

Sex differences in the evaluation of and communication with conversational agents

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Knowledge about user profiles and preferences plays an important role in the design of conversational systems. Especially in internet-based communication, user characteristics are largely unknown and need to be detected from cues in the ongoing textual interaction. Thus, the ability to identify certain characteristics of a communication partner based on textual cues is crucial, in order to support conversational agents and other interactive systems in adequately interpreting and managing the ongoing dialogue. In this respect, a better understanding of differences in female and male language use in dialogues is of interest for the development of artificial communication systems, both, in order to detect gender-specific features in online communication, and to adjust the interaction style and dialogue content of an autonomous conversational system to the user.

In order to investigate gender effects in web-based dialogues, we analysed dialogue data from chats with artificial communication systems. The communication context is comparable to a bar scenario: An artificial bartender and a human client talk with each other, and the bartender agent tries to engage the human in a conversation eliciting topics that positively or negatively affect the human communication partner. Data from two communication environments have been investigated. In the one, fully autonomous generation and Wizard-of-Oz-based generation of dialogue moves is combined with and without the display of affective facial expression. 35 participants (22 male, 13 female) of Swiss nationality took part in this virtual reality laboratory experiment. The other experiment took place in an ecological setting where the participants were free to log onto a web-based chat environment any time, from anywhere they wished to, and chatted with a bartender agent that shows positive, negative and neutral communication attitudes. 91 Polish participants (33 female, 58 male) took part in the web chat experiment. In both experiments, user input was purely text-based. Communication was in English, and the data used for evaluation stem from participants who had at least average communication skills in English.

Clear evidence was found that the affective stance (positive, negative, neutral attitude) expressed in the verbal dialogue contributions of the artificial agent influences how females as opposed to males evaluate the system and how they react in terms of language use, including wordiness, dialogue act classes and LIWC categories. Most gender-related differences were found when communicating with the negative system. On the contrary, very little to no differences were found in evaluation and language use when people communicated with the chat system displaying neutral to friendly communication attitude. The results emphasise the importance of investigating the effect specific features of artificial communicative agents have on male and female users. While some do not elicit different behavior in men and women, others significantly do. These findings are important preconditions for modelling and implementing socially aware and competent agents.