Designing video chat for social engagement in older adults with and without mild cognitive impairment

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Purpose The high prevalence of social isolation among older adults with normal cognition, as well as those experiencing Mild Cognitive Impairment (MCI), has been linked to detrimental health outcomes (Holt-Lundstad, Smith, Baker, Harris & Stephenson, 2015). Social engagement video technologies provide novel opportunities for social interaction that can help reduce the feelings of social isolation and positively impact health and quality of life (Chopik, 2016; Czaja, Boot, Charness, Rogers & Sharit, 2018). However, these technologies are rarely designed to accommodate the interests, capabilities, and concerns of older adults. The three main objectives of this study were to (i) understand the preferences of and attitudes toward an online video chat system called OneClick among older adults with and without MCI, (ii) evaluate and redesign this system to meet the needs of older adults, and (iii) explore the social engagement benefits of the updated OneClick system in an experiential field trial. **Method** First, 15 older adults (10 cognitively normal, 5 with MCI) viewed a demonstration of the OneClick system and were interviewed about their preferences for topics, people, and group size when using OneClick, as well as their attitudes toward the usability and usefulness of the system. The System Usability Scale (SUS) was used to validate the interview results. Second, heuristic evaluations were completed to identify usability problems with the system through the lens of older adults in general and those with MCI in particular. The system was updated based on the participant feedback and problems identified in heuristic evaluations. Four participants (2 cognitively normal, 2 with MCI) then interacted with the updated system and completed interviews and surveys about using the system. Third, 13 older adults (8 cognitively normal, 5 with MCI) completed a four-week experiential field trial using OneClick for social engagement. Pre and post questionnaires, including SUS, UCLA Loneliness, Quality of Life, and Friendship scales assessed outcomes, and a structured interview assessed attitudes. **Results & Discussion** Participants were open to meeting new people of all ages. Their three favorite topics were books, health, and family. Their ideal group size was between 3 to 6 people. Their attitudes toward the system were positive, as they perceived the system as easy to use and useful for social engagement, which was supported by high SUS scores. Heuristic analyses revealed 54 usability issues of the system, of which 41 major issues were addressed during redesign. Older adults who evaluated the redesigned system gave it high SUS scores. In the field trial, individuals with MCI had more technical issues and required additional assistance to use the system. Nevertheless, pre to post comparisons of questionnaire data revealed positive changes for the Quality of Life, Friendship, and Loneliness scales. In conclusion, this work demonstrates that social engagement technology has potential to benefit social health and quality of life among older adults with and without MCI. With consideration of usability issues, preferences, and instructional support needs of older adults, especially those with MCI, such technologies can be effectively used at home.

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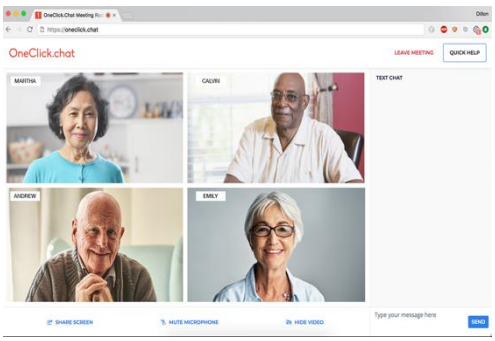

Figure 1. OneClick video chat system