

# **Negotiating Technological Engagement: Use and Non-Use Among Older Adults in Assisted Living**

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## **ABSTRACT**

Recent research on digital inequalities has shown that some individuals, including older adults, display careful consideration when deciding to use or not use technology. The purpose of this study is to explore the relationship between aging and technology use by examining not only the types of technologies used by older adults, but also how they make decisions about that use. Using semi-structured interviews and observations of staff members, residents, and family members of residents at a privately owned, for-profit assisted living facility in the northeast U.S., this research offers essential insights into the relationship between older adults and technology, along with the implications of that relationship on policy recommendations surrounding technology use. First, consistent with recent trends in research, the findings of this study reveal how technology use among older adults involves a complex decision-making process. Specifically, they navigate use and non-use by considering their skills and needs, while also managing their limitations and fears of technology. They also employ advanced mechanisms to compensate for the missed opportunities of non-use. Treating use as a negotiated process urges policymakers and practitioners to prioritize older adults' agency when considering the implementation of technological policy and intervention. Second, I propose an Interaction Approach of Technology Use as a more nuanced way to understand older adults' technology use as it relates to the degree of independence or dependence that occurs during that use. An interactive approach allows researchers and policymakers to consider a wider range of use when examining the relationship between older adults and technology.

**Keywords:** digital inequalities, aging, narrative gerontology, Interaction Approach

## **Negociar compromiso tecnológico: uso y no uso entre adultos mayores en vida asistida**

### RESUMEN

Investigaciones recientes sobre las desigualdades digitales han demostrado que algunas personas, incluidos los adultos mayores, muestran una consideración cuidadosa cuando deciden usar o no la tecnología. El propósito de este estudio es explorar la relación entre el envejecimiento y el uso de la tecnología al examinar no solo los tipos de tecnologías que usan los adultos mayores, sino también cómo toman decisiones sobre ese uso. Mediante el uso de entrevistas semiestructuradas y observaciones de miembros del personal, residentes y familiares de residentes en un centro de vivienda asistida de propiedad privada con fines de lucro en el noreste de los EE. UU., esta investigación ofrece información esencial sobre la relación entre los adultos mayores y la tecnología, junto con las implicaciones de esa relación en las recomendaciones de políticas relacionadas con el uso de la tecnología. Primero, de acuerdo con las tendencias recientes en la investigación, los hallazgos de este estudio revelan cómo el uso de la tecnología entre los adultos mayores implica un proceso complejo de toma de decisiones. Específicamente, navegan por el uso y el no uso al considerar sus habilidades y necesidades, al mismo tiempo que manejan sus limitaciones y temores de la tecnología. También emplean mecanismos avanzados para compensar las oportunidades perdidas por la falta de uso. Tratar el uso como un proceso negociado insta a los encargados de formular políticas y a los profesionales a priorizar la agencia de los adultos mayores al considerar la implementación de políticas e intervenciones tecnológicas. En segundo lugar, propongo un enfoque de interacción del uso de la tecnología como una forma más matizada de comprender el uso de la tecnología por parte de los adultos mayores en relación con el grado de independencia o dependencia que se produce durante ese uso. Un enfoque interactivo permite a los investigadores y legisladores considerar una gama más amplia de usos al examinar la relación entre los adultos mayores y la tecnología.

**Palabras clave:** desigualdades digitales, envejecimiento, gerontología narrativa, Enfoque de Interacción

## 技术参与协商：老年人对辅助生活技术的使用和不使用

### 摘要

关于数字不平等的近期研究表明，包括老年人在内的一些人在决定使用或不使用技术时表现出谨慎的考虑。通过分析老年人使用的技术类型以及他们如何作出技术使用的决定，本研究旨在探究老龄化与技术使用之间的关系。本研究通过对美国东北部一家私营营利性辅助生活设施的工作人员、居民、以及居民家庭成员进行半结构化访谈和观察，提供了关于老年人与技术之间关系的重要见解，以及这种关系对有关技术使用的政策建议的启示。首先，与近期研究趋势一致的是，本研究的结果揭示了老年人的技术使用如何涉及复杂的决策过程。具体而言，老年人通过考虑自己的技能和需求来决定使用和不使用技术，同时还会管理自己对技术的限制和恐惧。他们还采用高级的机制来弥补因不使用技术而错失的机会。将技术使用视为一个协商过程，能敦促决策者和从业者在考虑实施技术政策和干预时将重点聚焦于老年人的能力。其次，我提出一种技术使用互动方法，以更细微地理解老年人的技术使用，因为这与技术使用过程中出现的独立程度或依赖程度有关。交互式方法使研究人员和决策者在研究老年人与技术之间的关系时能考虑更广泛的技术使用。

关键词：数字不平等，老龄化，叙事老年学，互动方法

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In our current information society, having access to and making use of digital resources is frequently used as an indicator of one's place in that society. Those who have been "left behind" in the digital age, particularly older adults, are seen as missing out and in need of intervention. However, this well-inten-

tioned approach to understanding technology use by older adults often ignores how engagement in the technological landscape of modern society involves *choice*. Using or not using certain technologies, applications, hardware, software, etc., requires all types of users to undergo a complex decision-making

process—one that is based on a variety of motivating factors as well as the social context in which those decisions are made. The purpose of this paper is to explore the relationship between aging and technology by (a) examining how older adults in assisted living navigate that decision-making process, and (b) utilizing an Interaction Approach to better understand the impact of social interaction on technology use.

## Digital Inequalities and Narrative Gerontology

As the modern world entered the Information Technology Revolution in the second half of the twentieth century, the social inequalities experienced in industrial society not only permeated post-industrial, information society, but were also amplified by it (Castells, 1997; Quan-Haase, 2016). This new form of inequality, dubbed the Digital Divide, highlighted the gap between the *haves* and the *have nots* of digital technology. While the earliest conceptions of the Digital Divide focused on rates of access to technology, specifically, penetration rates for cable TV and then eventually high-speed Internet access, more recent research has focused on the usage that occurs after access has been gained. This distinction is crucial because it has shown that there is also a discrepancy between those that have access to digital technology and those who are actually using it (DiMaggio et al., 2004). Additionally, technology use is highly dependent on users' possession of the

skills necessary to efficiently utilize the technology available to them (Quan-Haase, 2016).

Of primary concern to the research in this paper is the relationship between aging and technological engagement. Prensky (2001) coined the terms *Digital Natives* and *Digital Immigrants* to distinguish the technological experiences between those that were born into and grew up in a digital society (Natives) and those that were required to assimilate into the digital culture later in life (Immigrants). While the terms were originally intended to address the growing gap between educators and their students who spoke a different “language” of learning, digital inequality researchers quickly identified their usefulness for better understanding the complex relationship between age and digital engagement.

Exploring the experiences of older adults as technology users requires not only an appreciation of the digital inequalities that they face, but also a deeper understanding of the unique methods through which they come to view themselves as technology users. To accomplish this, I utilize a framework of narrative gerontology, an interdisciplinary field of study centered on the idea that human beings are inherently storytellers and listeners (Kenyon & Randall, 1999) and that this storytelling is a life-long endeavor (Blix et al., 2015). Thus, researchers can make use of the personal narratives of older adults to investigate how they experience their own technology use, including the ways that they go about making decisions re-

garding that use and the impact those decisions have on their position within a digital society.

## Defining Use and Non-Use

In digital inequalities research and policy, it is essential that we carefully conceptualize the terms *use* and *non-use* when discussing the factors and consequences of technological engagement. Traditionally, *non-use* has implied limited access to technology, and consequently, unintended and unwanted exclusion from digital society. Prior research has shown that digital exclusion can have damaging consequences, including increased social exclusion (Castells, 1996; Ragnedda & Muschert, 2013) and reduced access to health care, wealth, education, and community and political engagement (Bimber, 2001; DiMaggio et al., 2001). However, non-use does not always mean exclusion. Digital disengagement, especially among older adults, can also be an indicator of digital *choice* (Selwyn, 2006). From a framework of agency in individual choice, it is crucial that we examine the language that we use to describe digital disengagement.

Approaching use and non-use as a *choice* rather than a consequence requires that we expand our conceptions of what *use* and *non-use* can mean in research and policy. Prior usage of these concepts has been quick to draw a distinct line signifying where use ends and non-use begins; however, these lines tend to be rather arbitrary. I propose instead that we think of use and non-

use as existing on a continuum and as highly dependent on a situational context. For example, an older adult may choose to own a cell phone one day, and the very next day, they may decide that their cell phone no longer has any use for them. Likewise, the next week they may then find themselves using a family member's smartphone to video chat with their grandchild across the country. Their use and non-use can fluctuate across moments, devices, and applications. Thus, in order to better understand use and non-use in older adults, it is more advantageous to approach *use* and *non-use* as decisions that individuals continuously make about the role that technology plays in their everyday lives.

Likewise, because technology use and non-use should be treated as situational and continuous, we must also move away from the practice of labeling older adults as *users* or *non-users* of technology, even when referring to specific devices or applications. Adhering to such a strict binary ignores any nuance in our understanding of how decisions are made about use and non-use, along with what those decisions reveal about an individual's relationship to technology. Even attempts to expand the user typology, such as Reisdorf and Groselj's (2017) examination of broad users, regular users, low users, non-users, and ex-users, is limiting because it does not fully consider how use can differ within an individual user over time. Thus, further research and policy will benefit from letting older adults not only define, but also explore, their own use and non-use.

Research on digital inequalities and technology use frequently focuses on information and communication technologies (ICTs). While there is no uniform definition for ICTs, it is typically understood as any and all technology that facilitates connection within a networked society. For this study, I use the term *ICTs* to refer to individual personal devices (computers, tablets, smartphones, etc.) and access to high-speed Internet, as well as *technology* as an all-encompassing term that includes ICTs, the software and applications that are run on those devices, and any additional electronic devices that are present in everyday life. Because *technology* is such a broad concept, each interview resulted in its own definition of the term, one that was largely driven by the participants themselves.

## Background

### *Technology Use and Non-Use as Choice*

While much of the early Digital Divides literature focused on examining the types of use and non-use, including benefits and consequence of use, more recent literature has shifted toward better understanding how and why all individuals, including older adults, make decisions about their technology use.

Some of the most commonly cited technology uses by older adults include interaction/communication purpose (Morris et al., 2007; Wagner et al., 2010), information seeking (Quan-Haase et al., 2016), and leisure/enter-

tainment (Wagner et al., 2010). These stated uses demonstrate a clear pattern: for older adults to adopt new technologies, they must deem them worthwhile. Specifically, new technology needs to be both highly useful and usable to older adults for them to want to learn how to use it (Seals et al., 2008). *Usefulness* of technology may be determined by its ability to: help older adults “keep up with modern times” (Selwyn, 2004; Sourbati, 2009); support the services that they are already using (Seals et al., 2004); and, specific to older adults in non-independent living situations, overcome the spatial barriers that are inherent in assisted living facilities (Winstead et al., 2013).

Likewise, Fernández-Ardèvol et al. (2022) found that older adults make decisions about technology use based on the negotiation of different media ideologies, such as using technology in their own way, implying that the legitimacy of use is defined by the user themselves.

Similarly, technology non-use can also result from careful decision making. Commonly stated reasons for non-use include concerns over “wasting time” on technology and online safety issues (Richardson et al., 2005), and its tendency to interrupt other activities in the home and at work (Mitzner et al., 2010).

Even among those considered *users*, computers are beneficial to a point or for some purposes (such as maintaining social connections with family), but they are not universally useful (Weaver et al., 2010), especially when

they do not enhance systems already in place (Sourbati, 2009). While research has shown measurable barriers for older adults who are interested in adopting new technology, studying non-use as a decision-making process requires a clear delineation between *barriers* and *choices*.

A significant level of older adult non-use stems from individual *choice*, specifically, a lack of interest (Morris et al., 2007; Selwyn et al., 2003; Wagner et al., 2010), and it is crucial that this approach drives any further research and policy on older adults' use and non-use of technology. As Quan-Haase et al. (2016) explain:

[A]gency is central to our understanding of digital seniors' use of ICTs, they critically consider various technological options, and make choices around personal preferences, convenience, and affordability. For digital seniors, ICT use is not a binary, they want to have the flexibility to choose for themselves how to engage with ICTs. (pp. 701–2)

### ***Technology Use as Interaction***

While previous literature has shown that technology use and non-use do contain an element of choice, accessing and using technological devices and applications is still an interactive process, especially for older adults. Specifically, family members, friends, and health-care workers play an important role in helping older adults gain access to and learn about various technologies.

Selwyn (2004) found that older adults most frequently acquire computers through informal methods (such as getting one from a family member) rather than through independent purchases. Researchers have also noted that ICT adoption by older adults is not always done willingly, which may include pressure from family members to “become digital” (Quan-Haase et al., 2016).

Beyond family and friends, community support workers have also been found to encourage ICT interest and use in older adults, specifically regarding accessing public and welfare services (Sourbati, 2009).

Additionally, once ICTs are adopted, older adults may also feel a reliance on family members to help them with further education and any technical support issues (Quan-Haase et al., 2016; Selwyn, 2004; Selwyn et al., 2003). While this support typically comes from more technologically savvy family members, such as children and grandchildren (Francis et al., 2018), digital assistance can also come from in-home partner support (Marler & Hargittai, 2022). Hänninen et al. (2021) found that older adults often benefit from having access to *warm experts* who can be “involved in the digital everyday life of older adults, ranging from small acts of motivation and giving practical advice to actual co-use and proxy use of ICTs” (p. 1596). Likewise, recent research from Bartol et al. (2022) has shown that older adults frequently engage in a practice of *use-by-proxy*, whereby others assist with or perform technological

tasks for them. Alternatively, additional research has revealed that some older adults, specifically those in nursing homes or senior community centers, express interest in and benefit from more institutional (rather than social) sources of technological support (Tirado-Morueta et al., 2021).

Despite moving toward an understanding of choice and agency in use and non-use, interaction with technology cannot always be avoided. Individuals living in a technology society, including older adults, have very little control over everyday interactions with the technology use of others. Wagenknecht (2017) refers to this as *affected bystanding*, or “the condition of individuals who involuntarily experience the impact of others’ use of technological systems while not relating to these systems as users themselves” (p. 2241). For older adults, especially those living in non-independent living situations, this can come in the form of electronic assistive technology (Davies et al., 2017), as well as surveillance technology (Mortenson et al., 2016).

From previous literature, we know that the relationship between aging and technology is more nuanced than a basic binary distinction between use and non-use. Specifically, older adults have the ability to make active choices about their technology use and non-use; however, we do not yet have a full understanding of how older adults make those decisions or how the decisions are embedded in a situational context. Additionally, there is limited research available on the technology

use of older adults in non-independent living situations.

This paper challenges the notion that those who do not use certain technologies do so because they are excluded from accessing or using them. Instead, use and non-use exist within an intentional and complex decision-making process. Having a better understanding of the needs and choices of a certain population is a necessary precursor to implementing more targeted and useful interventions surrounding technology use and access.

Through semi-structured interviews and observations of residents, their family members, and the staff of an assisted living facility, this study explores two primary research questions:

1. How do older adults negotiate their technology use (i.e., how do they make decisions about use and non-use of devices and applications)?
2. How can researchers and policy-makers reconceptualize the way that we understand and talk about use and non-use, specifically among older adults?

## Methods

The data for this study were collected at a for-profit, non-independent assisted living facility in the northeast United States that offers assisted living and multiple levels of memory care. The study site (the “facility”) is managed by a parent company, which owns numerous assisted living facilities throughout the U.S. Assist-



ed living facilities are unique locations that, as research sites, offer multiple benefits to data collection and analysis. Conducting research within a single facility allowed me to examine the role that institutional constraints and opportunities play in the process of making decisions about technology use and non-use. By only sampling participants from one facility, I ensured that the data reflect a shared institutional context. All the resident participants had equal access to high-speed Internet, technology within the facility, community life activities, and interaction with facility associates.

The participants for this study were sampled through a purposive sampling technique, which utilized the expertise and knowledge of a primary contact person at the facility, in order to carefully select individuals that could provide the most information-rich interviews. My contact, an executive associate employed by the facility who works in Community Life, had specific insight into which residents were cognitively able to participate in a lengthy interview about their lives and technology use. She also helped me identify associates at the facility that would be best to interview, and she assisted with scheduling times for each of them to meet with me. Associates were selected to produce a diverse sample regarding duties and roles within the assisted living facility, with a particular focus on those that had significant levels of interaction with the residents.

Finally, family members of the residents were also recruited through

my contact at the facility. I provided her with a recruitment script that she sent to the primary contact of each of the residents I interviewed. Family members were asked to contact me if they wished to participate in the study. My sampling for family members was limited to one family member per resident interviewed.

The final sample of this study is made up of 14 residents, 13 associates, and four family members of residents. The sample of residents consists of nine women and five men, ranging in age from 60 to 97 years old; however, most are in their 80s and 90s. All the residents in the sample are white, which closely aligns with the overall racial makeup of the residents at the facility. The sample of the 13 associates consists of ten women and three men and represents a variety of age and racial groups; however, the demographic characteristics of the associates were not thoroughly discussed in the interviews nor explored in the analysis of the data. The family member sample consists of three women and one man; however, the ages and races of the family members is mostly unknown as those factors were not discussed in their interviews. Three of the family members were children of the residents and one was a resident's niece.

This study was approved by the Research Office at the University of Delaware (IRB # 1144412-2).

### ***Data Collection***

Data for this study were collected primarily through interviews with residents, family members, and associates

in the assisted living facility. When possible, the findings from the interviews were supplemented by observations of these groups interacting with various technologies.

All the interviews were semi-structured and open-ended, and they were audio recorded with the permission of the participant. I also took handwritten notes during the interview to record observations of the participant and to mark important moments and themes in the interview.

The interviews with residents ranged from 18 minutes to 1 hour and 28 minutes, with an average of 45 minutes ( $SD = 24$ ). They consisted of two main categories: (a) a life narrative, and (b) direct questions about technology use. The interviews began with the residents giving an overview of their lives; I initiated every resident interview with the same question: *Tell me about your life* (de Medeiros, 2014). During this stage of the interview, I occasionally asked follow-up questions for more details about a certain event or to prompt the resident to continue their narrative, but overall, it was an opportunity for residents to tell their own story in the way that wanted to (de Medeiros, 2014).

After they finished telling their life narrative, we engaged in a more direct question and answer style interview, in which we discussed the various types of technologies that they currently use or do not use (including how they use or do not use them). Often, these questions would lead to follow up questions regarding past use of technology, current relationships with friends and

family, and general reflections about their lives.

The interviews with the associates ranged from 21 minutes to 1 hour and 39 minutes, with an average of 36 minutes ( $SD = 19$ ). These interviews followed a slightly more consistent pattern than the resident interviews. All the associate interviews began with a narrative about their duties at the facility and their employment history. As with the resident interviews, this portion of the interview was largely guided by the participant and contained very few interruptions. The narratives were then followed by direct questions about the associates' use of technology at work and, finally, their observations about the residents' use of technology.

The family member interviews lasted between 20 minutes and 1 hour, with an average of 43 minutes ( $SD = 27$ ), and they mainly covered topics related to the family member's perceptions of the resident's technology use.

In addition to the interviews, I also conducted four separate observations of community activities with the residents. Each activity session lasted 30 minutes, and they allowed me to observe residents interacting with associates while they used or discussed technology. Two of the sessions consisted of an associate using a computer system specifically designed to engage older adults in computer use. The other two sessions were informational sessions where associates led discussions about technological advancements and usages.

## Data Analysis

The audio recordings of the interviews from all three groups of participants were initially transcribed word-for-word, and then they underwent a second round of transcription that involved returning to the audio recording and adding additional codes and structure—such as utterances, pauses, and overlapping speech—to the original transcription. This re-transcription allowed me to capture certain aspects of the interviews that were not available in the word-for-word transcriptions, including notes about non-verbal behaviors that I took during the interview.

In addition to providing a framework for conducting narrative-based interviews, narrative gerontology also offers a framework for analyzing narrative data from both a structural approach, which involves thematic analyses of what and why things are said during interviews, and a performance-based approach, which focuses on how stories are told during the interview, i.e., the narrative practice (Bamberg, 2012).

Each interview underwent a primary thematic analysis, which identified top level themes across cases within a set of interviews, and a secondary thematic analysis, which identified sub-themes within the data. In a narrative thematic approach, which is distinctly different from a thematic analysis conducted in a grounded theory approach, “narrative scholars keep a story ‘intact’ by theorizing from the case rather than from component themes (categories) across cases” (Reissman, 2008, p. 53).

While grounded theory is useful for developing generalizable theory across many cases, pulling discrete pieces out of the larger narrative is less useful for understanding how the themes fit into the context of the larger story. Unlike grounded theory, which relies on thematic saturation during analysis, narrative thematic analysis is more concerned with capturing the full stories of every participant. Particularly with a narrative case study design, the depth of a narrative thematic analysis is limited to the available participants at the data collection site. Thus, the analytical themes that emerge in a narrative analysis are not meant to be generalizable across all cases (as is with grounded theory), but rather they are an in-depth examination of one case study (Reissman, 2008).

## Results

The interviews with the residents, their family members, and the associates at the facility in this study revealed not only *what* technologies older adults do and do not use, but also *why* they do and do not use them, along with *how* they go about making those decisions. When considering technological engagement, older adults employ a complex decision-making process that includes reasons for use and non-use, as well as mechanisms for compensating for any perceived consequences of that non-use.

Additionally, when examined holistically, patterns of use and non-use in older adults reveal a nuanced way of

conceptualizing technological engagement: an Interactive Approach of Technology Use, which considers the degree of independence or dependence that occurs during that use. This approach considers a specific social aspect of technology use: use, especially among older adults, is not always self-guided. Instead, older adults engage in various types of use that are often assisted or mediated by family members, friends, and healthcare staff.

### ***Complex Decision Making***

The older adults in this study reported a wide array of technology use, both in devices, including TVs, radios/music players, telephones (landlines, cell phones, and smartphones), and computers (desktops, laptops, and tablets), as well as applications. While technological devices are unique to each resident, there were stated reasons for using and not using certain technology that spanned across devices. These findings mirror previous literature on use and non-use among older adults.

The primary stated use of communication devices, such as phones and computers, was to stay in contact with family members. Participants also revealed why this communication is so important to them: for many older adults, members of their families, including children and grandchildren, live a great distance away from them, which can result in infrequent face-to-face interaction. Mediated communication devices such as phones and computers (via e-mail) can compensate for this distance and keep older adults connected to their families.

In addition to maintaining communication with family members, residents also frequently referred to the everyday usefulness of some technological devices. Residents expressed the importance of keeping up with the news/world events, whether through radio, TV, or computer. Additionally, the residents cited the usefulness of TV, radio, and tablets for accessing entertainment in the form of music, television shows, and movies. Consistent with previous research, for the older adults in this study, their decision to use a particular device most often came down to a simple question: is it useful to me?

Finally, when discussing the potential for learning about new technologies, a few of the residents took the approach that there is “no reason why I can’t learn.” Essentially, the use of new technology was framed as an opportunity to stay up to date with technological advancements and to continue to expand their cognitive capacities. While many residents took an opposing stance (i.e., if they have not learned the technology by now then there is no point in doing so), others expressed the idea that their potential use of a device may not necessarily serve an immediate purpose, but it would be interesting to use it.

A few themes also emerged when residents were explaining their reasons for non-use. With some of the more modern devices and uses (such as computers and email), residents stated that they just did not have the capability to learn or use new technology due to mental or physical limitations. While this is often cited in the literature as a reason that older adults avoid technolo-

gy, only a few of my respondents explicitly discussed this as a reason.

A more common explanation for non-use, specifically non-use of computers, was simply that learning about new technology had not been a priority for them. One resident, 85-year-old Helen, framed the situation as such: “No. I never took the time to do that. I never had the time, frankly, and at this point in my life, I’m not going to worry about a computer.” For many of the residents, learning to use a new technology, such as a computer or a smartphone, did not seem like a worthwhile use of their time. In that same vein, learning a new technology was occasionally framed as pointless at this stage of their lives: it served no real purpose. In fact, some residents viewed other activities as a more important use of their time.

### *Mechanisms of Compensation*

While the previous section provides an overview of the stated reasons of use and non-use in older adults, it does not take into account the complexities of how older adults negotiate which technologies to use or not-use *in relation to other technology*. Technology use does not occur in a vacuum. Rather, the decision to use or not use a particular device or application may be highly dependent on decisions to use or not use additional technologies. The findings below highlight the role that such a relationship plays in making decisions about use and non-use.

The first method through which older adults negotiate technology use is by expressing suitable alternatives to

devices that they do not use. For example, one resident, 87-year-old Albert, does occasionally watch TV, but he prefers the radio. When I asked him how often he watches TV, he responded, “Oh, not very often? Not very often. I like my radio. There’s two radio stations here, and if I don’t listen to one, I’m listening to the other.” His low use of TV is not because of a dislike of TV, per se, but rather a preference for listening to the radio. However, another resident, 90-year-old Betty, prefers reading over listening to the radio. In response to a question about using a radio, she stated, “Not really. I ... even in the car I don’t because I don’t want to be distracted and the radio distracts me. And as you get older it doesn’t take much to distract you, so I really don’t listen to it. Usually I read instead.” Additionally, some residents choose non-digital means of communication when available. Irene (85 years old) provided a suitable alternative to e-mail: handwritten letters, which she prefers; and Helen (85 years old) explained that she rarely uses her phone to communicate with her family because they often send her cards in the mail. On the other hand, Harold (98 years old) stated that his family never pressured him to use a computer for communication (via e-mail) because “They talk to me on the phone. I use the phone a lot. Yeah, the phone, it comes in handy for me.”

When discussing their families, including grandkids and great grandkids, I asked the residents where those family members lived and how often they were able to see them. I would then probe whether they had ever

received photos of family members through e-mail or text. Two of the residents, Helen (85 years old) and Phyllis (94 years old), expressed that having a way to receive digital photos was unnecessary because they were able to view photos of far-away family on the phones of those family members who did come to visit. For another two residents, Irene (85 years old) and Doris (96 years old), digital photos of family members were not needed because their family took the time to send them printed photos. In fact, one resident Irene (85 years old) had been gifted yearly calendars (made by another family member) that contained a collage of family photos from the year. She kept a collection of past calendars in the top drawer of her dresser.

While each resident had their own unique combination of uses and non-uses, this theme of *suitable alternatives* was a commonly employed mechanism of compensating for the non-use of certain technologies. This finding illustrates how residents constructed non-use not as a shortcoming but rather a natural result of the process of negotiating use and non-use. Some technologies simply do not warrant use when suitable, and often preferred, alternatives are available.

The relationship between one specific set of technologies, telephones, offers a unique illustration of the complexity of this negotiation process. All fourteen of the residents in my sample own and use some form of a telephone. However, they varied in the style of phone (landline, cell phone, or smartphone) and the extent of its use. During

all the interviews, based on a resident's initial answer about phone usage, I was able to walk them through discussing the negotiation process. In our discussion, Betty (90 years old) wove a narrative of her relationship with all three types of telephones. She explained that she originally had a landline, but she bought a cell phone after she moved out of the house and into assisted living. When she moved in, she was offered a landline through the facility; however, she decided that she did not need one because she already had a cell phone. When I asked Betty about her cell phone use, she clarified that she only uses it to call and does not text, because calling is "just as easy": "No, I should learn how to do that [texting], but I never did. In fact, my son said, 'I'll show you. Call me and I'll tell you how to do it,' but I figure it's just as easy to call and just say what you have to say." And finally, Betty argued that she does not need a smartphone because she already has a computer that does what she would want to do on a smartphone: "No, it's just to make calls. I don't want to deal with the smartphone. Enough technology." While this is just one set of technologies with one resident, my conversation with Betty clearly shows a careful negotiation process over which communication technologies do and do not have a place in her everyday life.

### ***Interaction Approach of Technology Use***

In order to more fully understand how technology use manifests in everyday life, I propose an Interaction Approach of Technology Use (Table 1) as a new

**Table 1.** Interaction Approach of Technology Use

	<b>Use</b>	<b>Concept</b>	<b>Example</b>
(Independent)	Individualistic	Use is self-directed; no assistance or guidance is needed to use; devices are owned and maintained by the primary user	A resident owns a cell phone, which he uses to make phone calls to his children and grandchildren
	Assisted	Use is still self-directed, but is contingent on occasional or regular assistance or guidance; devices can be owned by the primary user or by a secondary user (such as an individual or an institution)	A resident owns a TV, but she sometimes requires assistance from her family to turn it on  A resident uses the computers in the community computer lab in the assisted living facilities where he lives
	Mediated	Use is guided and directed by a secondary user; the primary user engages in a hands-off way as an observer in a one-on-one interaction	A resident asks an associate at the assisted living facility to look up a piece of information on the associate's personal cell phone
	Communal	Use is guided and directed by a secondary user; use is conducted in a community setting with the secondary user engaging with the technology on behalf of multiple primary users	An associate at an assisted living facility uses computer software and a monitor to lead residents in a game of trivia
(Dependent)	Embedded	Taken-for-granted use; technology is embedded in the institution; primary users have little choice in whether or not they become users	A resident has a special device on his wheelchair that alerts associates of the assisted living facility whenever he approaches one of the buildings external doors

way to conceptualize use as it relates to the degree of independence or dependence that occurs during that use. This approach is not a typology of users nor is it a way of classifying technological devices or the activities done on or with those devices. Rather, the Interaction Approach is a continuum that can be used to situate singular moments of technology use based on how interactive that use is from the viewpoint of the original user.

On one end of the scale lies *individualistic* use, the most independent of the uses. Individualistic use of technology exists when the user owns and regularly operates a device (or conducts an activity on a device) without needing assistance. This type of use is traditionally what comes to mind when we talk about technology use.

Most older adults are now presumed to have some degree of individualistic technology use. However, the complexity of the Interaction Approach is that in one moment, use of a device can be highly individualistic, and in the next moment, that use can slide along the scale to a more dependent form of use.

Moving away from an entirely independent form of technology use toward more dependent use results in a situation where the user is still primarily in control of the use, but they require regular guidance or assistance. This type of *assisted* use can take two forms depending on the owner of the device: (a) the primary user (here: an older adult/resident) owns the device, but they need assistance to use it, or (b)

The institution where the primary user resides (here: an assisted living facility) owns and maintains the device, but the resident is still the primary user.

This first form of *assisted* use, where the primary user owns the device but still requires assistance, is a commonly occurring type of use at the facility. All the devices that can be used in an individualistic way, such as TVs, phones, radios, and computers, can just as quickly require assistance. In the interviews with the associates at the facility, this was frequently discussed as “informal tech support.” In addition to the associates, residents also reach out to their own family members for help with some devices, and family members may also try to encourage certain types of use.

In addition to acting as “tech support” for their family members, both the resident interviews and the family interviews revealed that older adults frequently acquire their technology because their adult children buy it for them. While this gifting of technology can result in a more independent use, there is an aspect of *assisted* use as well. As adult children are giving new devices to their parents, they are also typically setting up those devices and teaching them how to use the technology.

The second form of *assisted* use occurs when the device is not owned or maintained by the primary user. At the facility in this study, this form of *assisted* use occurs most frequently with the call bell/button, which is a pendant that is worn (as a necklace or as a bracelet) by every resident in the assisted living



side of the building. The device is provided by the facility, but residents can press the button to request assistance from an associate. Another set of devices that function under this form of *assisted* use are the computers in the community computer lab. Although they are provided and maintained by the facility, these computers can be used by the residents with or without additional assistance.

Moving even further along the scale to a more dependent use, older adults can also engage in *mediated* use, or use that depends solely on the technology use of another person. In this type of use, older adults do not own or maintain the devices, and they are not the primary operators. Rather, they are, in simplest terms, observing technology being operated by someone else. However, this does not discount them as users of that technology when the operation of the technology is being done for their benefit.

Take for example the use of phones by the associates at the facility. During the workday, they are asked to not use their personal phones around the residents, *unless that use is for the benefit of the resident*. Associates reported that they frequently use their smartphones to connect with the residents by looking up information, playing music, and showing them photos of their own families. In this scenario, the associates remain the operators of the devices while the residents take a hands-off, observational role. However, both the associate and the resident are actively engaged with the smartphone

and the content on the screen. In those moments, while the associates are engaging in *individualistic* use (albeit with an audience), residents are engaging in *mediated* use.

In addition to the associates using their own personal devices, they also reported seeing residents' family members bringing in devices to share with the residents. As opposed to *assisted* use, where family members are encouraging and helping residents to use technology, with *mediated* use, family members are using their own smartphones or tablets to share information with the residents. This type of use was most apparent during my observations of residents and in my interviews with the associates. However, because many of the residents in my interview sample had their own devices, such as cell phones and computers, which encouraged more *individualistic* and *assisted* use, they did not often discuss this type of *mediated* use.

According to the associates, residents typically seemed satisfied with just observing someone else using a smartphone rather than trying to use the device themselves. This behavior falls squarely within *mediated* use; however, if the residents were to attempt to use the device that is being shown to them, that use would slide toward a more independent use such as *assisted* use.

The type of interaction inherent in *mediated* use was also reinforced during my interviews with the residents' family members. When I asked 85-year-old resident Helen if her family ever brought their devices to show her things,

she confirmed that they did. When I then interviewed Helen's daughter Gail, she reconfirmed that both *mediated* and *assisted* use were common within their interactions. Specifically, because her mother was losing her hearing, it made it difficult for her to talk on the phone. Thus, Gail's frequent in-person visits often resulted in her facilitating communication between her mother and her siblings through assisting and mediating her mother's phone use.

Gail and Helen's situation perfectly illustrates the fluidity of technology use. By placing use on a scale, we allow a behavior, such as an older adult trying (but not necessarily succeeding) to physically interact with someone else's phone, to oscillate between *assisted* use and *mediated* use. If Helen had been able to successfully navigate her daughter's smartphone when it was handed to her, that would reflect a more assisted style of use. However, because Helen was ultimately not interested in holding and operating the device herself, the use needed to be mediated.

This type of *mediated* use is similar to the *use-by-proxy* concept that is discussed by Bartol et al. (2022) and a form of *proxy use* that Hänninen et al. (2021) call *digital piggybacking*, whereby use is conducted in proximity to, but separate from, an older adult.

While *mediated* use more accurately describes spontaneous, one-on-one use, *communal* use refers to a form of dependent use that is planned out, regularly occurring, and conducted in larger groups. In assisted living facilities, this type of use typically oc-

curs during community activities and is moderated by an associate or other volunteer activity leader.

At the facility in this study, communal forms of technology use are scheduled into everyday social activities. Specifically, residents are given the opportunity to engage in *communal* use in a group setting with a specially designed computer system that combines software geared toward older adults with a large touchscreen monitor that can be wheeled around the facility. In addition to pre-programmed applications, such as trivia, bingo, puzzles, games, and touch-to-paint programs, the system also allows users to access an Internet browser and a music player. While the system is designed so that anyone can interact with the touchscreen, for the most part, the residents seemed uninterested in doing so. Instead, they preferred to observe the associates as they navigated the system.

However, despite this general lack of interest in directly interacting with the system, I observed residents regularly engaging mentally and verbally with the activities happening on the screen. For the associates conducting these community activities, this system was an essential tool for engaging the residents in new types of technology.

It is essential to note that the degree to which *communal* use is engaged in and/or is beneficial to the users is strongly dependent on the makeup of the community. The presence of opportunities for *communal* use does not guarantee that all members of the community will engage in it, or that they

are even interested in doing so. Thus, *communal* use may take on a different format for each of the subgroups within a larger community.

Finally, on the most dependent end of the scale lies *embedded* use, a type of use that reflects a complete lack of independence. *Embedded* use is a form of technology use that is so deeply integrated into the technological institution that it often goes unnoticed or is taken for granted. Some assistive technologies and most surveillance technologies fall into this category. The lack of independence is a result of *embedded* use requiring the control of another person beyond the primary user, but it also typically occurs without the primary user's consent (and sometimes knowledge). The primary user rarely has the choice to engage or not engage with *embedded* use; however, they are still heavily influenced by the embedded technology.

One example of *embedded* use at the facility is the Wander Guard system, a small tag that can be affixed to a resident or their wheelchair or walker that prevents the wearer from leaving through the external doors of the facility. Because Wander Guards are used for residents who pose an elopement risk, none of the residents I interviewed were required to wear them; however, through my observations and interviews with the associates, I was able to better understand how the devices embody *embedded* use in a technological institution.

Much of the previous discussion in this paper has regarded technology

use and non-use, especially among older adults, as a complex decision-making process. While this is typically true, we must acknowledge the role that the technological institution, along with all social contexts, plays in that process. Embedded technologies are unique in that the primary user (here, the resident) loses the ability to make decisions about use and non-use.

Overall, the interviews and observations conducted for this study reveal an essential finding on how older adults engage with technology: navigating use and non-use involves a complex decision-making process. However, that process can only be fully understood by expanding our conceptions of *use* to consider the various ways that technology is incorporated into everyday interactions.

## Discussion

The current study examines not only the stated reasons why older adults use and do not use certain technologies, but also how those decisions are made. Using frameworks from digital inequalities and narrative gerontology, the findings in this paper present a clearer picture of how older adults engage (and disengage) with technology by *choice*. Specifically, older adults utilize a complex decision-making process that negotiates their own communication needs, the usefulness of technology, and the availability of suitable alternatives to compensate for the perceived consequences of non-use. The findings of this study are consistent

with prior research on the technology use of older adults, including Hagberg's (2012) conclusion that older adults are fully capable of making informed decisions about their technology use. Additionally, the finding on *suitable alternatives* is consistent with research from Mitzner et al. (2010), which found that older adults weigh the time it would take to learn a new technology against the potential benefits, and sometimes learning a new technology is just not worth their time.

Also crucial from these findings is the understanding that technology *use* and *non-use* are not permanent statuses, but rather a continuum of situational activities that are heavily dependent on social interaction. This Interaction Approach explores how independent or dependent a primary technology user is on others during their use. In all but one type (*embedded use*) the primary user is able to make an informed choice about their use. However, with *embedded use*, the primary user is heavily impacted by the technology, often without their knowledge or consent. This finding is consistent with Wagenknecht's (2017) research on the *affected bystander*, as well discussions on the use of surveillance technology in elder care (Mortenson et al., 2016).

### ***Implications and Conclusions***

The concept of *choice* in technology use has important implications for researchers, practitioners, and policymakers. Digital choice, or the ability to decide for oneself whether to use or not use certain technologies, is a reflection of personal agency. For older adults,

especially those living in non-independent living situations, personal agency may be diminished. This study contributes to a growing body of literature in the last decade that emphasizes how older adults occupy a unique life-stage that allows for a complex and agentic decision-making process regarding their technology use.

In addition to maintaining agency, the concept of digital choice also has important policy implications, particularly those that are focused on technological interventions. Older adults have demonstrated that use and non-use are carefully negotiated. Thus, increasing digital literacy or usage is not as simple as providing more access to devices or educational information. For example: for an older adult that has no interest in conducting online banking on an application on their smartphone, a computer might prove to be a better option. However, continuing to bank in person or over the phone may still be a suitable alternative to that technology use. Technological interventions cannot be approached linearly.

In their research on attitudes toward technology during technological interventions, Berkowsky et al. (2013) found that older adults in assisted and independent living communities had more favorable opinions of technology when they received specialized instruction that was designed for older adults in their living situation. Thus, when planning and implementing technological interventions for older adults, policymakers and practitioners would benefit from engaging older adults in that process. In addition to developing

more specialized and welcomed interventions, this practice may also benefit older adults in non-independent living situations who may be struggling with a sudden or sustained loss of personal agency.

Respecting digital choice, and an older adult's decisions to use or not use certain technologies, still hinges on the widespread availability of technology. Consistent with prior research, the findings in this study still support advocating for policy that increases technology access and education for older adults. Essentially, technology must first be made available before older adults (and all individuals) can choose to use or not use it. Similarly, Hakkarainen (2012) argues:

Therefore, for promoting digital inclusion, the elderly should be provided with internet-related information, training, and support that would address their social representations and images of the internet. At the same time, however, for promoting citizens' equality in communication rights, older people should also be provided with the opportunities for ageing actively without using the computer. The contribution that this study makes to policy-making is that digital inclusion policies should also encompass a choice for internet non-use. (p. 1213)

Additionally, Tirado-Morueta et al. (2021) found that older adults are more likely to use the Internet if their

access to it is coupled with training and support. Ultimately, successful technological interventions will engage older adults as complex decision-makers that are capable of making informed decisions about their technology use. Current efforts to improve access should continue; however, implementing new technological interventions will have a higher success rate if the concept of choice is carefully considered.

Finally, the findings in this study challenge the current notions of *use* and *non-use* by expanding technology use to a continuum based on how dependent the use is on another person. Traditional notions of technology use have focused on a limiting set of criteria: *use* is reserved for moments when a single individual is in control of a technological device or application. The Interaction Approach of Technology Use encourages researchers, practitioners, and policymakers to look beyond this definition and consider the profoundly social nature of technology use.

A non-linear, continuous approach to technology use is currently being explored in other research, most recently, in Hänninen et al.'s (2021) examination of the role that *warm experts* play in older adults' engagement with digital technology. Similar to the Interaction Approach, their typology examines use that ranges from active, independent use to more limiting forms of use.

Where the two approaches differ is in the data from which they were developed. The study in this paper was conducted on older adults in the Unit-

ed States, while Hänninen et al.'s (2021) research was conducted in Finland. Additionally, Hänninen et al. (2021) primarily tell the story of technology use from the perspective of the individuals, or *warm experts*, that are providing technological assistance to their older adult family members. Contrarily, the Interaction Approach frames the various usages from the perspective of the primary user, the older adult. Regardless, in both studies, data is collected from both the older adults and the individuals that they interact with in their everyday lives. Future research and policymaking will benefit from considering the contributions of both Hänninen et al. (2021) and the present study.

One immediate implication of such an approach for practitioners and policymakers concerns the implementation of new technological initiatives or interventions for older adults. During data collection for this study, the facility was in the process of purchasing new computers for the community computer lab. Conversations with the associates revealed that, even before purchasing the devices, they were already considering how the new computer lab would need to be introduced to the residents so that it could be utilized to its full capabilities. Taking a nuanced approach to technology use, one that considers varying levels of dependence and independence, can help inform that process. Using findings from the Interaction Approach, when introducing new technological devices to older adults (for example: purchasing computers for an assisted living facility), successful implementation will depend

on how well the implementing agency considers the users' preferences for *individualistic* and *assisted* use, along with more *mediated* forms of computer use.

In addition to inserting new devices in a community, this approach can also inform the implementation of technology education interventions for older adults. While older adults may elect to receive technological skills training in order to engage in *individualistic* use, *assisted*, *mediated*, and *communal* use require unique skill sets as well. One such skill is the ability to know which devices can accomplish which tasks, as well as knowing someone in their everyday lives who can assist with the desired use. For example: when an older adult resident asks an associate to "look up" something for them, they are displaying a specific technological skill of knowing that a smartphone is capable of "looking up" information, even if they cannot or are not interested in holding the device in their hands and looking it up themselves.

While the Interaction Approach was developed from research on older adults in one assisted living facility, this continuum of use may be applicable to a wide variety of populations. Further research is necessary to test this conceptual approach in other assisted living facilities and with other groups of older adults in order to better understand how each of the forms of use outlined in this study may manifest in unique ways among different populations of people. Ultimately, approaching technology use as a continuum based on the level of required interaction in that use will

continue to illustrate the deeply social nature of all technology use in society.

While the Interaction Approach of Technology Use provides new language for discussing use and non-use, it is only the beginning of a much deeper and more nuanced conversation in the fields of technology and aging.

### ***Limitations***

Despite its considerable contributions, there are two limitations within this study that need to be addressed. First, because this research was conducted at a single assisted living facility, the available sampling pool for residents, family members, and associates was heavily limited. Thus, the final sample for each of the interview groups was smaller than preferred. Additionally, the participants in this study were recruited using a non-random, purposive technique, which undoubtedly introduced a significant sampling bias. Thus, the

generalizability of the findings should be approached with caution. Future research will benefit from sampling from a larger, more diverse pool of older adults, both within and outside of assisted living facilities.

Second, this study would have benefited from additional observational sessions of the residents interacting with family members and associates, as well as engaging directly and indirectly with various technologies, particularly *after* the Interaction Approach of Technology Use began to develop. The Interaction Approach emerged during data analysis as a new way to conceptualize how residents in assisted living facilities use technology in interactive ways. Given that the present research was largely exploratory, additional research will strengthen the validity of the Interaction Approach by asking questions that are specifically related to the various types of uses outlined in the findings of this paper.

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