

Can robots contribute to improving quality of life for elderly with dementia?

Y. Saito, M. Osaka, N. Ishiguro, T. Yamaguchi, M. Kaneda, M. Azuma, F. Nakamura, B. Kim, J. Shimaya, Y. Yoshikawa

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Purpose To clarify whether working memory (Osaka, 2016; Osaka, 2003) of elderly people with dementia can be activated by playing games with a communication robot. To examine if their quality of life (Ishiguro, 2018) can be improved as a result. **Method** [Subjects] The subjects were 5 elderly persons with dementia who live in a residential home in Kobe, Japan (3 females and 2 males, 77-93 years old). Their Daily Life Independence Level of Elderly with Handicap (Netakiri-do) is from "A1" to "A2" and their Daily Life Independence Level of People with Dementia (Ninchisho-do) were from "IIa" to "IIIb". [Robot] "CommU" (Figure 1) is a communication robot which was produced by JST ERATO Ishiguro Symbiotic Human-Robot Interaction project (by Professor Hiroshi Ishiguro, Osaka Univ.) and Vstone Co.Ltd.. "CommU" can talk by remote controlled operation. "CommU" can show some human-like movement and emotions. [Procedure] We ran a game (Rock-Paper-Scissors) using "CommU" 6 times in total over a two-month period. The game lasted 15-20 minutes per session. [Assessment] (1) Listening Span Test (LST) (Osaka & Osaka, 1992). LST, developed by Osaka and Osaka (1992), was used as an assessment tool to measure the working memory capacity. LST was conducted before and after each experiment. (2) Interview and observation. The subjects were asked some short questions about their feelings after each experiment. Short interviews for the staff were conducted as well. This research was approved by the Research Ethics Board of Department of Sociology of Human Sciences at Osaka University (No.2017037). **Results and discussion** We found no indication of working memory improvement. The experiment period and the way of conduct LST for dementia elderly should be developed. On the other hand, we observed some positive behaviors among the subjects (e.g. deep concentration on the game, talking actively with the robot, smiling more than usual). Further analysis of those behaviors and the result of the staff interviews are necessary to investigate more the effects of the intervention.

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Address: NiCT and Osaka University, JAPAN;

Email: ysaito@hus.osaka-u.ac.jp



Figure1. Communication Robot CommU"