Afterword

1. Older Adults Living, Playing, and Working Digitally: Emerging Technologies in Everyday Life

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Introduction

Aging and the social meanings given to aging are in constant flux. Contextual and institutional factors influence how different age groups vary in their social networks, their degree of networked individualism, and also in their media use (Quan-Haase, Harper, & Wellman, under review). This makes it particularly relevant to study the design, implementation, and evaluation of emerging technologies in the unique contexts of older adults, those aged 65+. Age differences in media adoption and use are a recurrent finding in much of the literature and demonstrate that older adults experience unique challenges which require theoretical approaches and considerations tailored to their specific needs and social lives.

Current Theoretical and Conceptual Issues for Researchers Working on Designing and Evaluating Emerging Technologies for Older Adults

We identify two current theoretical and conceptual issues of relevance to researchers working on designing, implementing, and evaluating emerging technologies for older adults.

Aging as a gray tsunami A key theoretical issue is how we view the social networks and social lives of older adults. Many observers think of aging as a "gray tsunami": a time of decline and fall (Enright, 2017). Yet, older adults' active engagement with digital media is increasing worldwide, suggesting that the gray divide is narrowing and possibly vanishing. Our case study of East York (Canada) older adult residents aged above 65 found that a majority owned personal computers, while some have multiple desktop computers and laptops and many use mobile phones, especially for emergency situations (Quan-Haase, Williams, Kicevski, Elueze, & Wellman, 2018). Although these older adults use digital media less than other age groups, 80% use email and 34% use Facebook. While those who use video chat benefit from the social contact with their same-generation kin, they especially value intergenerational contact (see Fig. 1; Quan-Haase, Wang, Wellman, & Zhang, 2018).

Networked individuals Researchers also need to examine the structure and composition of older adults' social networks. Many of the older adults we studied are networked individuals, using digital media in conjunction with in-person meetings to connect with multiple networks, learn new things, and engage in a wide range of activities (Wang, Zhang, & Wellman, 2018). These older adults have joined the digital world, transforming how they connect and search for information. Most use one form of digital media for at least half of their social contacts. Digital media supports their offline lives to a great extent, allowing them to be involved with family and friendship networks, interact with various social groups, and coordinate events and meetings. They value its ability to keep in touch with other adults and to increase intergenerational connectivity with their adult children, nieces, nephews, and grandchildren. Rather than withdrawing into themselves, digital media affords older adults opportunities for connecting with large and more diverse social networks.
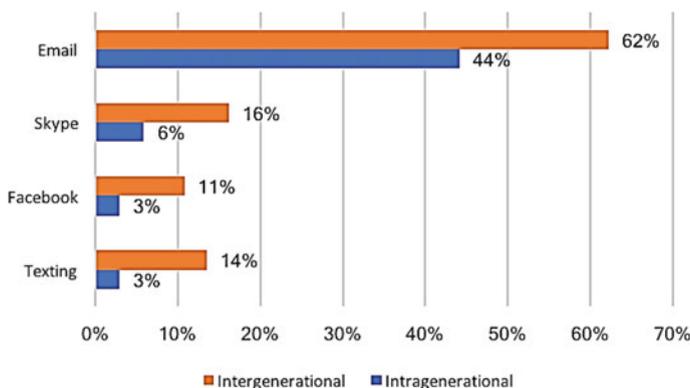

Fig. 1 Media use by East York older adults for inter- and intragenerational communication (©Quan-Haase)

Critical Future Issues for Researchers in This Burgeoning Field

Emerging technologies create threats to privacy Many older adults have mixed feelings about the use of emerging technologies because of perceived privacy threats (Elueze & Quan-Haase, 2018). Older adults do not believe they are equipped to deal with the risks associated with digital media use and therefore prefer to stay away from social media sites, e-commerce, and online banking. This shows that low privacy literacy combined with a desire for privacy may deter some older adults from adopting new types of digital media, even if they could benefit from them (Elueze & Quan-Haase, 2018). Many stressed that they were vulnerable because low privacy literacy precluded them from taking steps to protect themselves. The goal then is to design transparent technologies that allow older adults to grasp with ease what data are being collected, who has access to these data, how the data are being used, and what are the real risks.

Transnational networks Many international migrants and their descendants want to connect with both their countries of origin and settlement (Bilecen, Gamper, & Lubbers, 2018). Transnational migration creates unique challenges for older adults, who already see their social networks shrink and often struggle with issues of mobility and health. Digital media can play a dual role. First, digital media can reduce barriers of communication for migrants, providing much needed social support in the initial stages of settlement. Our East York research found that older adults used media-rich ways of staying in touch transnationally, such as video and voice chat (Quan-Haase, Mo, & Wellman, 2017). Second, digital media can support migrants in building and maintaining newly forged social networks in their location of settlement. In our networked world, designers need to look at transnational networks to provide the features that can better bridge local and global networks.

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2. Technologies: Current Methodological Issues

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We are in a period where large-scale data sets have become widely available and are nearly instantly downloadable. Moreover, they are generally free!! These data sets can be longitudinal, cross-cultural, and exceptionally representative of the groups from which they were drawn. Let me give an example from my own recent work. I was interested in updating some information I had on participation in voluntary associations among older Romanians for an article I was co-authoring. A little searching on Google disclosed the 2016 European Quality of Life Survey, which included information on age and on voluntary association participation for persons in the 28 European Union countries. A brief application was sent to the UK Data Archive, the next day I received a user name and password via email, I downloaded the data in SPSS format, and in moments, I had learned that older Romanians continued to have the lowest level of voluntary association participation among older persons in any of the EU 28 countries just as they did in 2012.

The European Quality of Life Survey is just one among many data sets that have been archived and are readily available for secondary analysis. I would cite the Health and Retirement Survey, the Survey of Health, Ageing and Retirement in Europe, and many others as illustrations of the type of data sets I have in mind here. But aside from omnibus-type questions asked of all respondents in all of these surveys, do they provide enough depth to answer the types of questions that will continue to pique the interests of researchers. I fear not. The user community may be able to acquire these data sets at low or no cost, but piggybacking in-depth questions on to them can be very costly.

Take technologies as an illustration. I expect there would be little disagreement with the proposition that age and technology use are related: Older persons are less likely to be users than younger persons. But is this due to a cohort effect or to an age

effect? Or to some combination of the two effects? Let us say that one wants to sort out cohort from age effects in a large-scale survey. Certainly, within HRS and SHARE, there are variables related to computer and technology use. But do they have the depth that is necessary to explore aspects of newer technologies in detail? Are comparable items available in more than one survey so that we can reliably look at trends? Or in longitudinal data sets, are comparable items available in more than one survey so that we can follow individual trajectories? To both sorts of questions, I suspect the answer is no.

So, one important issue pertaining to technology use and evaluation has to do with the depth in which questions are asked. Large-scale data sets—"big data"—are fine, but whether they provide the depth of substance that is needed is questionable.

Technologies: Future Issues

A recent issue of AARP's Bulletin (June, 2018) talked about some technological changes we might expect to see in five areas: home, health, transportation, privacy, and money. Many of them were mind-boggling. If we give in to our imaginations, developments such as these raise many issues, and I expect that each person contributing an afterword to this book will have favorites such that there is little overlap. Let me briefly mention a few that are of particular concern to me.

A first set of issues revolves around age differences in suitability, with a particular focus on suitability of technological advances for older adults. Take smartphones as an example. Smartphones are wonderful devices, capable with appropriate apps of doing all manner of things. On my own smartphone, I have flight simulation apps, apps for compass readings, apps that will provide me with the latest local and national news and weather, apps to get me around in strange foreign and domestic cities, and so many more. But have these devices become too "smart" for the typical older user? Does this account for the rise of technologies such as Jitterbug? Here, the methodological issue is assessing suitability. How can it be measured and assessed?

Still another involves the Internet. Again, I think there would be little disagreement with the proposition that the Internet has become part and parcel of daily life for persons. Although there are a number of issues that arise when we talk about older persons and the Internet (the appropriate design of Web pages, for example, for persons who may be experiencing some sensory problems), one I'd like to single out would be age differences in acceptance of and participation in the Internet scams. Are older persons more susceptible than younger persons? I suspect this is the case, but I also suspect that we have very little hard evidence on this topic.

Another example where a similar question can be raised is smart houses. Here, the issues involve autonomy and privacy. The technologies that tell us intimate details about the resident's daily life are impressive, but what is questionable is how many among older persons would want them? Again, more detailed data—whether

these data come from focus group research or from large-scale survey research or both—would be valuable.

And, finally, as I have written elsewhere, another important set of issues has to do with availability, affordability, and adequacy of housing. With a substantial segment of the older population being below, at, or near the poverty level, I would strongly suggest that the availability and affordability of adequate housing are more important to the typical older person than what is disclosed by the analysis of toileting or what sensitive floors can tell us about an older person's mobility. When an older person must decide between being able to pay monthly rental costs or annual property taxes and living in a costly environment, but one where data may be sent to a relative on whether that older person has fallen or is taking medications according to a physician's prescribed regimen, the decision may prove to be an easy one.

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3. Current and Future Issues

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I was asked to respond to two questions: What are the current practical and empirical issue(s) for researchers working on designing and evaluating emerging technologies for older adults? What do you think will be critical future issues for researchers in this burgeoning field?

Practical and Empirical Issues

Seniors, especially those who live alone, and those who think of themselves as having to struggle with technology are prone to frustration, self-doubt, and anger when things do not work and when they believe that something is broken and damage has been or will soon be done (Baecker, 2019, Chap. 8). Hence, the provision of technical support, easily accessible and without waiting in a queue listening to Muzak or advertising pitches for an hour, is essential. Support personnel

must be empathic, speak the senior's language articulately, and be able to connect screens so that he or she can look over the senior's shoulder and understand what is happening.

Technological obsolescence is a major problem, especially for seniors on a fixed income. One does not really need the newest, the fastest, the smallest, nor the system that is the most bloated with features (Baecker, 2019, Chap. 8). Tech companies barrage their customers with incentives to buy new hardware or upgrade software, which they back up by no longer supporting old versions. This also relates to the support problem, as there are often lots of hands-on work to do when upgrading to a new system to transport all of one's applications, files, settings, and preferences.

Also connected to the issue of humans supporting seniors (I shall speak below about the technology of robot companions or caregivers) is the need for huge numbers of relatively skillful but extremely sensitive and empathic caregivers for seniors. We must not be misled by the technical sweetness of designing robot companions and caregivers into thinking that we as children, grandchildren, and citizens are off the hook, that we can responsibly delegate all the hard work of the care of older adults to machines. Current battles about immigration in many western societies are making the situation even worse, as many caregivers are not legal immigrants.

Although I have listed the first two of these issues as "practical and empirical," it would be possible and interesting to study the effects of better support and the effects of technological obsolescence on seniors' well-being.

Research Challenges

Research is needed with respect to robot companions and caregivers (Baecker, 2019, Chaps. 1 and 4). I believe the former is reasonable and the latter is not. I also believe that the robots should not be anthropomorphized. They should take the form of animals, like Paro the robot seal, or abstract animated objects, like Elli-Q. Above all, they should not take on a human form. This is because they can be expected to be sources of amusement, companionship, and conversation, but not of love, compassion, or empathy. My point here is not that my beliefs are necessarily correct, but that we need lots of research on seniors using and interacting with robots, and in interventions extending for several years. To think that any respectable scientific conclusions can be drawn from a thesis-length one- or two-month intervention is ludicrous.

In addition to ensuring that the oldest old (aged 80+) are not lonely and abandoned, we need be concerned with the preservation of cognition. I believe the focus on brain training exercises has been a mistake (Baecker, Chaps. 1 and 4). This encourages seniors to engage in activities that provide no meaningful participation in what is authentic and human. Our focus should be on finding ways to ensure that seniors continue to do actively those mentally stimulating activities they have long

found to be engaging, for example, playing bridge or poker, reading, or writing. There needs to be extensive research on how continued involvement in activities of this kind helps preserve cognitive functions.

Now, let me move to two technical research challenges. One is in the design of communication technologies for older adults. It is possible now to build a communication environment that allows the seamless transition between messaging and conferencing, between communication in text, voice, images, and video, and with language translation working in the background so that it supports communication between grandparents who speaks only Ukrainian and grandchildren who speak only French. There are systems with elements of this (e.g., Baecker et al., 2014; Leone et al., 2018; Neves et al., 2015; 2017; 2018; Yurkewich et al., 2018 and http://famli.net), but not the entire concept. One design challenge is to ensure that the result does not feel bloated and can be easily learned and used.

Here is another technology design challenge, one that I believe is eminently practical and achievable. I am amazed and disappointed year after year with the barrage of general personal assistants, such as Alexa, and hardware assistants, such as Fitbits, while there still is no significant electronic replacement for the pillbox to help reduce the errors in medication administration, both errors of omission, forgetting to take a pill, or to take it on time, and errors of commission, such as taking the wrong pill. The degree of suffering and the numbers of fatalities still due to incorrect medication administration are embarrassing given that it is possible for us to do much better (Baecker 2019, Chaps. 1 and 4).

More ideas could have been mentioned. This is an exciting field. Thanks to the editors for assembling this excellent collection of papers.

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