

## Chapter 9

# **The ICT User Typology in Context: A Theoretical Perspective**

The ICT User Typology is deeply embedded in several decades of gerontechnological research and a much larger field of technology use studies. This chapter focuses on exploring the relationships between the typology and existing gerontechnological research and other theories of technology perspectives and adoption. It starts by examining the connections between existing gerontechnological work on the factors thought to influence ICT use by older adults: most importantly demographics and gender. Next, it explores existing theories that are related to the typology, including the theory of IT Cultural Archetypes (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999), the Diffusion of Innovations (E. M. Rogers, 1962, 2003; E. M. Rogers & Shoemaker, 1971), and the Taxonomy of Older Adult Digital Gamers (De Schutter & Malliet, 2014). Opportunities for further empirical investigation of the ICT User Typology are also highlighted.

### **The Gerontechnological Research and User Types**

There has been an increasing focus in the gerontechnological literature on understanding how demographics such as income, socio-economic class, and education level impact older adult ICT use. Much of this literature has suggested that those who are of lower socio-economic class, income, and education levels are less likely to use modern forms of ICTs (Czaja et al., 2006; Friemel, 2016; González-Oñate, Fanjul-Peyró, & Cabezuelo-Lorenzo, 2015; Ihm & Hsieh, 2015; Peral-Peral et al., 2015; Van Volkom et al., 2014).

The ICT User Typology cuts across these class, income, educational, and work boundaries to suggest that a person's ICT user type is more predictive of their approach to technology than their demographics. Individuals in this study ranged from those in acute poverty (Gwen, Jackie, June, and Nancy) to the affluent (Charles, Mary, George, and Mindy Jean), with most of the participants in the middle class. Occupations ranged from blue collared positions to white collared, including electricians, IT workers, upper management, and the director/vice president level. Many of the women were in/had been in pink collared professions, as was common for members of the Lucky Few Generation

(Carlson, 2008).<sup>1</sup> Participants ranged from those with General Equivalency Diplomas (or GEDs, an alternative to a traditional secondary school diploma) to two individuals with doctorates, with most participants holding a high school diploma, as was common for this generation (Carlson, 2008).

Based on these various demographics, there was no difference in a person's user type, with the exception of those who were Enthusiasts being more likely to choose IT careers. (It is likely that Enthusiasts' love of ICTs from early in their life influenced their career choice versus their career choice leading to their love of ICTs.)

Prior gerontechnological research has suggested a clustering of attitudes and uses of ICTs among older adults, providing hints at the user types. Studies have indicated that older adults have diverse motivations and reasonings for using ICTs including fun, usability, and usefulness (McMellon & Schiffman, 2002; Melenhorst, Rogers, & Bouwhuis, 2006). Such findings lend credence to the existence of the Enthusiast (fun) and Practicalist (function/usefulness) focused user types.

Other gerontechnological findings have suggested that older adults with larger social networks are more likely to use their cell phones than those with smaller ones (Petrovčič, Vehovar, & Dolnicar, 2016), suggesting that those with large social networks (like Socializers) have distinct ways of using communication technology to stay connected. Other studies have suggested that those older adults with higher levels of technophobia, or fears about technology, report more constrained, limited, and controlled levels of use (Nimrod, 2018). Evidence of such restricted use patterns lends support to the Guardian type's existence, as Guardians have the highest levels of technophobia and they strictly control and limit their ICT use.

While prior gerontechnological literature has hinted at the existence of the five user types there are other gerontechnological findings which contrast with the ICT User Typology. In particular, prior Gerontechnology work has suggested that gender is a driving factor in the adoption and use of ICTs. The ICT User Typology would suggest that it is not gender, but *perspectives* on ICT use that drive such behavior.

### *User Types and Gender*

Much of the literature on older adults and ICT use has suggested that women are less likely than men to be using advanced ICTs (Kim, Lee, Christensen, & Merighi, 2017), experience greater ICT anxiety (Czaja et al., 2006), and report lower levels of self-knowledge (Helsper, 2010). Gender has also been shown to be important in many age-diverse domestication studies: women and men have different conceptualizations of ICTs (Ang, 1994; Cockburn, 1994; Habib & Cornford, 2002; Singh, 2001), both in terms of how they should be used

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<sup>1</sup>In the Lucky Few generation women made tremendous strides in terms of work-place participation, but mostly in pink collared positions, such as administrative assistants, nurses, and teachers (Carlson, 2008).

(Buse, 2009; Lie, 1996; Livingstone, 1994), but also in who is seen as legitimate technology users (Cockburn, 1994).

Women were found across all five of the ICT user types discovered; however, men were only represented in the Enthusiast, Practicalist, and Guardian types. There is an open question if certain types are more gendered than others, particularly Socializers and Traditionalists.

All the Socializers were women. Such findings make sense: older adult women are much more likely to be involved in socialization activities and use ICTs to socialize and maintain bonds than men (Kim et al., 2017; Waldron, Gitelson, & Kelley, 2005). Certainly, age-diverse domestication research has suggested that men tend to view ICTs more as leisure devices for individual use and women view them more as devices of connection (Livingstone, 1994), suggesting a gender influence on the meanings that individuals give to technologies. While these prior findings support the Socializer type as being more feminine, other research suggests that there may be male Socializers as well. While not directly indicating the Socializer type, research has shown that older adults, regardless of gender, who have the largest social networks report highest use of their cell phones (Petrovčič et al., 2016). Given the influence that large intergenerational networks have on Socializers, such evidence suggests that it is possible male Socializers exist as well. After all, extroversion and joy in social activities are not a solely feminine trait.

The researcher's encounters with potential participants suggests that there are indeed male Traditionalists. Margaret's live-in partner refused to be a part of the study, because he, according to Margaret "isn't a computer user and isn't interested in any [technology] but television." Margaret reported that he loved watching television, listening to the radio, and using the telephone, but had no interest in learning how to use the computer, even though she often offered to teach him. (His love of the television often caused conflict in their relationship (Chapter 6), as Margaret, a Guardian, restricted her own television use.) Charles, a secondary participant and Margaret's neighbor, shared "Margaret's partner just said 'No. I don't want any part in that. Margaret can do it, but I won't.' So Margaret and I let the subject of your study drop rather than pushing him to participate." Such use patterns suggest that Margaret's partner was indeed a Traditionalist, who preferred the technology of his youth, but rejected later innovations.

There may be a tendency for older generations (such as the Lucky Few) to have more female Socializers and more male Enthusiasts than younger generations (such as Generation Z), as socialization has traditionally been seen as more "feminine" and technology as more "masculine." Instead of gender directly causing these differential gerontechnological findings, it is possible that a person's gender instead interacts with societal influences (such as societal expectations) to result in an individual's user type.

The ICT User Typology suggests that women do not have a single way of approaching or viewing technology, but five different approaches. While women may be more commonly found in one type or another, such as Socializers, this single user type or perspective on technology does not represent all women. This

leads to an important question as to why gendered impacts are often observed in previous older adult studies. While older studies have suggested women have higher computer anxiety than men (Czaja et al., 2006; Laguna & Babcock, 1997), newer studies have demonstrated it is not gender, but attitudes toward ICTs that impact such feelings (Nimrod, 2018). These more recent findings lend credence to the fact that perspectives on ICT use have more influence on use than gender.

Older studies, by their nature, are examining a “different” older adult population than newer studies. Those who are considered “older adults” by a strict age definition represent a population that changes from year to year as “new” individuals, just turned age 65 (or the basic age set by the researcher), meet the requirements of inclusion (Birkland & Kaarst-Brown, 2010). This may account for differences in older versus newer gerontechnological studies’ findings: the older adult population has changed.

It will be important to investigate if some user types are gendered or if they are more frequently gendered in some generations than others. While there are specific and interesting questions about gender and user type inspired by the Gerontechnology literature that must be explored further, the ICT User Typology can be integrated with other theories. The typology’s integration with other theories of technology perspectives and adoption allows us a better understanding of how people approach and apply meanings to technology.

## **Integration of the User Typology with Other Theories**

The ICT User Typology is the first theory that has concentrated on theorizing everyday older adult ICT use based on the meaning of ICTs in their lives. However, there are several other theories which have attempted to understand and predict ICT perspectives or technology adoption in a similar way to the typology, including Kaarst-Brown’s (1995) IT Cultural Archetypes and Rogers (1962, 2003) Diffusion of Innovations. A third theory, the Taxonomy of Game Players (De Shutter & Malliet, 2014), suggests a clustering of five attitudes toward digital games among older adult gamers. All these theories, interestingly enough, indicate that individuals can be separated into five categories. However, these theories also differ in their application and understanding of technology use/adoption from the ICT User Typology. The following sections address the similarities, differences, and synergies between these three theories and the ICT User Typology.

### ***Kaarst-Brown’s (1995) IT Cultural Archetypes***

Kaarst-Brown’s (1995) IT Cultural Archetypes were developed from an intensive ethnographic comparative case study of two different North American organizations. Using data from over 80 interviews with these two organizations’ employees, she discovered five emergent cultural views toward Information Technology (IT) that could exist in organizations. These five cultural views, termed

archetypes, represent distinct views of IT, derived from people's basic technological assumptions (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999):

- In a Revered IT Culture, IT is highly valued and looked to as a solution to many problems.
- In an Integrated IT Culture, IT is evaluated based on its match with user needs.
- In a Demystified IT Culture, IT is seen as a resource that any employee can use.
- In a Controlled IT Culture, decisions about IT innovation are believed to be a responsibility of organizational leaders.
- In a Fearful IT Culture, IT and innovations are seen as potentially harmful.

One can view these five archetypes as five potential subcultures that can exist in any organization, with each subculture having a distinct view on how IT should be used organizationally. This includes for what purposes and how IT professionals should be treated (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999).

While IT Cultural Archetypes (Kaarst-Brown, 1995) focuses on IT cultures in organizations, the ICT User Typology concentrates on individual perspectives and meanings of ICT use. Despite these differences in what is being measured (subcultures versus individual perspectives) and predicted (organizational strategies versus ICT use), there are remarkable similarities between cultural archetypes and user types. It is likely that these two theories are capturing different parts in a chain of phenomena from the individual creation of ICT user types to the development of organizational IT subcultures.

Enthusiasts, who "love" and "cherish" their ICTs, closely match the attitudes observed in the Revered IT cultural pattern. In a Revered IT Culture, IT is honored and respected, and turned to for solutions for a wide range of problems (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999). Similarly, Enthusiasts turn toward technological solutions in both their personal and professional lives, have great admiration for ICTs, and heavily advocate for greater use of ICTs in their workplaces. Enthusiasts enjoy working in technical environments and being involved in Revered IT Cultures. Fred was full of praise for his former employer (a secondary school) as he had been given free rein to use, invest in, and explore ICTs (a revered IT culture). When Enthusiasts encounter workplaces that do not value ICTs to the great extent that they do, they can be highly critical. Alice felt that the home healthcare agency she worked for was not using technology for the greatest benefit and was often suggesting ways to incorporate more ICTs into their workflow to her supervisor.

Practicalists, who see ICTs as "tools" that serve a specific purpose in their lives, correlate closely to the Integrated IT Cultural pattern. In Integrated IT Cultures, use by organizations is seen as a balance between technical capabilities and user needs. New innovations are evaluated on their contributions to an organization's well-being (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999).

This focus on functionality and practical purpose in the Integrated Culture is remarkably similar to Practicalists' own focus on usability and function. In an Integrated IT Culture, those technologies which have greatest value are those that are determined to be the best solution (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999); just as Practicalists place the highest value on ICTs that are useful. Practicalists enjoy working in Integrated IT Cultures, where the values and purpose of devices are clearly defined, and their use of helpful innovations is supported. Belinda was grateful for having colleagues that helped her identify useful technologies and a workplace that supported her through technical training and assistance (an Integrated IT Culture).

Socializers, who view ICTs as "connectors," want to use the technologies that younger generations are using. Socializers most closely mirror the Demystified IT Culture where users attempt to mimic the skills of IT professionals themselves: anyone can use IT, not just IT specialists (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999). Socializers, who are heavily influenced in their ICT use by the younger generations around them, believe that these younger users are highly knowledgeable ICT experts, whom they wish to emulate and mimic. Socializers adapt to and adopt the communication patterns of their youngest contacts; learning text speak, choosing to use the same devices and applications, and constantly observing the latest technologies being used. Those in a Demystified Culture seek to be self-sufficient ICT users (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999), much like Socializers do. Gwen commented on how she often made up text acronyms and had learned text speak to communicate with her grandchildren – meeting them using the technology they were using in the way they were using it.

Traditionalists, who "love" and cherish the ICTs of their youth but have little use for more modern forms of ICTs, closely reflect the Controlled IT Culture discovered by Kaarst-Brown (1995). In the Controlled IT Culture, it is believed that decisions about IT should come from the top of the organization, and use should be carefully contained and constructed (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999). This mirrors Traditionalists' own behavior in which they control which ICTs they use (the ones of their youth) and the ones they do not (the more modern innovations). It is likely that Traditionalists, who have little interest in using modern ICTs (unless they are required to for work), see the responsibility for determining technological adoption in the workplace as simply some other person's task, and not their own. Of all of the five types, Traditionalists are not only the least likely to adopt a new ICT, but also the least likely to discover new ICTs on their own. They rely, instead, on family members or friends to introduce new technologies; reflecting this abdication of ICT decision-making responsibility to others. It is quite possible that if Kaarst-Brown (1995) had examined the personal lives of the employees at the organizations studied, she would have discovered the split between work (where Traditionalists use modern ICTs, if required) and home (where Traditionalists use only the ICTs of their youth). An example of this would be June, who, as a Traditionalist, had used more modern ICTs when required to do so by work, but in her personal life she very rarely used them.

Guardians, who view ICTs with suspicion and are wary of their potentially negative impacts on society, reflect Kaarst-Brown's (1995) Fearful IT cultural archetype. In a Fearful IT Culture, innovations are viewed as possibly harmful, and in particular, as "harm to people" (Kaarst-Brown & Robey, 1999, p. 121). This culture is marked by a high level of technological anxiety (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999). These concerns echo Guardians' fears of the potentially negative impact of technology, and most importantly, how this technology can harm. Margaret, as a Guardian, experienced such a high level of anxiety over the increasing digitalization of her workplace that she disengaged from her job, eventually retiring much earlier than she originally planned.

The ICT User Typology and IT Cultural Archetypes (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999) should be viewed as complimentary, not competing, theories. Both provide substantial evidence that there is a grouping of five clusters of attitudes toward ICTs; and these five clusters are remarkably similar. It is likely that the user types of the ICT User Typology represent individual attitudes and beliefs toward ICTs, while the cultural archetypes represent the organizational subcultures that can develop in the workplace based on the user types present.

Kaarst-Brown (2005) has written about how a leader's underlying assumptions about ICTs shape the organization's overall outlook on innovation, IT culture, and its willingness to adopt new innovations. Interesting questions remain, however, as to what influence individual user types may have on the development of IT cultures depending upon their concentration in an organization. For instance, is it only the user type of the person in charge that determines the IT culture for that part of the organization? Is it possible, if an overwhelming number of employees in a sector of the organization have a conflicting user type from the leadership of that sector, that the employees determine the IT culture, rather than the leader? For instance, if an organization is led by a Traditionalist, but has mainly Enthusiasts and Practicalists as employees, will the organization become a Controlled, Revered, or Integrated IT Culture – all possibilities of the different user types observed? Will subcultures of these three archetypes develop, and if so, will it result in conflict and resistance?

Using the ICT User Typology in integration with Kaarst-Brown's IT Cultural Archetypes (1995), it is possible to understand how an individual's own user type could potentially impact the culture of an organization, or how differences in user types across an organization could lead to IT cultural conflict. It is also possible to understand how an IT culture that is significantly different from a person's user type impacts that individual, particularly in terms of job satisfaction and retention. Margaret, a Guardian, worked in an office that had developed a Revered IT Culture. She quickly became dissatisfied with her work, disengaged, and retired years before she had originally planned. Alice, an Enthusiast, was highly critical of her organization's more Controlled IT Culture and believed that they should introduce more innovation; she left her organization shortly after our interviews concluded. Both Margaret and Alice were dissatisfied with their work culture, but for dramatically different reasons. (Technology having too high of a status for Margaret versus technology having

too low of a status for Alice.) Both were highly valued employees according to their friends, family, and coworkers; both represented an organizational loss. Mismatch between their user type and organizational IT culture led to their eventual disengagement.

Given the similarity of the ICT User Typology and IT Cultural Archetypes (Kaarst-Brown, 1995; Kaarst-Brown & Robey, 1999), it is important to emphasize a few critical differences between the theories. The ICT User Typology is an individual level theory that examines domestication of ICTs in everyday life, whereas Kaarst-Brown's (1995) theory of IT Cultural Archetypes is a group-level theory that examines culture in organizations. In particular, the ICT User Typology is focused on explaining the diversity of older adult ICT use, while IT Cultural Archetypes are focused on how cultural attitudes toward innovations impact organizational IT strategy.

The close relationship of these two theories, however, provides more evidence that the user types of the ICT User Typology exist and are universal across generations. Kaarst-Brown (1995) developed her IT Cultural Archetypes theory in two large organizations from an age-diverse workforce. Although her study was completed approximately 20 years prior to the development of the ICT User Typology, her participants ranged in age from their early twenties through their seventies, representing individuals born from approximately 1915 to 1975. This meant that her participants represented the WWII Generation, Lucky Few, Boomer, and Generation X generations. These five cultural patterns were not limited to members in a single birth cohort/generation. This lends more evidence that the user types are not generationally specific, as discussed in Chapter 8.

### ***E. M. Roger's (1962, 2003) Diffusion of Innovations***

Another theory that presents five categories of users is E. M. Roger's (1962, 2003) Diffusion of Innovations, which seeks to understand how ideas become integrated into our societies. This theory posits that ideas and technologies undergo a process of adoption, and individuals can be separated into five predictable groups based upon their rate of adoption (fast to slow). These groups differ in their ages, financial, and social resources (E. M. Rogers, 1962, 2003; E. M. Rogers & Shoemaker, 1971):

- Innovators tend to adopt an innovation early, tend to be young in age, and have high financial and social resources.
- Early Adopters adopt an innovation shortly after innovators, tend to be younger in age, and tend to have high financial and social resources.
- Early Majority Adopters tend to be slower in adopting new innovations and have above average social status.
- Late Majority Adopters tend to adopt an innovation later than most individuals. They tend to have lower financial and social resources.
- Laggards resist adoption of new innovations, tend to be older in age, and tend to have low financial and social resources.



There are two trends seen in the five categories proposed by Diffusion of Innovations: resources and age. Those who are more likely to adopt a new innovation are likely to have higher resources and be younger (innovators and early adopters) compared to those categories that are likely to resist adopting a new innovation (late majority and laggards) (E. M. Rogers, 1962, 2003; E. M. Rogers & Shoemaker, 1971).

All of the participants discussed in this book in Chapters 2 through 6 were older individuals which Diffusion of Innovations (E. M. Rogers, 1962, 2003; E. M. Rogers & Shoemaker, 1971) predicts would be the least likely to adopt advanced ICTs. Yet a great diversity of ICT use and ownership was discovered: older adults were not all laggards. Age itself is not a solid predictor of adoption. There was also no relationship between resource level and user type. Instead, a wide variety of both financial and social resources was observed across the participants: several of the participants were quite impoverished, many were middle class, and a few were upper class.

The ICT User Typology suggests that technology adoption and use are not purely a function of finances, social resources, or age, but rather is highly related to an individual's fundamental beliefs and the meanings they find in ICTs.<sup>2</sup> Given the diversity of ICT use in the older adult population, the characterization of older adults and those with low social and financial resources as technological "laggards" is inaccurate at best, and ageist at worst. For example, we observed innovations diffuse from Harry (a Lucky Few generational member) to Katrina (a Millennial), the opposite of what Diffusion of Innovations would predict based on age. Resources also did not correlate with adoption. For example, Mindy Jean is a Traditionalist with a healthy social network and is the spouse of a retired executive who rejects advanced ICTs. Gwen is a Socializer who lives in low income housing with a large social network who embraces social media and texting. From the viewpoint of Diffusion of Innovations, Mindy Jean would be much more likely to adopt advanced ICTs than Gwen, due to Mindy Jean's much higher financial resources. However, Mindy Jean rejects modern innovations and Gwen embraces those that enhance communications. Put simply: it was not a lack of resources that prevented Mindy Jean from using these devices, but the fact that these devices had little meaning in her everyday life. Conversely, a scarcity of financial resources did not inhibit Gwen's adoption.

Although the ICT User Typology and Diffusion of Innovations both contain five categories, there is no clear mapping across the two theories. This is not to say that resources, both financial and technical support and encouragement, are not important – they are critical. Nancy, a Socializer, who desperately wanted to learn to text, was prevented from doing so due to her limited income and impairments. If a cell phone that accommodated both her abilities and her

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<sup>2</sup>Prior gerontechnological research has supported that income and educational levels are not always predictive of ICT use; as individuals who have low income and education levels are often digital participants (Eynon & Helsper, 2010).

budget was available, she would likely be an avid texter. There is still power in understanding how resources, functional ability, and knowledge impact time of adoption and, therefore, Diffusion of Innovations can be a useful theory. It, however, can be complimented by other theories that examine perspectives on ICT meaning, such as the ICT User Typology.

The ICT User Typology is not simply a metric for understanding when or at what rate an ICT will be adopted, but provides an understanding of *how* an ICT will be used and *why* it has been adopted. It is not the technologies owned that make a person any particular user type, but rather the meaning these ICTs hold to an individual that does so. Seeing an ICT as a “toy” is what made Alice, Fred, and Harry Enthusiasts, not that they all owned cell phones. In fact, not all of the Enthusiasts owned the latest smartphones: while Alice and Fred both owned smartphones, Harry lacked good cellular data coverage at his rural home so he opted to have a simple cell phone. Similarly, among the Practicalists the prevailing thought of ICTs as a “tool” did not lead this group to adopt similar cell phone models. Belinda had a smartphone, Cleveland had a simple plan phone and Boris had a pay-as-you-go cell phone. What motivated adoption of these diverse models was the everyday tasks these Practicalists completed. While Belinda was a college-level educator, necessitating her to purchase a smartphone; Cleveland had recently retired and found that a simple phone plan suited his needs as he no longer needed to be in constant contact with his workplace. Boris used a simple pay-as-you-go phone, as it provided emergency service should he need it on a construction site. Practicalists are not Practicalists because they own a certain type of device, or adopted a certain device at a similar time. They are Practicalists because they are motivated to adopt new devices based on their usefulness, which stems from their shared belief that ICTs are tools.

What can be seen in the above examples is that for any innovation, categorizing individuals simply by the time of adoption or type of technology used leaves a critical gap in understanding *why* individuals are adopting an ICT. More importantly, we do not know *how* they are using the innovations they have adopted. For instance, Alice, an Enthusiast, had a smartphone, as did Belinda, a Practicalist. If we placed Alice and Belinda in the same category because they owned smartphones, we would miss important and critical information on *why* these women adopted these ICTs. Alice owned a smartphone *despite* working in an environment that did not encourage its use; Belinda owned a smartphone *because* her workplace required it. Appealing to Alice is the “fun” and “newness,” appealing to Belinda is the “practical” and “function” – and these views impact how these women use their devices.

While Kaarst-Brown’s (1995) IT Cultural Archetypes and E. M. Rogers’ (1962, 2003) Diffusion of Innovations theories focus on the general population and their ICT perspectives and adoption, another theory, De Shutter and Malliet’s (2014) Taxonomy of Older Adult Gamers, specifically focuses on older adults and their perspectives on digital gaming.

### ***De Shutter and Malliet's (2014) Taxonomy of Older Adult Gamers***

De Shutter and Malliet (2014) studied the gaming habits and perspectives of 35 older adults who played digital games at least once weekly. From their qualitative study, they determined that older adult digital gamers can be divided into five categories:

- (1) Time Wasters view games as ways to fill time in a productive way, particularly for improving cognition.
- (2) Freedom Fighters view games as a positive way that they can avoid other daily tasks in their lives.
- (3) Compensators play games because they fulfill social and cognitive engagement needs that they are no longer able to fulfill in other ways due to functional declines.
- (4) Value Seekers use games to learn about other hobbies or interests.
- (5) Ludophiles are passionate gamers, individuals who love playing games and identify as gamers.

It is important to note that in the taxonomy that De Shutter and Malliet (2014) have proposed, all of the older adult participants analyzed were using digital games. This is a different population than the older adults studied for the ICT User Typology, which included many older adults who did not play games.<sup>3</sup> The Lucky Few individuals who played digital games in the study included Alice, Fred, Harry (Enthusiasts), Boris (Practicalist), and June (Traditionalist).

Alice identified most strongly as a “gamer” and most likely could be categorized as a Ludophile. Fred and Harry, although they did not consider themselves gamers, also found games fun like Ludophiles. Boris occasionally played games, viewing them as a way to be active and fill his time, much like a Time Waster. June’s game playing is more difficult to categorize. June rarely used digital games; she would occasionally play solitaire on her computer every few weeks. June’s level of game playing would not have met the selection criteria in De Shutter and Malliet’s (2014) study, given that they required older adults to play digital games at least once a week. This is likely why June’s digital gaming is difficult to categorize.

While at first it may seem that these two taxonomies are unrelated given the very different participants they were developed with and the behavior they describe, there are some interesting correlations. First, De Shutter and Malliet (2014) suggest that these gaming categories differ on their views of gaming as a more pleasurable versus a more useful task – a similar continuum to the split between the fun-loving Enthusiasts and the useful-focused Practicalists. Among older adults, there is some type of continuum in perspectives as to if technology

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<sup>3</sup>In particular, Guardians reject digital gaming, typically viewing it as a waste of time and a removal from the “real” face-to-face relationships they value.

is meant to be more fun or more functional. Second, De Shutter's and Malliet's (2014) Compensators lend support for Socializers' innovative use of ICTs for social interactions. Compensators view games as way to adjust for declines in functional ability (cognitive or physical) in order to remain active and socialize. Nancy, as a Socializer, viewed virtual bowling as a way for older adults to compensate for physical declines and socialize, although she herself did not use the gaming system.

While the Gaming Taxonomy and the ICT User Typology are not describing a similar phenomenon, there is a similar synergy, lending credence to the fact that older adults differ on the meanings they assign to ICTs – be they gaming technologies or technologies more broadly.

## **Opportunities for Further Research**

The ICT User Typology opens a potential field of research into exploring ICT use, meaning, introduction, and display from the perspective of the five user types. Opportunities exist for critically validating the types and for expanding the theory.

### ***Expansion of the ICT User Typology Beyond the Lucky Few (and Beyond the United States)***

One of the largest potential areas for development of the ICT User Typology is expanding the theory beyond older adults and the borders of the United States. The method chosen, dialogical interpretive interactionist (Denzin, 2001) case studies (Yin, 2009), allowed a depth of data collection that was necessary to generate the Typology. For practical purposes, the intensiveness of this method limited the number of comparative cases that could be conducted. (Methodological choices are discussed more fully in Chapter 11, “Discovery of the ICT User Typology”.)

The consequence of such an in-depth study is that it tells us little about the demographics of the typology. It is unknown how widespread these user types are in the general population. For instance, it is unclear what percentage of the Lucky Few generation is any particular user type. There is also little information as to if this theory is applicable across cultural boundaries or if the percentages of user types differ from generation to generation or from culture to culture. This, of course, is an opportunity to explore if the ICT User Typology is indeed applicable cross-culturally and cross-generationally.

Currently, work is underway to develop a survey instrument that accurately captures the five user types, allowing further testing both in the United States (where this study originated) and in other nations and cultures. Such a survey will also allow for further validation of the user types, while allowing us to understand interactions of the types with other theoretical perspectives currently being developed in Gerontechnology (such as current research on income, self-efficacy, and resource accessibility) (Czaja, Boot, Charness, Rogers, & Sharit,

2018; Friemel, 2016; Pick et al., 2015). Further research must also examine how these types develop – and if they can be changed or influenced.

### ***Exploring the Development of ICT User Types***

From the study of the Lucky Few participants, it appears ICT user types begin developing in childhood. Early interactions with technology have a large impact on the development of a person's lifetime technological perspective. Events through the life course to mid-age continue to shape a person's user type. These insights as to when types develop, however, are retrospective in nature. Retrospective studies are tainted by the fact that our memories are often not perfect and that the events we remember from long ago do not necessarily reflect the reality of what factually happened (Scott & Alwin, 1998).

Retrospective memories can be shaped by experiences that happen after the event in question, colored by our own perceptions, and at best, can often be blurry (Scott & Alwin, 1998). In some cases, this was proven to be true for the data presented in Chapters 2 through 6 – most people could only name rough time spans in which they started using an ICT (often half decade periods) and sometimes could not remember their original motivations for using a technology, particularly if such use first occurred in early adulthood or childhood. (For some older adults this was nearly 50–70 years ago). For the vast majority of participants, more specific dates and feelings could be recalled in a second interview after the participant considered the incident during the interval. However, even with improved recall of dates and feelings, such thoughts are being translated and filtered through their following life experiences and their current meanings.

Within the life course literature, such retrospective studies are common because of the difficulty in designing and implementing prospective studies (Elder, 1985; Elder & Giele, 2009; Scott & Alwin, 1998). Many have argued that when studying a person's current state, views, and meanings, those memories which are the most salient are the most important to having shaped a person; no matter how inaccurate. When it comes to understanding meanings and personal stories, it is often less important what factually happened to us as individuals, but more important what we believed happened: our own personal narrative of the events that shape our lives (Denzin, 2001). There is a power in those memories that we hold as creating an integral part of our identity, even if they are somewhat factually incorrect.

Despite the legitimacy of the retrospective studies in gerontology, the proposed genesis of these user types calls for longitudinal prospective investigation. Such studies could determine which childhood events are critical: the importance of mentors, the role of technological “tinkering,” and the importance of shared family media experiences. Most importantly, prospective studies could determine *when* such user types develop and the factors important in their development. They could also determine if these user types are stable or if they change over the lifespan (and most critically, how and what influences these changes). To truly understand the development of these user types would require a multi-

generational study of individuals, tracked from early childhood until older adulthood. Such a study, while likely to yield incredibly important data, would span the work of several generations of scholars.

The benefits of such a study, however, would be enormous. Such work could track how these user types develop and possibly change over the life course, but also provide an in-depth understanding of how an individual's user type interacts with a person's entire life trajectory. This includes how a person's user type impacts their work trajectory (chosen career, career path, time of retirement) and interpersonal interactions and relationship trajectories (intergenerational relationships, friendships, and family relationships).

Given the often-cited need for larger numbers of Science, Technology, Engineering, and Math (STEM) career holders in the United States (Gonzalez & Kuenzi, 2012; Kuenzi, 2008) and Europe (Directorate-General for Internal Policies, 2015; Microsoft, 2017), there are also important questions as to whether a person's ICT user type can be influenced, leading to more Enthusiasts and/or Practicalists in a given cohort. (Enthusiasts and Practicalists appear to be more likely to choose STEM careers than other types.)

While such future empirical studies should address if user types can indeed be changed or influenced, the ICT User Typology has immediate practical implications for practitioners, designers, and advertisers who are interested in the older adult population. Strategies for applying the ICT User Typology are explored in Chapter 10.