

A Longitudinal Randomized Control Study of Companion Chatbot Use: Anthropomorphism and Its Mediating Role on Social Impacts

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Abstract

Relationships with social artificial intelligence (AI) agents are on the rise. Most notably, people are forming relationships with companion chatbots such as Replika, a type of social AI agent that people can converse with via text or voice chat. These Large Language Model (LLM) chatbots are designed for companionship, and people have reported forming friendships, mentorships, and romantic partnerships with them. Concerns that companion chatbots may harm or replace real human relationships have been raised, but whether and how these social consequences occur remains unclear. Prior research suggests that people's states of social need and their anthropomorphism of the AI agent may play a role in how human-AI interaction impacts human-human interaction. In this longitudinal study (N = 183), participants were randomly assigned to a chatbot condition (text chat with a companion chatbot) or to a control condition (engage in text-based word games) in which they engaged in their daily task at least 10 minutes a day for 21 consecutive days. Participants completed four surveys during the 21 days and engaged in audio recorded interviews on day 1 and 21. We investigated three primary questions. First, do daily interactions with a companion chatbot impact people's social health and human relationships? Second, do states of social need predict anthropomorphism of the chatbot? Third, does anthropomorphism of the chatbot predict human-human social impacts? We found that people's social health and relationships were not significantly impacted by companion chatbot interactions across 21 days of use. However, people who had a higher desire to socially connect, but not higher loneliness, anthropomorphized the chatbot more. Those who anthropomorphized the chatbot more indicated that the human-chatbot interaction had greater impacts on their social interactions and relationships with family and friends. Via a mediation analysis, our results suggest that the impact of human-AI interaction on human-human social outcomes is mediated by the extent to which people anthropomorphize the AI agent, which may be motivated by a desire to socially connect.

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R.G. and M.G. designed the study. R.G. collected and analyzed the data. R.G. and M.G. wrote the paper. The authors have no competing interests to declare.

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