POSTER

Late Breaker

L.J. PHILLIPS, M.E. BOWEN. Technology-enhanced adaptive living space for aging-in-place research, education, and patient care. Gerontechnology 2018;17(Suppl):187s; https://doi.org/10.4017/gt.2018.17.s.182.00

Purpose The University of Delaware's STAR (Science, Technology and Advanced Research) Tower features an apartment simulation and adjoining laboratory within the Interprofessional Education Simulation Center, is intended for use by educators, researchers, students, and healthcare professionals. This simulated home environment offers observational windows and state-of-the-art objective tracking and assessment technology to support experiential learning experiences and health status research. **Methods** The apartment (*Figure 1*) contains living, dining, and sleeping areas, a fully equipped kitchen, and a standard apartment bathroom; it is furnished with a kitchen table and four chairs (two with and two without arms), two living room arm chairs, a sofa, a coffee table, and a twin bed (mattress and box spring). Our adaptive apartment, designed from our combined experiences in other Smart Home environments including the Department of Veterans Affairs and TigerPlace[1,2,3], will use low and high technologies to: (1) Assess the ability of older adults, some with visual and hearing impairments, to live independently; (2) Identify potential safety hazards; and (3) Develop interventions to delay/prevent formal health care service use. We will focus on the performance of instrumental and basic activities of daily living (IADL/ADL) and assess gait quality (e.g., gait speed) and balance ability while performing prompted complex tasks in the apartment and adjoining laboratory. For these purposes, the spaces will include a combination of the latest real-time tracking (e.g., Ubisense UWB RFID, Centrak Second Generation Infrared (Gen2IR™)) and other technologies (e.g., force platforms, and sensor-embedded walkways) for continuous and objective assessment. These systems will also be used to analyze activity patterns and speed of task performance, one indicator of cognitive function in older adults[4]. The dedicated observation room will allow researchers, faculty, students, and clinicians to observe performance during naturalistic IADL/ADL testing, and with permission, collect video recordings of the test activities for later viewing, coding, and further evaluation. **Results & Discussion** By identifying deficits in functional task performance in this population, both low and high technology solutions can be applied and evaluated. For example, as a complex IADL that may be challenging for persons with low vision or cognitive impairment, medication management might be supported with Voice First technology (i.e., Amazon Echo)[5] medication instruction and reminders – "time to take one pill from the green bottle." For persons with low vision, we will evaluate performance of food preparation activities in the kitchen (used to assess safety) and grooming activities in the bathroom (IADL), under different lighting conditions. The Internet of Things now provides an infrastructure for our team to design and test sensor combinations (e.g., motion, proximity, light) to individualize the Smart Home environment for older adults.

References

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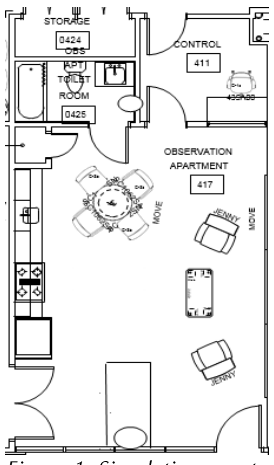

Figure 1. Simulation apartment

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