiar with.
>
> Also, as I think about having to eventually replace my aging laptop, I wonder what pieces of technology I might benefit from, esp. when cost is an issue. I'm lucky to have a tech-savvy husband, but others must be out there feeling increasingly isolated and/or out of it.

Sadie's final thoughts were profound. She acknowledged that her hesitancy, misunderstanding, frustration, and fear of technology acted as a blockade to her using ICTs that could very well have helped her in her life. I could feel her overwhelmedness with the fact that everything, even cars now, incorporates technology in some way for

use, and the more technology in the world, the more isolated Sadie felt because she did not find that learning how to use technology was intuitive or worth the struggle sometimes. Sadie did use certain ICTs on a weekly basis, but her feelings resulting from the situations in which she had to learn to use technology certainly led to her avoidance patterns.

Privacy Versus Connection

Sadie offered many thoughts on privacy versus connection and how these two terms worked against each other in her life.

> And I think sometimes there's an element of exposure on the internet that has caused me to be very cautious. I opened a Facebook page when it was first hot and I went on a friend's page, just to see what an active page could look like, and I was really turned off and I don't know if other people have this reaction, but I felt it was like writing your information on a public bathroom wall and other people would come along and put stuff up, and you know, there was nothing offensive there, but it was a bunch of meaningless twaddle as far as I could see… I think he had a book published and he had like 25 comments of like, 'Oh great,' 'That's great,' 'Yay, good for you,' blah blah blah. Well, I mean, okay. He wanted to build a presence online and so I guess that's what authors who want to build a presence do, but as far as for me, it was more for connection and relationship, and I felt a combination of both exposed and unconnected, which didn't seem like a

> very good combination. And so I just shut my page down and said, "Hasta la vista."
>
> It would be handy to figure out...somebody was telling me about Facebook Marketplace, which I've never even tried to find cause there are things that I might like to be able to sell in some fashion. But I'm put off by scammers, which, you know, might never have anything to do with me, but, you know, if I were gonna sell things then maybe you gotta have a PayPal account or some other, you know, technologically friendly account, and I don't quite know how to even evaluate the risks then, so at the moment I'm just holding off.

One of the many reasons Sadie avoided technology was because she valued privacy. It is almost impossible to maintain a level of privacy when using technology or social media, for example. In an email to me on January 9, 2021, Sadie asked me for "an assurance that people won't find my face on the web somewhere, publicly available. I don't do social media and would prefer to have my privacy somewhat protected." Once again, we see that Sadie was willing to step out in the digital world and to try and learn, but that only got her so far. Sadie already had it in her head, though, that she did not like, need, nor want technology or social media, partly because of the privacy issues involved, and partly for other reasons beyond privacy. Sadie also mentioned,

> I have had friends who have become, truly, just astonishingly, addicted to games on their smartphones and I will look at them like they've landed from another planet. I can't picture where the world would have gone for me to be sitting and

> poking buttons on my phone all day long. I just, it astonishes me. I would rather sit and count flecks of dust on the table, I think.

She continued on by saying that she valued "nature more than technology," and that was yet another barrier in her mind. And all of these self-made barriers in her mind caused her to stay distant from technology. Sadie was aware of this barrier in her mind, which was made evident through this part of our conversation:

> Sadie: I think they [technology] were built and designed, maybe by and for, people who can pick up a smartphone and use it right away. That's what it feels like to me. It feels like there are barriers that are kind of intrinsic to me and at least some people in my generation and anybody else that's not already fluent with technology. And I think some of us are just more easily frustrated by it. There's a little interaction that happens when you aren't particularly good at something, at least for me and some other people. You can sense that you're not gonna be able to pick this up instantly, and it kinda makes you mad. And then you make a mistake and then you get madder, and pretty soon you shut down all your ability to learn anything and then you drop out of the class.
>
> Marisa: Yeah. You're right. There's a lot of stuff I can learn really quickly and then there's also a lot of stuff I don't learn quickly. But my brain makes that decision for me early on, so if I think this is gonna be hard, it is gonna be hard because my brain tells me that.

> Sadie: Right. Before the COVID mess, I used to occasionally teach people how to spin [yarn] and it's completely different than the Zoom stuff. But you have a spinning wheel in front of you and a handful of unspun yarn or wool, trying to turn it into yarn, and initially it's almost impossible to do. Your hands don't know what to do, your feet don't know what to do, and you end up making a mess. And if, at that point, your mind says *oh this is never gonna work*, then that's the last you'll do. I've had that happen. It's frustrating, and I didn't know how to get past that.
>
> Marisa: It's hard, oh my goodness, it's so hard.
>
> Sadie: As soon as a student makes that decision, it's true.

Similar to the ways Sadie talked about connection being important to her, the concept of connection came up multiple times in my interviews with Kimberly. Kimberly yearned for that face-to-face connection, and during COVID, she relied on video conferencing services to communicate and connect with her friends and family. Technology was a "gift" to her and it excited her and made her want to learn more. Kimberly's attitude toward technology was much more positive than Sadie because she was comfortable learning how to use new technology.

Kimberly talked at length about how she was feeling the pain of no connection when the pandemic first arrived in the US. "And then Zoom...with COVID...it was just a

necessity. We couldn't go anywhere or do anything. It was the only way to get a meeting done." While clearly appreciative of Zoom, she also talked about how video conferencing for personal reasons and for work reasons were two different beasts.

> When they are personal, like with family or friends, there's a sense of relief and connectedness. You walk away with a smile and it feels good. When they've been for work, there's a sense of disconnectedness. Like those people on the screen aren't real… You have no other context with that specific group at work there. Talking specifically, when you're normally in a work situation, there is a social aspect to it. And you get to ask, you know, how was your weekend and you get to have those one on one conversations. You don't get to do that on a Zoom meeting for work. It's not the same.

She continued to talk about this disconnectedness when I asked her what she did not like about video conferencing services:

> Again, generally, that feeling of being a little bit disconnected. I've been in Zoom meetings where some of the people have their camera on and some don't. And you don't really know who you're talking to. And if you look at a gallery view, you can see everyone's faces, but it's not necessarily close enough. And if you look at just the speaker view, then sometimes somebody pops up that's not saying anything and you're missing people's reactions. So I don't like that you don't really have that chance to understand body language. One on one like this is fine. When it's in a group Zoom meeting, it's very difficult.

Staying connected was extremely important to Sadie and Kimberly, but privacy concerns got in Sadie's way of staying connected throughout the pandemic. Kimberly, on the other hand, stayed connected, but she did not necessarily feel as connected as she would have liked to.

Theme 2: Career Choice / COVID-19 Required the Use of ICTs

Although many of the participants in this study had retired from formal employment, all could draw upon their varied and rich histories of work, both formal and informal, that had prepared them to face fresh challenges like using ICTs. This history of work offered a remarkably nuanced set of assets that primed the participants for the need to nimbly (or as nimbly as possible) make the transition to using ICTs and video conferencing services. As such, the second theme to emerge was that career choice and/or COVID-19 required older adults to use ICTs and video conferencing services. This is another important theme that answered Research Question 1: "How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?," and Research Question 3: "To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?" Six participants spoke to this theme in deep ways.

Early Career Choice

With more technology comes the need for more technology. Andrea seemed to understand this better than others. "I mean, we're getting the hang of it and I've

discovered that I think I need even more technology because I got a new tv so it even uses, you know, communication technologies." For example, when the COVID-19 pandemic hit, school and business had to move online. All of a sudden tablets and computers were not good enough. In order to participate in class or business meetings, everyone needed a camera and microphone. Some devices come with those built in, but many people had to quickly buy webcams and software that would support video conferencing services.

But even before Andrea was required to use video conferencing services, she detailed her experience when computers came on the scene at her job:

> Well I think we were guinea pigs with starting with computers, especially with…tracking student attendance… I started learning on a Mac, which kind of was more confusing. Cause everybody else was using Microso...you know, the other...other things. So it was confusing. But then I moved, after we got the attendance situation with the Macs going, I also moved on a higher level to the district office, so then I started working more with Microsoft Word, Excel, little PowerPoint. So I've had to learn over the years, after computers started coming on the scene…

Andrea mentioned the term "guinea pigs" to describe what she and her co-workers felt like when being introduced to computers at work. Andrea and her coworkers had to experiment and test the new technology out with little to no direction. She was required to learn how to use computers and different kinds of software as an

essential aspect of her work, and the learning process took years because of the lack of direction from school leadership. Later she mentioned that her comfort level with technology was as a result of being "forced" into learning how to use technology:

> Well these days I'm a lot more comfortable, I guess probably because I was forced to learn back in the late 70's, early 80's. So I think as it has evolved like having to deal with telephone companies, tv, you know I'm more comfortable there having to deal with those issues and getting a phone set up...tv situation set up, so having learned that years ago, I'm a little more comfortable…

It is clear that the way Andrea was introduced to technology, like a computer, helped her later in life when she wanted to start learning how to use other ICTs. She used the term "comfortable" several times, which goes to show that she felt capable of her abilities to learn how to use devices and software that may have been new to her. Her attitude toward ICTs was much more positive than other older adults in this study.

Bonnie had a different experience than Andrea with technology when it was being introduced to the workforce. She detailed her experience:

> When I started at my last job, which I did for 30 years, 29 years I think, the systems that they used were very basic. And it was so I had to grow in the skills as they were developing their technology as well... So I kinda learned as I went with them, and they had training sessions for us and...some people as secretaries do a lot of dictation or technology with their administrators and things like that. I had the kind of a job that didn't really have a lot of it. It was more scheduling

> issues, transcripts, verifying documents, that kind of thing. But it was fairly limited… I did start on spreadsheets, but it ended up...I didn't end up having to do it, so I always felt my technical skills were a little lacking...a little behind.

Bonnie was one of the only participants who talked about how she had to learn how to use technology as it was still developing. But as she went along in her career, she slowly started drifting away from duties that required technology, and because of that, she felt like her skills with technology were always lacking. Because Bonnie was not required to use technology more for her job, she stayed behind the curve. It became clear to me, through Bonnie's interviews, that she wished that her experience back then was different. Being obligated to use technology would have helped her find the motivation to learn how to use more ICTs in the future. At the time of our interviews, Bonnie did use many different ICTs on a daily basis, but she was aware of the fact that there were so many other ICTs out there that could have positively contributed to her life in a myriad of ways.

Ramona had used many ICTs as she had gotten older, but she still remembered her first experience with a mouse:

> I think I was very blessed to be at the right place at the right time when things were introduced. I think my most favorite memory was when I was working in an office, at a computer, doing bookkeeping, and our IT guy for the office came in and handed me a mouse. And I said, 'What's this for?' He said, 'Oh, we'll hook it up, and that way you can move it around on your monitor.' I thought, well, what am I gonna do with that? 'Cause normally my hands were occupied on the

> computer and on a calculator. And so when he brought me the mouse, I didn't know what he wanted me to do with it, and so I just put it near my hand I could, I could use it with. I put it on my left side...I'm right handed. And so when he came back in he said, 'Oh I didn't know you were left handed.' And I said, 'I'm not, but this hand is always on a calculator.' So all of a sudden I had something else to operate but found that it worked well with my calculator. So as long as it did, I learned the software on computers as computers developed. And that was a blessing. So I really was really lucky to be alive and I'm blessed that I was alive in a period with this wonderful technology that we certainly didn't even dream of when I was in school.

Here we see Ramona being compelled to start using a mouse for the first time, and rather than being upset or nervous about having to learn how to use it, she chose to focus on what the mouse could help her accomplish. Ramona's outlook and attitude about ICTs paralleled those in younger generations. She was excited about ICTs and wanted to use anything and everything she could get her hands on. It was nice to hear how grateful she was to technology for helping make her career and her life easier and more efficient. While the mouse was thrust upon her, unbidden, she chose to embrace it and other ICTs later on.

Samuel was eager to share his own experiences with being introduced to technology, which took place back during his fire captain days and later as a community college instructor. While his experiences were not all negative, he definitely struggled to

learn and to apply what he learned with technology. Samuel recounted his first experience writing a fire report with a computer,

> ...if I had a fire report to write, it's usually about a four or five page, depending on how involved the fire was...and it, you know, doing it the hard way was one of these little funny things here, I think they call it a pencil. It took me about an hour, maybe an hour and a half. The first one I wrote on a computer...4 hours!

Samuel's first experience with a computer being put on his desk without warning must have been stressful. He had no idea how to use it or what functions it even performed at that time. While the computer was supposed to make his job easier, at the beginning, it certainly made everything more difficult. From writing a fire report with pen and paper in one hour to typing one on a computer in four hours, Samuel did not believe a computer could make his life easier.

COVID-19

With the average age of participants in this study being about 73 years old, all participants were alive when polio, a tremendously infectious and potentially deadly disease, was rampant in the US. It's likely that most (if not all) participants could recall when the polio vaccine was made available to the public, and they could remember the changes this brought into their daily lives. Similarly, it's likely that the participants experienced and could recall numerous serious waves of local and global infection in their lifetimes, and the advent of COVID-19 surely carried echoes of previous experiences of risk and a need for changed behaviors. While COVID-19 offered fresh

challenges for everyone, the participants in this study came to this current reality with unique expertise, having successfully moved through previous crises like this that required significant changes.

With this construct of responding to the need for change, later in our conversations, Bonnie went on to discuss her gratefulness for being forced into using video conferencing services. She described video conferencing services as a "common connection in the present." Video conferencing services can be a tool to connect with others when in-person connection is not possible. Bonnie saw and understood the value of video conferencing services, and that was one of the many reasons why she was able to use them and troubleshoot issues when they arose. COVID-19 and having to shelter in place for long periods of time allowed her to understand just how valuable video conferencing services could be:

> …if people, especially through COVID, were isolated, like I saw a bookclub…on Zoom the other day and I hadn't seen some of those people since October...I think it opens you up to being confident that, or you know, finding consolation that other people are still in the same boat and you can communicate with them, update yourself with their situation, help each other out if need be…

Isolation is an issue many older adults deal with, even without a pandemic. When COVID-19 arrived and pushed everyone into their apartments and homes for long stretches of time, isolation became a very real threat for many. The overwhelming loneliness that set in impacted older adults like Bonnie in big ways, and both isolation

and loneliness were mentioned several times in Bonnie's interviews. Video conferencing services provided a connection or a bridge to her friends, family, and acquaintances. For that, Bonnie was grateful for being forced into using ICTs like video conferencing services.

Eve was also one of the many people who was forced into using video conferencing services when the pandemic began to shut everything down. She was open to using them so she could stay connected with her family, friends, and book clubs. She said,

> I started using it very quickly when things closed down and the women's club wanted to meet and do stuff. I had been asking for the women's club to start doing that, you know, 2 years earlier because you have ladies...we have a meeting in a location and you've got a lot of ladies that can't travel that far. It's a 2 hour drive for a 3 hour gathering. And so we need to have really been embracing some of this technology much sooner. This pandemic has kind of been a double edged sword. We've been forced to start using technology, but it's also been the benefit that has forced us.

That last line, "...but it's also been the benefit that has forced us" to use video conferencing services hits the nail on the head. It is impossible to know whether or not video conferencing services would be as popular and widely used today if the pandemic never happened, but the pandemic did cause many to adopt video conferencing services as their new tool of choice to connect with people near or far away.

Eve also discussed how video conferencing services reshaped the healthcare industry during COVID-19. As someone who worked in the healthcare industry for thirty years, Eve was waiting for the day when doctors could visit with their patients via video conferencing services. COVID-19 changed everything and suddenly doctors needed to have the technology to meet with their patients virtually. She said, "I think that until the government opened the purse strings to allow that, you know, the doctors wouldn't even consider it because they need to get paid." She also said, "You know, now that the medical industry is getting up to speed and using Zoom and other ways to communicate, that's been great, to be able to reach out to our doctors and reach out to them without having to leave home." For an extended period of time, many could not leave their homes to visit with their doctors and other medical professionals. However, the medical issues that people were dealing with did not go away, so video conferencing services acted as the bridge from doctor to patient during the pandemic. Many patients were required to use video conferencing services to meet with their medical professionals, and that is one of the many reasons why both patients and the healthcare industry were able to keep up with patient health. Eve continued,

> I just feel like it is the wave of the future and yet the future is here right now, which has made it so much easier, not only to connect with people like you, but our family, and maybe most importantly our medical professionals during a time when we want to stay as remote as we can. Being able to connect with our doctor or someone like that so that people's health...the doctors can connect with you and

> see you versus just being able to talk to you over the phone. It's a much more personal contact but also that ability to see someone and really eye to eye, see how they're doing is fantastic. I think that this has been a long time coming for the medical industry as an example.

Even now with businesses and institutions becoming increasingly open, people, especially older adults, now have the freedom to continue meeting with their doctors virtually for routine visits or a quick chat about their health. This is one of the many ways video conferencing services are and will continue to be valuable to the healthcare industry and older adults like Eve.

Sadie was perhaps the participant for whom it seemed that technology was truly forced on her at multiple times in her life, but especially during the COVID-19 pandemic. She mentioned that she valued nature more than technology, which was one of the reasons why she steered clear of most ICTs. She shared this snippet:

> Because I guess like a lot of the internet stuff has kind of snuck sideways into my life… I don't recall ever having been invited to a tutorial on Zoom or any kind of explanation. I feel like it was just kind of thrust on me, you know, my choice, but still it wasn't a *here, let's learn about that* kind of thing. I just kind of stumbled along, and I'm not totally comfortable with it...

At the time of our conversations, Sadie was still not comfortable with ICTs, but she knew enough about the devices she used to get by. Sadie being forced into using different ICTs pushed her away from them, rather than pulling her toward them.

Zoom killed relationships and connection, according to Sadie, which was different from the ideas expressed by the other participants in this study. Sadie was fairly negative when it came to video conferencing services in general, but I think that was a result of her background with technology. She said, "I think I value nature more than technology." As a researcher, I wonder if this is a result of not growing up with the different kinds and amount of technology as younger generations. Or if it could be a result of being fearful of technology and choosing to go the opposite route of embracing a life with little or no technology. In addition to valuing nature, Sadie said, "I also value being frugal, so between not being in love with technology in general and then not wanting to spend money I don't have to… I am not a market for all of the innovators out there." Her awareness of this fact was useful as she knew that she didn't need to keep spending money on technology to keep up with it. She saw value in technology, but she valued nature and frugality more.

Like other participants, Sadie also felt "forced" into learning how to use Zoom. She avoided it for as long as she could, but eventually she had to give in and connect, because she was lonely. Sadie mentioned that one-on-one Zoom meetings felt personal, but a Zoom class for school, for example, felt messy since people constantly stumbled over one another to talk. Moving from in-person classes to Zoom classes had to have been a big transition for someone who already did not have nor want a lot of experience with technology. When in a physical classroom, students must engage in common classroom behaviors, like using body language to attend to the instruction or

conversation. When attending a class over Zoom or another video conferencing service, it can be incredibly easy to lose focus, to pay attention to the things that don't matter (e.g., a student picking their nose on the screen), or to have a hard time listening and understanding what is being said.

Sadie yearned for connection, and she explained that COVID-19 pushed her into a period of depression, but "not a big depression." However, her feelings were strong enough to push her to learn how to connect with others via video conferencing services like Zoom. In the end, her statement that "Zoom kills relationships" really just meant that it killed the connection between people if there were too many people involved. At the time of our interviews, Sadie did not feel that Zoom had the potential to help more intimate relationships thrive.

Finally, Sadie said, "I don't know the range of which it would be useful in my life…" Referring to video conferencing services here, I find this statement to be truthful for others her age. So many older adults have gotten by for their entire lives without technology, or they have simplified their lives enough to not need certain technologies that others use daily. I'm afraid if the need was not there, or Sadie did not feel forced, then she would never have connected with anyone outside of her household. That could be dangerous for someone who experienced depression, like Sadie, and who felt dismissed from society already. To Sadie, Zoom was already "mechanical. It feels artificial and there's a sort of big icky difference, you know, distance between us. And it's unfamiliar to me so it makes me feel awkward and out of touch…". Sadie offered no

argument, however, that communicating via Zoom and other video conferencing services was better than not communicating at all.

Decades after Samuel was first introduced to technology, Samuel was teaching in-person classes at a community college. As stated earlier, due to the pandemic, he was required to move his classes to Zoom. He detailed his experience, explaining here,

> Actually before it [Zoom] came out… I had, I think, six weeks left in the last Spring [2020] semester. And that's when COVID hit, and when the college decided, 'Okay, we're gonna go online in three weeks, here's a download to the Zoom program.' … I looked at that and went, 'You're really killing me now, right?' You want me to learn all of this in two weeks and I had to build a class in Zoom. And the way we learned how to do that is… All of the technology teachers there started putting videos together and took us through step by step, pretty much 'This is how you open Zoom and this is how you look at it,' and that kind of thing. So, a lot of watching videos, listening to their lectures, and just a lot of experimenting on my part to even get close to it. And two weeks later, I put on my first class.

For someone so close to retirement (and for Samuel, this was his second retirement), Samuel was forced to move his classes to Zoom in a matter of weeks. His experiences with technology up until that point were mildly positive, but then he was being asked to learn how to use video conferencing services quickly enough so that he could teach his classes through the new medium. Luckily, he had support from his university and he was

willing to try to do what the university required of him. His experience teaching via Zoom showed him that not only could he learn how to use a new ICT, but he could also appreciate their utility during a trying time like the COVID-19 pandemic. “Seeing how we were forced into that [using video conferencing services]...considering everything going on, it [video conferencing services] just makes everything flow a lot better.” Samuel came to the conclusion that video conferencing services could be a useful tool for many different reasons.

Theme 3: ICTs / Video Conferencing Services Serve as a Tool

The older adults in this study had a lot of experience being connected in ways that did not include ICTs—through communication in person with neighbors, friends, church members, doctors; using the US Postal Service to send communications; and using voice-only phone calls to name a few. Older adults know how to be in touch and they know the value of being connected. This brings us to the third theme to emerge which was that technology and video conferencing services serve as a tool to help older adults connect while aging in place. This is the main theme that responded to Research Question 1: “How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?” Aging in place is defined as “the ability to live in one’s own home and community safely, independently, and comfortably, regardless of age, income, or ability level” (CDC, 2013). Nine participants spoke to this theme.

ICTs Are Simply Tools

Wyatt was keenly aware of the shortcomings of technology and technology users. Computers are "tools," not "magic boxes," he said more than once in his interviews. He then said,

> Some people think of computers as tools they can use and they work as long as they learn what they need to learn. And other people think of computers as magic boxes that aren't rational and...that will do weird things just because, after all, they're computers and nobody understands computers.

Computers and other technologies are meant to be functional and useful, not scary or intimidating. Wyatt knew this, but other technology users may not. Wyatt even said that technology did not make him emotional in any way. But I got the sense from him that new technology of which he was not current on did in fact frustrate, intimidate, and confuse him.

ICTs are designed to be intuitive, but they are not intuitive for everyone. Wyatt understood technology in a deeper way than others I talked to, and he was also one of the few who brought up privacy issues with technology and social media these days. Technology is a valuable and useful tool, but once you start using technology, it is hard to go back to a life without technology.

There is certainly a lot of confusion and anxiety around technology use, both feelings that Wyatt expressed that he felt using Zoom. But he repeated that technology, including video conferencing services, is a tool. That's all it is. It is meant to be useful,

and if you understand the basics, then you can get anything to work. “It’s just a tool,” he said. “Don’t fall in love with the computer!” Wyatt also said:

> And I worked with lots and lots of people about computers and some people feel okay, it's a tool, it should be able to do what I tell it to do. And some people go, “It’s a god and if I get it wrong, you know, I’ll burn in hell…” I think the major reason that you fall on one side or the other is whether or not you understand the basics of how computers work. And hardly anyone teaches that.

Video conferencing services specifically were a hot topic for Wyatt. He did not enjoy using them, but he understood their value, especially during the times of COVID-19.

> Well, video conferencing is like any other tool. It’s useful in some situations and sort of misused or an excuse in other situations. The value of video conferencing has of course been brought more front and center because of COVID and social distancing and so that makes it a much more usable tool because you don’t need to be near other people… it allows us to spend more time without face to face contact. I think it’s not a good thing. In person contact is essential for a healthy society… but you know it’s not Zoom’s fault that we have the pandemic. You know, so in that sense, it’s a very valuable tool because it gets us to at least interact with other human beings more often and it enables us to do that.

Once again, we see that Wyatt was reminding me, and himself, that video conferencing services were nothing to be afraid of. They were and continue to be a tool created to enhance and help our lives move forward during a worldwide pandemic.

On the other side of this, Wyatt also looked toward the future of video conferencing services:

> The level of effectiveness has more to do with how the people involved communicate than the tool itself. The tool is relatively transparent and very flexible. I think that there is gonna be a growing trend to try to over-utilize it for things other than what it's good at. But again, the operator is not the tool. If you only have a hammer, everything looks like a nail. There are communications between people that...for that platform, for those platforms, that's not a good place. But that's not the platform's fault.

He also said,

> I think the fact that more older people probably have trouble with video stuff...video conferencing...than younger people will be wildly and widely misinterpreted to mean things that it doesn't actually mean. You know, it's kind of like saying you can't drive a car with a manual transmission because you're too young. Well I think that if you did a survey of everybody who drove who could drive a manual transmission, it would be preponderantly older people, but it's not because young people are somehow stupid or incapable or because those transmissions work better for older people, or any of those things that I think will be drawn from, you know, the parallel with who uses computers. It's because you simply haven't been exposed to it. So there's been no need for you to know how to do that. You know, the transmission is just a tool.

Wyatt said the word "tool" more than any other participant. This is likely because he understood that computers and other ICTs serve as tools, and he understood the language that ICTs use. He mentioned that younger generations more readily know and understand the concept of technology as a tool:

> I think that barriers to use…really aren't age related. You know, some of the most sophisticated users I know are in their 80's and 90's. I think the split, and it is across all ages…is how people approach computers. Whether they're magic boxes or tools, you know, so the younger you are, the more likely you are to recognize computers are just tools. And so to that extent, it's easier to use stuff… I still run into young people, I mean preteens even, but certainly teens and 20's and 30's…they didn't have a good introduction. They weren't given the grounding they need to understand this is a tool and you can use it for what you want to use it for and you don't have to use it, you know, if it's not a good tool for you.

Why is it that some adults see technology as a tool that can be played around with while others see technology as a "magic box" or "a god" that will punish them if they do something wrong that the device does not like? Wyatt was adamant about people understanding what computers and other ICTs are and how they function. Most issues are easy to figure out and fix, according to Wyatt, as long as you are communicating with the computer or other ICT in a language that it understands and you are asking the tool or device to perform a task that it is capable of performing. Wyatt ended by saying video conferencing services are "a valuable tool for certain tasks, you know, it's like a hammer.

A hammer is good for a lot of things. It's also no good at all for a number of other things." And that is what he wished older adults could understand about technology in general. ICTs are good for a lot of things, but they are also useless for others.

Communication and Connection

"Technology is such a part of our lives now," said Bonnie. Technology exists as a tool, and in the context of this study, it served as a tool for older adults who were having to age in place due to the COVID-19 pandemic. Bonnie understood the pros and cons of having technology in her life:

> …and the other thing that I think video conferencing services does, it does open us for more opportunities... But you learn new things in addition to seeing people, so in a moment there, you can see people and talk to people who are hundreds and thousands of miles away. And it pulls people together to give us a common...connection in the present.

Bonnie mentioned this "common connection in the present" that video conferencing services allowed and noted maintaining these connections was important for her in order to avoid feelings of isolation. Her antidote to that aloneness was using video conferencing services.

Through her interviews, it was clear that Bonnie saw video conferencing services as a tool to communicate with her friends and family. She said, "...it's a tool, but you have to learn...you get to learn how to use… I think it's accessible for anybody no matter your age." This accessibility is key for older adults, because the harder an ICT is to use,

the less likely someone will try to learn how to use it. Bonnie may be seen as a positive example for other older adults because she understood the value of ICTs like video conferencing services, and she was willing to experiment in order to continue communicating with those outside of her everyday environment. She had a positive attitude toward ICTs because she knew they were useful in her life.

The concept of connection emerged throughout multiple interviews, and connection is perhaps one of the most important reasons why people, especially older adults, use video conferencing services. Janine talked a bit about how she saw the value in video conferencing services for this reason of connection, but she did also mention that her health issues had gotten in the way of her using all technology more due to a lack of energy. She said,

> I can see how it would be very helpful if I were still working or if I were still doing some of my volunteer activities. I can see where it would be helpful, to be able to keep that connection with the group and keep the vitality of a movement going if you will. So yeah I can see that...the goodness there. I'm just not employing it at this point.

COVID-19 sent the world into a tailspin, and so many people yearned for connection during those initial months of isolation. The antidote to isolation is connection, and video conferencing services can provide that connection wherever you are and whenever you want, as long as the person on the other end is there. Janine said,

> I can see where it would be helpful for people who...One of my friends who is not computer literate does use Zoom to video conference with her family. Her only child and his family live in Massachusetts and so they're, every Sunday, on a Zoom call and that's the way she stays connected to her family.

Video conferencing services were used before the pandemic began, but they were not commonly or frequently used by most people until we were forced to shelter in place. People in the United States went from sporadically using video conferencing services, in mostly business settings, to using them to facilitate school classes, to conduct meetings, and to connect with family and friends. Janine said, "I like being able to see the person I am talking to, particularly if it's somebody that, you know if it's like a family member that we've not been able to see for a long time." Video conferencing services certainly allow for a more personal connection than other ICTs allow, and that is why they are now a widely used tool in many different settings.

Everyone has their own mode of communication. Texting, calling, video chatting, emailing, speaking in person; these are just some of the different ways that people communicate today. And most people tend to prefer one means of communication over another. Many younger adults tend to prioritize texting and video chatting, while many older adults may prefer calling or speaking in person. Karen was the only study participant who brought up this concept of modes of communication, and she explained,

> My brain is kinda going to my grandkids who live two doors down…that's how they do it is texting. Well they just haven't figured out that… I mean, I will

> respond to them but I'm not gonna do a lot of texting. If you want me, you live right there, call me on the regular ph...I even have a landline or you can email me… I've talked to myself about this, being too stuffy or are you not allowing them to have their mode of communication?

Karen continued,

> Well, and I've been reading all these kinds of books and it's called mindfulness...in my opinion, and that's like, okay how do we want to communicate? I have no problem Zoom-ing. This is like you sitting in my living room talking to me. I mean, you know, I'm thankful we have this. But I also want to have a hug eventually, in my lifetime…

Karen's grandkids preferred to text, while she herself preferred to see someone in person or talk to them on the phone. These modes of communication are different, but they all have the same goal of communicating and connecting with another person. Video conferencing services are yet another mode of communication for people to use. While these forms of communication are newer, they have gained popularity in so many areas like school and business with the pandemic shutting everything down for a period of time. Karen continued her thought, and explained,

> The distance between the people I talk with on video conferencing prohibits me seeing them in person… I'm a hugger so before COVID I… people would have come to my home, we would have met somewhere hugging, I hug in a restaurant, so this is the second best for me and my...the friends that I'm connected to with

> video conferencing. And a few family members, but not as many as I would hope. I had given family members all of them those little video machines [webcams] back when, or you know, and they're all built in now. My point here is some set them up…

Karen believed video conferencing services were now the second best tool for communicating because you could both hear and see the person you were communicating with. As stated earlier, everyone has their preferred mode of communication, and video conferencing services are quickly becoming a preferred mode of communication for those who can not meet in-person.

Video conferencing services like Zoom are used less by older generations because they didn't grow up with technology like this. Younger generations, however, have been forced into using Zoom and whatnot by their schools. Samuel talked quite a bit about how his use of technology had increased exponentially from the first time he saw a computer. He sensed that he used his smartphone and apps more frequently than many of his older-adult peers. He explained,

> But you know, do I use it as much as a twenty-year old in app world? No. But I do use them. And I don't think age has so much to do with it. It's whether or not you accept the twenty-first century or not… I'm in my mid 70's and your friends are in their mid 70's or late 70's...if you embrace, you know, technology and use it the way it was intended...you can learn a lot and find out a lot. Every time I'm doing something...if I have a question, I go, 'Huh?' And where do I go? Google!

Samuel was aware that he did not use technology as much as younger generations. While he understood that his use of technology was much less frequent than many younger than him, he also understood the value of being connected to the world via technology. He seemed proud of his technology use, now that he had experience with many different technologies out in the world. Samuel seemed to understand that being forced into using technology is one way that we can get people to use technology. Those that are hesitant lose some of that hesitancy by being thrown into the lion's den without warning. Sometimes you just have to stop thinking and freaking yourself out, and just do what makes you uncomfortable. That is how one accepts the twenty-first century, according to Samuel.

Samuel truly began to understand video conferencing services as a useful tool when he was forced to start teaching his formerly in-person classes over Zoom. After some trial and error, he realized this:

> …once I learned how to do it… had I done it for a complete semester, I'm sure I would have been totally comfortable with it. But it, I mean it actually made the instructor's job I guess, a lot less cause it took attendance, it took roll…cause I used to do all that manually. And then when I got on the Zoom program, I went, 'Wow, this is pretty cool!'... The Zoom program, I mean, they pretty much did everything for me. I mean, all I had to do was put the right information in and I'd get the right information out.

Samuel used Zoom and all of its functions as a tool to help him teach his online classes. He was hesitant with Zoom at first, but because he had the right equipment and was open to learning, he ultimately felt successful in teaching over Zoom. Zoom is simply another tool that one can employ to teach classes when in-person teaching is not possible.

Daily Life Activities

As the previous director of an IT department in the medical industry, Eve clearly understood the value of ICTs and video conferencing services. Throughout my interviews with Eve, she discussed how grateful she was for video conferencing services, because they saved her time and effort when she was unable to travel far distances for medical appointments or her book club meetings. She mentioned her excitement "about the opportunity for technology to assist our daily lives," and how video conferencing services served as a "tool that more and more people get comfortable with…they'll be more opportunity for other applications to begin to use it." Eve discussed how video conferencing services saved her time with medical appointments, as she described in the situation below:

> And then also being able to reach out to our doctors. When we lived in La Quinta I was referred to Loma Linda for my Crohns and so I was able to have a pretty lengthy conversation with a gastroenterologist specialist online, and then she ordered a lot of tests that, again, it would have been a 2 hour drive to her office only to spend probably 20 minutes or 30 minutes with her.

Eve also discussed a situation with her husband:

> I hope that especially the doctors will continue to do this for those kinds of follow-up appointments and things like that. [My husband] had eye cataract surgery several weeks ago and we go in a few weeks after and, you know, because of COVID I'm sitting in the car and he's going in, but the room is still full of patients. He said 'I go in and wait half an hour for the doctor to see me less than two minutes.' And he said he has another appointment on Friday and he's thinking he's gonna cancel it. If they would use this type of technology, she could still see him without that twenty minute trip to the office and the parking and all that's involved in getting into the doctor's office. So I hope that a lot of appointments will be able to continue via Zoom… especially if you're not feeling real well, having to get up and get out...as well as being exposed to other people with a bad cold or whatever.

For an older adult who does not enjoy driving or being around people who may be sick, video conferencing services have allowed for them to stay where they are and contact their medical team without having to ever leave home. Eve said, "You know, now that the medical industry is getting up to speed and using Zoom and other ways to communicate, that's been great, to be able to reach out to our doctors…without having to leave home." Video conferencing services are one reason why older adults are able to successfully connect and age in place if that is what is most beneficial for them. Eve's video conferencing service of choice, Zoom, also allowed her to stay in her book club without having to drive hours to connect with the women involved.

> In fact, the book club that I am a part of, we have used Zoom a couple of times, and I think it's great that, you know, we lived in La Quinta that's 2 hours away from Seal Beach area or Orange County, and I really wanted to stay a part of that book club, so Zoom gave me that opportunity to continue to do that and stay connected with all those ladies.

Eve felt more connected to the world and those she interacted with because of video conferencing services. She mentioned that the video aspect, which allowed her to see facial expressions and hear voices, was what helped her feel more connected to those she was communicating with. Eve summed up her thoughts on ICTs like video conferencing services well. "I just feel like it is the wave of the future and yet the future is here right now…".

Video conferencing services are certainly a part of the present, and they have been instrumental in helping people connect with others during the COVID-19 pandemic. School, work meetings, book clubs, and communicating with friends and family are all possible because of the freedom that video conferencing services provide. And "once you realize the ease of using it, then you are allowing yourself to be open to other technologies," according to Eve. Being open is critical when it comes to learning how to use ICTs, and Eve understood this.

As a busy real estate broker, John shared that he used and was open to all technology, like video conferencing services, on a daily basis and he shared that Zoom had been of great use for him. For John, video conferencing services were "easy,"

"simple," and much more efficient as they helped save him time. He spoke about how he "had several other doctor's appointments I've done online. They worked great and in some ways I much prefer them to going into the office. It's quicker and more efficient." Video conferencing services certainly can make life tasks easier and more efficient. Referring to video conferencing services, John also said,

> Oh I definitely think it opens up the opportunities. You can expand things, you can do things from home that you wouldn't do normally. In many ways I'm glad to see the healthcare industry going that way because there's no reason to go sit in a doctor's office for 30 minutes when you can do the same thing and update in 5 minutes on a Zoom call.

While certain health issues do not lend themselves to virtual visits with a doctor, many do. There was a long period of time at the beginning of the COVID-19 pandemic in which many older adults did not feel safe going out into the world, especially to doctors' offices where they could potentially become sick from contact with an infected person. In addition, the older one gets, certain bodily issues may arise that can make driving a car more difficult or even impossible. In these cases, video conferencing services saved many older adults from having to visit their doctor in person. The efficient and time-saving nature of video conferencing services are one of the many reasons why John used video conferencing services as his tool of choice to communicate when in-person meetings were not possible.

On the other hand, John also talked about how there was no perfect replacement for in-person communication. However, video conferencing services are quickly becoming the next best thing to in-person communication. While COVID-19 led to everyone sheltering in place for long periods of time, video conferencing services created a way that people could interact with one another while being physically apart. John mentioned numerous times how he appreciated video conferencing services and what they offered. At the same time, he also talked about how interactions through this medium could feel depersonalized. John said,

> Sometimes it can be… depersonalization, but that's probably just because my age and we're used to doing things personally. And learning to use them and just get along. You become more comfortable as you use them...the more you use it, the more comfortable you are with it so…

Many would agree with John, in that many older adults do tend or prefer to communicate in the most personal way possible. Older adults tend to value in-person communication rather than relying on technological devices to help them communicate. This could be for a variety of reasons including cost, or simply not knowing how to use or feeling comfortable enough with a device or piece of software. By the time people become older adults, they have had decades of communication in the original ways that humans have always used: in person. The relative newness of the digital age is remarkable, and it is this generation that is being caught in the time of transition. Either way, video

conferencing services can provide a safer way to communicate for older adults who can not communicate in person.

John ended by saying he is a "researcher at heart. I enjoy research, so I don't mind getting online and doing those kinds of things if I had to. There's a lot you can do online these days that makes it quicker and easier, you can do it in the privacy of your own home, that's fine." Aging in place does not always have to be difficult or isolating. And video conferencing services have helped many older adults access ways to safely communicate with others.

Kimberly may not have grown up with technology, but she had certainly embraced it throughout her life. Her career and her life interests had always kept her close to technology. Technology was a "gift," and she saw the benefits of using technology as a tool to help her with her daily life activities. For example, Kimberly was "very dependent on things like GPS" and she used technology for everything from email and internet searches, to online purchasing and ordering, to tracking things using spreadsheets and money software, to online banking, finding recipes and quilt patterns, and reading books. Kimberly was aware that she needed technology to quickly and efficiently do all of the things she stated. Technology can keep us connected and allow us to do so much more than we ever thought it could. She said, "I'm an avid user of my phone and the apps on it. It is a tool I would just be lost without at this point. It's my alternate brain." She also said that video conferencing services have been "convenient. You don't necessarily have to leave the house for them… if there's a specific purpose to

it, we can get it done quickly and move on." Video conferencing services are a tool that older adults can use to stay connected with others without having to leave home.

Ramona was the only participant who talked about how ambulation or gross mobility issues for older adults do not matter with video conferencing services, because they can be used anywhere. Whether you are in a book club that meets over Zoom or communicating with your doctor via a telehealth appointment, video conferencing services are useful for those with ambulation or gross mobility issues.

> …this is an opportunity for us to find different venues for learning. And you don't have to be mobile, because some of the people in my facility aren't. They're on their carts and, you know, if the elevator's not working then they're not going anywhere. So yes, I'd like to see it used more for everyone.

She later extended this idea, noting,

> Because we get to experience somebody else's life; we get to experience somebody else's world. Cause I could Zoom with anybody. I'm Zoom-ing with people that are in another state now. So… I'm seeing my grandchildren, they're in San Francisco, on a weekly basis. I'm watching them grow. I'm sharing my life with them; they're sharing their life with me. But we're not in the same space. It's great.

Video conferencing services are one of the many modes of communication that can cater to those who cannot easily ambulate or drive. Many older adults deal with these kinds of issues as they age, so the fact that there is a mode of communication, like video

conferencing services, that allows those using the service to stay put is helpful. Video chatting can be a good way for older adults to stay connected to their loved ones when they can't chat in person. The COVID-19 pandemic has made travel difficult, so for many older adults, video conferencing services can allow them to continue communicating without a change in environment.

Ramona also spoke about those who were hesitant to use ICTs like video conferencing services. "I do understand those who are hesitant, and generally speaking I will say for my generation, those individuals who are hesitant to move forward with something...it's out of fear and lack of knowledge." Fear is one of the many emotions older adults may feel while learning how to use technology or simply being introduced to it. Ramona may not have felt this fear, but she knew other older adults who struggled with that fear, and she did her best to get other older adults around her excited about all the possibilities that ICTs could afford them. To end with Ramona's words, a video conferencing service "opens our world wider… there's so much more to know. And why not share that?"

Equipment and Aesthetics

Technology can be more difficult to use for older adults, and there are a variety of factors that may play into this. For example, Janine explained, "I think the only thing about my smartphone that I don't like are my big fingers...trying to use that little tiny keyboard." The keyboards on phones are too small for many, the font on the screen can

be too small or bright (or too dim) to read, and very few ICTs are intuitive for beginners or other older adults who don't have a lot of experience with ICTs in general.

Janine made a great point when she talked about how having the right equipment was vital to using technologies such as video conferencing services. She said,

> My husband and I are both fairly technology literate. So we've got the equipment and we're not afraid to try something new. So I think the biggest thing for anybody, whatever age, is do they have the equipment that they need? Do you have a camera? Do you have a microphone? And if you have that, then it should be fairly easy.

Having the right equipment to use a video conferencing service is key. Video conferencing services are tools, but they need the proper equipment in order to allow for the tool to work. If you don't have a camera or a microphone, then video conferencing services are not useful or even possible to use. Nowadays, many smartphones, laptops, and other devices come with microphones and cameras built in. There are also many different ways to go about getting a webcam that has both capabilities if your device does not already have them built in. Some older adults, however, do not have the knowledge, experience, or know-how to make sure they have these things before they choose to use video conferencing services. The right equipment is needed to use technology, like video conferencing services, properly, and this is an area where older adults may need support in understanding this.

In addition to having the right equipment, aesthetics are also important when communicating with ICTs or video conferencing services. Ramona had a big personality that went well with her red hair and flair for sparkly items of clothing. She cared about how she looked and she thought other people should care how they look too, especially when communicating via a video conferencing service. Video conferencing services involve seeing the other person or people on video, and Ramona took the aesthetics involved seriously because she wanted to come off in the best light. In thinking about how to curate her appearance in video conference settings, she explained,

> Then I started looking at the details around myself. Oh really, Ramona, don't just have a flat, a flat screen behind you. Add a little bit of...a lamp, a picture. Look at that, you need to be wearing something colorful, you know. And comb your hair for god sake woman! Yeah the little details started coming out…

For Ramona, the wrong aesthetics were distracting, and Ramona talked about her experiences chatting with friends and family and noticing things that she perceived to be out of place. It was those experiences that allowed her to realize she needed to put more thought into her background, hair, or clothing when on video. To be clear, she did not think everyone needed to be wearing fancy clothes or makeup. She simply believed that every person should put a little thought into what others will see on the opposite end of the camera. These things may seem trivial to some, but they certainly can be important for people with priorities like Ramona when communicating via video conferencing services.

Theme 4: Learning How to Use ICTs Is Trial and Error

Although many of the participants in this study were wary of incorporating new ICTs at different points in their lives, they were all willing to try and experiment, even if that meant making mistakes along the way. The fourth theme to emerge was that learning how to use ICTs involves trial and error. This theme answered Research Question 1: "How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?" as well as Research Question 2: "What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?" This theme also answered Research Question 3: "To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?" Eight participants spoke to this theme.

Learning Means Experimenting

Learning how to use ICTs can be exciting, frustrating, fun, boring, and a whole host of other conflicting words. For Andrea, she knew this well and had spent a great deal of time learning how to use the ICTs that made her life easier. Andrea talked about how her first few tries learning how to use a device or software usually found her panicked and questioning whether or not she could do what was needed. "But then after a while I got so that I could try more things, to figure things out, or if I could call somebody and get more help and talk me through it, that kind of calmed me down." Andrea tried to

figure out how to do things on her own, and if she could not seem to get something, then she called in reinforcements.

Andrea also knew that ICTs were meant to make her life easier and more efficient, which is why she was willing to experiment with them. She said, “Because I’m more comfortable setting something up from the beginning and knowing that it can be done, but you know, it might take a few tries, but it can be done if you have all the right equipment.” The simple act of knowing that so many others had been successful with ICTs gave Andrea the confidence to try and learn on her own. Having the right equipment also mattered, but it was Andrea’s confidence and rational nature that got her from beginning to end with learning how to use ICTs.

When I asked Andrea what advice she would give herself knowing everything she now knew about ICTs and video conferencing services, she said,

> Don't be afraid to learn all the new technology and try all different types now rather than waiting till later. It's easier to learn with a younger mind because as we all get older, we get more set in our ways and it's a little more difficult to try and learn new things!

Fear is a real emotion that many older adults experience, especially when it comes to incorporating ICTs into their lives. So Andrea’s advice here is important and useful, because she understood that that fear only gets worse as one ages, and learning in general can get increasingly more difficult at the same time. It is important to experiment and try new things throughout one’s life.

Samuel's resistance to using technology for teaching purposes was put to the test when his in-person teaching of fire academies was suddenly moved to virtual in the last six weeks of the Spring 2020 semester due to COVID-19 restrictions. He had two to three weeks to both learn how to use Zoom and conduct a class through the medium. In an email to me, he said,

> For the last four meetings of the fall semester I had to learn how to teach via zoom and had 10 days to figure it out and present the first class. At my age [75] I was not sure if that was even possible? I did get it done, to my surprise!

This situation would be scary for any person, but especially for someone who was well past retirement age. "So, a lot of watching videos, listening to their lectures, and just a lot of experimenting on my part to even get close to it. And two weeks later, I put on my first class." Samuel's apprehension and frustration at the beginning of his experience teaching via Zoom were simply a part of his learning process, and his intimidation of technology did not overshadow his desire to learn. Samuel experienced feelings of hesitancy and being overwhelmed while learning how to use new technologies. This is not surprising, but it is interesting to me that he went from being hesitant to experimenting to feeling comfortable, or at the very least able, fairly quickly. Technology scared him a little bit, but saving people from fires was less scary to him! Whereas many older adults are afraid of technology and unwilling to learn, which Samuel knew, he was aware of the benefits of growing up with technology like his granddaughters were at the time of our interviews.

> …generally my generation...a lot of them are just, 'Oh I don't want to know anything about it. I don't have a cell phone. I don't have all this high-tech stuff.' So...it's used less by the older generation. And obviously your generation and the one that's coming up now. I mean, my 9 year old [granddaughter] already knows how to use them [video conferencing services] because she's taking classes at school on Zoom! She's gettin' in early on that.

Using technology, especially video conferencing services, is not for those who do not have time to experiment and to try. In one of the first emails Samuel sent to me, he expressed that it had been awhile since he used Zoom, but that he was willing to "give it a try." Sometimes that is the main solution to learning how to use technology; simply having the willingness to try and to fail or to try and succeed. Samuel had many reasons to try, and he had in fact succeeded. Whether or not he continues to experiment with technology is a different story.

No one is comfortable with an ICT they have never used before. And being comfortable takes time, even as we see technology constantly changing from day to day and from year to year. While being comfortable might not mean one is an expert, that comfortable feeling will push many into trying other new ICTs as they get older. Kimberly used technology a great deal in her career and that was certainly a factor in her comfort with technology after her retirement. She seemed to have a deep understanding of how certain devices functioned and worked. Her history with technology dated back decades, and that amount of time passing and experimenting led to a familiarity with the

basics of technology. Whereas technology might have been a helpful addition to any job before the twenty-first century, it is now a necessity.

Kimberly said:

> I have to say honestly it has changed a little bit over the last two years. Normally I'm an early adapter and if something new comes out I want to try it...I want to play with it...I want to figure out what it can do. I have noticed over the last couple of years I am less inclined to want to solve a problem if it happens and more inclined to ask or look for somebody else to solve it for me.

This was an interesting point that Kimberly made. She liked to learn and figure things out on her own, but as she got older, her drive to solve problems dissipated. This is one of the many reasons why older adults may wish to adopt ICTs earlier in their lives than later. While not everyone may share the same beliefs about this as Kimberly did, her statements were mirrored by other participants in their interviews as well.

Mindset

Bonnie talked a great deal about mindset and how she always believed she could learn how to use technology if she wanted to actually learn. Even though she may have felt reluctant or anxious, she tried anyway. "Just stick with it," she said. If only more older adults had her attitude, the current rate of engagement would surely be different. Even with the pandemic and hordes of people being isolated from each other and their loved ones, so many older adults shied away from ICTs and video conferencing services. Learning how to use video conferencing services made Bonnie more confident in using

technology in general, and I think this whole "being forced into learning how to use technology" idea had a positive purpose.

Over and over throughout her interviews, Bonnie reiterated the necessity of having a positive mindset when trying to learn a new technology like a video conferencing service. "I have found if you think you can't do it, then you're up the crick." "I want to be able to do it. So I just stick with it. I'm not gonna give up." " No need to panic." "You can do this." "I thought, first I was gonna say don't panic, but I'm trying to get away from the 'don't' thing, stick with the positive. So the hardest thing to remember is to stay calm." These are just a few examples of the fact that Bonnie had to constantly remind herself that her mindset and attitude mattered. She joked a lot in her interviews, but you could tell that she truly believed her mindset and attitude got her through the frustration and panic she felt while learning how to use video conferencing services.

Later, Bonnie talked about problem solving. "So you've got to try to figure it out and problem solve and I have found it helps because then you can figure it out. Usually." Problem solving is not a skill that everyone has, but Bonnie's awareness of this skill allowed her to try and work out issues on her own. She then talked about her first experiences with video conferencing services:

> I think my reaction was positive, but I was just also crossing my fingers at the same time to say, 'Oh gosh, I hope I can make this work.'... I really feel that with young people... say my daughter, she's like 35, and they sometimes… I've heard the same kind of comment...they say, 'Oh, it's not that hard. Just do it. I'll walk

> you through it.' Or 'Haven't I told you this before?' or that kind of thing. But you want to be able to...I want to be able to do it. So I just stick with it. I'm not gonna give up.

Bonnie made an excellent point here about how other people's words can stress out older adults even more when it comes to learning how to use ICTs. "Haven't I told you this before?" is not going to make anyone– and certainly not an older adult— feel better about their abilities. Phrases like that make older adults uncomfortable and feel less-than. "Oh, it's not that hard" can also lead to feelings of discomfort and embarrassment, especially if the older adult does not perform the given task correctly. Attitude and mindset are incredibly important, but at the same time, hearing comments like the ones stated here can negate the positivity an older adult may come in with.

Attitude and mindset also mattered to John, who used video conferencing services a lot for his job as a real estate broker. But even he had issues at first and had to learn through trial and error like most older adults. He said, "I think initially on the first couple of times when I used it at a doctor's appointment and we had some problems with the hearing… it was just an adjustment. Just had to learn how to adjust to the system, that's all." Sometimes the issues that someone may be having are small, easily fixable issues. Other times, the issues are bigger and more complex. John's advice of simply learning how to adjust and trying to solve the easiest problems first can be useful for other older adults.

The COVID-19 pandemic caused many older adults to shift away from in-person interactions to interactions via video conferencing services. While this may have been an unwanted and frustrating change, it was necessary. John only became comfortable with video conferencing services the more he used and experimented with them. The comfort certainly did not come overnight, and so John agreed that both his experimentation and trial and error until comfort was achieved was crucial to him being successful with video conferencing services.

Learning With "Headaches"

Trial and error can be a time-consuming process when it comes to learning how to use a new ICT. One of the many lines I found endearing from Karen throughout her interviews was that she learned how to use video conferencing services with "headaches." Sometimes, she even needed to give herself a pep talk when things were not working in her favor. Karen had one of the most positive attitudes through her interviews and it truly made me enjoy interviewing her. She discussed one of the times she had to give herself a pep talk:

> Oh boy, well I have to say I wasn't necessarily for Zoom when the Friends of the Library wanted to have our meetings. And then I just had to say, 'Karen, you can do this. You can do this. And it's not that difficult.' So I need to just say that I had to get over that. It was a tiny hump…

Karen learned by doing and she "learned a lot of software on my own, without books, so it was just like trial and error." Her attitude was one of the many factors that led

to her having such great success with multiple video conferencing services. She knew that Zoom and other video conferencing services "aren't going away," so she was doing her best to learn and to stay motivated to keep learning. Karen's attitude certainly took her far with learning how to use new ICTs.

Empowerment

Empowerment is a powerful feeling that many older adults do not feel as they learn how to use new ICTs and software. Ramona, on the other hand, talked a great deal about how technology and video conferencing services made her feel empowered because she felt that you didn't have to be high tech to learn how to use them. She learned by "trial and error," like a few other participants, and that really helped her get by. I find it funny that she talked about being grateful for growing up with technology. At 73, she may not have had the technology that most younger generations actually grew up with, and her "growing up with technology" would have included tools and devices that although novel at the time, have now become obsolete. I enjoyed Ramona's positive spin and outlook on her life.

Ramona talked about how she experimented when learning how to use technology. "...the generation that I came from, I would hunt and peck and find out how to do it by experimenting." "It's trial and error for me." "And for me, it empowers me. Cause I feel like, oh I did that! Well I can do that too! So I know that I can." Learning can be difficult for many, no matter what the subject. Ramona, on the other hand, truly

enjoyed learning and experimenting and working through issues via trial and error. The more she learned, the more she wanted to learn.

While learning helped her feel empowered, that was not enough for her. Ramona also wanted to help other older adults around her feel empowered with learning how to use ICTs. Ramona spoke about video conferencing services and how she wanted to help empower others by teaching them how to use them properly:

> Yes, the communication is fuller. It is absolutely fuller… Because fear is, it can be very real for senior citizens. And it's not been a part of my life so I feel fortunate that I can give them another way to think. If I'm gonna have something to share, why not share something that's gonna do good for somebody.

She then went on to say:

> I feel like if I've touched it, then that means, you know, I can learn more because I've already learned part of it. Just like when I learned...the first time I learned how to do a spreadsheet. AHHH! I had, in my mind, this big sheet that we used to use in the bookkeeping business, with a pencil, this large sheet as a spreadsheet, and all of a sudden, I put it up on my monitor. And at one point I worked for someone who I had 2 monitors with and I was in heaven. I was absolutely in heaven. 'Give me more, give me more!' Absolutely. Anything that goes from pencil and paper to...is good in my book! Even making a grocery list. I'll pick up my phone and go make a list of milk and bread and eggs, you know. I don't have to write it down.

Learning how to use technology led Ramona to feel empowered and grateful for technology. Once again, we see here that attitude is a key piece to learning how to use technology and video conferencing services. And the more she learned about technology, the more she used it. Ramona had the attitude of someone much younger when it came to technology, and I believe her attitude and willingness to help and teach others continued to empower her while also empowering others.

"Operator Errors"

Computers, tablets, and smartphones are all designed to work a certain way. When something on these devices breaks or does not work, the problem is not usually with the device (although sometimes it is). The problem almost always has to do with "operator errors." Wyatt spoke about operator errors and said, "…that happens with almost any interaction over computers. There are always operator errors…they're irksome but, you know, they're nothing to get worked up about. And as people learn better how to use stuff, they go away."

Wyatt also said,

> So I am not intimidated by computers, because I understand the basic principles of what they do and how they work and how things go wrong. So when I'm confronted with new technology, I'm reasonably confident that, given that it's sound technology and if you stick with Apple you're pretty much guaranteed that you can figure out how to make something work...computers only do six things. They add, subtract, multiply, divide, compare, and remember. And everything

> they do is some combination of those six things. And once you understand...and if you've ever done programming, you understand that everything a computer does is based on a foundation of something. It starts with certain assumptions and then it will follow the commands you give it down the line. And where you get into trouble with programming is that you make an assumption that the computer doesn't know about. And so you give it a command that it can't carry out…
>
> If you don't tell the computer to check and see if you're sitting down, it doesn't know anything about that. If you say 'Open the door,' it's sitting in a chair. It doesn't know how to go to the door from sitting in a chair. You gotta tell it, "Stand up, face the door, walk until you get to it," you know. And so once you understand that...well first of all...one of the rules is computers do what you tell them to do, not what you thought you told them to do.

The profoundness of these statements are not lost on me. Wyatt's brain was logical and he was able to think and do things fully knowing where the problems actually were.

Later, Wyatt talked about his first experiences with learning how to video conferencing services:

> I had to play around with all the buttons. You know, mute and unmute, video on and video off, how do you arrange the pictures of everybody else involved, displaying chat and not displaying chat. You know, just, I like learning new skills, just like anybody does I guess. I still have...often have a little anxiety. Not about using Zoom per say, but about, did I get the right numbers for signing in, you

> know, and is this the right day and time. That's not really a Zoom thing. That's a meeting thing.

Even though Wyatt deeply understood computers and other ICTs and how they functioned, he still had anxiety about whether or not he was doing everything needed correctly. This is surprising to me in some ways because throughout his interviews, Wyatt told me that he did not experience emotional responses or feelings to using or learning how to use ICTs. At the same time, he vocalized or described feelings and emotions, sometimes without naming them outright. However, experimenting and playing around with the functions of video conferencing services gave him more confidence and allowed him to realize that he could troubleshoot issues the same as he would for computers and other devices he was familiar with.

Theme 5: Support With ICTs From Family or Friends Is Important

The participants in this study were all hesitant to use ICTs at some point in their lives, but they were also strong enough and brave enough to ask for help and support from those around them. The fifth and final theme to emerge was that having access to support with ICTs from family or friends is important. This theme answered Research Question 1: "How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?," and Research Question 2: "What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?" Seven participants spoke to this theme.

Friends and Family

Andrea was a "guinea pig" with new technologies like the computer while working as a secretary throughout her young adulthood. I think this fact led to her future self being more autonomous with learning how to use technology. She asked for help when needed, but she seemed more comfortable than other participants with technology because of her experience with using many different technologies. This is also where the field of andragogy can provide some insight. Andragogy refers to a "set of principles and assumptions about adult learners, the learning environment, and the learning process" (Frey, 2018). Essentially andragogy is the "art and science of helping adults learn" (Knowles, 1980, p. 43). Adult learners learn differently, and according to the field of andragogy, andragogy describes "adulthood as a psychological, rather than a chronological, milestone in which the learner develops a self-concept striving toward independence" (Frey, 2018). Andragogy will be discussed more in the next chapter.

Older adults do not learn the same way as younger adults. They may need more patience or repetition for example, because with repetition comes understanding, and with understanding comes openness to other technologies. Andrea struck me as a very open individual who saw technology for its worth. And while she did try to work through issues on her own, she had access to help from her husband who was "computer literate," her grandson, her friend, and her "computer guy."

> Well, the beginning, yes, we had lots of help. And then for my own personal use, my husband was very computer literate, so he taught me a lot of things. Now I

> have a grandson that helps a little and I also have a computer guy, so if I need any help...And of course my friend Kathy has helped me as well, but I'm starting to be able to figure out...I can figure out some things on my own, but then some of the technology, no, I have to have help so...

She later said:

> A really savvy friend is more helpful to me than reading it because, I guess I don't learn as well that way. I learn more from repetition, so then if I have somebody show me, then I can replicate...I can write it down as I go through the steps and that's the way I learn, is through documenting things and then go back and do it again on my own using my notes.

Andrea reminds us just how important access to help is when it comes to learning how to use new technology. Many devices have functions that are intuitive for younger generations who grew up with more contemporary forms of technology. But most modern devices and their functions are not intuitive for older adults simply because they did not grow up with this specific kind of technology from a young age, and/or their style of learning is different. As is the case with many learners, older adults may need repetition, patience, and support from a person who can help them learn rather than a book or tutorial that they might not even understand how to get access to. Andrea valued the help of a human and it was clear that she was willing to use new technologies because she had that help.

Many jobs rely on technology nowadays. But back when Janine was just starting to work, technology was new and exciting. She started out her working life with a job at an operating telephone company and it was in that job that she was introduced to technology. She said, "...so it was easy for me to learn what was necessary and I've always been able to have the technology around to find out what's new and exciting." Janine always had a positive attitude and a willingness to learn how to use new ICTs in her path.

This idea of learning what is necessary is interesting because it shows both motivation to learn and also the knowledge that you don't have to learn everything all at once when you are just starting out in the workforce. Many people bite off more than they can chew when they start a new job, and that can lead to stress and burnout. Quantity is valued rather than quality. Learning what is necessary is the first step to learning how to use any sort of technology, and Janine was aware of this. For everything after, she sought support from her husband or her son who was "smart and technology-driven." For older adults, perhaps this idea of taking a piece and learning that piece, rather than taking the whole and learning everything about that whole, is one of the keys to teaching older adults how to use technology. Slow and steady wins the race, most of the time.

Bonnie used ICTs on a daily basis, and generally she was fairly self-sufficient when it came to learning how to use ICTs and solving the problems that came with them. However, when she did need help with an issue that she could not solve on her own, she reached out to her thirty-five year old daughter. As noted earlier, she said, "...she helps

me with a lot of it, if I have questions, but she has encouraged me to try to do things myself, because I have a tendency to...I have found if you think you can't do it, then you're up the crick." So not only did her daughter help her when she needed it, her daughter also encouraged her to experiment and to try to do things on her own. Troubleshooting is definitely a skill, and the more one practices troubleshooting issues, the sharper their skills become. Bonnie was lucky to have a family member that was not only willing to support her when she needed help, but also encouraged her to try and fix things on her own when it was possible.

Sadie was grateful to have support and help from her technologically savvy husband. She talked a bit about how his help and guidance was one of the reasons why she still used certain ICTs. Again, as noted earlier, she explained, "No, I think I could easily wash up on a deserted shore technologically if [my husband] weren't around. I just, would probably just give up at some point and say, 'Too many things need to be updated.'" Without her husband, Sadie would have given up on ICTs a long time ago. She continued to talk about the support her husband had provided her:

> Then after that, because [my husband] is so much more comfortable with technology… I kind of dragged along on his coattails so you know if my computer needed a software upgrade, he could help me get it installed and figure out which end was up. And so it's been really handy to have him around. By myself I would probably be like some of my friends… you know, the printer goes

> out and you just make do without one… COVID has made it so hard for people to get help.

Sadie felt comfortable enough to share some of her feelings and emotions with me regarding ICT use. Everything about ICTs frustrated her, and she said that if she was alone, she would not even bother trying to learn how to use any ICT. Luckily for her, her husband was able to support her learning and he was able to provide that comfort and know-how that she needed.

Being the Support for Others

Karen was spunky and excited about technology and video conferencing services. I could feel her energy through the computer screen. She talked a lot about learning with headaches and having to give her and her friends pep talks, which shows me again that attitude is key here with learning to use ICTs. Communication, connection, access, and support are the other key players here, and I commend Karen for being that support for her friends learning how to use video conferencing services.

When she was working as a secretary, Karen was the support that the other women in her office needed:

> So that's when I got back into the schools as a secretary, and one reason they hired me was because they were...the women there did not have any computer experience. So I was the first secretary to come into a group of eleven women at Centennial High School, and I was able to help the women.

Without Karen's help and support, the women she worked with would have been lost. Later on in her life, Karen continued being that support that her friends needed as they were learning how to use the different video conferencing services out there. She even taught one of her friends how to use Zoom after she had just learned how to use it herself. Karen wanted to help her friends learn video conferencing services so they could continue communicating in different ways during the pandemic. She said, "I just feel supported" and she wanted to then support the people in her life with video conferencing services.

Karen was the type of person who wanted to learn and enjoyed learning. At the same time, she enjoyed teaching and supporting her friends and family. She said,

> I learned a lot of software on my own, without books, so it was just like trial and error. But there are people who...who don't learn that way. And they need...they need some help...direction, verbally or...there's not really books out there except for that Zoom for Dummies book.

One of her many strengths was being aware of how different people learn in different ways. And no matter what, having support in a person or an institution like a public library is key to making older adults feel comfortable while learning something new.

Karen supported many of her friends and family when it came to learning how to use video conferencing services:

> I've even helped my parents in their 80's. We set up Skype and they could get on it and...I would think that they could initiate a Zoom, I don't know that they ever

> did. But that was a long time ago. Zoom. I've helped people with Duo...the 3 people...well I've told people about it and the youngsters can download. Zoom, I helped a couple people with Zoom just because we were trying to see if we could do it on our desktop.

Karen was the support that everyone wished they had. She was excited and patient, and wanted to show others in her life how to use video conferencing services to stay in communication. One of the many things I noticed with these interviews was how each participant felt better using technology if they had some sort of support in the background, whether it be a friend or family member. Support is important when it comes to making older adults feel more comfortable with ICT use.

Ramona also sought support from others and provided support to her friends and family when it came to ICTs. She understood that seeking and providing support would help her and others become more successful with ICT use. Her daughter provided support to her at the time of our interviews, in addition to the genius bar at her local mall. "I have to go quite a drive to get up there, but when I go, it is always worthwhile. And I've actually only been physically up to the bar once. Every other time I walk through the door and somebody has answered my questions."

Ramona also prided herself on providing support to her friends in her senior care home. She discussed a recent instance of this:

> I have a neighbor who lives right across the hall and I love the fact that sometimes I'll hear a little knock on the door, and she'll say, 'How do you get this to work?'

> She came yesterday and knocked on my door and I said, 'Hey, what are you doing?' And she says, 'Well I'm trying to take a picture of myself but how do you take this [phone] and you turn it around to look at yourself but you have to take the picture to see it like this.' And I showed her how to push that one button that turns the camera around and her face just lit up. She said, 'Oh my gosh I wondered how everybody took selfies!'

A little kindness and help go a long way. Ramona's attitude and willingness to help others was commendable. She wanted to show those around her that ICTs could be fun, entertaining, and helpful, while at the same time ridding seniors of feelings of isolation. Ramona enjoyed using ICTs like her phone in order to find information, and she felt young at heart. One of the final experiences she shared with me in her interviews displayed this in spades. She said,

> My daughter and I drove over to Lincoln City for the weekend, last weekend, and we...she got crazy with me. 'Do not pick up your phone when you're driving!' I said, 'But, but, but…'. She said, 'No, don't pick up your phone!'

The child becomes the parent and the parent becomes the child. It is funny how that happens.

Outside Support

In addition to having support from her husband, Sadie also talked about her public library and how, as an institution, it is always available to provide support to older adults. COVID-19 did shut down many public library buildings for an extended period of time,

and that was hard to deal with as public libraries are one of the few places that older adults go to learn how to use technology. Even after COVID-19 is no longer an everyday threat, public libraries will continue to be a center for learning. Sadie valued her library and mentioned several times how important the public library was for her and other older adults who wanted to learn how to use their devices. She mentioned that the public library was that special place where she could go in and ask, “Can you help me figure out how to use this?” Having a place where one can go to ask these kinds of questions is important for older adults.

Sadie said:

> I hope at some point, it’s still for people, you know, as we get older, vision problems, hearing problems, and so forth, the assistance with technology through the library is really critical. And I was trying to picture how many elderly people are out, in homes, stuck maybe with no computer, maybe with no smartphone...

Public libraries are a necessary and valued institution for many older adults, and they have allowed Sadie to be “open to a little more possibility with it [technology]”. There are so many different technologies and reasons for using technology, and Sadie understood that she didn’t even know what was all out there for her to use and experience. The library helped her with “ebooks and audiobooks and just even using the library. I mean that’s not technology, but it gets me to technology.” The library was her bridge to technology, and I know she still heads to her local public library when she has trouble with technology or just wants to learn more.

Sadie's final email to me summed up how she felt about having adequate technology support:

> I'd like to think that I could have found a connection with a good teacher/tech person who could have helped me negotiate the gradual tsunami of tech innovations that have rolled by me. People talk about U-tube [YouTube], texting, zoom, and other applications that I just missed. Hard to know what I might have found useful, but it never occurred to me to try to find that kind of instruction.

Support is everywhere. The problem lies in the fact that many older adults do not know about the avenues of support available to them or they may feel reluctant or afraid to ask for help. In addition, supportive people and institutions must keep the art and science of how adults learn, or andragogy, in mind when they are helping older adults with technology. Sadie learned later in her life that support was available, and she wished all older adults would find and seek help from free sources such as their public library.

Finally, when Samuel was forced into teaching his community college classes online at the end of the Spring 2020 semester, he was provided support by the technology instructors at his college. This support was crucial to his success in teaching over Zoom. The support that Samuel received was one of the main reasons he was able to successfully put on his first class at the end of that Spring semester. He told me that he would have been lost without their help. And while he would have tried to figure things out on his own, he was not sure that he would be successful. The combination of support from his college and his willingness to experiment with Zoom led to his success teaching

classes via Zoom. He was proud of his accomplishment and later mentioned that using Zoom to teach actually saved him a great deal of time and energy. Video conferencing services can be a valuable tool in many different circumstances.

Strengths and Limitations

This study design had three primary limitations. First, not all older adults are interested in learning how to use a new ICT like a video conferencing service, and the participants in this study, all of whom have learned to use an ICT, represent an undetermined fraction of their age population in the US. In other words, we don't know exactly how many folks in the population as a whole a) don't have access to ICTs, b) have the desire to learn, and c) may have already learned and are already highly skilled with ICTs and video conferencing services.

The second limitation is that not all older adults have strong emotional reactions to technology, and not all older adults are interested in discussing their experiences. Not everyone cares much about ICTs like video conferencing services, and not everyone wants to talk about how they feel about ICTs and what it is like to learn how to use one. The learning process can be complicated and overwhelming, so it would make sense that some would be hesitant to talk about or relive those trying experiences.

The third limitation is that I spent a limited amount of time with each participant, totaling approximately three hours of interviews with each participant, and several additional hours communicating with each participant via email and other avenues. It is possible that more and different information may have been shared if I had already had

previous relationships with the participants, or if I had even more time with them during the data collection process; perhaps the participants would have trusted me more and offered deeper insights into their experiences with ICTs and video conferencing services.

While this study did have limitations, there were also four primary strengths of the design. First, the topic is grounded in a time of historical significance with COVID-19 as large portions of the country were and continue to require some folks to communicate through video conferencing services. Second, multiple methods were used (triangulation), including interviews, which allowed for a targeted focus on the topic at hand. Third, within-case and cross-case analysis allowed for a greater understanding of the cases and the topic. And fourth, video conferencing services are a relatively new ICT that has not been studied extensively yet.

Summary

The participants in this study came to me with a variety of strengths, wisdom, insights, creativity, tenacity, dedication, and bravery. Throughout their lives, they were introduced to many different ICTs and they were able to incorporate some of these ICTs into their lives in ways that benefitted them. The five themes I identified in this study create a picture of the eleven older adults and their experiences with ICTs and video conferencing services: Challenges or problems with ICTs led to feelings and sometimes expressions of frustration and avoidance of technology in older adults, career choice or COVID-19 forced older adults into using ICTs and video conferencing services, ICTs and video conferencing services serve as tools to help older adults connect while aging in

place, learning how to use ICTs is trial and error, and having access to support with ICTs from family or friends is important. The five themes essentially offer a bigger and wider picture that illustrates the range of feelings and emotions older adults can experience when using ICTs and video conferencing services due to the different issues, problems, barriers, surprises, rewards, and benefits that emerge during that process. The eleven participants in this study had some similar experiences while also having very different experiences. In the end, however, the five themes presented answered the three research questions in this study in new and surprising ways.

Chapter 5: Discussion

Introduction

I begin chapter five with a synthesis of my study's findings by theme, which answers the three research questions:

R1: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically?

R2: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services?

R3: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video conferencing services?

I then continue the discussion by sharing the implications of the study, as well as the potential limitations that came up during the study process, which include my own bias and positionality. Finally, I offer recommendations for future research beyond what I have established.

Synthesis of Findings

As noted in Chapter 4, the participants in this work provided tremendous evidence of their wisdom, willingness to learn, and rich life experiences. "Older adults are a diverse population, with a wide range of life histories, beliefs and practices" (Lund, 2021, p. 294). The older adults in this study have so many assets and they came to this learning of ICTs with a huge foundation of experience, insight, and success in previous endeavors

unrelated to ICTs. To learn more about how these assets connect to the use of ICTs and video conferencing services, I used a comparative or multiple-case study design to collect data from eleven older adults to understand how they described and explained their experiences with ICTs and video conferencing services, as well as the emotions those experiences brought about. Using interviews, observations, and artifacts like email exchanges, I collected data over a six month period. Data analysis went on for another several months. I performed two rounds of first cycle coding for each participant interview. For the first round of coding, I started with attribute coding and initial coding, and then moved on to descriptive coding, InVivo coding, and emotion coding. After, I moved on to code mapping, in order to form the final themes I will discuss further in this chapter. Those themes are:

- Challenges or problems with ICTs led to feelings and sometimes expressions of frustration and avoidance of technology in older adults.
- Career choice or COVID-19 required older adults to use ICTs and video conferencing services.
- ICTs and video conferencing services serve as a tool to help older adults connect while aging in place.
- Learning how to use ICTs took place through trial and error.
- Having access to support with ICTs from family or friends was important.

Using a multiple-case study design allowed me to hone in on the experiences of the individual cases of older adults in order to look at the unique ways each participant had experienced and used ICTs and video conferencing services.

In reflecting on this work, and especially the centrality of connectedness in my focus, I am reminded of Kincheloe's (2011) work on critical ontology and this particular passage:

> A critical ontology involves the process of reconnecting human beings on a variety of levels and in numerous ways to a living social and physical web of reality, to a living cosmos. Teachers with a critical ontological vision help students connect to the civic web of the political domain, the biotic web of the natural world, the social web of human life, and the epistemological web of knowledge production. In this manner, we all move to the realm of critical ontology where new ways of being and new ways of being connected reshape all people. (p. 204)

Kincheloe's critical ontology demands a deep level of engagement with one's self and one's community with layers of empowerment, action, and human agency (Meyer, 2011). "Critical ontology is obsessed with new and better ways of being human, being with others, and the creation of environments where mutual growth of individuals is promoted and symbiotic learning relationships are cultivated" (Kincheloe, 2003, p. 54). We are all connected in this world in many different ways, and this study allowed me to see that in new ways. We can help one another learn and grow into the older adults we want to be.

Older adults are best served when they reach a point with ICTs where they feel empowered to take action to learn how to incorporate ICTs into their lives. This is going to happen most easily with help and direction from folks who have already incorporated ICTs in their lives. We all construct knowledge in different ways, but because of this, we can learn from each other. Kincheloe reminds us that "thinking in new ways always necessitates personal transformation; indeed if enough people think in new ways, social transformation is inevitable" (Kincheloe, 2003, p. 56). There is a social transformation going on as we speak, with ICTs quickly being embedded and interwoven in our society. It is important to remember the connectedness that we all have to each other so we can help older adults be included in this social transformation.

Theme 1: Challenges and Frustration

Although all participants in this study have a history of success in navigating new situations, tools, and scenarios, the first and primary theme that emerged in this study was that challenges or problems with ICTs led to feelings and sometimes expressions of frustration and avoidance of technology in older adults. Even though each participant had countless successes in life with other challenging situations, through my interviews, I found that each participant has had to confront multiple challenges or issues when it comes to ICT use. Many participants have actively tried to incorporate technology into their lives, but like Sadie said, they may be going in with limited experience and a patience level of zero. Bonnie mentioned that older adults perhaps get overwhelmed because younger generations have grown up with ICTs from the beginning, meaning for

younger people it's second nature at this point. Younger generations have been building their digital and critical literacy skills by adopting and learning how to use ICTs. ICT use is not necessarily second nature to older adults, which means they may also lack robust digital and critical literacy skills that they need to successfully use and incorporate ICTs into their lives. Technology is certainly a major hurdle for many older adults because they did not grow up with technology younger generations have often experienced for their entire lives. "It seems like a stumbling block for a lot of us," Bonnie said.

New ICTs are released to the public every day, and that is partly because these devices are not built to last for extended periods of time. Smartphones and laptops need to be replaced, and software needs to be updated frequently, which can be costly to those who are on fixed incomes. Sadie talked about how the idea that every software update or new device is supposed to improve one's ability or experience using the new software or device does not apply to everyone, especially older adults. Sadie made a great point that not everyone needs or is as excited about new devices, new software, or new games as others are. Each and every "little improvement" can lead to more confusion, frustration, and cost for older adults. It can be difficult to remain current without the money or experience needed to keep up. And for those who value privacy and caution on the internet, new is not always better. This can be a significant factor for many older adults when it comes to ICT use.

Another major issue or challenge with ICT use has to do with the language, and specifically the technology jargon, that older adults confront every time they use ICTs.

There are countless devices, types of software, and ways of using technology that the average older adult may have issues with understanding. Just as is the case for anyone engaging in a new field of study or exploration, the use of specific technology jargon without providing clear explanations and definitions does not help older adults with understanding how to use new technologies, and failing to ensure they understand the terms may in fact be setting older adults up to fail with technology. Communicating a technology issue can be very difficult for older adults who do not have the vocabulary that those more familiar with the technological landscape (such as family members or those in formal tech support) may use.

This brings me to another challenge that older adults may face while using ICTs, which is that many aspects of daily life refer back to technology, which can make life difficult for those resisting, reluctant, or avoiding technology. Bonnie said, "Technology is such a part of our lives now." Once you have learned to incorporate and rely on certain kinds of technology, it is almost impossible to go backwards or to go without it. Increasingly, multiple aspects of daily life require the user to engage with some form of technology. For example, do you need help setting up your new television or Comcast account? Go online. Do you need to look at a restaurant menu in the times of COVID-19? Scan the QR code at your table. Customer service is changing, and increasingly moving towards "customer self-service," reliant on chatbots or virtual agents (Nextiva, 2021), with person-to-person interactions becoming more rare. The problem is that many older adults do not have the device, internet, or the established skill set to interact with the

digital world in this way. For example, my grandparents, who were born in the 1930's, never owned a smartphone, so if they went to a restaurant today and found a QR code at their table for the menu, they would be lost. To ensure the ongoing, active participation in daily life of our senior population, we must provide accommodations in the form of alternative options for older adults in situations like this, or we must provide them with the knowledge and equipment to interact with the world in these new ways.

Finally, at times, attitude towards technology was a significant barrier for the older adults in this study when it came to ICT use. Sadie demonstrated tremendous awareness of her attitude toward technology and the barriers she confronted on a consistent basis. This threads back to chapter two, wherein I discussed Appraisal Theory (Arnold, 1960). To repeat, "In its simplest form, its [Appraisal Theory] essence is the claim that emotions are elicited by evaluations (appraisals) of events and situations" (Roseman & Smith, 2001, p. 3). Richard Lazarus (1984), the American psychologist known for his contributions to Appraisal Theory, also said that "emotions are 'constantly in a state of flux,' which means that the cognitions shaping the emotional reaction are affected by the interaction between emotion-eliciting conditions and coping processes" (Schorr, 2001, p. 23). In one of her interviews, Sadie talked about her "disaster" of a Zoom-based poetry class, and her recognition of the "interaction that happens when you aren't particularly good at something, at least for me and some other people." She then explained that, "You can sense that you're not gonna be able to pick this up instantly, and it kinda makes you mad." This can result in shutting down the learning process and

eventually, she mentioned, dropping out of the class that she so desperately wanted to be a part of and learn from. Appraisal Theory explains that because her initial experience, and a few experiences after that, were perceived by her to be negative, the emotions of anger and frustration further impacted her choices about using technology in the future.

This first theme, which was that challenges or problems with ICTs led to feelings and sometimes expressions of frustration and avoidance of technology in older adults, offers opportunities for a way forward. Some of those challenges or problems that older adults face include lacking digital and critical literacy skills, technology needing constant updates, the tech jargon and language used, the fact that many aspects of daily life refer us back to technology, and attitude. Each of these challenges or barriers can lead to a myriad of feelings and frustration. Because feelings like anger and frustration can impede the progress of older adults in learning to effectively engage with ICTs, it will be increasingly important for device manufacturers, software developers, community service organizations, support folks, and family members to continue to work to find ways to ensure older adults are supported in ways that are most appropriately tailored to their unique needs.

Theme 2: Career Choice and COVID-19

The second theme that emerged from the data was that the older people in this study began engaging with ICTs and video conferencing services because career choices or COVID-19 required them to do so. When COVID-19 reached pandemic status, school, business, and countless other forms of engagement had to move online. Suddenly, older

tablets and computers were not good enough. In order to participate in classes, business meetings, or even medical appointments, the expectation was that everyone needed a camera, microphone, and a stable WiFi connection. Some devices come with those built in, but many people had to quickly acquire webcams and software that would support video conferencing services so they could interact with the outside world from a safe location.

Video conferencing services have been around for several decades, but the pandemic made them a more commonly called-upon tool very quickly. Connection is what we all need, especially while the pandemic forced many to isolate for long periods of time in order to stay safe. Video conferencing services allow for that connection to be made as long as there is a reliable internet connection and a capable device. While many participants in this study, as well as many others, felt like they were forced into using video conferencing services, perhaps that served as a kind of incentive to learn how to use them. The term “forced” sounds harsh, but yet in the context of ICT use, it can carry a somewhat positive connotation, because being forced to learn how to use technology can end up benefiting whoever is being forced to learn. Some synonyms for the term “force” are compel, necessitate, drive, push, and press, each with a slightly different connotation, which are not inherently negative. The word “force” clearly had more of a positive connotation to the older adults in this study, because being forced led them to success in learning how to use ICTs such as video conferencing services. Eve said, “...but it’s also been the benefit that has forced us” to use video conferencing services. Video

conferencing services, according to Eve, reshaped the healthcare industry at a time when it needed to adapt to the major changes going on in the world. Because of this, many people in the US, especially older adults, were able to safely connect with their doctors without having to see them in person.

Theme 3: ICTs as Tools

The third theme to have emerged from the data was that ICTs and video conferencing services serve as tools to help older adults connect with their family, friends, and healthcare professionals, to name a few, while aging in place. Computers and other ICTs are meant to be functional and useful in one's life and work, and not scary or intimidating. It is clear that Bonnie saw video conferencing services as a tool to communicate with her friends and family. She said, "...it's a tool, but you have to learn… I think it's accessible for anybody no matter your age" as long as you are willing to learn. This accessibility is key for older adults, because the more complex an ICT is to use, the less likely someone will try to learn how to use it. The Technology Acceptance Model (Davis, 1986) details this accessibility by suggesting that computer usage (or some other technology usage) is determined by "Behavioral Intention" (p. 985), which is an individual's readiness to perform a given behavior (Ajzen, 2006). At the same time, that Behavioral Intention is jointly determined by the person's "Attitude Toward Using" (Davis, 1986, p. 985) the system and "Perceived Usefulness" (p. 985). According to Davis' 1986 Technology Acceptance Model, all three of these factors must work together if a person is to continue using a technology. This was clearly the case with Bonnie, who

many may see as a positive role model, because she understood the value of ICTs like video conferencing services, and she was willing to experiment in order to continue communicating with those outside of her everyday environment. Arnold's Appraisal Theory (1960) allows us to understand that if the initial experience with an ICT is positive and an older adult understands what they are learning, then they might experience positive feelings, because they have appraised the experience as one that could have positive long-term effects on their life. These emotions will further impact the choices they make about technology in the future. Bonnie had a positive attitude toward ICTs because the experiences she had with ICTs confirmed that they were useful in her life.

Wyatt, on the other hand, did not believe that attitude was as important as understanding the basics of technology. He said, "I think the major reason that you fall on one side or the other [of the digital divide] is whether or not you understand the basics of how computers work. And hardly anyone teaches that [technology basics like prerequisite skills]." Wyatt is not talking about how computers function on a technological level; he's talking about how humans do things to make computers function. He later said that people can and will be successful in using ICTs if they understand how to communicate with the tool itself. "The tool is relatively transparent and very flexible… But again, the operator is not the tool. If you only have a hammer, everything looks like a nail." ICTs and video conferencing services are tools, and Wyatt is perhaps the only participant who addressed this fact. He understood that there is a time and a place to use ICTs, and when

problems occur, it is more often likely to be because the user is unfamiliar with how to proceed, rather than the ICT being broken or malfunctioning.

ICTs are rarely designed with older adults in mind, which is clearly to the detriment of this population. The keyboards on phones are too small for many, the font on the screen can be difficult to read (being too small, too bright, or too dim), and very few ICTs are intuitive for beginners or others who don't have a lot of experience with ICTs in general. In contrast, if I, at age thirty today, were to buy a new smartphone, I would feel confident in playing around and learning how to use it. Many of the functions on my past smartphones are either identical or very similar to the new models, therefore making the learning of this new phone intuitive for me. Because I have had a steady contact with technology, an uninterrupted relationship if you will, the minor updates and changes are not dramatic enough to make the functionality inaccessible. It's my ongoing relationship with technology that has made any new features accessible to me. The same may not be true for older adults who buy new smartphones, especially for the first time, because they bring no historical memory of how previous smartphones have worked, rendering *all* of the features and functionality new to them. Similarly, thanks to the time and context in which I was born, I have a great deal of experience using video conferencing services like Zoom on many different devices. Because I have experimented with Zoom and its functions on multiple devices, I could easily learn how to operate Zoom on my new smartphone. All of this is to say what feels intuitive for me is not usually intuitive for older adults who may not have had a similarly uninterrupted flow of experiences with

these devices and tools. As we move forward, more technology needs to be designed with older adults and other newcomers to the technology in mind. This accessibility is especially key for older adults, because the more complex an ICT is to use, the less likely someone will try to learn how to use it. And "once you realize the ease of using it, then you are allowing yourself to be open to other technologies," according to Eve. Being open is critical.

Theme 4: Trial and Error

The fourth theme that emerged from my data was that learning how to use ICTs took place through trial and error. Learning often means experimenting. Learning often means doing or trying and not being afraid to fail. In addition to ensuring the tools are accessible, mindset and attitude matter. Understanding the basics of technology matters. When talking about the construct of "operator errors," Wyatt noted,

> If you don't tell the computer to check and see if you're sitting down, it doesn't know anything about that. If you say 'Open the door,' it's sitting in a chair. It doesn't know how to go to the door from sitting in a chair. You gotta tell it, "Stand up, face the door, walk until you get to it," you know… one of the rules is computers do what you tell them to do, not what you thought you told them to do.

The profoundness of these statements offer evidence of Wyatt's logical thinking, and his ability to think and do things fully knowing where the problems actually are. I believe that is one of the many reasons why older adults may encounter challenges with the technologies they use. You can't make a call unless you turn your phone on. You can't

take a picture with your phone unless the camera is on or open. You can't send a text to your friend until you open the messaging app and you also have your friend's phone number. While these may seem like obvious steps for those familiar with using these tools, much of this information is unfamiliar to older adults, as they spent the majority of their lives in a mostly analog (and not digital) world. So many issues and errors are a result of "operator errors," as Wyatt put it, and not device or software failure. The devices and systems have been designed to require Step 1 before Step 2.

In keeping with the theme of the importance of trial and error, in one of her interviews, Andrea explained that she wanted to tell other older adults to not be afraid to learn all the new technology and try all different types right now rather than pushing it off or waiting too long. She mentioned that it is so much "easier to learn with a younger mind because as we all get older, we get more set in our ways and it's a little more difficult to try and learn new things!" Kimberly mirrored this sentiment when she said she liked to learn and figure things out on her own, but her drive to solve problems dissipated the older she got. This is one of the many reasons why it may be beneficial to support older adults in adopting ICTs earlier in their lives, rather than waiting until later.

Theme 5: Support Matters

The fifth and final theme was that having access to support with ICTs from family or friends matters. Every single participant mentioned this in their interviews, because they all believe support is crucial for older adults when learning how to use ICTs like video conferencing services. Just as each participant had offered support to others

throughout their lives, older adults may need someone around them who can be patient, kind, and reassure them when it comes to learning how to use new technologies. This kind of comforting and encouraging presence is a huge part of what matters to them. Older adults also benefit from the support of other older adults, which can create a circle of support wherever an older adult goes. Ageism remains a pernicious issue in the US, and those that provide support to older adults must actively work against ageism and age-based discrimination.

Andrea addressed this idea of peer support, noting, “A really savvy friend is more helpful to me than reading it [instructions for using a specific technological tool]…”. Many devices have functions that are intuitive for younger generations, due to repeated previous exposure, but many devices and their functions are not intuitive for older adults either because they did not grow up with technology and/or their style of learning is not catered to by the supports typically included with the device or product being used. Older adults may need repetition, patience, and support from a person who can help them learn, rather than a book or tutorial that they might not understand how to access.

Support is important, but that support is most beneficial when it encourages the learner to try on their own, in addition to being calm and kind. Giving voice to this specific approach, Weimer (2013) said, “Constructivism, as a theory of learning, recognizes that teaching is less about ‘covering’ content and more about using the content to develop unique and individual ways of understanding” (Stabile & Ersher, 2015, p. 14). Through this lens, knowledge is actively constructed by the learner, which means that the

relationship between teaching and learning is about "interactions, growth, and development" (Fosnot, 2005). Constructivism tells us that learning is a "messy process" because it is relative to the individual (Stabile & Ersher, 2015, p. 14). Bonnie made this point in one of her interviews, when she talked about how other people's words can evoke stress in older adults even more when it comes to learning how to use ICTs, because it can be a "messy process." Just as is the case with learners at all ages, statements like "Haven't I told you this before?" and "Oh, it's not that hard" will not make an older adult feel better about their abilities. In fact, these statements can make older adults uncomfortable, embarrassed, and upset, as these statements are examples of elderspeak, which is "a speech style similar to baby talk, that fails to communicate appropriate respect" (Williams et al., 2004, p. 17). Those who support older adults with ICTs must be mindful in selecting the words they use as guidance, correction, and reinforcement, as well as mindful of tone and inflection, as statements like those stated above can negate any positivity towards learning a new technology that an older adult may have.

Related to the idea of support is the construct of caring, and what it means to demonstrate care, as well as to feel cared for. Nel Noddings wrote extensively on the topic of care ethics, starting in the 1980's. Noddings (2012) said that care ethics in teaching involves a "discussion of the central elements in establishing and maintaining relations of care and trust which include listening, dialogue, critical thinking, reflective response, and making thoughtful connections" (p. 771). The carer, or in this case, the

supporter of an older adult, must perform all of the above tasks if they are to create a climate of caring in order to help their learner succeed. Drawing from and understanding both constructivism and Nel Noddings' care ethics can certainly assist those who support older adults with ICTs.

Finally, outside support from institutions, such as public libraries, can be important and useful as well. Sadie talked a lot about her own public library, and how she felt like it was one of the few places she could go to get technology help. She said, "...as we get older, vision problems, hearing problems, and so forth, the assistance with technology through the library is really critical." Public libraries are often a good place to get information and to learn how to use and interact with ICTs. While public libraries and their staff may not know how to use every single device that is available, many have background knowledge and know the basics of the devices they may be asked to help with. It is imperative that older adults are aware that public libraries can be a safe space for them to experiment and learn how to use ICTs, and it is also imperative that public library staff are well prepared to support older adults in learning to use ICTs.

Research Questions

Based on the insights and experiences shared by the participants in this study, I offer this synthesis of the answers to my research questions.

Research question 1 was: How do the older adults in this study describe and explain their experiences learning how to use ICTs in general and video conferencing services specifically? While it was abundantly evident that each participant had decades

of history in successfully learning various skills, this first question was answered by each participant as they went through their past and current history learning how to use ICTs and video conferencing services. Although all participants ultimately learned some level of familiarity in using ICTs, some participants had positive experiences overall while others had largely negative experiences. It was these different experiences that led to a variety of feelings and expressions of frustration, which I will discuss next.

Research question 2 was: What are the emotions older adults in this study experience while learning how to use ICTs and video conferencing services? The participants came to this study with rich life experiences and insight from those experiences, and they reported feeling a variety of emotions, both positive and negative, in response to learning to use ICTs. For multiple reasons, our conversations tended to focus more on the negative emotions and feelings, most notably anger, frustration, embarrassment, fear, overwhelmedness, and everything in between. Some participants felt all of these feelings at once while others moved back and forth between them. The participants in this study also reported feeling a variety of positive emotions and feelings like happiness, empowerment, excitement, joy, and hope, to name a few. Whether the participants were sharing their experiences and history with ICTs in general or video conferencing services specifically, they experienced a range of different feelings and emotions that were dependent on many factors, which I will discuss next.

Research question 3 was: To what do the older adults in this study attribute the emotions they experience when learning how to use ICTs, and specifically, video

conferencing services? Participants attributed their feelings and emotions to a variety of factors including barriers associated with aging like memory issues, cost of ICTs, isolation, connection issues, lacking skills and knowledge about ICTs (critical and digital literacy), constant changes with technology, tech jargon, privacy concerns, and lack of caring and willing support. While not every participant experienced each one of these barriers, every participant experienced more than one barrier during their history with learning how to use ICTs and video conferencing services. Additionally, each participant seemed hopeful that these barriers would disappear in time, due to their past learning experiences and the wisdom they gained from those experiences.

Implications for Practice

Due to the small pool of eleven participants from a limited geographic area, I do not suggest that the results of my research are generalizable across the broader population of older adults in the US. However, I do assert the importance of my findings, especially in the time of the COVID-19 pandemic and the increased reliance on ICTs for communication and connection. Although my findings rely on self-report methods of participants' perceptions, these insights have implications for practice. I note three main areas where findings from my study have implications for practice and policies regarding older adults and the use of ICTs and video conferencing services. These implications include (a) countering ageism (b) bridging the digital divide by teaching digital and critical literacy skills, and (c) providing access to positive ICT support that anticipates

and addresses the emotions older adults may feel when learning to use ICTs like video conferencing services.

Countering Ageism. It is my belief that public libraries, senior centers, schools, and other similar institutions can do more to counter the ageism that older adults confront on a daily basis, both from their younger peers, as well as from those in their same-age cohort who may have internalized ageist ideas from their own upbringing. Ageism is deeply ingrained in the US, as we are in an "age of ageism" (Nelson, 2016, p. 191), and ageism affects how older adults are framed in the policies and practices of this country. Levy and Banaji (2002) said that although ageism is quite prevalent, it is one of the most tolerated forms of prejudice as there are few or no social consequences for people who express ageism towards older adults. In addition, research on ageism lags behind research on other types of prejudice, such as racism and sexism (Firzly et al., 2021).

As it is so deeply entrenched, ageism will not go away overnight, but there are different ways that public libraries, senior centers, schools, and other similar institutions can actively counter and fight ageist beliefs and practices that may or may not contribute to feelings and expressions of frustration from older adults. First, public library and senior center staff should be provided with educational opportunities that teach them to identify and work through ageist beliefs that they may have learned. These opportunities should also educate staff on elderspeak (2004) and how to communicate with older adults in ways that are supportive and respectful. Second, public libraries and senior centers can facilitate intergenerational conversations and programs about aging and what it means to

grow old in this country. For example, Bartlett et al. (2021) did a study that matched undergraduate students and older adults who met criteria for "successful aging," in a mutual interviewing, life review project utilizing documentary film, photography, and memoir creation. The end results determined that students who participated in the collaboration with older adults showed less stereotypical beliefs and biases about aging than their counterparts who did not engage in the collaboration. The authors found that programs that are more "relational, in-depth, more experiential and less didactic may be useful for consideration in undergraduate psychology or human service programs in reducing ageism" (Bartlett et al., 2021). "Services that enable older adults to contribute as well as be recognized for their contributions could not only be of benefit to all, but also serve to combat these stereotypes" (Chen et al., 2021, p. 193). Both public libraries and schools can follow this example and create programs and assignments that focus on warm and respectful intergenerational communication.

Bridging the digital divide by teaching digital and critical literacy skills.

Wyatt said that older adults need to understand the basics of how computers and other ICTs work, and he lamented that there seem to be few opportunities for older adults to learn those skills. Not being familiar with the basics is perhaps one of the most obvious reasons that some older adults experience such a range of emotions when learning how to use a new ICT. It is time to provide older adults with thoughtfully created pathways to accessing ICTs through teaching them basics in ways that are appropriate for adult learners, with the goal of successfully bridging the digital divide. In order to do this, there

must be settings wherein older adults can learn digital and critical literacy skills, as these skills are a prerequisite for understanding how ICTs work. “This lack of digital technology knowledge, experience and use, may lead to other issues like diminished digital literacy. These populations may be targeted through education and outreach to promote adoption of these technologies” (Lund, 2021, p. 300-301). Studies show that digital skills and literacy training programs for older adults can help to extend digital inclusion, which remains a policy challenge around the world (Suchowerska & McCosker, 2021).

The public library is one institution that, in many communities, has the accessibility, resources, and the reach to teach digital and critical literacy skills, and many public libraries are already holding classes and other programs that teach these skills. Senior centers are another option. Many older adults go to their local libraries (or senior centers) for help with technology, sometimes on a one-on-one basis, and at other times, in a group setting. Librarians like myself should start or continue to create programs and classes that are specifically intended to teach older adults both digital and critical literacy skills, all of which can build upon the rich skills the adults already bring, in order to set them up for success with future ICT use. Older adults' digital participation can benefit from the ICT training and programs that organizations and institutions, such as public libraries, can provide. Intergenerational mentoring (Breck et al., 2018), computer club-like gatherings in local spaces (Millard et al., 2018), or special programs in local public libraries (Jaeger et al., 2012) show how community-based organizations like the

public library can provide support to help older adults learn about, develop, and practice their digital and critical literacy skills. One can neither effectively nor safely use ICTs without knowing the basics, and these literacy skills are the first step to successfully using ICTs in order to bridge the digital divide.

Addressing the feelings and frustrations older adults may feel when learning to use ICTs like video conferencing services by applying ideas from the field of andragogy. Andragogy is the "art and science of helping adults learn" (Knowles, 1980, p. 43) and it outlines four assumptions about the learning environment: 1) The teacher is a facilitator of a co-constructed experience of learning focusing on autonomy and self-actualization, 2) Different instructional methods assist in identifying gaps and strategies for how to fill the gaps between what the learner knows and doesn't know, 3) Real-world scenarios are the organizing structure for the learning process, and 4) Scenarios should be scaffolded with the desired learning outcomes and current developmental level in mind (Frey, 2018). Creating and developing library services for older adults is crucial. Specifically, it is crucial to provide access to live support, with people who can understand and be in solidarity with older adults as they experience a range of emotions and feelings. Public library staff, senior center staff, and technology help specialists should draw from the field of andragogy in order to learn strategies to engage with older adults that cater to their needs. Andragogical methods are effective in increasing "learners' situational interest, cognitive complexity, clinical reasoning, lifelong learning skills, satisfaction, long-term retention" (Frey, 2018) and performance

on many other tasks. The older adults in this study stated that they need support from people who can go slowly and spend the time necessary to repeat and go over what they need to learn at a pace appropriate to their level of understanding in any given moment. The older adults in this study also said that they need their supportive person or persons to be cognizant of their word choices when providing help.

As is the case with those at any age, older adults may experience cognitive changes or impairments, so their learning may be slower than support persons might anticipate. If a staff member helping an older adult says, “But I already showed you how to do this” while teaching an older adult how to access their email account, then the older adult may have an emotional response that most likely will be negative. Older adult learners may have feelings of fear, embarrassment, overwhelmedness, or discomfort, to name just a few. It is very possible to educate staff at institutions that provide technology support by drawing from the field of andragogy in order to be mindful of the ways in which they communicate, and to focus on techniques to recognize the strengths and skills the learners bring, and to provide comforting and supportive language in response to challenges. For example, Great Britain established an open learning program designed to help instructors of information technology courses become effective tutors. Each tutor had to complete 30 hours of modules that focused on topics such as how adults learn, approaches to learning, feedback, pace and review, and supporting older learners (Clarke et al., 1999). Perhaps those who provide technology support in any setting can have

access to continuing education opportunities such as this, so they understand and know how to interact with the older adults seeking support in their continued learning.

Limitations and Bias

My positionality is the most significant limitation of this study. My positionality has played a central role in all aspects of my study, including the ways I approached the topic, my review of the literature, my framing of my research questions, the process through which I engaged with my participants, and my research findings as a whole. I had multiple interactions with each participant through interviews, observations, and email correspondences. The person that I am, the career that I have, and the experiences that I have been through influenced how I conducted my research study. To understand the way this study was created and conducted, I must again address who I am and how it impacted this study.

I am a White, cisgender, middle-income, woman in my early thirties. I am also a well-educated librarian who has spent almost a decade working in public libraries to work in solidarity with diverse communities with a range of socioeconomic statuses. I came to my research aware that my lived experiences differ from the participants in the study, mostly in that my participants were older adults with limited experience with technology. Throughout this research, I did my best to remain aware of who I am while also understanding that who I am might affect my research. My goal with this research was to learn from and with my participants through the research process.

As a researcher, I acknowledge the various manifestations of power I have when it comes to the relationship between researcher and participant, including aspects of power that were perhaps surfaced and noted, as well as other aspects that may have gone unmentioned or unrecognized. I acknowledge that my role as a young librarian, with multiple academic degrees, and a great deal of experience with technology may have influenced who joined the study and how they interacted with me in our interviews and conversations. Rather than denying who I am and how it may have influenced this study, I wanted to explicitly address this and be transparent about my position and role as researcher. Identity is a shifting, ongoing process in qualitative research (Bone et al., 2018), and identity is considered to be both an entity and an ongoing, dynamic process in which we develop, evaluate, and reevaluate our self-image in the context of others in our environment (Chatman et al., 2005). “Identity is a construct and a process of identification that presents as complex and compelling, and with reflexive elements that enhance the qualitative research process from beginning to end" (Bone et al., 2018, p. 534). My identity changed throughout this study, and that is to the benefit of the qualitative research process.

I did my best to constantly and consistently communicate my appreciation and care for every participant as their identities changed during the research process, as well. I let them know that it was my goal to learn from them and with them during the research process, and I also let them know that they could ask any questions they felt necessary to learn more about me and my work. While the data collection portion of this study only

lasted several months, I was able to build short, but meaningful relationships with my participants. “The researcher enters the informants’ world and through ongoing interaction, seeks the informants’ perspectives and meanings” (Creswell, 1994, p. 161). Both myself as researcher and the participants in this study redefined our positions and power throughout the interview process. The participants' approaches gave “prominence to human agency and personal associations of meanings” (Bravo-Moreno, 2015) through structured, but open-ended interviews. This is why a qualitative approach was the best way to explore the research questions I explored through this study.

Another significant limitation of this study is the limited diversity in my participant pool, which while offering a rich window into the lives and experiences of eleven individuals, does narrow the impact of my findings. Although my participants had a wide range of socioeconomic backgrounds, they all identified as White. My goal was also to recruit half male and half female participants; however, I was delighted to engage in this project with three male and eight female participants. I attribute this proportion to my recruitment strategy, which involved potential participants reaching out to me if they wanted to participate in this study, rather than me reaching out to potential participants. The impact of this self-nomination is that all participants represent those who want to talk, who seek connection, and who want to be in touch with others. The eleven participants in this study are the voices that are being heard, but it is important to acknowledge those whose voices are not present in this study. Although there is of course no way to know why folks would have chosen not to volunteer, some possible reasons

might be because they are not comfortable with technology, including video conferencing services, they wish their experiences with technology to remain private, or they simply do not know or trust me. While all the rich and descriptive data brings value to this field of research, I must acknowledge and clearly express the impact of having a narrow participant pool on my study. Everyone in this study started with some level of success with video conferencing, had the financial circumstances to have access to technology, used English fluently, and had the level of mental acuity to engage in the process of these interviews. Due to the COVID-19 pandemic (and not being able to meet with participants in person), I was only able to speak to folks who had relative success with ICTs and video conferencing services, but there are many other folks who had access but no success, limited success, or no desire at all to use ICTs. These missing voices did impact the results of this study, and it is clear that many diverse voices are missing in this study. This is certainly an area where I would like to continue my research with those missing voices; those who may not have had success with or even used video conferencing, those who do not have the financial resources to access technology, those who speak other languages, and those who may have a difficult time learning. While the findings and implications in this study are significant and important, there are many other diverse voices and experiences missing, and this is a fact that I would like to address in the next section on recommendations for future research.

In the end, even with the limitations and bias in this study, the findings are important for older adults and the people and institutions that exist to help them learn how to use ICTs.

Recommendations for Future Research

Through this study, I have explained many aspects of how older adults describe and explain their experiences, barriers, and emotions associated with learning how to use ICTs and video conferencing services. However, this study only begins to reveal the experiences of these older adults, and older adults not in this study also have a wide range of experiences to share. The findings from this study offer several new avenues for research that can clarify and expound the best ways to support older adults with incorporating ICTs and video conferencing services into their daily lives.

First, the sample size for this study was relatively small, with eleven participants total. In addition, the participant pool was not as diverse as it could have been. Therefore, repeating this study with a larger participant pool and a wide range of diverse participants (age, gender, ethnic background, socioeconomic background) would be the first recommendation for future research because these missing voices might have incredibly different experiences, perspectives, and ideas than those in this study. Also, gathering participants from different settings may prove to be valuable as well, because geography might impact older adults' experiences with and access to ICTs. We live in a world where there are glaring inequities in ICT and internet access according to where we live, what we look like, and who we are. In including a broader range of voices and experiences,

this would provide allies and advocates of older adults to learn more about how best to offer support and solidarity in learning to use ICTs, and to learn about ways different identity and/or circumstantial characteristics may change the narrative.

Technology influences everyday life for so many people, and technology has a major influence on culture as a whole. “The new information technologies and their global diffusion have radically influenced the changes in Western society and locally” (Combi, 2016, p. 4). This means there are cultural implications here, both within this study and for those who chose to participate in this study. Our culture impacts our responses to everyday, normal events. “We are frequently unaware of the way we value time, perceive spatial boundaries, and communicate with others” (Ellis Fletcher, 2002, p. 86). The participants in this study were all culturally unique individuals, having walked varying paths through life, but they all identified as white, and were all living in the US, with English as their primary language. And although many people living in the US rely on technology for communication, and understand the need for technology in their lives, it is important to note here that not all cultures, both within the US and outside of it, use or value technology. However, technology is a common part of US culture, and the participants in this study were all acutely aware of the omnipresence of technology. Some embraced technology, while others tried to keep it at a distance. In the end, the “influence culture places upon our daily lives is significant. As humans we encounter the same basic problems. The major differences lie in our perception of the problem, and our ability to solve the problem” (Ellis Fletcher, 2002, p. 86). To the point Ellis Fletcher made,

technology is one tool that many people in the US use to solve their everyday problems. Having said this, it would be both enlightening and interesting to include other participants from other contexts, cultures, or belief systems that may not rely on technology to meet their everyday needs, particularly as US demographics continue to diversify.

Second, I think it could be tremendously informative to bear witness to the process through which older adults learn how to use a new ICT. Due to the COVID-19 pandemic, I was not able to bear witness to participants as they were learning, due to safety issues and protocols in place at that time. However, being present while older adults learn how to use a new ICT (or video conferencing service) may allow me to learn more about the emotional processes they may experience in real time. This in-person, live (and not recollected) experience could take place on a one-on-one basis, or it could take place in a setting such as a public library program that is teaching older adults how to use an ICT, such as a beginner's e-reader program that teaches participants how to download digital material onto their e-reader devices. Witnessing the learning and emotional processes in real time, as opposed to asking folks to recall their experiences, will provide me with better, richer data because I will be a part of the experience rather than just hearing about it.

Third, I would like to learn more about what older adults consider to be "technology" and delve more into the history of the participants' experiences with being introduced to technology, in order to see how their past experiences with ICTs influenced

their future use of ICTs. One of the core assumptions of andragogy says that adult learners have "invaluable resources from their previous experiences that can enrich their current educational endeavors" (Frey, 2018). Many participants talked about the serious barriers they faced with learning how to use ICTs, and it is my belief that past experiences hold one of the keys to understanding the barriers and the emotional responses that result from them. This information could come through multiple conversations with a more detailed focus on their past.

Conclusion

In this chapter, I synthesized the findings of this study within the context of the problem of practice, purpose of the study, and the literature. I outlined implications for practice including how the findings of this study can assist the people and institutions that help older adults with learning how to use and incorporate ICTs into their lives. I also outlined the limitations and my own bias in this study. Finally, I suggested next steps for future research, all of which I see as next steps in my research agenda as both a scholar and as a professional in the world of public libraries.

While many researchers have studied older adults and their habits of ICT use, very few have studied older adults and their use of video conferencing services. Video conferencing services are not a new ICT; however, this is the first time in history that they are as popular and widely used as they are now. This is because the COVID-19 pandemic required many people, including those in schools, businesses, and industries such as healthcare, to connect and communicate with others virtually to maintain a level

of safety. Older adults have needed to keep in touch while sheltering in place, and more than two years into the pandemic, this is still a reality.

Through a comparative or multiple-case study design, I attempted to offer rich and descriptive data that illuminated the experiences and voices of eleven older adults that were introduced to ICTs, like video conferencing services, at multiple points in their lives. Looking at the cases individually and collectively, I found five themes that have implications for practice in my field of library and information science and in other similar fields and settings.

Our society is aging, as it always has, and as will likely continue. Every second of every day, there are people making the transition to older adulthood, and these older adults need the proper support to be able to incorporate ICTs into their daily lives. Digital technologies are quickly becoming woven into the fabric of everyday life, and the participation of older adults in this digital society is as important and necessary now as it ever has been. Being online and using ICTs "is not necessarily sufficient to benefit older people's well-being. It matters how seniors engage with the digital space" (Szabo et al., 2018, p. 67). By learning from older adults and their experiences with ICTs, I have been able to define and share some of the barriers and emotions that older adults experience and encounter. This information can, in turn, help institutions and other people in and around these institutions better support older adults with learning how to use ICTs like video conferencing services. Older adults will benefit from this support if they are to

embrace and become a part of the new digital world that is helping us communicate and connect from wherever we are.

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Appendix A: Recruitment Flyer

(To post on social media, sent via email, or to be printed and passed out during public library contactless holds pick up service)

- Have you or someone you know learned how to use a video conferencing service (ie. Zoom, FaceTime, Google Hangouts, Skype) since the beginning of the COVID-19 pandemic?

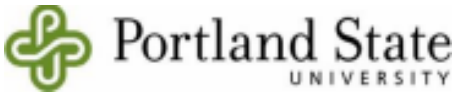
- Are you or the person you know age 65 or older?

- Would you be interested in participating in a doctoral dissertation research study on older adults and a video conferencing service? (*Your participation would include two interviews, 30-90 minutes each, that will take place via the video conferencing service of your choice or phone. The interviews will be recorded if possible, and the recordings will be destroyed once transcribed. Pseudonyms will be used in place of identifiable information.)*

If the answer to all three questions above is YES, please contact Marisa Soltz, the doctoral candidate, to set up the first interview. Please include your **name** and **contact information** (email and/or phone number) when responding. If you are recommending someone to participate, please give them the contact information below to contact the researcher if they are interested. Thank you!

Contact Information:
Marisa Soltz
msoltz@pdx.edu
714.865.5680

Appendix B: Consent to Participate in Research (No Signature)



Consent to Participate in Research (No Signature)

Project Title:	Keeping in Touch While Sheltering in Place: On the Complex Emotions Experienced by Older Adults When Introduced to a Video Conferencing Service
Population:	Older adults, interviews
Researcher Contact:	Marisa Soltz, College of Education Portland State University msoltz@pdx.edu / 714.865.5680
Researcher Contact:	Anita Bright, College of Education Portland State University abright@pdx.edu / 503.395.4372

You are being asked to take part in a research study. The box below highlights key information about this research for you to consider when making a decision whether or not to participate. Carefully review the information provided on this form. Please ask questions about any of the information you do not understand before you decide to participate.

Key Information for You to Consider

- **Voluntary Consent**. You are being asked to volunteer for a research study. It is up to you whether you choose to participate or not. There is no penalty if you choose not to participate or discontinue participation.
- **Purpose**. The purpose of this research is to examine the emotions older adults experienced with the introduction of a video conferencing service to communicate in their daily lives.
- **Duration.** It is expected that your participation will last approximately three to four months, due to the spacing out of interviews.
- **Procedures and Activities.** You will be asked to participate in two recorded interviews, the first lasting approximately 60-90 minutes and the second lasting 30-60 minutes. Both interviews will be scheduled during mutually convenient times, and they will take place over the video conferencing service of your choice or by phone. You will be asked to review your own transcripts to make sure everything is true and correct.
- **Risks.** Some of the foreseeable risks or discomforts of your participation include thinking about your past emotional responses to learning how to use technology. Participation will remain completely anonymous, however, and all recordings will be destroyed after transcription takes place.
- **Benefits**. Some of the benefits that may be expected include understanding how learning how to use technologies can involve emotional responses. This research will also help librarians and teachers better instruct older adults on how to use certain technologies for the first time.
- **Alternatives.** Participation is voluntary and the only alternative is to not participate.

Version: [12/2020]

What happens to the information collected?
Information collected for this research will be used for analysis for this dissertation. I plan to publish this dissertation to be disseminated in online research databases. All identifiable information will be confidential and pseudonyms will be used in place of identifiable information. Interviews will be recorded using the video conferencing service of your choice, and all recordings will be destroyed once transcription is complete (approximately two weeks after each interview takes place).

How will my privacy and data confidentiality be protected?
I will take measures to protect your privacy including the use of pseudonyms to protect any identifiable information. Despite taking steps to protect your privacy, I can never fully guarantee that your privacy will be protected.

To protect the security of all of your personal information, I will keep records of personal information on password-protected electronic devices that only I use. Despite these precautions, I can never fully guarantee the confidentiality of all study information.

Individuals and organizations that conduct or monitor this research may be permitted access to inspect research records. This may include private information. These individuals and organizations include the Institutional Review Board that reviewed this research and my faculty advisor, Anita Bright.

What if I want to stop participating in this research?
Your participation is voluntary. You do not have to take part in this study, but if you do, you may stop at any time. You have the right to choose not to participate in any study activity or completely withdraw from participation at any point without penalty or loss of benefits to which you are otherwise entitled. Your decision whether or not to participate will not affect your relationship with the researchers or Portland State University.

Will I be paid for participating in this research?
There is no monetary compensation for participation in this study.

Who can answer my questions about this research?
If you have questions, concerns, or have experienced a research related injury, contact the research team at:

Marisa Soltz
714.865.5680
msoltz@pdx.edu

Anita Bright
503.395.4372
abright@pdx.edu

Version: [12/2020]

Who can I speak to about my rights as a research participant?

The Portland State University Institutional Review Board ("IRB") is overseeing this research. The IRB is a group of people who independently review research studies to ensure the rights and welfare of participants are protected. The Office of Research Integrity is the office at Portland State University that supports the IRB. If you have questions about your rights, or wish to speak with someone other than the research team, you may contact:

Office of Research Integrity
PO Box 751
Portland, OR 97207-0751
Phone: (503) 725-5484
Toll Free: 1 (877) 480-4400
Email: psuirb@pdx.edu

Consent Statement

I have had the chance to read and think about the information in this form. I have asked any questions I have, and I can make a decision about my participation. I understand that I can ask additional questions anytime while I take part in the research.

□ I agree to take part in this study
□ I do not agree to take part in this study

Appendix C: Interview # 1 Protocol

Introduction / Instruction to the Interviewer:

"*Hi! My name is Marisa Soltz and I will be conducting this interview. This is for my dissertation study that I will be completing at Portland State University, with the help of my faculty advisor, Anita Bright, to help us learn how best to support older adults in feeling successful with technology. You have been selected to speak with me today because you have been identified as someone who has interest in sharing your experiences about technology. My study does not aim to evaluate your techniques or anything other than your own experiences and understanding."*

"To facilitate my note-taking, I would like to record our session today. For your privacy and confidentiality, only I will be watching the video and I will eventually destroy the recordings once transcribed. Please read the consent form and ask any questions you may have before signing the form that is required for my research. Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and we may stop at any time if you feel uncomfortable, and (3) there are no risks to you participating. Thank you for agreeing to participate."

"I have planned this first interview to last approximately 60-90 minutes. During this time, we have several questions that I would like to cover. Please note that you do not have to answer any questions you don't want to, and that is completely okay. If you have any questions or concerns throughout this process, please do not hesitate to contact myself (msoltz@pdx.edu) or my faculty advisor, Anita Bright (abright@pdx.edu)."

Interview #1 Protocol

1. Background
   - Tell me about your educational background.
   - Tell me about the last job you had and/or your career choice.
   - How old are you?
   - Tell me about your experience with technology related to your education or career.

2. What technology do you use most frequently? Smartphone, computer, laptop, tablet?
3. Who helps you learn how to use technology?
4. What reasons do you frequently need to use technology for?
5. Some people come to new technology with excitement and enthusiasm. Some people are more neutral or indifferent. And other people may feel reluctant, nervous, or uncomfortable when approaching new technology. These days, what are *your* feelings about technology?
6. My friend Becky is 79, and she can't wait to add new apps to her phone. But I

have another friend, Neil, who is 77, and he wants nothing to do with using a smartphone. How about you? Do you feel your age has an impact on your use of technology?

7. Have you experienced any barriers or challenges when using technology? Cost? Access?
8. Tell me about your experiences with video conferencing services. When did you learn how to use one? Did you get help (from a family member, friend, online tutorial, librarian)?
9. Why did you decide to learn how to use a video conferencing service? 10. What reasons do you use them now?
10. What emotions came up with the introduction of the video conferencing service?
11. Do you still use the video conferencing service?
12. Have you learned how to use any other video conferencing services?
13. What is the hardest thing for you to remember regarding video conferencing services?
14. How do you perceive the possibilities that video conferencing services have to offer?
15. How do you feel about video conferencing services now?
16. Hypothetical situation question: Let's say you are in a book club that meets every Thursday evening at 6pm, but you are moving out of the county onto a secluded, quiet farm with lots of land. You want to stay in the book club, but now you can't physically meet with everyone. Someone in your book group suggests that you use <*video conferencing service you have not used before*> to connect with the book club at the next meeting, which is tomorrow, and you really want to because you loved this month's book. What do you do? Do you download <*video conferencing service you have not used before*> and try to figure it out? Do you tell everyone that you can't make the meeting? How does this make you feel?
17. Do you feel more encouraged or less encouraged to learn how to use another new technology?
18. What do you wish you had access to in order to feel supported with learning technology?

Concluding the interview:

The interview is over. Thank you for your time. Feel free to reach out to me with any questions or concerns. I will contact you with any follow-up questions as well and it is my goal to take the information I gather here back to you in order to make sure my interpretation of the data rings true to you and your experiences. What is the best way to contact you? [Get/double check contact information.] Again, thank you for participating in this study. I will reach out to you.

Appendix D: Interview Protocol #2

Introduction / Instruction to the Interviewer:

"*Hi again! My name is Marisa and I will be conducting this second interview. Once again, this is for my dissertation study that I will be completing at Portland State University, to help us learn how best to support senior citizens in feeling successful with technology. My study does not aim to evaluate your techniques or anything other than your own experiences."*

"To facilitate my note-taking, I would like to video tape our session today. Please sign the release form. For your information, only I will be watching the video and I will eventually destroy the tapes once transcribed. In addition, you must sign a form devised to meet our human subject requirements. Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) I do not intend to inflict any harm. Thank you for agreeing to participate."

"I have planned this interview to last no longer than one hour. During this time, we have several questions that I would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete this line of questioning."

Interview # 2 Protocol

1. Here is the transcript from your first interview, which you read after I sent it to you. Is there anything you want to add or clarify?
2. Have you been using the video conferencing service we discussed?
3. Have you learned how to use a different video conferencing service than the one we discussed?
4. Have you noticed any new emotions come up while using the video conferencing service?
5. What do you like about the video conferencing service?
6. What do you not like about the video conferencing service?
7. Is there anything else you would like to tell me about your experiences with video conferencing services or technology in general?

Concluding the interview:

Thank you so much for agreeing to participate in my dissertation study! As for next steps, I will transcribe this second interview and then I will send you the complete transcription for your review, where you will have the opportunity to add or clarify any of your previous statements. After that, while I am analyzing all the data, I may reach out to you with additional questions, but only if it is necessary. Thanks again and I will be in touch!

Appendix E: Updated Interview Protocol #2

Introduction / Instruction to the Interviewer:

"*Hi again! My name is Marisa and I will be conducting this second interview. Once again, this is for my dissertation study that I will be completing at Portland State University, to help us learn how best to support senior citizens in feeling successful with technology. My study does not aim to evaluate your techniques or anything other than your own experiences."*

"To facilitate my note-taking, I would like to video tape our session today. Please sign the release form. For your information, only I will be watching the video and I will eventually destroy the tapes once transcribed. In addition, you must sign a form devised to meet our human subject requirements. Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) I do not intend to inflict any harm. Thank you for agreeing to participate."

"I have planned this interview to last no longer than one hour. During this time, we have several questions that I would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete this line of questioning."

Updated Interview # 2 Protocol

1. Here is the transcript from your first interview, which you read after I sent it to you. Is there anything you want to add or clarify?
2. Have you been using the video conferencing service(s) we discussed? If so, tell me about your experiences since we last spoke.
3. Have you hosted a Zoom (or other video conferencing service) meeting?
4. If you had to explain how to use Zoom (or other video conferencing service) to a friend or family member, would you feel comfortable doing so? Could you explain the features associated with that video conferencing service?
5. Have you taken any notes when learning how to use a video conferencing service? Did you use any aids (like how-to books or searching online)? If so, would you be willing to share those with me?
6. Using words that evoke feelings or emotions, describe how video conferencing services make you feel or have made you feel?
7. Have you had any issues you can recall with video conferencing services? Please be specific about what occurred and how it made you feel.
8. Have you noticed any new or different emotions come up while using video conferencing services?
9. What do you like about video conferencing services?
10. What do you not like about video conferencing services?

11. Do you feel as if video conferencing services and their functions cater to all age groups? Why?
12. What do you think, if anything, would make video conferencing services easier to use?
13. Is there anything else you would like to tell me about your experiences with video conferencing services or technology in general?

Concluding the interview:

Thank you so much for agreeing to participate in my dissertation study! As for next steps, I will transcribe this second interview and then I will send you the complete transcription for your review, where you will have the opportunity to add or clarify any of your previous statements. After that, while I am analyzing all the data, I may reach out to you with additional questions, but only if it is necessary. Thanks again and I will be in touch!