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Supporting medication intake of the elderly with robot technology

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SHORTEST SUMMARY

- RITA is a robot to assist the elderly in daily activities.
- We developed and evaluated an interface for RITA to remind elderly about medication intake on a touch screen.
- The main findings were:
  - users understood the interface
  - users were able to take medication with the touch screen support
  - many were unable to perform slightly more advanced functions
- The main conclusions / recommendations were:
  - interfaces should be as simple as possible
  - usability tests should be routine in developing health technology for the elderly

AIM OF THE STUDY

- To develop a robot interface to assist the elderly with their medication intake.
- To investigate whether the target group is willing to accept medication intake assistance from a robot

BACKGROUND

- Medication intake can prove to be a complicated task for the elderly.
- Roughly 50% of all prescribed medication is taken incorrectly (McLaughlin, et al, 2005)
- Simplification of this task might have beneficial effects on this group’s general health and society’s healthcare costs
- Together with Enacer Company we developed an assistive robot for the elderly, called RITA (the Reliable Interactive Table Assistant).

DESIGN PROCESS

Interviews with caregivers
Main result:
- it is especially important to check whether the elderly actually take their medication

Focus group of elderly
- feedback on the clarity of the design
- requirements analysis
Main result:
- Font size should be increased for optimal utility

Interface development
- The interface was developed in HTML5

User study
- Usability test of the interface on the touch screen
  - subjects were asked to perform a number of tasks related to the intake of medication
  - basic task: supervision of medication intake
  - more advanced functions: change settings
- Acceptance questionnaire

MAIN RESULTS OF USER STUDY

Usability test
- The majority of participants in this study (17 out of 19) were able to take their medication with assistance of the interface
- Participants found it difficult to work with more advanced interface settings
- setting notifications interval
- changing pharmacy’s contact details
- Pre-Study Usability Questionnaire (Likert 5-point scale)
  - Users rated usability positively
  - mean score of 3.9 (between ‘Neutral’ and ‘Agree’)

Robot Acceptance
- Robot Acceptance Questionnaire (Likert 5-point scale)
  - User accepted help from the robot
  - mean score of 3.5 (‘Neutral’)

CONCLUSIONS & RECOMMENDATIONS

Conclusion
- The basic functionality of the interface was easy to use for the elderly for assistance with the medication intake task
- Elderly are willing to accept assistance of a robot with this task

Recommendations
- Interfaces for the elderly should really be as simple as possible
- Testing of usability aspects during the design process is vital for a well-designed robot

REFERENCES