

D.I. MILLER, C. MESSIER, M. GAGNON, V. TALBOT. *Making interactive voice response systems friendlier to older people. Gerontechnology 2010;9(2):232; doi:10.4017/gt.2010.09.02.259.00* **Purpose** Interactive voice response systems (IVR) use computer-based, voice recognition and software algorithms to conduct human/computer interactions. In the recent years, there has been a proliferation of IVR to provide a number of services from business to health care. In the context of health care, IVR systems have the potential to improve efficiency and maximize the use of health care resources¹⁻⁵. However, a survey examining people's attitudes towards these systems found that older people dislike interacting with IVR systems⁶. The only study examining older people's ability to interact with these systems, found that older people have more difficulties using these systems compared to younger people, and are at a disadvantage when attempting to use IVR provided services⁷. Many of the difficulties that seniors experience when interacting with IVR systems appear to be due to cognitive changes associated with aging (e.g. less efficient working memory and slower information processing)⁷. The goal of this project was to maximize the use and usability of IVR systems for older people. The study is a collaboration between TelAsk Technologies and researchers at the University of Ottawa specialized in neuropsychology of aging. **Method** The main objective of this project was to design a short IVR program (IVR-COG) to evaluate verbal abilities and working memory, and integrate adaptive algorithms. The results of the IVR-COG would subsequently be used to triage callers into one of three IVR protocols that provide a better match with older people's cognitive abilities. We adapted two neuropsychological tests for an IVR presentation and scoring (a version of the Animal Naming Task and the Digit Span). Prior to undertaking the two cognitive tests, callers were also provided with the option to adjust the volume and the speed of the conversation. The IVR-COG was presented to adults, aged 65 and older (mean 71.1 sd= 5.2) and the results from the focus groups were used to improve the subsequent version of the IVR-COG. In addition to the IVR-COG, we also evaluated participants' perceptions and experiences with IVR systems in general. Finally, preferences for voice characteristics of the IVR system were examined. **Results & Discussion** Frequency and Chi square analyses were performed on the focus group data. 92% of participants reported that they found the opportunity to adjust the volume and the speed of the conversation useful ($p < 0.5$, $\chi^2 = 18.6$, $df = 1$). Participants reported that they would be willing to spend the time needed to take the IVR-COG if this would make their interaction with the IVR system easier; 44% of participants indicated that they would be willing to take the test every time they call a system and 25% reported that they would like to be given the option to take or not to take the test. Concerning participants' preferences about the demographic and other characteristics of the voices they are interacting with, the only significant variable was the clarity of the voice that they are speaking to.

References

1. Forster AJ, Walraven C van. Using an interactive voice response system to improve patient safety following hospital discharge. *Journal of Evaluation in Clinical Practice* 2007;13(3):346-351
2. Heisler M, Halasyamani L, Resnicow K, Neaton M, Shanahan J, Brown S, Piette J. "I am not alone": the feasibility and acceptability of interactive voice response-facilitated telephone peer support among older adults with heart failure. *Congestive Heart Fail* 2007;13(3):149-157
3. Estabrooks PA, Smith-Ray RL. Piloting a behavioral intervention delivered through interactive voice response telephone messages to promote weight loss in a pre-diabetic population. *Patient Education and Counseling* 2008;72(1):34-41
4. Greist JH, Marks IM, Baer L, Kobak KA, Wenzel KW, Hirsch MJ, Mantle JM. Behavior therapy for obsessive-compulsive disorder guided by a computer or by a clinician compared with relaxation as a control. *Journal of Clinical Psychiatry* 2002;63(2):138-145
5. Greist JH, Mundt JC, Kobak K. Factors contributing to failed trials of new agents: can technology prevent some problems? *Journal of Clinical Psychiatry* 2002;63(2):8-13
6. Katz MJ, Aspden P, Reich WA. Public attitudes toward voice-based electronic messaging technologies in the United States: A national survey of opinions about voice response units and telephone answering machines. *Behaviour & Information Technology* 1997;16(3):125-144
7. Dulude L. Automated telephone answering systems and aging. *Behaviour & Information Technology* 2002;21(3): 71-184

Keywords: interactive voice response, memory, attention

Address: University of Ottawa, Canada; E: dmill049@uottawa.ca