Changing Technologies, Changing Lives:
Older Adults' Perspectives on the Benefits of Using New Technologies

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Though older adults are online in increasing numbers, many still lag behind other age groups. Age is one of the most persisting aspects of digital inequality, and given the many potential benefits of digital media for older adults, it is an inequity that deserves continued attention. Drawing on in-depth interviews with a multinational sample of older adults from five countries, we explore what benefits older individuals believe they derive from new technologies. We find that the majority of participants share several positive experiences, although the dimensions of benefits differ depending on the purpose of use. Negative experiences and opinions also exist. This article offers insights into how older adults who have not yet crossed the digital divide may be encouraged to take that step, given positive experiences voiced by their peers.

Keywords: older adults, ICTs, Internet use, Internet skills, qualitative interviews, benefits, Internet outcomes, digital inequality, digital divide

Older adults are increasingly adopting new technologies and digital media (Anderson & Perrin, 2017), yet they still trail younger generations (Eurostat, 2018; Vogels, 2019). Beyond variation between younger and older adults, differences also exist within older-adult age groups when it comes to access and use of the Internet (König, Seifert, & Doh, 2018; van Boekel, Peek, & Luijkx, 2017), as well as attitudes toward certain technologies (Vicente & Lopes, 2016). Given that research has found numerous potential benefits to using the Internet for older populations (Cotten, Anderson, & McCullough, 2013; Cotten, Ford, Ford, & Hale, 2014; Hofer, Hargittai, Büchi, & Seifert, 2019; Ivan & Fernández-Ardèvol, 2017; Marston, Genoe, Freeman, Kulczycki, & Musselwhite, 2019), it is important to understand how those of mature ages could be encouraged to go online. Prior research has identified different reasons for nonadoption of emerging technologies by older individuals, including lack of interest (Aytuna & Çapraz, 2018; Helsper & Reisdorf,

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2013), security (Seifert & Schelling, 2016) and privacy concerns (Elueze & Quan-Haase, 2018), lack of confidence or skills (Berkowsky, Sharit, & Czaja, 2017), and difficulty of use (Seifert & Schelling, 2016).

Reviewing the literature on older adults and Internet use, Hunsaker and Hargittai (2018) found that most existing investigations focused on Internet adoption overall, not details about older adults' experiences once online (notable exceptions are Harper, Wellman, & Quan-Haase, 2020; Quan-Haase, Williams, Kicevski, Elueze, & Wellman, 2018). This article addresses this gap in the literature through interviews with more than 100 adults ages 59 and over in five countries about their perspectives on their uses of ICTs. By giving voice to older adults using new technologies, this study also aims to highlight how nonusers in the same age group could be inspired to go online based on their contemporaries' experiences and provides policy implications for getting more older adults to use new technologies. Our study includes perspectives from Hungary, the Netherlands, Switzerland, Turkey, and the United States, and thus includes countries that have been less present in current literature on older adults' ICT uses.

Older Adults' Perceptions of ICT Use

Older adults vary in their enthusiasm toward ICTs (Marston et al., 2019), the reasons for which differ. Positive attitudes toward emerging technologies (Kadylak & Cotten, 2020) and social influence (Luijkx, Peek, & Wouters, 2015) have been shown to affect older adults' willingness to use such technologies. Older adults' desire to use the Internet and digital media also depends on factors related to the technologies themselves, such as ease of use (Barnard, Bradley, Hodgson, & Lloyd, 2013; Tsai, Shillair, Cotten, Winstead, & Yost, 2015) and perceived benefits (Kadylak & Cotten, 2020). As such, using technologies that are easy to comprehend can encourage older adults to adopt digital media (Tsai et al., 2015). Whether certain technologies meet their specific needs or not influences older adults' willingness to use them, as in the case of those with physical limitations showing more willingness to use assistive robots (Kadylak & Cotten, 2020).

It is of great concern whether older adults use ICTs as there are various benefits they can derive from them. Digital communication channels enabling new forms of interaction with social ties may benefit older adults suffering from loneliness or social isolation (Cotten et al., 2013). Similarly, social media use may promote social connectedness, social participation, and intergenerational communication (Ivan & Fernández-Ardèvol, 2017; Ivan & Hebblethwaite, 2016; Matassi, Boczkowski, & Mitchelstein, 2019; Yu, McCammon, Ellison, & Langa, 2016). Motivation to find and share information facilitates technology use among older adults; adopters benefit from both greater access to information and alternative ways (e.g., video calls) of connecting with people (Marston et al., 2019). Using the Internet for enhanced access to information also has positive ramifications for older adults' subjective well-being (Hofer et al., 2019). Online platforms offer a great variety of services that were available only offline in such people's past, such as shopping, banking, or leisure activities. Since decreased mobility can occur with aging, older adults may use online services to avoid traveling, carrying items, or waiting in queues (van Ingen, Rains, & Wright, 2017). Moreover, they can turn to technologies for leisure use, such as reading e-books on their tablets or playing games on their devices (Genoe et al., 2018).

Yet not all older adults have positive perceptions, and some may be reluctant to adopt ICTs due to challenges with use (Marston et al., 2019; Seifert & Schelling, 2016), privacy concerns (Bixter, Blocker,

Mitzner, Prakash, & Rogers, 2019), and security and reliability issues (Mitzner et al., 2010). Despite increasing Internet use among older adults, some still prefer using traditional mass media rather than social media for information (Nimrod, 2017), and they may favor face-to-face communication over technology-mediated communication (Yuan, Hussain, Hales, & Cotten, 2016). Sometimes ICT use in certain social contexts may be disapproved of by older adults—for instance, mobile phones during in-person meetings (Kadylak et al., 2018)—and may negatively influence their perceptions of new technologies.

In some cases, engagement with ICTs may not result in positive outcomes. Research has shown that belonging to online communities and participating in meaningful online discussions can relate to greater anxiety (Hunsaker, Hargittai, & Piper, 2020). When it comes to online information seeking, not all older adults engage in verification of information (Seo, Erba, Altschwager, & Geana, 2019), and it may be challenging for some to find reliable information. Indeed, one study found that older adults were more likely to share fake news on Facebook than were younger age groups (Guess, Nagler, & Tucker, 2019). Such practices may result in unintended negative consequences for older adults and may prompt concerns related to trust, which in turn could result in nonadoption (Fischer, David, Crotty, Dierks, & Safran, 2014). Sometimes, older adults may abandon certain tools and applications when they no longer need them due to changed circumstances such as retirement or reunification with family members (Ivan & Fernández-Ardèvol, 2017; Nguyen, Hargittai, Fuchs, Djukaric, & Hunsaker, 2021).

Considering the diverse adoption of ICTs among older adults, the benefits and downsides they perceive remain open to further examination. Additionally, much of what we know is based on studies from North America making it hard to assess whether findings apply elsewhere. To address these gaps in the literature, this article addresses the research question, "How do older adults perceive the positive and negative outcomes of ICTs in their everyday lives?" and explores these among a multinational sample of older adults.

Data and Methods

Given the goal of understanding nuances in older adults' thoughts about the benefits and downsides of ICT uses, we relied on in-depth interviews to answer our research question. This article is part of a larger study that was concerned with various aspects of older adults' uses of ICTs. Below, we describe our multicountry data collection, the interview protocol, our coding and analytical procedure, and the make-up of our sample.

Data Collection

Based on the widely held definition of older adults being people 60 and over (World Health Organization, 2015), we set out to interview this group. Beyond age, our only inclusion criterion was willingness to talk to us about communication practices. We recruited respondents through our own social networks, community centers, social media groups, and snowball sampled through our participants.

We draw on in-depth interviews with 102 adults ages 59 and over conducted between December 2018 and March 2020 in Hungary, the Netherlands, Switzerland, Turkey, and the United States. The 59-

year-old respondent was turning 60 a few weeks after her interview, so we deemed her within the appropriate age range. We had one interview in March 2020; it took place on March 5th (i.e., before any COVID-19 lockdown restrictions went into effect). Existing studies on older adults, especially those based on qualitative methods, tend to be restricted to single-country samples and the vast majority have been conducted in North America, making it hard to assess whether findings apply in other cultural contexts. We included people from different cultures and national backgrounds not with the goal of doing cross-country comparisons, rather, to represent more diverse perspectives than are usually present in published work. Varying opinions of the respondents on ICT use are especially enlightening given that connectivity in these countries differs considerably. For instance, the level of Internet use among older populations in the Netherlands (77%) is higher than in the United States (73%), Switzerland (72%) and Hungary (53%; Anderson, Perrin, Jiang, & Kumar, 2019; CBS Internet, 2019; Eurostat, 2019; König et al., 2018; Központi Statisztikai Hivatal [KSH], 2019), which is yet higher than in Turkey with only 1 user among 5 older adults (Türkiye İstatistik Kurumu [TÜİK], 2020).

We conducted the majority of interviews in person with the exception of under half of our U.S. cases, which took place via phone or video call. In-person interviews took place at participants' homes or at an agreed-upon location (e.g., café, library). Interviews were mostly in the local language, although in some cases when respondents preferred, we spoke in English even if that was not the local language. The length of the interviews ranged from eight to 135 minutes, depending on a participant's level of digital experiences, and the average interview lasted about an hour. Participants received financial compensation for their participation: 3,000 HUF, 20 EUR, 30 CHF, 40 TRY, or 20 USD, respectively, depending on the country of the interview, taking into account purchasing parity across locations.

The interview protocol contained questions about various aspects of older adults' ICT uses, needs regarding interpersonal communication as well as information-seeking and online behaviors in different domains (e.g., health, online participation, online services, shopping, leisure activities). For this article, we specifically focus on questions asking participants about their opinions on ICTs and whether and how these affected their lives. We explicitly asked them if the Internet had made things easier or harder for them, or if they experienced no such changes in their lives. We also asked whether ICTs had increased or decreased their contact with family and/or friends. However, if specific benefits or downsides of using ICTs were mentioned as a response to other questions throughout the interview, we included these passages in our analyses as well. After the interview, respondents completed a short survey with questions covering demographic characteristics, Internet experiences, and Internet skills (Hargittai & Hsieh, 2012).

Analytical and Coding Procedures

All interviews were audio recorded and transcribed. Interviews in Hungarian, Dutch, Swiss, German, High German, and Turkish were translated by the members of our research team to English. To identify emerging themes, we began with open coding and created a coding scheme (Corbin & Strauss, 2015) focusing on the benefits and downsides of using ICTs. For instance, when an interviewee mentioned a technology and commented on its benefits, we coded the corresponding section with the name of the particular technology, the purpose of use and the opinion (e.g., email; communication, opinion: good). We then applied this scheme to several interviews, refined the codebook as necessary based on discussions,

and then applied the updated scheme to all interviews. When we were not sure about how to code a particular quote during the coding process, we discussed and agreed on the most appropriate code together. Finally, we revised our findings section by going over the coded quotes one by one while presenting them together under relevant themes. For the coding process, we used the qualitative coding software MAXQDA.

Sample Characteristics

The mean and median age is 70 years (range: 59–91), and just over half are women (55%). Just under two-thirds (64%) had completed a college degree. Thirty-nine respondents live in the United States, 26 in Switzerland, 18 in the Netherlands, 13 in Hungary, and six in Turkey. Fifty respondents reside in urban areas, 37 in suburban areas, 11 in rural areas, and four in small towns. Seventy percent are married, and a similar portion are retired (72%).

Regarding Internet experiences, one older adult is not a current Internet user, while the vast majority (93%) had been online for five or more years, and a third had taken a course or workshop about using the Internet (32%). On average, they had 2.5 devices for accessing the Internet (these can include laptop/desktop, tablet, or smartphone) and spent an average of 15 hours online weekly. The mean for Internet skills on a 1–5 scale was 3.0, with a 1.3 standard deviation suggesting considerable variation in the sample.

Findings

Although a few participants said new ICTs did not change anything, "not even the rhythm of life" (63, female, suburban, Switzerland), or "doesn't make any difference from the past" (84, male, suburban, the Netherlands), and they "could still live without the Internet today" (61, male, urban, Switzerland), most participants noted a change in their lives in some way. Respondents often highlighted both benefits and downsides of their digital experiences simultaneously, but for clarity purposes we present the findings grouped by positive experiences and perceived benefits followed by negative experiences and potential downsides. Four domains of use emerged as themes during our analysis: (a) communication, (b) information seeking, (c) use of services, and (d) leisure use, which is how we organize the findings below.

Positive Experiences With and Benefits of ICTs

Communication

Participants mentioned various experiences with new ICTs and interpersonal communication. Throughout the interviews they referenced experiences with email (94%), video calls (68%), social media platforms (77%), and messaging applications, such as WhatsApp (52%) and Facebook Messenger (51%), for communication purposes.

Many said that their contact with family and friends has increased with the adoption of digital communication tools. The reasons for this increase include the ease of use and decrease of response times, as well as the possibility of using multiple modes alongside each other. One older adult (65, male, suburban,

Switzerland) explained that his contact with people had increased since the emergence of a mobile messaging app:

> I think we're much more actively in touch with people now since WhatsApp, because it's so easy. You're always sort of sending pictures and messages from where you are, and changing your profile and people sort of comment on your profile. . . . There's much more contact these days than there was before.

Similarly, another (72, female, urban, the Netherlands) stated that contacting people became easier with mobile messaging, leading her to have more contact:

> I quickly share something with the family in group app. And that's easier, of course. I used to call a lot. But I'm going to mix that now. So calling one time and using WhatsApp the next time. Well, you do have more contact.

When asked whether she had more or less contact with family and friends, one woman (62, suburban, the Netherlands) said that nowadays she connects with people "in a different way; not necessarily more or less," and explained:

> Well, I'm sitting on the couch and I send out a WhatsApp [message]. And you have contact. Whether or not there is an immediate reaction, that's something else. But otherwise, you had to go outside to look for that person, or when there was the phone, you could use the phone.

Older adults talked about how new ICTs allowed them to communicate faster with people, and how this benefited their social connections. Several described their change in communication over time by giving examples from their past or by comparing it with earlier ways of communicating. One participant (82, female, suburban, Switzerland) discussed how it used to take days for a letter to arrive, whereas now it is possible to get in touch with people immediately. Another said that emailing probably increased the amount of contact she has with people "because you can more easily do that and get a response right away as compared to snail mail and things like that" (64, female, suburban, United States). Another example of fast communication was related to mobile messaging apps. One participant (61, female, suburban, the Netherlands) mentioned WhatsApp as "a fun and fast way to communicate" and further explained:

> I remember when we only had text messages. Then WhatsApp had just been invented. They said: "You have to do that, it's much faster." And I didn't understand. I thought: "How is that possible?" But it is indeed much faster, yes.

Older adults also recognized communication across distances as a benefit of using digital media. For instance, one participant described how she uses certain methods with certain people (66, female, suburban, United States):

> I have certain people I email with and certain people that I text with, but I have noticed
> that the texting is becoming a bigger percentage of that, especially when I'm in America.
> When I'm overseas, it tends to be email.

Others using mobile messaging applications specifically mentioned taking advantage of the alternative affordances and features they offer. For instance, one respondent (78, male, suburban, Switzerland) said that since no immediate response is required to messages, as opposed to phone calls, it is a convenient way to reach out to people who are not available in the moment: "If it's during the day that I want to know something, then I write a message, because I don't want to bother them at work. You never know, they constantly have meetings and conferences and so on." According to many older adults, various features of new media, such as group chats, play a significant role in their relationship maintenance with other people, especially family. For instance, one explained (66, male, suburban, United States):

> Family dynamics have fundamentally changed as a result of the technology. The ability to
> see our grandchild on FaceTime . . . who lives in another country, the ability to see and
> talk and interact with [them] is just immeasurably valuable. It never existed before. The
> ability to text and to have a shared family text capability is remarkable because . . . it
> keeps people totally in tune with each other that otherwise would really not be [the case]
> and [we] would have to work much harder at [it].

Moreover, digital communication modes (e.g., social networks sites, messaging apps) may be of great importance for the socialization of older adults, especially for those who are retired. One respondent (60, female, urban, Turkey) explained that she joined social media platforms with the hope of not feeling isolated from social life:

> I thought that joining these platforms would be good for me especially after I retired.
> When you are working, you can socialize. However, when you are retired, you are always
> at home. I didn't want to be isolated. Facebook, Instagram, and WhatsApp work well for
> socializing.

Information

Older adults expressed interest in turning to ICTs for information seeking, with a majority having experiences with Google search. Participants often mentioned the ease of access to information and faster information-seeking opportunities as clear benefits. One (65, male, suburban, Switzerland) thought that the convenience of online information seeking made the Internet integral to his life:

> Notice that you have your Internet access and it's always there. It's omnipresent, so if
> someone asks you a question and you're not sure, you just quickly go in and you find the
> answer. It's part of your life. It's like, so essential.

Respondents explained how being able to look for information online enriched their lives. One (84, male, urban, Hungary) mentioned how the Internet made his life easier, but also that it brings "the whole

world closer." He continued by saying: "For example, Google is a fantastic thing, because whatever I'm curious about I go and look it up there. So, I really like it. I sit a lot in front of the computer." For another (77, male, urban, the Netherlands), the Internet "is an enrichment in many ways" since people now have "such a wealth of information available."

Online information seeking on certain topics such as health is common among many in our sample. They might use online sources to learn about alternative treatments, for instance, as one respondent (60, female, urban, Turkey) explained:

> I'm getting help from Google on every question I have. I'm asking Google about something stuck in my head, and it enlightens me . . . [on] the benefits of medical herbal stuff. I like to try natural solutions before I start taking medicines.

Others (61, female, suburban, the Netherlands) do research online to find information about possible causes of illnesses, diagnoses, and treatments: "I usually first go and look on the Internet, what the cause might be, and whether I could do something about it." It is also helpful for understanding illnesses. A respondent (74, female, suburban, the Netherlands) described how it can be useful by giving examples of questions they might have: "What exactly does it mean? What you are missing and what are the possibilities, to do something about it?"

Services

Many older adults mentioned using various online services. Our interviews show that participants find it helpful to be able to find and do things online without being present at certain places such as retail or grocery stores. A respondent (77, male, urban, Hungary) praised the large book collection on Amazon and mentioned that he regularly buys books there. Another (66, male, suburban, Switzerland) said that online shopping may be preferable for difficult-to-find products: "For standard stuff, it's easier just to go to stores, but a lot of the stuff that you need, that you don't quite know where it's at, it's easier to buy it online." While explaining the convenience of not having to travel for shopping, one person mentioned (63, female, urban, Switzerland) that online shopping "would be the easiest" when she "didn't want to go around to stores to look for" a coffee machine. Another (72, female, suburban, the Netherlands) stated that even though she visits stores, she prefers ordering online afterward because taking the stuff home "gives you a big hindrance."

Confirming this report, one woman (90, urban, the Netherlands) stated that she buys clothes online due to her "poor mobility." Similarly, another respondent (65, male, rural, United States) mentioned that his wife does all the shopping online and he said:

> It's made it easier for her to buy a lot more products, because her health isn't always the best, so she can't get out that much, but she can play on that computer and order stuff and have it delivered the next day with Amazon.

Besides shopping, other online services also make older adults' organization of everyday life easier, in the realm of online banking, health services, and travel. For instance, one woman (64, suburban, United States) spoke about how convenient she finds being able to pay bills online:

> I remember when I used to sit and write checks to pay bills, it would be a 45 minute to an hour process and now it's just like dang. Well, most of them, if it's a steady thing, every month they're on auto pay, and then [for] the others all I do is plug in an amount.

One older adult (61, female, urban, Turkey) described the convenience of using the Internet related to health services: "My daughter checked several hospitals using the Internet. It became easier, I had the opportunity to make an appointment immediately." Another (65, male, suburban, Switzerland) mentioned looking online for travel options as "a huge benefit" because of online hotel booking. He further stated, "it's all so comfortable and it makes traveling so much more spontaneous and interesting." Leading a "virtualized life" (66, male, suburban, United States) and being able to arrange things online (e.g., automatic bill pay) has even allowed one respondent to travel large parts of the year with his wife.

Leisure Use

Respondents also expressed interest in using technology and online services for entertainment purposes or recreational activities. One woman described using the Internet "to pass time" and thereby "keep her mind busy" (63, urban, Turkey), while others reported listening to music on iTunes or YouTube (64, male, rural, Switzerland), and playing games since "it's good for stress relief, for relaxing" (66, female, urban, Hungary). In some cases, new technologies replace older ones for certain recreational activities. For instance, one respondent (63, female, rural, United States) said that new digital streaming services replaced the television in her home: "I don't have regular cable TV anymore. I just have Netflix, and Hulu, and Amazon Prime. My entertainment videos mostly come from the Internet."

Some older adults use online resources to develop a particular skill or to take up a hobby. For instance, one respondent mentioned practicing yoga and clarinet by taking online courses (68, female, urban, United States). Another stated that she joined Facebook groups to exchange images of weaving techniques (74, female, suburban, the Netherlands). She also noted that the Internet "enriched" her life, explaining: "because it's easier to get in touch with peers, especially in the field of my hobby." Several respondents mentioned Pinterest as a source for ideas and inspiration about hobbies and crafts. One woman (64, suburban, United States) explained: "I do Pinterest when I'm in my creative mood. I might go there to get ideas, or color combinations, or different things like that, or to look for a particular recipe." Another (63, female, rural, United States) said that she spends a lot of time on Pinterest for finding ideas: "Knitting projects . . . someday I'd love to build a tiny house. I've got a Pinterest page for tiny house ideas. What else is on there? Embroidery projects, tattoos that I like. A little of this, a little of that."

Negative Experiences With and Downsides of ICTs

Although not as common as positive aspects, respondents also shared negative experiences and downsides of using ICTs. Reasons behind negative responses vary, yet, lower technology use capabilities

may especially be decisive. One participant (80, female, suburban, United States) described the effect of ICTs in her life as "totally overwhelming" and explained the reason as follows: "I'm too old. It's hard for me to understand, or to catch on, harder to do new things. I just have to block it out, I can't even deal with it." This older adult is not alone in her experience; others also described feeling left behind in certain domains of technology use. For instance, another participant (79, male, urban, United States) said that "it's hard to keep up with changes in what's available online or with new services." He referred to an old digital music service to illustrate how much and fast technology changes: "Wow, I remember when everybody used Napster. Now, nobody uses Napster, you know?" When asked if new technologies made their lives easier or harder, one respondent (65, male, suburban, United States) said:

> That's a two-pronged question. The answer is both. Certainly made it easier, looking up.
> . . . You know, if I have a question about what I just said. But it certainly made it harder,
> because it's so hard for me to catch on to these things. I feel that I'm just out of it. And
> that's made it harder.

Other difficulties besides having trouble keeping up with technologies also came up during the interviews and we describe these under corresponding themes.

Communication

Noted downsides of digital communication included diminishing amount and quality of face-to-face interactions, which could mainly be attributed to the use of mobile phones and uptake of mobile messaging applications. Several respondents expressed their concerns about how superficial their communication with people had become over time. One participant (70, female, urban, Switzerland) thought that although people can send messages quickly instead of calling, the conversation "doesn't go into deepness." Older adults also worried about a shrinking social life in general, such as the following participant (61, female, suburban, the Netherlands), who expressed concern that people have less face-to-face contact nowadays due to messaging services:

> I think it has become less, seeing less in real life, I mean. Of course you have faster
> contact, because you just send a WhatsApp [message]. That's it. But seeing each other
> or talking on the phone has become less, I think.

Another respondent (67, female, urban, Hungary) worried that with digital communication as an option, people may be less inclined to meet up in person, and when being in person, people can be distracted by technology:

> I have little time to get together with people, but maybe everyone feels like there is less
> of a need to get together, and this is a disadvantage. On the one hand, when we are
> together in person everyone stares at their phone, which I think is death. That's a very
> extreme term, but I think this is a huge disadvantage socially in human life.

Indeed, other older adults were also bothered by the use of digital media at the cost of in-person social interactions, for instance during meals (64, female, suburban, United States):

If we're having dinner with people, I can't stand if somebody brings out their phone. I'm just like, "Okay, be present." . . . Or you go to a restaurant, I'm very observant about this, too, because it irks me. . . . Kids got the iPad playing some game, mom's on her phone, dad's on his phone. I'm like, "What happened to discussion? What happened to talking?" In our house, I'm like, "All the technology goes away."

Very few older adults said that they struggled with their own digital media use during social situations, but they did find it important to adjust their behavior. For instance, one woman (63, urban, Switzerland) believed herself to be "addicted" to her phone and actively tried not to use it while being with other people, but she was also aware that she had no control over the behavior of her interlocutors.

Some held the perception that digital overuse was a problem for younger people's communication behaviors. One participant (64, female, suburban, United States) specifically noted the dearth of good communication habits among younger individuals:

Younger people, I just don't know if they know how to communicate as well, because they're so accustomed to doing it this way versus this way. I mean if you just walked down the street, how many people have in earbuds and are talking to someone or looking at their phone? You can't even get anybody to smile at you when you walk past them, because they're in their own little worlds and I don't like [it].

Information

Although the Internet provides easier and faster access to information, the experiences are not always positive for older adults. Reasons are related to the enormous amount of information on the Web, as well as misinformation and older adults' lack of skills to evaluate its credibility. One participant (74, female, rural, Switzerland) stated that even though the Internet has made her life easier on the whole, her life also became "more complicated" as she explained: "the information and websites sometimes overwhelm me and there's also a lot of wrong information." Others reported concerns about the quality and credibility of content found through online channels. Some perceived online information to be less credible than offline information (77, male, urban, Hungary) because "the ease of the means makes it possible to distribute quickly and inexpensively any kind of information."

Although participants generally attributed their negative experiences to the technologies and the features they offer, there were cases signaling that the actual reason for negative experiences or non-adoption concerned their digital skills. For instance, one participant (66, male, urban, the Netherlands) had problems with distinguishing credible information from wrong information and stopped using the Internet for this purpose:

> I was diagnosed with gout and I started looking for something about that [online]. And then it turned out that I was so terribly disappointed that I thought: "I really don't benefit from this." I really couldn't distinguish between correct information and very subjective or incorrect information.

Another (63, female, urban, Switzerland) disliked using the Internet for health-related information because it made her more anxious: "All it does is feed my fears." She also did not feel that she had the right expertise to deal with health information online.

On the whole, while older adults see many positives about all of the information available online, some do see it as a double-edged sword.

Services

Although not a common occurrence, some older adults mentioned service-related examples that are less desirable or even potentially dangerous. Most of the negative opinions stem from the way these technologies work or lack of transparency in how they work, which could lead to older adults seeing these services as a threat to their online privacy. Some worry about websites abusing their personal information as relayed by one participant (74, female, rural, Switzerland): "The pages often ask if they can save the data, and I always check no. But I don't know if they will really delete the data." Another (63, female, urban, Switzerland) referred to data collection by online platforms and said:

> I can more and more times see that the Internet, cyberspace is collecting data by me. I googled hotels in London, and then within an hour I saw, I think it must have been on my Facebook page, hotels in London. It ticks me off.

One participant (78, female, urban, United States) stated that she would hesitate to share private information related to her personal issues online because of her lack of trust toward the security of online platforms:

> I don't think anything you put out is totally secure. Anything. Even the things that are very secure. You hear every day, data captured from [people]. You don't know if you're part of the 20 million people that just got hacked, but you could be.

Another (68, male, urban, Hungary) mentioned that despite having no problems with it so far, he does not like doing online purchases. He said, "What I like the least is paying with a debit card," and stated his concerns of phishing even if "it's the bank's encrypted site."

Sometimes, negative opinions are fed by the technical requirements of the online services that older adults do not believe to be necessary. One participant (68, male, suburban, United States) said that he refrained from using an online delivery service because he was asked to download an app and register his cell number: "I find the Apple stuff to be pretty good, but there's [*sic*] certain things that I just don't pursue because they offer more complexity than I'm comfortable with or care about."

Leisure Use

Even though many participants enjoy using technology for entertainment, some reported negative experiences or effects related to overuse or being overwhelmed by content. Some older adults believed that digital media could easily take up too much of their time, taking away from time that they would rather spend on other leisure activities. For instance, one respondent (66, female, urban, Hungary) thought that the Internet made life easier, but also mentioned that there were drawbacks as well since one "can get stuck on it, it can take up too much time with reading or blogging." Another (66, female, suburban, United States) stated that she could use the time she spends on the Internet for other "more virtuous" activities, although she recognized that this may just be wishful thinking:

> For me, I waste time on it probably. That's giving myself credit for having done something more virtuous if I didn't have it. It's indirectly saying, "Oh if I wasn't wasting time on Facebook, I would be reading *War and Peace*—as opposed to watching *Price is Right*."

Excessive use of the Internet was sometimes also seen as a drawback, with one participant (66, male, suburban, United States) even describing himself as being addicted to his screen and newsfeed:

> It is a little bit addictive and probably is a bit of a challenge. You become more addicted to the news feed than you ever were, or at least I do. And that I find to be somewhat of a challenge sometimes, because there's this feeling of "I just need to get my fix," that sort of addiction to the screen, where the screen is a newsfeed.

In some cases, frequent notifications from apps and mailing lists may be overwhelming for older adults, which may result in abandonment of certain applications. One participant (69, female, rural, Switzerland) who was interested in Pinterest content about hobbies and crafts stated that she stopped using the platform when she received too many content suggestions: "I've been on Pinterest once, but there are probably 10 suggestions sent every day or what do I know. I was just bombarded. And at some point I just deleted it. Because that was too much for me."

Some mentioned having to learn and keep up with technology as a drawback for using ICTs for leisure activities, again referring to the role of digital skills. For instance, one participant (70, female, urban, Switzerland) explained:

> I stick to my lifestyle somehow and to my common sense . . . and I think I don't want to be stressed always to learn this and that, and do this and do [that]. . . . Of course, the basic things, you have to do, but I know people spend so much time on social media and stuff, but not me.

She also mentioned that she does not put effort into learning those, but said "maybe one day, we have to."

Discussion and Conclusion

This study examines how older adults perceive and experience the benefits and downsides of using ICTs in their everyday lives. Digital inequality scholarship has long highlighted the persistent lag of older adults in ICT adoption (Anderson & Perrin, 2017; Hunsaker & Hargittai, 2018). One approach to encouraging and supporting older adults' online engagement is to draw on their own positive experiences to inspire others' more active involvement.

Older adults reported various positive and negative effects of ICTs on their communication practices, information seeking, service use, and leisure activities. Our findings show that older adults' opinions are mostly shaped by the affordances of technologies. The Internet and online messaging applications allow for greater connection, offer varying functionalities, and both free time as well as provide sustenance for individual pursuits. Alternatively, in-person communication could become less meaningful, and concerns regarding security emerge. While talking about the role of technologies in a specific domain of use (e.g., contacting people, information seeking), older adults mostly referred to the specific technology they use (e.g., the Internet, mobile phone, social media) and shared their perceived benefits or downsides accordingly. These unique experiences are valuable sources of information about which needs of older adults these technologies meet. A careful reading between the lines of respondents' opinions provides a nuanced image of ICT adoption by older adults. Whether negative or positive, older adults' experiences shed light on the underlying reasons or motivations they have for technology adoption, beyond usage experiences. Comments that reveal their reluctance to use a certain technology, or the convenience they perceive, may simultaneously signal their motivation to remain relevant in the contemporary world and keep up with younger generations, which is in line with findings of previous research (Costa, Gilliland, & McWatt, 2019).

Older adults also made general statements explaining their perceptions and, in these cases, they referred to technologies as a whole. These were generally the instances where older adults' or other people's particular uses of technologies led to positive or negative outcomes (e.g., turning to social media during retirement, overuse of applications). Such statements particularly signaled the personal reasons behind adoption or nonadoption of technologies; thus, helped uncover older adults' perceptions of ICTs.

We find that perspectives within this age group vary considerably confirming others' findings (Hargittai & Dobransky, 2017; Seifert & Schelling, 2016; Vicente & Lopes, 2016) that older adults are not one homogeneous group of users despite often being assumed as such. Many use and report benefiting from mobile messaging applications and video call services. Such alternatives for one-to-one communication are useful for those living away from their loved ones. This type of communication has been shown to play an important role for sustaining family relationships across borders (Madianou, 2016) and many respondents affirmed that these tools led to either increased communication or different ways of maintaining relationships, which were not possible at earlier times of their lives. Similar to previous research (Cotten et al., 2013), older adults seem to be benefitting from technology adoption to increase social interaction.

Respondents also noticed negative effects from their own ICT uses, as well as voiced negative perceptions toward the digital media uses of others inside and outside of their social circles. Past work finds that older adults may be particularly sensitive to how others, especially younger generations, use mobile

communication technologies in social settings (Kadylak et al., 2018; Rainie & Zickuhr, 2015), and such perceived intrusions on in-person conversations can have negative ramifications for older adults' well-being (Kadylak, 2019). Future work might explore whether these perceived downsides at the societal level in turn affect how older adults use such technology.

Additionally, although participants pointed to increased and varied communication with loves ones thanks to new technologies, they also relayed a perception of superficiality and even a decrease in face-to-face communication arising as a result of using digital methods. This contradicts earlier work showing that older adult Internet users more often visit friends and family in person than nonusers (Choi & DiNitto, 2013). Given these discrepancies, future examination of positive and negative perceptions using an intergenerational approach might allow for a deeper understanding of intergenerational digital communications as well as greater insights about people's views on such interactions.

A particular challenge that several older adults encountered was the difficulty of learning about and keeping up with new technologies, signaling that digital skills may influence people's attitudes on and experiences with such modes of communication. Other research on older adults has also shown similar views, such as computers being a threat to "easy and simple living" (Hakkarainen, 2012, p. 1210) or being "very difficult to learn" (Luijkx et al., 2015, p. 15477), emphasizing the importance of digital skills for ICT adoption among this age group in today's ever-changing technological world.

Some of our participants explained in detail for what purposes they turn to the Internet. Related benefits included convenient information seeking on various topics such as health, use of booking services for travel, banking, and shopping. Lack of trust toward online services and overuse were mentioned several times, and these seem to be factors playing a role in shaping negative attitudes toward use of the Internet. This is in line with previous research noting the role of privacy concerns and security issues in the adoption of ICTs by older adults (Bixter et al., 2019; Mitzner et al., 2010). Several respondents noted the benefit of using the Internet to access services when one is less mobile, such as online shopping. This corroborates previous work about how social media use and online shopping may decrease the negative impact of functional disability on well-being among older adults (van Ingen et al., 2017).

As our main goal was to provide insight into older adults' overall experiences and perceptions of ICTs in a multinational sample, exploring differences by sociodemographics such as age was beyond the scope of our study. Yet our sample included older adults from a wide age range, and one could indeed argue that certain uses and perceived benefits or drawbacks of ICTs may be different for the younger-old than the older-old. For instance, issues of limited mobility are more likely to be present among the older-old (like with our 90-year-old participant) for whom online services such as shopping may become more important. Given that previous research has highlighted the heterogeneity of older adults' Internet uses by sociodemographics and digital skills (Friemel, 2016; Hargittai, Piper, & Morris, 2018; Quan-Haase et al., 2018), future research could look into how these factors might shape experiences with ICTs, contributing to a deeper understanding of digital inequality among older adults. Relatedly, the cross-sectional design of our study reveals findings about current perceptions rather than being able to investigate changes over time. How the experience of aging impacts older adults' views of using new digital technologies, including their perceptions of benefits attained as one gets older, may be a fruitful avenue for further research.

Like all research, the results of this study should be considered in light of some limitations. We put effort into achieving a diverse sample, but we acknowledge that our sampling method limits the generalizability of our results. Although we did not provide a detailed description of our study of interest during the recruitment process, some respondents who may be especially uninterested in or averse to the Internet may have opted out of participation in a study about their communication practices and ICT use, possibly introducing a self-selection bias. A relevant consequence of this is that those with especially negative experiences or opinions about and those wholly uninterested in ICTs may be underrepresented in the sample.

Drawing on in-depth interviews with a multinational sample of older adults, we examined how older adults perceive the positive and negative outcomes of digital media in their everyday lives. Our analysis revealed that many older adults incorporate new communication technologies into their lives, take advantage of online information seeking, enjoy the convenience of online services, and turn to digital media (e.g., social network sites, online games, music, video streaming services) for leisure use. On the other hand, several older adults also hold negative attitudes, and are concerned with superficial communication and decreased communication skills especially among younger people, security and privacy challenges of online platforms, and negative effects of overuse. Overall, different attitudes of older adults toward ICTs mean that those reluctant to use new technologies are potentially excluded from the benefits one can derive from such uses, thereby exacerbating existing digital inequalities. Programs aimed at getting more older adults connected can draw on our findings about this age group's perceptions of benefits to encourage technology adoption and use while addressing head on their concerns so that they understand that those do not have to be impediments to beneficial uses.

References

Anderson, M., & Perrin, A. (2017, May 17). *Tech adoption climbs among older adults*. Retrieved from http://www.pewinternet.org/2017/05/17/tech-adoption-climbs-among-older-adults/

Anderson, M., Perrin, A., Jiang, J., & Kumar, M. (2019, April 22). *10% of Americans don't use the Internet. Who are they?* Internet Archive Wayback Machine. Retrieved from https://web.archive.org/web/20190422232109/https://www.pewresearch.org/fact-tank/2019/04/22/some-americans-dont-use-the-internet-who-are-they/

Aytuna, N., & Çapraz, Y. C. (2018). Uses and gratifications of Internet use among the elderly in Turkey. *Athens Journal of Mass Media and Communications*, *4*(2), 109–120. https://doi.org/10.30958/ajmmc.4.2.2

Barnard, Y., Bradley, M. D., Hodgson, F., & Lloyd, A. D. (2013). Learning to use new technologies by older adults: Perceived difficulties, experimentation behaviour and usability. *Computers in Human Behavior*, *29*(4), 1715–1724. doi:10.1016/j.chb.2013.02.006

Berkowsky, R. W., Sharit, J., & Czaja, S. J. (2017). Factors predicting decisions about technology adoption among older adults. *Innovation in Aging*, *1*(3), 1–12. doi:10.1093/geroni/igy002

Bixter, M. T., Blocker, K. A., Mitzner, T. L., Prakash, A., & Rogers, W. A. (2019). Understanding the use and non-use of social communication technologies by older adults: A qualitative test and extension of the UTAUT model. *Gerontechnology: International Journal on the Fundamental Aspects of Technology to Serve the Ageing Society*, *18*(2), 70–88. doi:10.4017/gt.2019.18.2.002.00

CBS Internet. (2019, February 24). *StatLine—Internet; toegang, gebruik en faciliteiten; 2012–2019* [Internet; access, use and facilities; 2012–2019]. Retrieved from https://opendata.cbs.nl/statline/#/CBS/nl/dataset/83429NED/table?ts=1614184917202

Choi, N. G., & DiNitto, D. M. (2013). Internet use among older adults: Association with health needs, psychological capital, and social capital. *Journal of Medical Internet Research*, *15*(5), 1–16. doi:10.2196/jmir.2333

Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: SAGE Publications.

Costa, C., Gilliland, G., & McWatt, J. (2019). "I want to keep up with the younger generation"—Older adults and the Web: A generational divide or generational collide? *International Journal of Lifelong Education*, *38*(5), 566–578. doi:10.1080/02601370.2019.1678689

Cotten, S. R., Anderson, W. A., & McCullough, B. M. (2013). Impact of Internet use on loneliness and contact with others among older adults: Cross-sectional analysis. *Journal of Medical Internet Research*, *15*(2), 1–13. doi:10.2196/jmir.2306

Cotten, S. R., Ford, G., Ford, S., & Hale, T. M. (2014). Internet use and depression among retired older adults in the United States: A longitudinal analysis. *The Journals of Gerontology: Series B*, *69*(5), 763–771. doi:10.1093/geronb/gbu018

Elueze, I., & Quan-Haase, A. (2018). Privacy attitudes and concerns in the digital lives of older adults: Westin's privacy attitude typology revisited. *American Behavioral Scientist*, *62*(10), 1372–1391. doi:10.1177/0002764218787026

Eurostat. (2018, May 28). *Internet access and use statistics—Households and individuals.* Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Internet_access_and_use_statistics_-_households_and_individuals&oldid=379591#Internet_activity_by_age_group

Eurostat. (2019, October 18). *Ageing Europe: Looking at the lives of older people in the EU*. Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Ageing_Europe_-_looking_at_the_lives_of_older_people_in_the_EU

Fischer, S. H., David, D., Crotty, B. H., Dierks, M., & Safran, C. (2014). Acceptance and use of health information technology by community-dwelling elders. *International Journal of Medical Informatics*, *83*(9), 624–635. doi:10.1016/j.ijmedinf.2014.06.005

Friemel, T. N. (2016). The digital divide has grown old: Determinants of a digital divide among seniors. *New Media & Society*, *18*(2), 313–331. doi:10.1177/1461444814538648

Genoe, R., Kulczycki, C., Marston, H., Freeman, S., Musselwhite, C., & Rutherford, H. (2018). E-leisure and older adults: Findings from an international exploratory study. *Therapeutic Recreation Journal*, *52*(1), 1–18. doi:10.18666/TRJ-2018-V52-I1-8417

Guess, A., Nagler, J., & Tucker, J. (2019). Less than you think: Prevalence and predictors of fake news dissemination on Facebook. *Science Advances*, *5*(1), 1–8. doi:10.1126/sciadv.aau4586

Hakkarainen, P. (2012). "No good for shovelling snow and carrying firewood": Social representations of computers and the Internet by elderly Finnish non-users. *New Media & Society*, *14*(7), 1198–1215. doi:10.1177/1461444812442663

Hargittai, E., & Dobransky, K. (2017). Old dogs, new clicks: Digital inequality in skills and uses among older adults. *Canadian Journal of Communication*, *42*(2), 195–212. doi:10.22230/cjc.2017v42n2a3176

Hargittai, E., & Hsieh, Y. P. (2012). Succinct survey measures of Web-use skills. *Social Science Computer Review*, *30*(1), 95–107. doi:10.1177/0894439310397146

Hargittai, E., Piper, A. M., & Morris, M. R. (2018). From Internet access to Internet skills: Digital inequality among older adults. *Universal Access in the Information Society*, *18*(4), 881–890. doi:10.1007/s10209-018-0617-5

Harper, M. G., Wellman, B., & Quan-Haase, A. (2020). Older adults and information and communication technologies in the global north. In D. Danan Gu & E. Dupre (Eds.), *Encyclopedia of gerontology and population aging* (pp. 1–7). Cham, Switzerland: Springer. https://doi.org/10.1007/978-3-319-69892-2_902-1

Helsper, E. J., & Reisdorf, B. C. (2013). A quantitative examination of explanations for reasons for Internet nonuse. *Cyberpsychology, Behavior, and Social Networking*, *16*(2), 94–99. doi:10.1089/cyber.2012.0257

Hofer, M., Hargittai, E., Büchi, M., & Seifert, A. (2019). Older adults' online information seeking and subjective well-being: The moderating role of Internet skills. *International Journal of Communication*, *13*, 4426–4443.

Hunsaker, A., & Hargittai, E. (2018). A review of Internet use among older adults. *New Media & Society*, *20*(10), 3937–3954. doi:10.1177/1461444818787348

Hunsaker, A., Hargittai, E., & Piper, A. M. (2020). Online social connectedness and anxiety among older adults. *International Journal of Communication*, *14*, 697–725.

Ivan, L., & Fernández-Ardèvol, M. (2017). Older people and the use of ICTs to communicate with children and grandchildren. *Transnational Social Review*, *7*(1), 41–55. doi:10.1080/21931674.2016.1277861

Ivan, L., & Hebblethwaite, S. (2016). Grannies on the net: Grandmothers' experiences of Facebook in family communication. *Revista Română de Comunicare Şi Relaţii Publice*, *18*(1), 11–25. doi:10.21018/rjcpr.2016.1.199

Kadylak, T. (2019). An investigation of perceived family phubbing expectancy violations and well-being among U.S. older adults. *Mobile Media & Communication*, *8*(2), 247–267. doi:10.1177/2050157919872238

Kadylak, T., & Cotten, S. R. (2020). United States older adults' willingness to use emerging technologies. *Information, Communication & Society*, *23*(5), 736–750. doi:10.1080/1369118X.2020.1713848

Kadylak, T., Makki, T. W., Francis, J., Cotten, S. R., Rikard, R. V., & Sah, Y. J. (2018). Disrupted copresence: Older adults' views on mobile phone use during face-to-face interactions. *Mobile Media & Communication*, *6*(3), 331–349. doi:10.1177/2050157918758129

König, R., Seifert, A., & Doh, M. (2018). Internet use among older Europeans: An analysis based on SHARE data. *Universal Access in the Information Society*, *17*(3), 621–633. doi:10.1007/s10209-018-0609-5

Központi Statisztikai Hivatal. (2019, March 23). *Indicators of ICT usage by individuals according to the age-group, private households*. Retrieved from https://statinfo.ksh.hu/Statinfo/themeSelector.jsp?&lang=en

Luijkx, K., Peek, S., & Wouters, E. (2015). "Grandma, you should do it—it's cool": Older adults and the role of family members in their acceptance of technology. *International Journal of Environmental Research and Public Health*, *12*(12), 15470–15485. doi:10.3390/ijerph121214999

Madianou, M. (2016). Polymedia communication among transnational families: What are the long-term consequences for migration? In M. Kilkey & E. Palenga-Möllenbeck (Eds.), *Family life in an age of migration and mobility: Global perspectives through the life course* (pp. 71–93). London, UK: Palgrave Macmillan. doi:10.1057/978-1-137-52099-9_4

Marston, H. R., Genoe, R., Freeman, S., Kulczycki, C., & Musselwhite, C. (2019). Older adults' perceptions of ICT: Main findings from the technology in later life (TILL) study. *Healthcare*, *7*(3), 86–112. doi:10.3390/healthcare7030086

Matassi, M., Boczkowski, P. J., & Mitchelstein, E. (2019). Domesticating WhatsApp: Family, friends, work, and study in everyday communication. *New Media & Society*, *21*(10), 2183–2200. doi:10.1177/1461444819841890

Mitzner, T. L., Boron, J. B., Fausset, C. B., Adams, A. E., Charness, N., Czaja, S. J., . . . & Sharit, J. (2010). Older adults talk technology: Technology usage and attitudes. *Computers in Human Behavior*, *26*(6), 1710–1721. doi:10.1016/j.chb.2010.06.020

Nguyen, M. H., Hargittai, E., Fuchs, J., Djukaric, T., & Hunsaker A. (2021). Trading spaces: How and why older adults disconnect from and switch between digital media. *The Information Society*. https://doi.org/10.1080/01972243.2021.1960659

Nimrod, G. (2017). Older audiences in the digital media environment. *Information, Communication & Society*, *20*(2), 233–249. doi:10.1080/1369118X.2016.1164740

Quan-Haase, A., Williams, C., Kicevski, M., Elueze, I., & Wellman, B. (2018). Dividing the grey divide: Deconstructing myths about older adults' online activities, skills, and attitudes. *American Behavioral Scientist*, *62*(9), 1207–1228. doi:10.1177/0002764218777572

Rainie, L., & Zickuhr, K. (2015, August 26). *Americans' views on mobile etiquette*. Retrieved from https://www.pewresearch.org/internet/2015/08/26/americans-views-on-mobile-etiquette/

Seifert, A., & Schelling, H. R. (2016). Seniors online: Attitudes toward the Internet and coping with everyday life. *Journal of Applied Gerontology*, *37*(1), 99–109. doi:10.1177/0733464816669805

Seo, H., Erba, J., Altschwager, D., & Geana, M. (2019). Evidence-based digital literacy class for older, low-income African-American adults. *Journal of Applied Communication Research*, *47*(2), 130–152. doi:10.1080/00909882.2019.1587176

Tsai, H. S., Shillair, R., Cotten, S. R., Winstead, V., & Yost, E. (2015). Getting grandma online: Are tablets the answer for increasing digital inclusion for older adults in the U.S.? *Educational Gerontology*, *41*(10), 695–709. doi:10.1080/03601277.2015.1048165

Türkiye İstatistik Kurumu. (2020, March 18). *Türkiye İstatistik Kurumu, İstatistiklerle Yaşlılar, 2019* [Household information technologies usage survey, 2019]. Retrieved from https://tuikweb.tuik.gov.tr/PreHaberBultenleri.do?id=33712

van Boekel, L. C., Peek, S. T., & Luijkx, K. G. (2017). Diversity in older adults' use of the Internet: Identifying subgroups through latent class analysis. *Journal of Medical Internet Research*, *19*(5), 1–11. doi:10.2196/jmir.6853

van Ingen, E., Rains, S. A., & Wright, K. B. (2017). Does social network site use buffer against well-being loss when older adults face reduced functional ability? *Computers in Human Behavior*, *70*, 168–177. doi:10.1016/j.chb.2016.12.058

Vicente, P., & Lopes, I. (2016). Attitudes of older mobile phone users towards mobile phones. *Communications*, *41*(1), 71–86. doi:10.1515/commun-2015-0026

Vogels, E. A. (2019, September 9). *Millennials stand out for their technology use but older generations also embrace digital life*. Retrieved from http://www.pewresearch.org/fact-tank/2018/05/02/millennials-stand-out-for-their-technology-use-but-older-generations-also-embrace-digital-life/

World Health Organization. (2015, September 30). *World report on ageing and health*. Retrieved from http://www.who.int/ageing/events/world-report-2015-launch/en/

Yu, R. P., McCammon, R. J., Ellison, N. B., & Langa, K. M. (2016). The relationships that matter: Social network site use and social wellbeing among older adults in the United States of America. *Ageing & Society*, *36*(9), 1826–1852. doi:10.1017/S0144686X15000677

Yuan, S., Hussain, S. A., Hales, K. D., & Cotten, S. R. (2016). What do they like? Communication preferences and patterns of older adults in the United States: The role of technology. *Educational Gerontology*, *42*(3), 163–174. doi:10.1080/03601277.2015.1083392