Trust me if you can

Exploratory study on the effects of anthropomorphism in embodied social robots on self-disclosure of users in dyadic communication

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ABSTRACT

The field of affective computing is developing emotionally-aware agents with the assumption that in order for autonomous robots to truly enter the human social environment they need to adapt to human communication norms. This study explores the effect that humanoid and abstract design in a social robot has on the sense of trust and perception of anthropomorphism in users in dyadic interaction

CSS CONCEPTS

•Human-Robot Interaction • Robotic Interface Design • Human-centered computing • Affective Computing

KEYWORDS

Affective Computing, Human-Robot Interaction, Humanoid, Abstract Robots, Anthropomorphism

1 Introduction

While the studies connecting anthropomorphism in robots and intimacy suggest that more human-like design positively influences bonding and trust between the robot and the human, it is still unknown to what degree should the robot resemble a human, if any. Robot's design contributes to its perceived abilities, and a higher degree of human resemblance may create false expectations if the robot doesn't live up to them, which may negatively affect its likeability and impact trust the user has in the agent [1]. The experience of intimacy demands reciprocal self-disclosure in communication [2]. We wanted to figure out whether a more anthropomorphic design of an embodied social robot positively affects self-disclosure in human users in comparison to a more abstract design

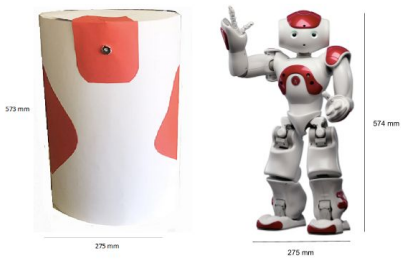

Figure 1: **Two conditions of the study: abstract MAO on the left, and fully anthropomorphic NAO on the right**

2 Experiment Design

To test our hypothesis, we conducted a between-subjects experiment with 42 participants. It consisted of a real-time face-to-face interview conducted by either an anthropomorphic robot NAO or an abstract robot MAO. We controlled the process remotely with a strict script, based on the Dyadic Disclosure Dialogue Model [3]. The robot would share personal information and prompt the user to reciprocate. After receiving the answer, it would respond with an appropriate comment, before moving on to the next, more personal self-disclosure and a question for the total of 11 cycles. Both robots employed a similar likable personality, biography, movements, and an identical androgynous voice. Pre and post-experiment questionnaires for participant information and perceptions of the encounter, based on Godspeed Series were employed [4].

3 Results and conclusion

Interactions were recorded, transcribed and rated by an independent judge for the depth of intimacy, based on the disclosure intimacy rating scale [5], participants' perception of anthropomorphism, animacy, and likeability was measured and analyzed. The independent samples t-test performed associated with a statistically insignificant effect $t(40) = -1.21$ $p = .231$. The results suggest that there was no significant difference between the abstract and anthropomorphic condition in the level of self-disclosure and the perception of anthropomorphism. Our results show that the humanoid design in robots may not always be the greatest choice for social interaction, on the contrary, a simpler, abstract design with the same context and the content of interaction derives a similar level of trust from users, with less effort to design the interaction.

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