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## Editorial: Exploring the Technological Needs of Older Adults: Advances in Design, Functionality, User Experience, and Age-Related Cognitive and Sensory Aids to Facilitate Adoption

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# Editorial: Exploring the technological needs of older adults: Advances in design, functionality, user experience, and age-related cognitive and sensory aids to facilitate adoption

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## Editorial on the Research Topic

Exploring the technological needs of older adults: Advances in design, functionality, user experience, and age-related cognitive and sensory aids to facilitate adoption

## Introduction

The rapid advancements in artificial intelligence, robotics, communication, and automation have been the catalyst for the development of a host of new technologies that allow older users to monitor their own health (*via* wearables), maintain their independence (semi-autonomous driving), social connections (smart home devices), and compensate for a range of age-related sensory changes (hearing aids, smart glasses, augmented displays, etc.). Less well understood is how older users get acquainted with these innovations, how their design and functionality need to be adapted to improve older users' performance and experience, and which factors and interventions help or hinder technology adoption and use by older users. This Research Topic aims at providing some further insights into these issues.

The impact of age and gender on the understanding and acceptance of vehicle automation, whose positive impact is known to increase as drivers grow older, is analyzed by Greenwood and Baldwin in "Preferred Sources of Information, Knowledge, and Acceptance of Automated Vehicle Systems: Effects of Gender and Age." The study concludes that older adults are significantly less willing to adopt vehicle automation, and

the willingness is also lower in females. To increase the acceptance of this technology older adults prefer vehicle automation information to come from more objective sources than their younger counterparts, and they consider driving safety to be their primary concern.

Familiarizing engineers and industrial designers with the needs and capabilities of older adult users is essential if technology is going to be assessable to a broader population of users. The paper by Schmidt et al. titled “Aging Means to Me... That I Feel Lonely More Often? An Experimental Study on the Effects of Age Simulation Regarding Views on Aging” investigates the use of an age simulation suit (ASS) intervention to increase empathy and awareness of age-related changes and age stereotypes. Their findings show that participants emerged with more negative expectations regarding the impact of aging on socialization and the ability to learn new things. However, their age stereotypes did not change from pre- to post-assessment. With respect to desired support through technology, overall acceptance increased in the household domain after the intervention. Interestingly, adults that experienced higher difficulties to perform during the geriatric assessments while wearing the ASS reported a higher openness to being supported by intelligent assistive devices.

The paper by Jiang et al. titled “A Library of Old Photos Supporting Conversation of Two Generations Serving Reminiscence Therapy” provides insight into the design and impact of resources used in therapies aimed at preventing and improving depression and neurocognitive disorders, which in some societies affect more than 20% of adults aged 60 or over. In their paper, the authors explore the emotional impact of using different types of public old photos to foster the communication between older people and younger volunteers. The data shows that choosing the right type of photo impacts the effectiveness of the therapy, and that using photos related to topics of interest for both caregivers and older adults provokes more fluent conversations that increase the pleasure experienced by older adults while recalling their experiences and unforgettable memories.

Finally, given the increasing impact of Information and communication technologies (ICT) on the wellbeing of older adults, there is an increasing need to bridge the digital divide within the older generation, with a particular focus set on users with intellectual disabilities. Design of technology should address the potential general barriers to the adoption of apps and technologies. In the paper by Harris et al. titled “Older Adults and Smart Technology: Facilitators and Barriers to Use” the authors identify ignorance of technological features and the cost of smart technologies as commonly cited barriers to using smart technologies. Non-users of technology cited a lack of knowledge of the features and privacy as their main concerns. On the other hand, use was facilitated by perceived usefulness, perceived ease of use and factors such

as instruction support. This instructional support and how to communicate effectively with the older user population is addressed in the paper by Schlomann et al. titled “How Older Adults Learn ICT-Guided and Self-Regulated Learning in Individuals With and Without Disabilities.” The authors report that older adults prefer personal explanation in a one-to-one setting, followed by reading manuals or videos. Individuals with learning disabilities rely more on guided learning with person assistance.

In summary, the collection of articles in this Research Topic shows how the characteristics of the older adult population generate user experiences that are often different from those of younger populations. Only the inclusion of this population in all processes, from the design and testing of resources, software, or interventions, to the selection of communication channels and the definition of messages, will guarantee that the digital divide is reduced and enable them to benefit from the potential advantages of new technologies, thus contributing to creating a fairer and more equitable society.

## Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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## Conflict of interest

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