音声ユーザーインターフェースによる共感的応答の状況的妥当性の重要性

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Importance of Situational Adequateness of Empathic Responses by Voice User Interfaces

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1. Introduction

Many companies have started to introduce voice-user-interfaces (VUI) to handle basic customer requests. VUI can be cost effective but customers will only accept VUI's that can communicate in a natural and social way. Goal of this study was to examine whether affective responses expressing empathy by a VUI increases the feeling of being understood and acknowledged in a service setting. Special emphasize was given to the situational adequateness of empathic responses.

In interpersonal relations empathy plays a crucial part. In this context, empathy is defined as the ability to understand the emotional situation of the conversation partner [1]. Empathy develops during the entire interaction and includes not only the expression of emotions, but also feedback on having understood the emotional situation of the communication partner [2]. It is believed that the relationship building component of empathy can be beneficial for the interaction with conversational agents. In a previous study Urakami [3] examined users' perception of empathic expressions of a VUI that acted as a service agent. The results of this study showed that a VUI whose behaviour was perceived as empathic received higher scores in terms of joy of interaction, intrinsic motivation and intention to use. However, empathy evolves in the complex interplay between interaction partners and their environment. Thus empathy is an interactive social process that develops dynamically in an iterative process of feedback cycles and subsequent adjustment in response to this feedback [4]. Furthermore, perception of empathy depends not only on received feedback per se, but also on the relationship between interaction partners and the sensitivity and appropriateness of empathic expressions in a specific social context [5]. The goal of the study reported here was to examine how important the situational adequateness of empathic responses by a VUI is for user. In an experimental setting participants rated three

different types of sentences that were either non-empathic, empathic non-situational and empathic situational according to perceived empathy. We expected that situational appropriateness of empathic expressions would be an important factor for the evaluation of the VUI.

2. Method

Participants. 29 students (16 female, 12 male, 1 not specified) of Keio University participated in this study. Students' age ranged from 19 till 27 years old with an average age of 22.

Material. Students evaluated 23 different sentences varying in the degree of expressing empathy: 1) non-empathic; 2) empathic non-situational (empathic expressions not related to the situation) and 3) empathic situational (empathic expressions relevant to the situation). The sentences were generated using Google's text-to-speech tool (<https://cloud.google.com/text-to-speech>). Sentences were chosen from a previous study [6] and three raters evaluated the empathic sentences according to their situational adequateness. The sentences were created representing a scenario where a person lost an item and had to approach a conversational agent (the VUI) to clarify the situation.

Procedures. Participants had to imagine a situation in which they had lost an item. Participants listened to all the sentences and had to evaluate how well they felt understood or their feelings acknowledged by the expressions of the VUI on a 11-point Likert scale ranging from "0 - Feel not at all understood" till "10 - Feel fully understood". One session took about 20 minutes.

3. Results and Discussion

Participants' evaluation of sentences was assessed with a repeated measures ANOVA using sentence categories (non-empathic, empathic non-situational,

empathic situational) as independent variable. The results indicate that perceived empathy differed across sentence categories, $F(2, 56) = 164.94$, $p < .00$. Perceived empathy was evaluated highest for sentences category empathic situational, followed by empathic non-situational. The lowest evaluation was given to the non-empathic sentences (see Figure 1). Follow up pairwise comparisons with Bonferroni correction revealed that the differences between each sentence category was significant ($p < .00$ respectively) as indicated in Figure 1.

Fig. 1 Participants' evaluation of perceived empathy of non-empathic, empathic non-situational and empathic situational sentences (** $p < .00$)

The results suggest that participants were sensitive to the situational adequateness of expressions of empathy. Participants clearly distinguished between empathic and non-empathic expressions. Additionally, situational adequateness was valued positively. The results implicate that the situational context is an important factor for creating dialogs that express empathic behavior. It is not sufficient to include phrases in a dialog that might be commonly associated with expressions of empathy, but the context and situational dynamics of the interaction have to be considered as well. This might be challenging for automated agents that rely on set phrases and dialog patterns for specific types of interactions. Designers of VUI need to develop systems that are sensitive to the specific situation at hand and consider interaction dynamics to respond

adequately to customers' requests.

4. Conclusion

Expressions of empathy are believed to affect customers' perception of conversational agents in a positive way. To make VUI thoroughly empathic, expressions of empathy must be adapted to the situational dynamics of the interaction and need to be adequate to the specific situation at hand.

References

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