PAPER

Social Robotics

K. ISHIHARA, S. ISHIHARA. A talking teddy bear for encouraging the elderly to talk with back-channeling. Gerontechnology 2018;17(Suppl):122s; https://doi.org/10.4017/gt.2018.17.s.118.00 **Purpose** The elderly people who live alone is continue to increase in Japan. The population exceeded 590 million in 2015[1]. The purpose of this study is to find a way to offer such people opportunities to make conversations. **Method** (1) Talking Teddy Bear (*Figure 1*): The authors produced a talking Teddy bear who makes back channeling in a local dialect to encourage the speaker to continue. Talking in dialect can be used for communication robots to draw friendly response from human users[2]. Back channeling is characteristic in Japanese conversation. Coordinated back channeling works as the social bond between the speaker and the listener rather than the content of conversation[3]. The authors implemented the back-channeling by using *HEARTalk*™ (Yamaha, Corp., Japan) which does not analyze the contents but the rhythm or prosody of the speech in real time and choose a message for natural response[4]. The authors used the length and the intonation of the speech for the analysis to choose a response message. Seventeen back-channeling messages were chosen from seven categories, affirmation, agreement, consensus, sympathy, surprise, praise, and promotion to the next step, which are popular in Japanese communication skills[5]. Four responses were used to ask the speaker back when the voice was not loud enough. All messages were recorded voice of a native male speaker in Hiroshima dialects who was around 60 years old. The responses were given by the Teddy bear, *Himitsu no Kuma-chan* (Mysterious Teddy bear) (T-ARTS Company, Ltd., Japan) who waggles his head during the speech. (2) Trial by an elderly woman: A woman who was in 70s of age living alone in Hiroshima prefecture participated in the trial. She had been talkative in her family since she suddenly lost her partner three months ago, then she spends some days in silence. The researches asked her to continue the conversations with the talking Teddy bear as long as she could, although it would or not give responses in expected way. **Results & Discussion** The participant welcomed the Teddy bear. She was glad at the bear's voice in a familiar dialect and interested in managing the conversation with coping with Teddy's responses in both expected and unexpected way. After succeeded to continue the session for about two minutes, she pleased with saying "We achieved to play catch with talking!" Many of the communication robots used in nursing care facilities such as *Pepper* (Softbank Robotics), *Robi* (Deagostini Japan), *Kabo-chan* (Pip Robot Technology) play leading roles in urging older users, who need to be gave care, to activities, e.g. exercising, activities, or urging to take medicine. The method proposed here is different approach in that the robot encourage the user has a leading role in managing the conversation. The participant liked to speak the daily occurrence to the Teddy for both mental and oral exercise. The better effect is hoped than that living animal companion for the elderly person living alone.

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Figure 1. The Talking Teddy bear