



Digital Dependency as a Burden: Impact of Active Aging for Technology Adoption in Brazil and Chile

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Abstract

Successful aging and active aging policies frame independence in old age as an expectation and a virtue in opposition to the once desired reciprocity between generations. Due to digitalization trends worldwide, mastering digital skills becomes another responsibility for older adults to remain independent. However, this process can create new forms of dependency as support from skilled users – usually the younger generation – is crucial for technology adoption among older adults. This study addresses how older adults may experience digital dependency as a personal failure and a burden upon younger generations. We conducted long-term ethnography among older adults adopting new technology in Brazil and Chile, countries with rapidly aging populations that have implemented aggressive digitalization strategies. The fast digitalization of public services may increase the risks of social exclusion for older adults as the less connected and less skilled age group in Latin America. Contrary to expectations suggested by the research literature, participants preferred to enroll in smartphone workshops instead of relying on their children. We volunteered in smartphone workshops for older adults and mapped the difficulties they face when adopting new technologies and the strategies they develop afterward to use technology while avoiding dependency. Participants may restrict their use of smartphones due to their limited digital skills or claim a lack of interest in technology as a self-defense strategy against appearing ignorant or incompetent. We found that participants preferred relying on friends for support instead, perceiving their help as a form of peer collaboration.

Keywords: *Active aging; Intergenerational relationships; Dependency; Digital literacy; Social exclusion*

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Introduction

Successful aging discourses impose responsibility on individuals to take care of themselves and stay healthy and independent as they age (Calasanti and King 2017; Higgs et al. 2009; Katz and Marshall 2004; Lassen and Jespersen 2017). Aging successfully becomes a personal virtue and a moral obligation toward the family, state, and society (Lamb 2019). Successful aging challenges interdependence in old age as a moral contract of reciprocity between generations in which parents take care of children until they become objects of care (Whyte 2017). Due to digitalization trends worldwide, mastering digital skills becomes another responsibility for older adults to age successfully (i.e., to keep their autonomy). This process, however, can create new forms of dependency for this growing sector of the population.

Dependency, in fact, has become central to tech adoption as more skilled users play a crucial role in supporting less skilled ones in their encounters with technology. Close personal connections – mainly relatives and friends – are the preferred choice for this task. Known as ‘warm experts,’ they acknowledge the novice users’ needs and background while guiding them through a concrete situation (Bakardjieva 2005) in a “two-steps-access” process toward technology (Leong 2017). The mediation provided by warm experts emerges as a crucial ongoing resource for older people’s familiarization with the digital world (Anderson and Perrin 2017; Hänninen et al. 2021; Olsson and Viscovi 2018).

This article addresses the impacts of active aging on tech adoption in old age. Does tech support provided by younger generations create a new form of dependency, a digital one? Would then older adults experience this digital dependency as a burden or even as a personal failure? This study is based on two 16-month ethnographies among older adults adopting new technologies, during which we each volunteered in Smartphone workshops in São Paulo and Santiago.¹ Such long-term participant observation led to the main argument of this paper. While embracing active aging, participants avoid digital dependency on children. Instead, they develop other strategies to overcome their digital constraints, preserve self-esteem, and gain some autonomy in the digitalized world.

Firstly, we briefly present current digitalization and active aging trends in Brazil and Chile, and then a methodology section detailing our field works. Secondly, we adopt a chronological approach – before, during and after the smartphone workshops – as a rhetorical way to display our ethnographic findings and analyze the complex relationship between older adults and smartphones. This approach allows us to frame smartphone adoption by older adults through several factors. “Before the workshop” provides context to understand older adults’ decision to seek professional support. We address older adults’ preconceptions towards new technology, ageism, and complicated intergenerational relationships with warm experts. “During the workshop” addresses what we observed during our teaching: issues regarding outdated devices, poorly designed interfaces, and motor abilities, and how they impact students’ progress. “After the workshop” focuses on the persistence of digital dependency and the

strategies adopted by older adults to deal with it. The final section reflects upon digital dependency, experienced as a burden, and its impact on digital inclusion, participation, and autonomy in old age.

Brazil and Chile: Active Aging and Digitalized Nations

Brazil and Chile offer two excellent study cases on the complexities of contemporary aging and digital inclusion in Latin America. On the one hand, both countries adopted an active aging agenda (World Health Organization 2002) to implement public policies for older adults (Dias and Pais-Ribeiro 2018; Programa Envejecimiento Activo n.d.). Active aging as a public policy sets high expectations regarding health and autonomy for older citizens, akin to the ‘successful aging’ trend. On the other hand, both countries have deployed an aggressive digital strategy. The Brazilian government set the goal to digitize 100% of public services by 2022 (Ministério da Economia 2020), while the Chilean Senate’s “Digital Transformation in the State” bill came into force in 2022 (Gobdigital Chile n.d.). In 2022, the World Bank’s GovTech Maturity Index (GTMI) classified both countries as GovTech leaders. The GTMI measures how governments are using technology to modernize the public sector in four focus areas, including enhancing service delivery (World Bank 2022).

As observed in Brazil and Chile, public policies are tightly entwined with technology in the wider world. From Telemedicine (Oudshoorn 2011) to the Smart Cities (Lombardi and Vanolo 2015), technology arises as a solution to optimize governance, urbanization, public services, and healthcare delivery. Thus, digital skills are increasingly becoming required of citizens, especially considering the fast digitalization of public encounters (Duque and Oliveira 2022; Hänninen et al. 2021; Lindgren et al. 2019).

The rapid aging of the global population not only affects public policies, but also the images representing aging in the media and ad campaigns. Until the 1970s, older people were represented by images of frailty, decline, and dependence. As observed by Featherstone and Hepworth (2005) in North American society, these representations have changed in past decades. Older adults are now portrayed as “exemplary profiles of the heroes of aging” who exercise their personal choice to “fight decline, along with quicky solutions which are there to be purchased” (Featherstone and Hepworth 2005, 360). These stereotypes show how culture prescribes a proper way to age, highlighting health and independence as a virtue and a responsibility. Similar instances of the role of culture in shaping later life have been observed by Debert (1997) and Leibing (2005) in the context of Brazil. Cultural anthropologist Sarah Lamb (2019) argues that this idealization hides social and economic inequalities that may result in very different experiences of aging that have nothing to do with individual choice. Consequently, as Lamb observed in the United States, older people might feel that not achieving good health and independence in old age is a personal failure. These representations of ‘successful aging’, however, co-exist in contradiction with public policies that reveal that older adults are still regarded as a homogenous group of fragile individuals lacking agency and needing constant care. The COVID-19 pandemic in Chile provided a clear example (Fuentes-García and Osorio-Parraguez 2020, 99), with the authorities emphasizing the collective care of older adults rather than self-care (Salazar 2021, 237).

When it comes to digitalization trends, the portrayal of older adults is contradictory as well. In many cases, older adults are depicted as successfully using online services (see Figures 1 and 2 for examples from Chile and Brazil). This can create feelings of personal failure for those who lack digital skills. Even worse, in some contexts, older people could feel they are incompetent as citizens. In China, for example, as shown by Miller et al. (2021), technology development and adoption have become a priority for the state as a strategy for competitiveness and growth. As older adults experience a deep commitment to the party-state, “many people feel a personal responsibility as good citizens to support the state’s drive

to digital modernity” (2021, 34). When it comes to older citizens embracing technology as a civic duty, Brazil and Chile differ significantly from the Chinese study case. However, the robust active aging agenda in both countries places similar expectations on the older population as technology becomes a means for autonomy and citizenship. In other cases, older adults are still portrayed as less able to use digital technologies. Figure 1 illustrates this contradiction. While the image shows an older adult smiling with a smartphone (therefore, mastering digital skills) the text (“I would have already done it at your age”) highlights that this was unexpected for a person of this age. Such negative representations can impact older adults’ confidence to adopt and engage with these technologies daily (Rivinen 2021).



Figure 1: “Switch to the electronic invoice. I would have already done it at your age.” A 2021 advertisement for an electricity company in Chile playing with age, youth, and tech. Screenshot by Otaegui.

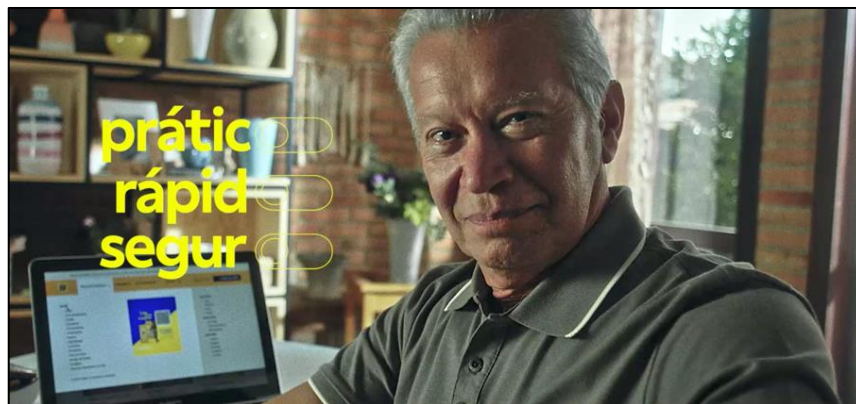


Figure 2: “Practical, fast, safe.” A 2021 advertisement for a bank in Brazil. Screenshot by Duque.

Fieldwork and Methodology

This study is part of the global project “Anthropology of Smartphones and Smart Ageing” (ASSA) led by Daniel Miller at University College London which aims to provide a comparative approach to the

impact of smartphones on aging and health in nine field sites: Al-Quds, Brazil, Cameroon, Chile, China, Ireland, Italy, Japan, and Uganda.

In the Brazilian field site, Duque volunteered as a teacher in WhatsApp workshops at a Catholic church in São Paulo, where people aged 60 and over can enroll in a vast portfolio of activities. They usually enroll in more than one activity during the week (with an admission price of US \$10 per course). Students from other neighborhoods also attend the workshops, thanks to the subway and bus services. During three terms from February 2018 to June 2019, Duque taught three groups of students with classes once a week in the mornings. Lessons took place in a room with a blackboard and Wi-Fi. Students were retirees with different educational backgrounds and high purchasing power. They travelled (including abroad), shopped in bazaars organized by the church, and usually had lunch or a coffee in the shopping mall across the street after the workshops. All students could afford a data package plan. The only one who started the course using the church's Wi-fi exclusively was a 68-year-old woman; her issue was not money but self-confidence. As soon as she became more skilled, she bought a data package. Duque created WhatsApp chat groups to support the three groups of students. The church assigned a student to assist Duque during the class, mainly to manage the attendance list and give announcements that could be copied on WhatsApp groups.

In the Chilean field site, Otaegui volunteered as a teacher assistant at a municipal cultural center's smartphone workshop for older adults. Students could attend this smartphone workshop, which was a month long, just once. Otaegui taught at this workshop to 20 to 25 different students – aged 60 to 84 – every month for six months. Otaegui also taught his own workshop for a year at the same center. It was called “Smartphone Practice” and aimed at students who had already taken the standard workshop. There was no set program; students could come for whatever classes they wanted and stay as long as they needed. The same fifteen to twenty students – aged 61 to 80 – attended this workshop all year round.

Even while the workshops in both field sites shared some similarities, such as teaching simple actions and operations first and then progressively moving to more complex tasks, they differed significantly in their practice. In Chile, the standard one-month workshop had a program, developed, and implemented by Francisca Robles, the main teacher: in four weekly meetings, the students learned smartphone usage basics (general settings, camera, WhatsApp, and Google Maps). Otaegui's workshop allowed for more student participation. Otaegui asked the students which apps or tasks they wanted to learn and planned each class accordingly. A typical lesson consisted of an initial ten minutes of general explanations (what is the Internet or 'the cloud,' the origin of QR codes, or the Bluetooth icon, etc.), then a step-by-step description of a task, and finally the exercise section when students would accomplish the task(s) of the day. Even though most lessons focused on WhatsApp features, others dealt with YouTube, Google Maps, Twitter, transportation, and calendar apps, to name a few. In São Paulo, the three WhatsApp workshops offered at the church followed a program developed by Duque. A few classes were dedicated to learning the basic features of smartphones. These were followed by classes dedicated solely to WhatsApp and the intent was to lead students from simple actions (insert a contact, send a message, attach a file) to complex ones (open groups, share location, set a conversation with their own WhatsApp number). Another workshop was catered to former WhatsApp students who were more likely to use public transportation when they retire and interested in mobility apps (i.e., Google Maps, Uber).

Both these volunteer programs formed one part of our broader ethnographies conducted in São Paulo and Santiago. Fieldwork combined participant observation (offline and online) and in-depth interviews following the ASSA project protocols. Both universities' ethics committees approved research protocols

and consent forms. Institutions hosting the workshops and participants were informed about the aims of the study and gave their informed consent before they began. Duque's ethnography in São Paulo took place in a middle-class district with the second-highest rates of income, life expectancy, and education among the 96 districts of the city (Gonçalves and Maeda 2017). Specifically, fieldwork was carried out in a neighborhood that was rolling out a pilot project to implement the WHO's Global Age-friendly Cities Agenda (World Health Organization 2007) in São Paulo. Among the 38 participants interviewed (aged 50 to 76; 22 women, 16 men), 30 had a university degree and 28 were retired. However, there were also participants with only primary education or under financial stress, such as those who were neither employed nor retired. Otaegui's ethnography in Santiago took place in a lower-middle-class neighborhood: the western part of Santiago Centro (Downtown Santiago) commune. The cultural centers where Otaegui taught smartphone workshops are state-run and offer free workshops for older adults. Most participants had completed high school education or had college degrees and were middle class, living on minimal pensions. Most were retired (with two of them still working) and used to attend free cultural activities. Most students lived alone, while some lived with their partners. Otaegui did in-depth interviews with 15 students (5 men, 10 women) and spent time having lunch together, meeting in the evenings, and going on field trips together.

Before the Workshop

"Before the workshop" does not mean 'before adopting a smartphone.' Students in São Paulo and Santiago were already basic WhatsApp users when they started the workshops. Messaging apps have become central for communication with transnational, extended, and nuclear families (Nedelcu 2017; Plaza and Plaza 2019; Taipale and Farinosi 2018; Webb 2015), and it is the primary motivation for tech adoption among older adults (Gonzalez and Katz 2016). This is also true for participants in both field sites. They acknowledge that 'today you can't live without it,' given the digitalization of everyday life, but primarily they became smartphone users because of their desire to connect with family and friends. For example, Rosângela, a 68-year-old retired woman in São Paulo, thought WhatsApp was just a fashionable gimmick until she realized it was the primary means of communication among her friends. She almost missed a celebration with them because they had arranged everything through their WhatsApp group. Rosângela decided then to attend a WhatsApp workshop, so not to be left behind. Her case illustrates the "social relativity of digital inequalities" (Helsper 2017).

Helsper (2017) uses the Relative Deprivation Theory (RDT) to propose that the way individuals experience digital exclusion depends on how they perceive others' attitudes related to the use of Information and Communication Technologies (ICTs). As Helsper argues, this subjective evaluation (that can lead to action) is less likely to be triggered by campaigns like the ones we addressed before (Figures 1 and 2). Instead, people are more likely to experience digital exclusion when they compare themselves to a proxy referent, that is a personally relevant individual or group whose opinion and behavior show the gains of being connected in a specific social context. We find this conceptual framing of 'digital relative deprivation' fruitful in explaining Rosângela's decision to enroll in a WhatsApp course.

The preference for WhatsApp among older adults can be explained by its massive adoption in Brazil and Chile where 98% (Panorama Mobile Time Opinion Box 2021) and 80% (Corporación Latinobarómetro 2018, 78) of people with smartphones use WhatsApp respectively. Thus, it is unsurprising that some participants say "WhatsApp" when referring to their smartphones. Some older adults may also become smartphone users due to their relatives insisting that they use this device in order to be able to reach them anytime, as happened to Valeria, an 81-year-old Chilean retired journalist. After being hit by a car, she spent three days at a hospital while her family could not reach her. "That's

it. You are getting a cellphone,” they told her once they found her. For one reason or another, participants are pushed to adopt the smartphone.

This adoption does not stop older adults from complaining about the smartphone while at the same time acknowledging its benefits. The ASSA project extensively documented the ambivalent relationship between discourses and usage of smartphones among older adults (Miller et al. 2021). Migrant participants in the Italian field site carried out by Watson in Milan, for example, complained about smartphone risks and harms such as addiction and lack of sociability, while at the same time considered the device an “unalloyed blessing” (Miller et al. 2021, 44) as it enabled communication with their transnational family. Smartphones also allowed Italian participants to stay active and fight boredom and loneliness. Fieldwork in Brazil, Cameroon, Chile, Ireland, and Uganda also revealed similar incongruities between discourses about smartphones and participants' everyday lives (Miller et al. 2021, 27–54).

Governments' discourses on the digitalization of services and the actual internet use by the older population also reflect this ambivalence in Brazil and Chile. There is a considerable gap between digitalization projects and practices (Duque and Olivera 2022), mainly widened by meaningful connectivity (A4AI 2021) and digital skills constraints. Despite that, e-government and the provision of web-based public services are developing fast, making it harder for older people to remain offline. The low percentage of users aged 60 and over in Brazil (59%) (Núcleo de Informação e Coordenação do Ponto BR 2021) and Chile (31.5%) (Observatorio Social 2018) raises concerns about the digital divide and its impacts on social exclusion (van Deursen and van Dijk 2011; Helsper 2016).

Participants in both field sites shared the belief that digital technologies are not for them but for the younger generation. As Carla, a 62-year-old retired woman from São Paulo explained:

Perhaps it was not my focus of interest in the past. Or maybe it wasn't a market requirement while I was working. Already the younger generation, they look like they are born tuned in. They deal with it as if it were an ordinary thing, a natural thing. They do not accept our ignorance.

Many participants in Chile also seemed to believe that technology was simply natural for younger people and just complicated for older adults due to their age, displaying an introjected version of ageism (Butler 1969). This stereotype threat (fear of confirming the stereotype of being less competent and skilled in the digital domain) influences the type and frequency of internet use (Rosell et al. 2022) and can lead older people to avoid or abandon computer technology (Mariano et al. 2020).

Starting from Zero: Technology Adoption and the Life Course

While some participants perceived new technology as too complicated, others were dejected by the idea of becoming or appearing ignorant at this stage of their lives. Roberto, for example, is a 67-year-old Chilean who worked as a chemical engineer for the military all his life until he retired. In his late fifties, he was a leading expert in his field and was usually hired for excellent jobs. However, Roberto reached a point where the new technology required (email) was beyond his abilities. “It was impressive; everybody sent emails,” he stated. He could not send an email or communicate through computers in general, so he realized he had to retire early, which was frustrating for a man of his expertise. Some participants struggled with the feeling of being now turned into a newbie despite having lived an entire professional life. Valeria, the 81-year-old retired journalist, confessed, “When you have been a

professional all your life, you do not like to feel stupid...! It meant starting from zero...!" This feeling of becoming ignorant left a deep mark on many participants' self-esteem.

"Starting from zero" can mean losing the status and privileges achieved throughout one lifetime, even if one's educational background and career could still lead to other advantages in old age. As Cumulative Advantage (CA) theory shows, education triggers and amplifies opportunities through the life course (type of work, income, access to health resources), that will systematically define health behavior and self-agency in later life (Dannefer 2003; Mirowsky and Ross 2005). Education is also a predictor for information and communication technologies use, which has become a critical asset in contemporary societies (van Deursen and van Dijk 2011). Thus, digital skills exacerbate inequalities and should be seen as a new trigger for cumulative advantages (or disadvantages) in digitalized nations. A study conducted in Brazil illustrates older adults with low digital skills might be not using or underusing e-government websites developed to provide information and services that could improve citizens' quality of life and participation in society (Da Silva et al. 2023). Moreover, digital skills can be seen as a 'natural' advantage attributed to the younger internet users. This perception can impact older adults' self-esteem even when they become more digitally skilled. That was the case of a 62-year-old participant: despite managing her smartphone quite well, she still referred to herself as an "illiterate person" when comparing herself with younger generations.

For participants in São Paulo, the amount of time since their retirement also affected their digital skills; there was a stark difference between those who had been retired for twenty, ten, or just a few years. For example, a 72-year-old man, who had been retired for twenty years, did not use banking apps and preferred to go to the bank branch in person; a 62-year-old woman, retired for ten years, relied on mobile banking exclusively; a 63-year-old woman retired for almost three years, used banking apps and made investments and international transfers via apps. This comparison indicates that timing of retirement can influence how older people engage with digital technology and their level of media literacy, especially if little or no digital skills were acquired during one's working life (Rivinen 2021). The earliest age of retirement among participants in São Paulo was 49. Many participants who retired early did so because they had been victimized by ageism in the corporate market or were influenced by rumors of reform in the Brazilian National Pension System in 2019 (Temóteo, Andrade, and Mazieiro 2019).

Knowledge Under Dispute: The Failure of Warm Experts

The ASSA project found that smartphones generated a field for power disputes between generations (Miller et al. 2021, 157–180). Older generations' knowledge, accumulated during a lifetime, is challenged by the new knowledge required to use digital technology, producing a shift in authority from older to younger generations. On the one hand, parents may feel embarrassed to learn from their children. On the other hand, young people often seem dismissive, impatient, and unhelpful in teaching parents. This digital dependency puts children in a privileged position (Miller et al. 2021, 178).

The line quoted earlier – "[Young people] do not accept our ignorance" – illustrates how older parents feel their children treat them as less-skilled users and how young people fail to provide 'warm' tech support. Lack of time, patience and inability to teach appropriately are the most frequent complaints (see Figure 3). "My daughter bought this phone for me," said Clara, a 63-year-old retired nurse in Santiago, "and taught me [how to use it] on the first day. After that, if I ask something, she just replies, 'I already taught you!'" Vânia, a 69-year-old woman in São Paulo, explained that "using your smartphone is like learning to drive. It's better to look for a school because a relative doesn't have the patience to teach you." Roberto, the 67-year-old chemical engineer, had similar complaints about his sons: "When you ask them how to do something, they do it very fast on your phone, but they don't

show you how to do it." These interactions deepened their feeling that older adults cannot learn to use technology. As one older lady said, "my daughter told me I would learn nothing." As Figure 3 shows, children are more likely to reinforce the perception that technology is natural for younger people ("'pa, pa, pa' and it's done!").



Figure 3: Illustrating ASSA findings with comics (Chile). Extract from "The Next Step."

Children in São Paulo claim that smartphones are intuitive and that older adults should be able to learn by themselves, indicating that the younger generation does not welcome digital dependency. As Carla, the 62-year-old woman, put it, "They tell us to go to Google, as though to say, 'Don't bother me.'" Older adults reject dependency in general as well. In work-oriented São Paulo, older adults are also concerned about not burdening their children's work. They are proud of their children's achievements, and at the same time, they are worried about their stability. Thus, they don't want to disturb them by asking for help with their smartphones. Children's main excuse not to help their parents is lack of time due to work and career demands. Carla supported this justification: "In the current economic context, having a child in employment is the most important thing." In addition, some adult children in São Paulo, especially those who still live in their parents' houses, can use their digital knowledge to counterbalance their fathers' authority as the owner of the house (Duque 2022). In these cases, mutual dependency can give children an advantage. Nelson, a 58-year-old retired man, illustrates this power conflict. He likes to remind his son that the younger generation might be the smarter one, "but when I was 29, I already had my own house. And you, what do you have?" he says.

Generally, participants in both field sites agreed that 'times have changed'. Many do not expect their children to take care of them in the future. Older adults comply with the idea that they must take care of themselves and delay dependency as much as possible. On the one hand, this attitude fits with the active aging expectations of retained health and independence (World Health Organization 2002). On the other hand, it conveys a sense that the moral contract of reciprocity between generations is broken: the once desired interdependency in old age suddenly became a burden and a failure (Lamb 2019; Whyte 2017). As older adults find their children unable to support their technology adoption and want to avoid being perceived as a burden, they look for workshops. Workshops dedicated to smartphones and WhatsApp were the most demanded in both field sites. The preference for 'professional support' challenges the role of 'warm experts' in helping new or less skilled users to adopt and engage with technology (Bakardjieva 2005). Warm experts can be defined as "nonprofessional persons who help more inexperienced users to come to terms with digital devices and services" (Olsson and Viscovi 2018,

326), while “cold experts” refer to the professional support (Hänninen et al. 2021, 3). It was expected that participants would rely on family members’ support. Instead, they preferred learning through the workshops as these spaces offered neutral support that did not convey dependency. Workshops also gave older adults a chance to meet new people. In this way, smartphones, contrary to the alleged risk of isolation, provided two instances of socialization: in-person meetings and WhatsApp groups, which workshop teachers created with the students. These connections on WhatsApp expanded the support network available to participants (Duque 2022), which, as we will show later, became a valuable resource when they concluded their workshops.

During the Workshop

In São Paulo and Santiago, the students arrived at the workshops with WhatsApp installed on their smartphones. A relative or a friend had downloaded and installed the app for them. New students only knew basic tasks on the app, such as sending text messages and sharing pictures and videos. Apart from their capability with WhatsApp, they tended to share low self-esteem when it came to digital technology more generally, a factor also identified as the main barrier to tech adoption among older Americans (Anderson and Perrin 2017).

Students’ low self-esteem and lack of confidence were evident from three specific fears: accidentally erasing important information; being charged for some service without consent; and breaking the devices just by using them. These fears made trial and error unfeasible and severely limited their learning process. On top of these fears, participants also had to deal with security concerns, as their age group is the preferential target for robberies and digital scams (Melo 2020). A man in São Paulo explained the feeling: “If you have grey hair, you are already a target.” Insecurity shaped participants’ behavior in public spaces; most of them avoided using their smartphones on the street. Digital threats also intimidated them. An extreme example could be Francisco, a 77-year-old Chilean man. Having read that this strategy had been used by Mark Zuckerberg, he covered his smartphone’s selfie-cam with tape. In addition to this, he keeps the GPS disabled because he hates that Google Maps follows him. Francisco believes a network of delinquents who steal smartphones uses Google Maps to track possible victims.

Older adults are more likely to own a second-hand device they obtain from children, grandchildren, other younger relatives, or friends. That was the case for more than half of the participants interviewed by Duque and several of Otaegui’s students. Even those who had bought their own devices were more likely to have an outdated device presenting memory and battery life issues. It was not unusual for these devices to become unresponsive or take several seconds to process input. In these situations, students tended to “falsely blame themselves” (Norman 2013, 65). The limitations of their devices are taken as their own failure. For example, when something doesn’t work as expected, they often say, perplexed, “Maybe I tapped it [the screen] wrong,” reinforcing their lack of confidence and their own introjected ageism regarding digital technology.

Some factory pre-settings exacerbated this feeling of failure. One example is the screen timeout, usually set for a period of five to thirty seconds after inactivity. When students were trying to figure out what to do, the screen suddenly turned off. This lack of time to think led to error as students became anxious to act before understanding the action needed. Even after we offered to change the screen timeout setting to two or five minutes, anxiety persisted. On such occasions, Duque would ask students to put their smartphones down and calm down while doing exercises to relax their hands and fingers. The teacher and the students would laugh together during this “anxious finger” break. Otaegui would encourage students to be more patient and kinder towards themselves and say, “If you don't know what to do with the phone, it's probably not your fault. Blame the phone now and then!”

Students were encouraged to interact with their smartphones, but their fine motor abilities challenged their confidence again. When touching the screen, they would press it firmly for a couple of seconds, as if pressing a doorbell. This input is understood as a ‘long press’ instead of a ‘tap’ and the phone responded accordingly, that is, not in the way that the student intended, resulting in surprise and frustration for the new user. In due time, students learned to tap with more precision, but confusion between a ‘tap’ and a ‘long press’ persisted throughout the workshops. Specific difficulties were due to frailties associated with advanced age, such as trembling fingers or poor eyesight. Some older women had long nails, making hitting the touch target more difficult. In some cases, poor blood circulation or dry skin rendered the finger unable to use a touchscreen. These frailties made it difficult for participants to hit a touch target precisely.

Older adults also face difficulties imposed by interfaces that offer no visual cues to indicate that an icon or word is there to be pressed. This is due to trends in User Interface (UI) design in the last years. These trends, more aesthetic than functional, emphasize minimalism and low-contrast shapes and fonts. These designs lack discoverability – the facility to discover functions just by looking at the screen (Norman 2013, 72) – and therefore compromise the experience of older adults as new users of mobile interfaces. Further, students were challenged by the hypertextual and non-linear navigation of the smartphone (Docampo Rama, de Ridder, and Bouma 2001). The authors then developed step-by-step instructions for each procedure taught. Students copied every step from the whiteboard, and, in that way, built their own handwritten, personal manual, which became a fundamental support for their learning process.

Complementary to this manual, peers (who were on the same learning level as each other) and cold experts (who helped ensure students would not break their devices or fall prey to scams) provided support that helped students gain self-confidence and overcome their fears. This safe environment encouraged students to use the smartphone more often to fulfill their needs – primarily social ones. Their digital skills, however, were mainly confined to WhatsApp; students learned many operations within this popular messaging app. However, even if they expressed curiosity about other apps, some proved unable to transfer the knowledge they had developed around WhatsApp to other apps.

After the Workshop

This section addresses how older adults managed their everyday needs after becoming more familiar with their smartphones and more skilled on WhatsApp. We argue that their practices are defined not just by their skills but also by their preferences. We start with the latter. As Relative Deprivation Theory shows, “If the resources from which one is excluded are not considered relevant or desirable, that is they have low value expectations, then no attempt will be made to compare the personal situation with that of another” (Helsper 2017, 4). In both field sites, relevance and desirability were key factors for participants’ decision to learn or adopt a new app.

In some cases, an app can render abilities, developed throughout a lifetime, obsolete. As participants want to preserve the social capital related to these abilities, they might see this particular app as undesirable. Flávio, a 72-year-old man in São Paulo, illustrated this very clearly. He had memorized all the city streets, and thus he refused to try apps such as Waze and Google Maps. This expertise is crucial to him as he felt useless compared to his wife, who found a new job after retiring and contributed more than he did to the family budget. He did, however, still drive her to work, guided by the streets he knew by heart, which kept his self-esteem high. Familial arrangements can also make a new app less appealing. As families distribute domestic duties among their members, there might be no point in learning to use an app whose functionality supports someone else’s activity.

Older adults are more likely to engage with new apps perceived as relevant, meaning those that “genuinely circumvent or solve everyday problems” (Hänninen et al. 2021, 8), otherwise, what would be the motivation to abandon a habit that remains effective for them? That was the case with Francisco, the 77-year-old Chilean mentioned before. Even though Otaegui focused on WhatsApp in his teaching, he also presented new apps to students (Google Photos, Google Maps, Duolingo, weather apps, Google Translate, etc.). Francisco had plenty of similar apps already installed on his phone. He was very curious, but also pragmatic about them. If his old-fashioned way worked well for him, he would not try a new app to substitute or improve it (see Figure 4).



Figure 4: Francisco had no interest in learning to use Google Calendar, as the paper version was good enough for him. Photo by Otaegui.

Although older adults overcame their fears and improved the digital skills needed to operate their devices because of the workshop, they didn’t necessarily progress much beyond WhatsApp. They often didn’t use other apps developed to engage with by the public and private sectors. Participants therefore combined multiple functionalities from those apps that they are comfortable with to get things done. In other words, they improvised with what they had at hand (Duque 2022). For example, Sandra, a 69-year-old woman, developed a creative solution to overcome the constraints she faced when dealing with the app developed to manage access to the Brazilian National Health System in São Paulo. As she struggled to download the app that would provide her with a digital ID for her healthcare, she took a picture of the printed version she had and saved it to Google Drive. She then used this improvised digital ID whenever she went to a doctor’s appointment.

Sandra could have asked one of her three children to be her warm expert, instead of solving the problem by herself. But if she had asked for help on this occasion, there is no guarantee she wouldn’t have needed support again in the future. Because technology keeps changing (i.e., apps, interfaces, and systems that include constant need for updates), it requires constant learning and relearning. Even older adults who have been internet users for a while still need the support of warm or cold experts (Olsson and Viscovi,

2018). Since they wish to avoid digital dependency on children, participants adopt diverse strategies to compensate for their lack of digital skills.

The first strategy was the one illustrated by Sandra above. She makes the most out of the digital repertoire she is comfortable with – a repertoire shaped by interests and skills, available devices and applications, and the support received from close connections (Hänninen et al. 2021). As for other participants, their digital repertoire often remains limited to WhatsApp or complemented by YouTube and a few other apps. The second strategy consisted of transferring their demands for support from children to friends. Skilled friends could play the role of warm experts, with one advantage: their support is not seen as dependency but as collaboration among peers. As observed by Duque (2022) in her broader ethnography in São Paulo, WhatsApp groups emerge as a strong support network where older adults exchange favors not restricted to technology. Thanks to reciprocity, older adults don't feel embarrassed to ask these connections for help whenever they need a hand, to download or set-up an app, or ask for a friend to accompany them to a doctor's appointment. In addition to this, as observed by Otaegui in Santiago, this 'warm' network on WhatsApp is also used to share any news about smartphone workshops, free online courses for older adults, digital literacy manuals, recommendations, or tips related to technology.

The third strategy is to simply declare a lack of interest in new apps. Some participants would state that they wanted to use their smartphone "just for calls, and WhatsApp, nothing more." As Rita, a 70-year-old woman in São Paulo explained, "I could learn how to do it if I wanted to, but I am lazy. And I don't have the time."

This attitude could be observed in students' discourses before the workshops, among participants who didn't attend the workshops, and by other participants interviewed during both ethnographies. Other studies suggest that a lack of interest in the internet is growing among older Brazilians. This was the main reason reported by those aged 60 and over who have never gone online in 2018 (34%), in 2019 (37%), and in 2020 (42%) (Núcleo de Informação e Coordenação do Ponto BR 2019, 2020, 2021). However, as research in both of our field sites showed, this statement should be understood as a self-preservation strategy for older adults who don't want to be seen by others as ignorant or stupid. Also, as suggested by the primary argument of this paper, this attitude protects them from the accusation that they are failing their responsibility to take care of themselves as they age – an expectation that now includes becoming digitally competent and independent.

Conclusion

This study shows how digitalization trends worldwide are creating forms of digital dependency for older people. Through active aging policies and successful aging discourses, older adults can perceive their digital dependency as a burden upon their children and as a personal failure. Our research showed how older adults in São Paulo and Santiago are overcoming a lack of support in using these technologies, mainly from their children, by choosing professional support provided by the active aging agenda in both countries. This preference challenges the crucial role played by warm experts in tech adoption in old age (Hänninen et al. 2021; Olsson and Viscovi 2018).

Their primary motivation to enroll in the workshops available in both field sites was to connect with relatives and friends by expanding their abilities on WhatsApp. Throughout the classes, students gained confidence even though challenged by introjected ageism, poorly designed interfaces, and declining fine motor skills associated with aging. However, most students couldn't easily transfer the skills

developed on WhatsApp. As a consequence, they might avoid or underuse other apps. In addition to this, even when more digitally skilled, participants can refuse adopting other digital solutions as they didn't always consider it as desirable or relevant. For one reason or another, older adults might have their autonomy compromised as the services needed to achieve crucial outcomes in everyday life are becoming digitalized.

From the perspective of Technology Adoption Propension (TAP), users' inclination to adopt new technology relies upon two simple factors: a) how beneficial such technology will be once they learn to use it; and b) how difficult it will be to learn to use it properly (Ratchford and Barnhart 2012, 1210). Starting from these two factors, Ratchford and Barnhart (2012) describe four elements defining TAP: optimism (how useful the user thinks the new technology will be); proficiency (confidence in one's ability to learn how to use it); dependence (sense of the possibility of becoming enslaved by technology); and vulnerability (the fear of being taken advantage by scams). These four factors interact with a general cultural context full of ageist representations of older adults as unable to adopt new technology, which hinders the contributing factor 'proficiency' and reinforces the inhibiting factor 'vulnerability.' The 'dependence' factor presents a particular twist in our studies. It is not so much about the fear of becoming dependent on the technology itself but about intergenerational digital dependency, which may be seen as a burden by both older adults and their younger relatives.

Participants overcame their constraints by developing creative solutions based on their digital skills. They relied on peers as their help didn't denote dependency but rather was perceived as collaboration. Or they simply declared they were not interested in adopting new apps that could expand the outcomes needed in their daily life. All three strategies can effectively work to avoid digital dependency, as older people do not want to be constantly reminded of what they cannot do (Garattini and Prendergast 2015). For participants, this meant not facing the feeling that technology is 'not for them' or that they might be seen as 'ignorant,' 'dumb,' or 'dependent,' especially while they could still fully manage other aspects of their life with autonomy.

This reluctant disposition toward technology can work as a self-preservation strategy to cover the lack of digital skills or overcome stereotype threat (fear of confirming older people are not technology "natural" users). However, participants' decisions not to engage with digital technology can also express they do not recognize the value of a specific solution or do not experience digital deprivation concerning their peers. It is true that, regarding the fast digitalization of public and private services, they might not have a choice. Being disconnected or lacking digital skills can drive them to cumulative disadvantages as consumers and citizens.

Finally, the ethnographic finding of an increasing attitude of 'not interested' toward technology as a self-preservation strategy may be regarded as resistance to the active aging narrative. As Lassen and Jespersen (2017) found in Denmark older adults may distance themselves "from any exterior pressure to conduct life in a certain way" (141), which includes being "put under" active aging administration (2017, 147). In addition, there are cultural contexts where dependence is valued and welcomed, as observed by Lamb (2019) in India. While this was not the case among most participants in Brazil and Chile, future research on this topic would contribute to a broader discussion of digital dependency and independence in old age.

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Notes

1. In 2020 in Brazil, 64% of internet users aged 60 or over go online only through their smartphones (Núcleo de Informação e Coordenação do Ponto BR 2021). In 2018 in Chile, 84% of internet use was done through mobile devices (934% of these devices were smartphones) (Subsecretaría de Telecomunicaciones 2019). Smartphone workshops are frequently available to older adults under local active aging agendas.

References

- Alliance for Affordable Internet. 2021. “A Policy Guide: Towards Meaningful Connectivity.” Washington DC. Accessed March 23, 2023. <https://a4ai.org/wp-content/uploads/2021/10/Policy-Guide-Towards-Meaningful-Connectivity.pdf>
- Anderson, Monica, and Andrew Perrin. 2017. “Tech Adoption Climbs Among Older Adults.” Pew Research Center. Accessed March 23, 2023. https://www.pewresearch.org/internet/wp-content/uploads/sites/9/2017/05/PI_2017.05.17_Older-Americans-Tech_FINAL.pdf
- Bakardjieva, Maria. 2005. *Internet Society: The Internet in Everyday Life*. London: SAGE Publications.
- Butler, Robert N. 1969. “Age-ism: Another Form of Bigotry.” *Gerontologist* 9 (4): 243–246. https://doi.org/10.1093/geront/9.4_Part_1.243
- Calasanti, Toni, and Neal King. 2017. “Successful Aging, Ageism, and the Maintenance of Age and Gender Relations.” In *Successful Aging as a Contemporary Obsession: Global Perspectives*, edited by Sarah Lamb, 27–40. New Brunswick, NJ: Rutgers University Press.
- Corporación Latinobarómetro. 2018. “Informe 2018.” Accessed August 26, 2022. https://www.latinobarometro.org/latdocs/INFORME_2018_LATINOBAROMETRO.pdf
- Dannefer, Dale. 2003. “Cumulative Advantage/Disadvantage and the Life Course: Cross-Fertilizing Age and Social Science Theory.” *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 58 (6): 327–37. <https://doi.org/10.1093/geronb/58.6.S327>
- Da Silva, Leonardo Filipe, Emilene Zitkus, and André Pimenta Freire, (2023). “An Exploratory Study of the Use of the Internet and E-Government by Older Adults in the Countryside of Brazil.” *Information* 14 (4): 225–247. <https://doi.org/10.3390/info14040225>
- Debert, Guíta Grin. 1997. “A Invenção Da Terceira Idade e a Rearticulação de Formas de Consumo e Demandas Políticas.” *Revista Brasileira de Ciências Sociais* 12 (34): 39–56.
- Deursen, Alexander van, and Jan van Dijk. 2011. “Internet Skills and the Digital Divide.” *New Media & Society* 13 (6): 893–911. <https://doi.org/10.1177/1461444810386774>

- Dias, Ewerton Naves, and José Luis Pais-Ribeiro. 2018. "Evolução Das Políticas Públicas à Pessoa Idosa No Brasil." *Enfermagem Brasil* 17 (4): 413–20. <https://doi.org/10.33233/eb.v17i4.860>
- Docampo Rama, Mili, Huib de Ridder, and Herman Bouma. 2001. "Technology Generation and Age in Using Layered User Interfaces." *Gerontechnology* 1 (1): 25–40. <https://doi.org/10.4017/gt.2001.01.01.003.00>
- Duque, Marília. 2022. *Ageing with Smartphones in Urban Brazil: A Work in Progress*. London: UCL Press.
- Duque, Marília, and Adriana Lima de Oliveira. 2022. "The Accidental "Age-Friendly City": Public Expectation and Subjective Experience in São Paulo." *Revista Lusófona de Estudos Culturais* 9 (1): 67–86. <https://doi.org/10.21814/rlec.3649>
- Featherstone, Mike, and Mike Hepworth. 2005. "Images of Ageing: Cultural Representations of Later Life." In *The Cambridge Handbook of Age and Ageing*, edited by Malcolm L. Johnson, Vern L. Bengtson, Peter G. Coleman, and Thomas B. L. Kirkwood, 354–62. New York: Cambridge University Press.
- Fuentes-García, Alejandra, and Paulina Osorio-Parraguez. 2020. "Una mirada a la vejez en tiempos de pandemia: desde el enfoque de curso vida y desigualdades." *Revista Chilena de Salud Pública. 2020: Número especial "Virus y Sociedad: hacer de la tragedia social una oportunidad de cambios,"* 90–102. <https://revistas.uchile.cl/index.php/RCSP/issue/view/5534/2020%3A%20Número%20especial>
- Garattini, Chiara, and David Prendergast. 2015. "Critical Reflections on Ageing and Technology in the Twenty-First Century." In *Ageing and the Digital Life Course*, edited by David Prendergast and Chiara Garattini, 1–19. New York, Oxford: Berghahn Books.
- Gobdigital Chile. "Ley de Transformación Digital del Estado." Accessed May 29, 2023. <https://digital.gob.cl/transformacion-digital/ley-de-transformacion-digital/>
- Gonçalves, André de Freitas, and Marcos Toyotoshi Maeda. 2017. "IDH e a Dinâmica Intraurbana Na Cidade de São Paulo." In *Territórios Em Números: Insumos Para Políticas Públicas a Partir Da Análise Do IDHM e Do IVS de UDHS e Regiões Metropolitanas Brasileiras, 2*, edited by Bárbara Oliveira Marguti, Marco Aurélio Costa, and Cesar Buno Favarão, 171–91. Brasília: IPEA.
- Gonzalez, Carmen, and Vikki S Katz. 2016. "Transnational Family Communication as a Driver of Technology Adoption." *International Journal of Communication* 10: 2683–2703.
- Hänninen, Riitta, Laura Pajula, Viivi Korpela, and Sakari Taipale. 2021. "Individual and Shared Digital Repertoires – Older Adults Managing Digital Services." *Information, Communication & Society* 26 (3): 1–16. <https://doi.org/10.1080/1369118X.2021.1954976>
- Helsper, Ellen Johanna. 2016. "Inequalities in Digital Literacy: Definitions, Measurements, Explanations and Policy Implications." In *Survey on the Use of Information and Communication Technologies in Brazilian Households ICT Households*. 2015, 175–85. São Paulo: Comitê Gestor da Internet no Brasil.
- Helsper, Ellen Johanna. 2017. "The Social Relativity of Digital Exclusion: Applying Relative Deprivation Theory to Digital Inequalities: The Social Relativity of Digital Exclusion." *Communication Theory* 27 (3): 223–42. <https://doi.org/10.1111/comt.12110>
- Higgs, Paul, Miranda Leontowitsch, Fiona Stevenson and Ian Rees Jones. 2009. "Not Just Old and Sick: The 'Will to Health' in Later Life." *Ageing and Society* 29 (5): 687–707. <https://doi.org/10.1017/S0144686X08008271>
- Katz, Stephen, and Barbara L. Marshall. 2004. "Is the Functional 'Normal'? Aging, Sexuality and the Bio-Marking of Successful Living." *History of the Human Sciences* 17 (1): 53–75. <https://doi.org/10.1177/0952695104043584>
- Lamb, Sarah. 2019. "Interrogating Healthy/ Successful Aging: An Anthropologist's Lens." *Bulletin of the General Anthropology Division* 26 (2): 7–9.
- Lassen, Aske Juul, and Astrid Pernille Jespersen. 2017. "Getting Old and Keeping Going: The Motivation Technologies of Active Aging in Denmark." In *Successful Aging as a Contemporary Obsession: Global Perspectives*, edited by Sarah Lamb, 141–53. New Brunswick, NJ: Rutgers University Press.
- Leibing, Annette. 2005. "The Old Lady from Ipanema: Changing Notions of Old Age in Brazil." *Journal of Aging Studies* 19 (1): 15–31. <https://doi.org/10.1016/j.jaging.2004.03.010>

- Leong, Lorian. 2017. "Mobile Myanmar: The Development of a Mobile App Culture in Yangon." *Mobile Media & Communication* 5 (2): 139–60. <https://doi.org/10.1177/2050157917689950>
- Lindgren, Ida, Christian Østergaard Madsen, Sara Hofmann and Ulf Melin. 2019. "Close Encounters of the Digital Kind: A Research Agenda for the Digitalization of Public Services." *Government Information Quarterly* 36 (3): 427–436. <https://doi.org/10.1016/j.giq.2019.03.002>
- Lombardi, Patrizia, and Alberto Vanolo. 2015. "Smart City as a Mobile Technology: Critical Perspectives on Urban Development Policies." In *Transforming City Governments for Successful Smart Cities*, edited by Manuel Pedro Rodríguez-Bolívar, 147–61. Cham, Switzerland: Springer International Publishing. https://doi:10.1007/978-3-319-03167-5_8
- Mariano, João, Sibila Marques, Miguel R. Ramos, Filomena Gerardo, and Hein de Vries. 2020. "Too Old for Computers? The Longitudinal Relationship Between Stereotype Threat and Computer Use by Older Adults." *Frontiers in Psychology* 11: 1–7. <https://doi.org/10.3389/fpsyg.2020.568972>
- Melo, Karine. 2020. "Golpes Financeiros Contra Idosos Cresceram 60%, Diz Febraban." *Agência Brasil*. September 2, 2020. <https://agenciabrasil.ebc.com.br/economia/noticia/2020-09/golpes-financeiros-contra-idosos-cresceram-60-diz-febraban>
- Miller, Daniel, Laila Abed Rabho, Patrick Awondo, Maya de Vries, Marília Duque, Pauline Garvey, Laura Haapio-Kirk, Charlotte Hawkins, Alfonso Otaegui, Shireen Walton, and Xinyuan Wang. 2021. *The Global Smartphone. Beyond a Youth Technology*. London: UCL Press.
- Ministério da Economia. 2020. "Brasil Lança Sua Estratégia de Governo Digital Para 2020 a 2022." Accessed March 23, 2023. <https://www.gov.br/economia/pt-br/assuntos/noticias/2020/abril/brasil-lanca-sua-estrategia-de-governo-digital-para-2020-a-2022>
- Mirowsky, John, and Catherine E. Ross. 2005. "Education, Cumulative Advantage, and Health." *Ageing International* 30 (1): 27–62. <https://doi.org/10.1007/BF02681006>
- Panorama Mobile Time Opinion Box. 2021. "Mensageria No Brasil – Fevereiro 2021." Accessed April 22, 2022. <https://www.mobiletime.com.br/pesquisas/mensageria-no-brasil-fevereiro-de-2021/>
- Nedelcu, Mihaela. 2017. "Transnational Grandparenting in the Digital Age: Mediated Co-Presence and Childcare in the Case of Romanian Migrants in Switzerland and Canada." *European Journal of Ageing* 14 (4): 375–83. <https://doi.org/10.1007/s10433-017-0436-1>
- Norman, Don. 2013. *The Design of Everyday Things*. New York: Basic Books.
- Núcleo de Informação e Coordenação do Ponto BR. 2019. *TIC Domicílios 2018: Pesquisa Sobre o Uso Das Tecnologias de Informação e Comunicação Nos Domicílios Brasileiros*. São Paulo: Comitê Gestor da Internet no Brasil. Accessed June, 28 2023. https://www.cetic.br/media/docs/publicacoes/2/12225320191028-tic_dom_2018_livro_eletronico.pdf
- Núcleo de Informação e Coordenação do Ponto BR. 2020. *TIC Domicílios 2019: Pesquisa Sobre o Uso Das Tecnologias de Informação e Comunicação Nos Domicílios Brasileiros*. São Paulo: Comitê Gestor da Internet no Brasil. Accessed on June 28, 2023. https://cetic.br/media/docs/publicacoes/2/20201123121817/tic_dom_2019_livro_eletronico.pdf
- Núcleo de Informação e Coordenação do Ponto BR. 2021. *TIC Domicílios 2020: Pesquisa Sobre o Uso Das Tecnologias de Informação e Comunicação Nos Domicílios Brasileiros: Edição COVID-19 :Metodologia Adaptada*. São Paulo: Comitê Gestor da Internet no Brasil. Accessed June 28, 2023. https://cetic.br/media/docs/publicacoes/2/20211124201233/tic_domicilios_2020_livro_eletronico.pdf
- Observatorio Social. 2018. "Adultos Mayores. Síntesis de resultados: Encuesta CASEN 2017." *Ministerio de Desarrollo Social. Gobierno de Chile*. Accessed November 17, 2022. http://observatorio.ministeriodesarrollosocial.gob.cl/storage/docs/casen/2017/Resultados_Adulto_Mayores_casen_2017.pdf
- Olsson, Tobias, and Dino Viscovi. 2018. "Warm Experts for Elderly Users: Who Are They and What Do They Do?" *Human Technology* 14 (3): 324–42. <https://doi.org/10.17011/ht/urn.201811224836>

- Oudshoorn, Nelly. 2011. *Telecare Technologies and the Transformation of Healthcare*. Health, Technology and Society. Houndmills, Basingstoke: Palgrave Macmillan.
- Plaza, Dwaine, and Lauren Plaza. 2019. "Facebook and WhatsApp as Elements in Transnational Care Chains for the Trinidadian Diaspora." *Genealogy* 3 (15): 55–74. <https://doi.org/10.3390/genealogy3020015>
- Programa Envejecimiento Activo (n.d.). "SENAMA Servicio Nacional del Adulto Mayor." Ministerio de Desarrollo Social y Familia. Gobierno de Chile. Accessed August 1, 2022. <https://www.senama.gob.cl/envejecimiento-activo>
- Ratchford, Mark, and Michelle Barnhart. 2012. "Development and Validation of the Technology Adoption Propensity (TAP) Index." *Journal of Business Research* 65: 1209–1215. <https://doi.org/10.1016/j.jbusres.2011.07.001>
- Rivinen, Susanna. 2021. "Developing Media Literacy Geragogy for Older People through Design-based Research." PhD diss., University of Lapland. <http://urn.fi/URN:ISBN:978-952-337-288-7>
- Rosell, Javiera, Alvaro Vergés, Claudia Miranda-Castillo, Sofía Sepúlveda-Caro, & Marcarena Gómez. 2022. "Predictors, Types of Internet Use, and the Psychological Well-Being of Older Adults: A Comprehensive Model." *The Journals of Gerontology: Series B* 77 (7): 1186–1196. <https://doi.org/10.1093/geronb/gbac054>
- Salazar Norambuena, Carola. 2021. "COVID-19 y Personas Mayores: Representaciones Sociales en el Ministerio de Salud de Chile." *Anthropologica* 39 (47): 221–244. <https://doi.org/10.18800/anthropologica.202102.008>
- Subsecretaría de Telecomunicaciones. 2019. "Conexiones 4G se disparan 35% en 2018 y abre expectativas de cara al despliegue de 5G." Accessed August 26, 2022. <https://www.subtel.gob.cl/conexiones-4g-se-disparan-35-en-2018-y-abre-expectativas-de-cara-al-despliegue-de-5g/>
- Taipale, Sakari, and Manuela Farinosi. 2018. "The Big Meaning of Small Messages: The Use of WhatsApp in Intergenerational Family Communication." In *Human Aspects of IT for the Aged Population. Acceptance, Communication and Participation*, edited by Jia Zhou and Gavriel Salvendy, 532–46. Cham, Switzerland: Springer International Publishing. https://doi.org/10.1007/978-3-319-92034-4_40
- Temóteo, Antonio, Hanrrikson de Andrade and Guilherme Mazieiro. 2019. "Congresso Promulga Reforma Da Previdência." UOL. November 12, 2019. <https://economia.uol.com.br/noticias/redacao/2019/11/12/congresso-promulga-reforma-da-previdencia.htm>
- World Bank. 2022. "GovTech Maturity Index 2022: Trends in Public Sector Digital Transformation." Accessed June 28, 2023. <https://documents1.worldbank.org/curated/en/099035001132365997/pdf/P1694820bcef0903e091160315d2050d03b.pdf>
- Webb, Lynne M. 2015. "Research on Technology and the Family: From Misconceptions to More Accurate Understandings." In *Family Communication in the Age of Digital and Social Media*, edited by Carol J. Bruess, 3–31. New York: Peter Lang Publishing.
- Whyte, Susan Reynolds. 2017. "Epilogue: Successful Aging and Desired Interdependence." In *Successful Aging as a Contemporary Obsession: Global Perspectives*, edited by Sarah Lamb, 243–48. New Brunswick, NJ: Rutgers University Press.
- World Health Organization. 2002. *Active Ageing: A Policy Framework*. Accessed June 28, 2023. https://apps.who.int/iris/bitstream/handle/10665/67215/WHO_NMH_NPH_02.8.pdf;jsessionid=9A418B629755E58207E0C0FF1D6531C6?sequence=1
- World Health Organization. 2007. *Global Age-Friendly Cities: A Guide*. Geneva: World Health Organization. Accessed June 28, 2023. <https://apps.who.int/iris/handle/10665/43755>