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Guest Editors' Introduction

MORE YEARS, MORE TECHNOLOGIES: AGING IN THE DIGITAL ERA

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Today, people are enjoying longer lives, often without major disabilities (World Health Organization, 2015). For the disciplines of human and social sciences, the increased longevity opens a completely new horizon for investigating the role of new technologies in human lives; people living longer have many more years to experience increasingly frequent waves of innovation in technologies. Even though not all old people are active and independent users of digital technology, the amplitude of new devices, applications, and services targeted at a growing segment of older people is staggering. This special issue of *Human Technology* brings together six research articles that explore the role of digital health and communication technologies in later life.

Amid the ongoing trends in aging, this area of research has been defined by the abundance of off-the-shelf products and emerging technologies, on the one hand, and a wide diversity in digital technology use among the older people on the other. Contemporary markets are targeting older consumers more than ever before (Gilleard, 2018). All sorts of traditional and new digital solutions—ranging from simple walking sticks and ergonomic chairs to senior phones, alarm pendants, and smart home and telecare systems—are available in the marketplace to facilitate successful aging and autonomous living, whether in institutional care, home-like environments, or at home. At the individual level, people's longer lives are influenced by and integrated with digital technologies to varying extents. Hence, it can be argued that the principle of aged heterogeneity (Nelson & Dannefer, 1992), proposing that old people constitute a more diverse group in terms of their physiological, psychological, social, and functional traits than young people, also manifests itself with respect to the adoption and use of digital technologies. Through research, the considerable variation in older people's personal

attitudes towards and history of technology use has been identified, as well as their information and communication technology (ICT) ownership and usage rates, digital skills, and the availability of support networks (e.g., Friemel, 2016; Sourbati, 2015).

The articles of this special issue tackle the various aspects of this "abundant supply–heterogeneous demands" phenomenon from two perspectives. First, the issue includes studies that analyze groups of relatively experienced older technology users in different European countries who have engaged with various digital technologies from early on, especially mobile phones, computers, and the Internet. Second, the possible downsides to using digital technologies in later life are examined and discussed in the articles. Concerns such as a possible loss of self-determination and privacy violations are typically associated with the passive and/or involuntary use of telehealth, telecare, and telemonitoring technologies. Yet, in practice, these very same problems relate to the use of ordinary personal communication technologies as well. For example, smartphones or online service may be used for tracking online behavior and physical movements irrespective of users' age. Although these two perspectives do not explicitly address issues concerning older nonusers or digitally less-engaged seniors, the articles of this special issue do not leave the challenges faced by older people in the digital era unaddressed. Moreover, although the challenges pinpointed in the articles are mainly characteristics of older technology users, some of these concerns can be ascribed to younger user groups as well.

OVERVIEW OF THE SPECIAL ISSUE

The special issue includes six articles from the authors researching in different countries: Canada, Italy, the Netherlands, Spain, Sweden, and the United Kingdom. The first two articles present systematic overviews of the prior research on older people's use of mHealth and eHealth solutions. The paper by **Alice Spann and Ellen Stewart** presents their research into the barriers to and facilitators of older people's usage of mHealth. Conducting a qualitative thematic synthesis, they are able to indentify three factors—drawn from 17 eligible studies published between 2007 and 2017—that directly connect to older people's intentions or actual use of mHealth solutions. Based on the results of their synthesis, the authors maintain that older people's perceptions of usefulness often deviate from those of their relatives or home care providers and that, at times, old people feel pressured to adopt technologies they deem inappropriate. The other two factors were self-efficacy and the costs of equipment and associated services. Spann and Stewart call for concrete measures to ensure older people's self-determination over the adoption and use of mHealth solutions.

Mei Lan Fang, Ellie Siden, Anastasia Korol, Marie-Anne Demestihas, Judith Sixsmith, and Andrew Sixsmith investigated the intended and unintended consequences of eHealth applications on older people. This article presents a scoping review of literature published between 2010 and 2017 that was informed by a Health Equity Impact Assessment framework. The authors identify several potential benefits of eHealth initiatives for older adults, which indicate that cost-effective eHealth systems offer great potential to alleviate the growing health-care demands on societies. Even so, the study also reveals that eHealth care systems may not solve—and may even exacerbate—the problems of old people at the margins

of society. Too often, these systems fail to recognize cultural and linguistic factors and individual needs—that is to say, aged heterogeneity—that influence technology appropriation.

In the next two articles, older people and their practices of using new technologies are at the center of analysis. **Tobias Olsson and Dino Viscovi** breathe new life into the concept of warm experts, originally coined by Maria Bakardjieva (2005). When the first personal computers and Internet technology were domesticated, the role of these proximate and familiar persons, who had a relatively deep knowledge of new technology but provided help without expectations for return, was crucial for facilitating ICT uptake and usage. While acknowledging that in Sweden, the country of their study, a majority of older people have been using the Internet already for some years, Olsson and Viscovi asked who are the warm experts for older people today, and what do they actually do? Based on both qualitative and quantitative evidence, the article indicates that the need for help in technological matters has not disappeared, and that even the most skilled seniors need assistance in technology use at times. Besides its other merits, the study reminds that a large number of older people living alone in Sweden have fewer, in any, possibilities to get help, support, and encouragement in ICT use from people nearby.

The article written by **Fausto Colombo, Piermarco Aroldi, and Simone Carlo** turned attention to Italian grandmothers, especially to their generational experiences and perceptions of ICT use. The authors interviewed a group of grandmothers living in Milan and its surroundings, all of whom are ICT users, in order to understand the dynamics of intergenerational exchanges and ICT-related family communication. What surfaced from their analysis is that the grandmothers had developed a distinctive understanding of what they believe is the correct use of technology. According to the authors, this understanding was based on their inter- and intragenerational experiences, produced through reflections on the grandmothers' own practices of ICT use and contrasted with those considered typical for younger generations.

The last two articles approaches explore the outcomes of aging and digitalization from the perspectives of organizations. The study by **Loos** investigated the use of online stock photographs portraying old people. When used on the Web sites for organizations offering services to older people, Loos maintains such photos typically depict old people as active and healthy individuals, thus consequently overlooking the aged heterogeneity. In his exploratory study, Loos exposed a group of older Dutch people—differing in terms of their age, gender, living arrangement, and self-reported vitality—to five sets of online stock photos to find out which photos they would identify with and like most. The results of the study indicate that, although all participants liked certain photos quite unanimously, they typically liked most the photos portraying old people in the same life stage as themselves. This said, Loos advises organizations using stock photos to make their Web sites more attractive for older online users consider ways to acknowledge the diversity of older people better.

Lastly, **Deusdad and Riccò** examined digitalization and digital technology available to professionals in organizations providing long-term care services to the older people. While researchers and politicians are often worried about older people' attitudes and ability to use public digital services, the resistance towards a wider utilization of new technology also has appeared to be strong and persistent among professional care workers, according to the authors. In contrast to previous Spanish studies, Deusdad and Riccò now present that care professionals' attitudes toward the digitalization of administrative processes have changed.

Drawing from their recently collected focus group responses and semistructured individual interviews, the authors indicate that earlier digitalization projects in the Spanish care sector were partial and insufficient, thereby increasing care workers' workloads and anxiety. However, a new, more comprehensive, and wisely-designed digitalization process of long-care services was seen as a way to relieve workers' burdens and to facilitate clients' claiming of services.

DISCUSSION AND CONCLUSIONS

As social circles typically shrink when people get old, gerontologists argue that older people would prefer using their time on socially meaningful activities and less on learning new things and skills (Carstensen, Isaacowitz, & Charles, 1999). In contrast, in the field of human–technology studies, the general, but strongly held, perspective is that older people in particular would benefit from using ICTs, social media, and other digital technologies—for a variety of reasons. This supposed great potential is validated by referring to, for instance, the evidence of positive effects of ICT use on older people's physical and mental well-being, as well as lower levels of social isolation (e.g., Delello & McWhorter, 2017; Sims, Reed & Carr, 2017). Another presumption behind this argument is that more intuitive technologies require less learning and skills updating, and hence seem particularly suitable for older people.

This special issue makes a couple of important contributions to this ongoing debate: analyzing a wealth of new technologies used by or targeted at older people while simultaneously recognizing the potential impacts of aged heterogeneity. First of all, it seems that allegedly increasingly intuitive user interfaces have not, at least to date, significantly decreased the need for external help in ICT usage. Even the most skilled and experienced older technology users need help with the rapidly regenerating and novel devices and applications. The studies also have clarified that generational experiences (see also, Haddon, 2018) and earlier personal encounters with then-new technology shape the ways in and the extents to which new technologies are appropriated and used in old age. Besides a relatively high diversity in their digital skills and actual use of digital technology, older people's perception of what is intuitive, acceptable, and appropriate with respect to technology and its use differs from younger people. Bearing in mind that some older people's unwillingness to accept new technologies is associated with the potential loss of agency and autonomy, it is obvious that the aged heterogeneity and the particularities of old age as a stage of life are still insufficiently incorporated into the design of digital technologies and applications.

Intuitive interfaces have accommodated much of the digital development over the past decades by providing easy access to various ICTs, thus democratizing the ways people generally incorporate the digital world into their everyday lives, and vice versa, meaning how the needs and demands emerging from everyday life situations are reflected in the development of technology. Although heterogeneity characterizes older people's stance on and needs for digital technologies, the fact remains that almost everybody, regardless of their age, struggles with ICTs at some point in their lives. In this light, it is also intriguing to see what happens to Bakardjieva's (2005) original notion of the warm experts in the future: How long are the warm experts needed in the context of digital technologies and applications and in what capacity. As the articles in this special issue indicate, the development of digital

technologies remains a work in progress, at its best, yet continually must be made intelligible and meaningful to many of the elderly people. Thus, more insight is needed into how older people experience ICTs as a part of their everyday lives and well-being, not just as a distinctively heterogeneous group but particularly in terms of how elderly people themselves choose to participate in the digital era.

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