Talking Ally: The effects of speech mode and interaction environment on perceptions of a social robot

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Introduction

Talking Ally is a robot developed in the Interaction & Communication Design Lab at Toyohashi University. When speaking to a person, Ally seeks to maintaining its audience’s attention by using filler words (“um”, “and”, “so”… etc.) and hesitation particularly when it cannot detect their eye contact. In the spring of 2016, Ally was brought to the R-House Laboratory at IUB to develop an English version prototype similar to the Japanese version. We ran an experiment after the development of the system in order to test how Ally’s hesitation and English utterance would affect people’s perception of it. Based on the previous research done in Japan, we hypothesized that people would perceive Ally under the hesitation condition as being more animate.

Method

Recruit Participants

35 participants were recruited in a public space at the Informatics Building.

Interact with Ally

Participants were asked to listen to Ally read a news article for any amount of time. They were placed in two conditions: 1) Ally would utter when it fails to properly detect the participant (N=19) 2) Ally would talk without interruption (N=16)

Take Survey

Participants took a survey consisting of twenty 7-point semantic differential items. The survey was to test people’s perception towards Talking Ally’s anthropomorphism, animacy, likeability and intelligence.

Results

Our research showed:
- No significant difference in animacy between the two conditions. (p=0.05)
- People viewed Ally as more intelligent (t(33)=3.142, p=0.004) when it talked without interruption (Figure1).

![Figure 1. Mean of perceived intelligence under two conditions](Image)

With hesitation

Without hesitation

Error bars indicate two times standard error.

Conclusion

The results from our study were not congruent with the ones found in the similar experiment done in Japan. We surmise this is largely due to the fact that in our experiment, Ally often failed to detect participants. This has two main causes:

1. Many participants’ heights were outside of Ally’s detection range.
2. Many participants did not apply social norms (standing distance, eye contact) when interacting with Ally. These factors affected Ally’s speech generation mechanism. Such problems were avoided in the experiment done in Japan because the participants were sitting rather than standing.

The results of this experiment indicate people did change their perceptions of the robot’s intelligence based on its speech cues. They also emphasize the importance of the designing of the space in which people interact with the robot. In situations where the robot has certain limitations or the people do not intuitively know how to interact with the robot, the environment should help suggest the way of interaction. For example, in this case, a simple placement of a chair in front of the robot would simultaneously work as an intuitive suggestion for the audience as to how he/she should interact with Ally, as well as a way for Ally to work around her height-detection limitations.

References
