

Assisted Living Systems: Human Factors Considerations

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Abstract. Although many older adults wish to live independently, remaining in their own homes as long as possible, they may face obstacles such as transportation issues, social isolation, upkeep of the home, and increasing in-home care costs, which prevent them from doing so. The use of technology within the home, through technology-based assisted living systems, has the potential to alleviate some of these obstacles. Incorporating human factors principles to maximize safety, efficiency, and usability is key to the development of these systems.

Keywords: older adults, aging in place, human factors, assisted living systems

1 Introduction

The need for assisted living systems stems partially from the desire of older individuals to “age in place.” That is, rather than living in institutionalized settings, many older adults prefer to live independently, remaining within their own homes as long as possible. In fact, the majority of seniors who live in their own homes are disinclined to move, and this disinclination often increases with age.

Nevertheless, there are numerous obstacles which can prevent individuals from remaining within their homes, such as transportation issues, social isolation, upkeep of the home, and increasing in-home care costs. The use of technology within the home has the potential to alleviate some of these obstacles therefore allowing for successful aging in place.

2 Human Factors and the Home Environment

The field of human factors investigates user capabilities and limitations in order to enhance performance, increase safety, and increase user satisfaction [1]. Applying human factors principles to assisted living systems will result in the study of the behaviors, skills, and knowledge of aging individuals in order to maximize their safety and efficiency with the use of technological systems. In addition to studying aging individuals, it will be critical for the success of assisted living systems to consider other users, including medical professionals, caregivers, engineers, programmers, insurance companies, telecommunications, and sensor companies.

One important consideration for future research is the amount of exposure aging individuals need and want to technology. We already know that users can be successful using complex systems without understanding how they work. For example, a driver can successfully operate a motor vehicle without understanding how the engine works. Moreover, as technology in vehicles increases, the proportion of drivers who maintain their own vehicle decreases. Similarly, when dealing with technology within the home environment, it may be appropriate and even beneficial to hide the technology from the user. The interfaces seniors interact with, however, must adhere to usability principles and be easy to learn, easy to remember, efficient to use, and subjectively pleasing to the user while having few errors [2].

3 Future Issues

In order for researchers and companies across the globe to make use of developing technologies, standard training and implementation protocols must be available. Developing these protocols for new technology-based assisted living systems may include a calibration process to ensure accurate detection of behaviors such as sitting, standing, carrying groceries, or picking up items off of the floor. Additionally, standardized protocols must allow for implementation by users with different levels of functional independence and different cultural backgrounds. As these assisted living systems emerge, human factors experts must be involved in their development and standardization to ensure usability of these developing systems.

References

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