

Y.H. Wu, V. FAUCOUNAU, C. GRANATA, S. BOESPFLUG, M. RIGUET, M. PINO, M. CHETOUANI, A.S. RIGAUD. *Personal service robot for the elderly in home: A preliminary experiment of human-robot interaction. Gerontechnology 2010;9(2):260*; doi:10.4017/gt.2010.09.02.284.00

**Purpose** Robotics become increasingly important as a means of supporting frail older people by providing monitoring, mobility aids, information and companionship<sup>1,2</sup>. The 'Robodom' project aims to develop a personal service robot to support elderly with cognitive impairment living independently in their homes. In order to ensure the appropriateness of the design of this kind of robot, a prototype is deployed to the targeted end-users, and will be refined by involving the users. This study presents a preliminary experiment in a hospital setting demonstrating and examining some features of the prototype. In this scenario-based testing, we want to evaluate: (i) The comfortable distance between the user and the robot. (ii) The acceptance of speech interaction. (iii) The desired appearance of a personal service robot. **Method** The companion robot 'RobuLAB-10' is tested. It is designed by Robosoft<sup>3</sup> for cognitive assistance to elderly people living at home. It is composed of a mobile platform and an upper module that embeds a tablet PC (used for voice interaction) and an IP camera (used for video-conferencing and the remote control of the robot). It is capable of speech and basic conversation. Twenty-two subjects (F=14, M=8; MMSE4=19-30; age=66-88 years), were recruited from the Memory Clinic of Broca hospital. After being informed and having signed the consent form, they were invited to interact individually with the robot. The teleoperated robot came to the user and asked some questions (about user's name, his day schedule, the weather ...). After this, it asked the user to sit down around a table, to take a glass and pose it on the robot. Finally, the user and the robot returned to the starting point. After the session, subjects completed a questionnaire with open-ended and close-ended questions (4-point Likert scale) concerning (i) desired appearance of the robot, (ii) their appreciation of its movement and its language capacity, (iii) their level of excitement of this experience and (iv) their perception of the robot as a companion. **Results & Discussion** Most of the subjects were satisfied with their interaction with this prototype. They found it stimulating and were willing to participate in other experiences (Table 1). As to desired appearance of the robot: 8 subjects would like it to resemble a machine. Two of them said "the robot is a machine; it has to remain like a machine." On the other hand, 6 subjects would like it to be humanoid. Concerning their perception of the robot as companion, most subjects considered the robot useful for elderly who live alone. Positive results emerged for the prototype as a personal service robot with the elderly.

**References**

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**Keywords:** human-robot interaction, personal service robot, assistive robot

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*Table 1: attitude toward features of the prototype (%)*

| Question  | Very bad<br>Strongly<br>disagree | Bad<br>Disagree | Good<br>Agree | Very good<br>Strongly<br>Agree |
|---|----------------------------------|-----------------|---------------|--------------------------------|
| How do you find the oral expression of the robot?                     | 0                                | 13.64           | 15            | 68.18                          |
| Are you satisfied with the oral comprehension of the robot?           | 4.76                             | 9.52            | 80.95         | 4.76                           |
| Are you satisfied about the distance between you and the robot?       | 0                                | 0               | 86.36         | 13.64                          |
| How do you find the movements of the robot?                           | 0                                | 9.09            | 86.36         | 4.55                           |
| Do you find the robot stimulating?                                    | 9.09                             | 18.18           | 72.73         | 0                              |
| Are you interested of participating in other experiences with robots? | 31.82                            | 9.09            | 50            | 9.09                           |