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Effects of “gender” of the computer on informational social influence: the moderating role of task type

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Abstract

The present experiment examined if and how “gender” of the computer, manifested in character representation, would affect its informational influence on individuals’ decisions on masculine (sports) or feminine (fashion) topics. In a 2 (participant’s gender) × 2 (character gender) × 2 (nature of topic: masculine vs. feminine) between-subjects experiment, participants played a trivia quiz game with the computer. During the game, they were given a chance to change their initial answer after seeing the computer’s answer, which they knew was not necessarily correct. Results supported the match-up hypothesis such that while the male computer elicited greater conformity on the masculine topic than on the feminine topic, the opposite was true for the female counterpart. In addition, men were less likely to yield to the computer’s suggestion than women on the masculine topic whereas women were less likely to succumb to the computer’s influence on the feminine topic. These findings are discussed in terms of the robustness of gender-stereotyping in human–computer interaction and the implications for Computers Are Social Actors paradigm.

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1. Introduction

Unreasonable as it may sound, recent research on human–computer interaction has demonstrated that people reveal gender stereotypical reactions to the computer

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when its “gender” is manifested in the voice output—both male and female users rated a female-voiced computer as more knowledgeable about love and relationships than a male-voiced computer whereas a male-voiced computer was rated as more knowledgeable about technical subjects than its female counterpart (Nass et al., 1997). Even when the computer uses a clearly machine-generated synthetic voice, as opposed to recorded human voices, this gender stereotyping seems to persist: The product descriptions delivered by a male-voiced computer were considered as more credible than those by a female-voiced computer (Morishima et al., 2001); a male-voiced computer was perceived to be more competent and trustworthy and furthermore, elicited greater conformity to its recommendations than the female counterpart did (Lee et al., 2000). Taken together, the findings are in line with previously documented gender differences in credibility perception and social influence (see Carli, 2001; Ridgeway, 2001, for reviews), thereby supporting the notion that people respond to computers as they do to real people, albeit not consciously so (Nass and Moon, 2000; Reeves and Nass, 1996).

The findings that people exhibit gender stereotypes in response to the inanimate and thus genderless machine appear to bespeak of the robustness of gender stereotypes as a frame of reference that influences the way people interpret and respond to various stimuli. Yet, when the gender is manipulated by means of computer-generated voices, the disadvantage of the female computer often evokes another seemingly plausible explanation: the difference in the synthesis quality between male and female voices. That is, despite continuous attempts to improve the quality of female synthetic voice, some typical vocal and prosodic characteristics of human female voice render it technically more difficult to produce a high-quality synthetic female voice, which in turn likely elicits less favorable evaluations of female synthesized voices (Mullennix et al., 2001). Although this account does not fully explain why women did not evaluate the female-voiced computer in more negative terms than the male-voiced counterpart as men did (Lee et al., 2000), it seems crucial to rule out this possibility to draw any meaningful conclusions about gender-typed reactions to the computer.

Another argument casting some doubt on the significance of the persistence of gender stereotypes in human–computer interaction stems from the strong cue value of voice as evidence of humanness. That is, given that speech is one of the most fundamental and unique indicators of humanness (Amalberti, 1993; Nass and Moon, 2000), one might argue that it is not surprising at all that the use of speech triggers expectations and attributions associated with human, thus encouraging social responses to the computer. Obviously, considering that synthesized speech, which clearly reminds the users of the asocial nature of interaction, elicited the same gendered responses as recorded human speech did, the claim that the too close resemblance between human and the computer is primarily responsible for the findings seems less convincing. Nevertheless, in order to illustrate the robustness of the gender-stereotyping in human–computer interaction, thus providing additional evidence for the Computers Are Social Actors (CASA) paradigm (Reeves and Nass, 1996), it seems to be in order to replicate the effects with the gender of the computer being operationalized in different modalities, presumably less “social” than voice.

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