
The Impact of A Humanlike Communication Medium on The Development of Intimate Human Relationship

Anomymous

Abstract

In this paper, we reports how a humanlike communication medium affects the development of human relationship. We examined changes in the relationship between persons when they interact with each other through humanlike communication media or mobile phones for about a month. The intimacy of their relationship was evaluated with the amount of self-disclosure. The result shows that a communication medium with humanlike appearance facilitates the development of intimate relationship even when it just has humanlike shape and other functions are the same as standard mobile phones. We also discuss a possible underlying mechanism of this effect from misattribution of a feeling caused by intimate distance with the medium to a conversation partner.

Author Keywords

Social presence; mediated social interaction; human relationship

ACM Classification Keywords

H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous

Introduction

Recent advance in ICT has provided diverse ways of communicating and developing personal relationship with oth-

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ers. This enables us to easily find a new friend or partner as well as to keep in touch with friends and family members. On the other hand, researchers have warned that mediated interaction attenuates human relations [5, 8, 3], compared with face-to-face interaction. One reason is that we do not feel a sense of sharing the same space with conversation partners who are in a distant location in mediated interaction.

We address this problem by using a humanlike robotic avatar representing a distant person as a communication medium since a physical entity allows people to feel a remote person [6]. As shown in the previous studies [9], such media promote good human relationship even when its humanlikeness is minimized. However, no study has been done to investigate how humanlike communication media affect the development of human relationship.

In this paper, we examine how people constructs relationship with unfamiliar person when they interact with each other through humanlike communication media or mobile phones for about a month. We report that a humanlike communication medium facilitates the construction of good relationship with unfamiliar person even when it is equivalent to a mobile phone except that it has soft body with humanlike appearance.

A handheld robotic medium: Elfoid

Elfoid has been developed as a cellular phone that conveys a distant person's presence [2]. Its main feature is its humanlike shape: humanlike head, arms, and legs but no hands and feet. Its skin is fashioned from sponge to resemble and feel like human skin. While the original version of Elfoid was developed as a replacement of a cellular phone, we used mobile-phone cover in the shape of Elfoid to make



Figure 1: Elfoid. People talk with each other on hands-free mode

all functions equivalent to a mobile phone except for softness and humanlike appearance (Figure 1).

Experiment

Twelve people participated in the experiment (4 males, mean age 22.5 years). We separated them into two groups each of which consists of 3 pairs (a male-female pair and two female-female pairs): the Elfoid group, whose pairs talked with each other through Elfoid in separate rooms, and the Mobile-phone group, whose pairs talked through mobile phones. It was confirmed that each pair neither know nor meet each other during the experiment. We asked the participants to have 10-minute conversation with the same partner twice a week. The conversation topic was not limited except that they cannot ask their partner's name, religious belief, and political affiliation. In total, they had ten conversations for about one month.

To investigate the development of intimate relationship between pairs, we focused on self-disclosure, which means that one person reveals information about himself or herself to another, since people develop intimate relationship with others through the exchange of personal information about them [7]. We evaluated the amount of self-disclosure

presented in conversation based on self-disclosure scale developed by Niwa and Maruno [4].

Result

We counted the amount of self-disclosure through all conversations of each participant and compared it between groups. The result with Welch's t-test showed that participants in Elfoid group talked about more personal information than ones in Mobile-phone group ($t(5) = 2.91, p < .05$) as depicted in Figure 2.

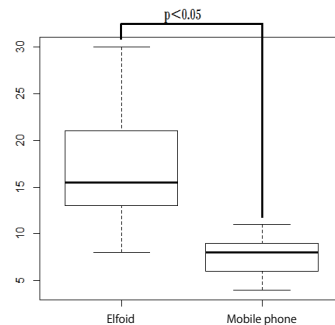


Figure 2: The average amount of self-disclosure

Discussion and Conclusion

The result shows that a communication medium with humanlike appearance facilitates the development of intimate relationship even when it just has humanlike shape and other functions are the same as standard mobile phones. Furthermore, we also find that intimate relationship might develops with increase-decrease cycle of the amount of disclosure and Elfoid accelerates this cycle. Why does humanlike features cause the significant difference? As an possible reason, we point out that the situation of talking through

Elfoid with holding it is similar to face-to-face intimate interaction. Research on proxemics has suggested that interpersonal distance represents human relationship [1]. People who used Elfoid might feel as if Elfoid is their conversation partners and an affinity with the partners because Elfoid is within their intimate distance. We will investigate whether such misattribution to the partner happens as a future work.

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References

- [1] E.T. Hall. 1966. The hidden dimension. (1966).
- [2] T. Minato, H. Sumioka, S. Nishio, and H. Ishiguro. 2012. Studying the Influence of Handheld Robotic Media on Social Communications. In *the RO-MAN 2012 workshop on social robotic telepresence*. 15–16.
- [3] K. Murase. 2006. Distance Counseling, Counseling Approaches, and State Anxiety. *The Japanese Journal of Personality* 14, 3 (2006), 324–326. in Japanese.
- [4] S. Niwa and S. Maruno. 2010. Development of a Scale to Assess the Depth of Self-disclosure. *The Japanese Journal of Personality* 18, 3 (2010), 196–209. in Japanese.
- [5] C. O'Malley, S. Langton, A. Anderson, G. Doherty-Sneddon, and V. Bruce. 1996. Comparison of face-to-face and video-mediated interaction. *Interacting with computers* 8, 2 (1996), 177–192.
- [6] E. Paulos and J. Canny. 2001. Social tele-embodiment: Understanding presence. *Autonomous Robots* 11, 1 (2001), 87–95.
- [7] T.H. Reis, P. Shaver, and others. 1988. Intimacy as an

interpersonal process. *Handbook of personal relationships* 24, 3 (1988), 367–389.

- [8] G.M. Stephenson, K. Ayling, and D.R. Rutter. 1976. The role of visual communication in social exchange. *British Journal of Social and Clinical Psychology* 15, 2 (1976), 113–120.

- [9] Hidenobu Sumioka, Shuichi Nishio, Takashi Minato, Ryuji Yamazaki, and Hiroshi Ishiguro. 2014. Minimal human design approach for sonzai-kan media: investigation of a feeling of human presence. *Cognitive Computation* 6, 4 (2014), 760–774.