Effects of AI Agent Anthropomorphism on Consumers' Affective, Cognitive, and Social Shopping Experiences

Sharmin Shoukat and Wi-Suk Kwon, Auburn University, USA

Background and Purpose. Artificial intelligence (AI) agents are increasingly adopted by retailers to assist customers during shopping in-store and online (Kwon et al., 2018). Anthropomorphic AI agents can appear human-like to users and influence human-AI agent interaction (Yang et al., 2021). AI agents' anthropomorphic design cues can be grouped into three dimensions: human identity, verbal cues, and nonverbal cues (Goetz et al., 2003; Seeger et al., 2021). These anthropomorphic design cues together can increase perceived anthropomorphism (Seeger et al., 2021). For example, human-like face and voice make more anthropomorphic AI agent and increase social response (Waytz et al., 2014). AI agents' anthropomorphic verbal and visual cues (Zhang & Rau, 2022), social characteristics (Chaves & Gerosa, 2021), and human identity and behavior (Goetz et al., 2003) may affect their perceived humanness and thus impact their interaction with users. Consumers' shopping experience consists of affective, cognitive, and social experiences (Barari et al., 2020). This conceptual paper seeks to conceptualize the relationships between AI agents' anthropomorphic cues and the three dimensions of consumers' shopping experiences.

Conceptual Framework and Propositions. In Figure 1, a conceptual model is proposed to link AI agents' anthropomorphism to consumers' shopping experiences. In this model, AI agent anthropomorphic cues, such as human identity, verbal cues, and non-verbal cues, are proposed to impact consumers' affective, cognitive, and social experiences during shopping. Social response theory posits that people might treat computers like social actors (Moon, 2000). AI agents' anthropomorphic representations can facilitate users' social responses, and a more knowledgeable or skilled AI agent indicated by their verbal and non-verbal communication cues may increase the perception of social presence (Guadagno et al., 2007), which in turn may drive users' affective, cognitive, and social experiences.

Agent Anthropomorphism and Affective Experience. The human-like visual representation of AI agent is positively correlated with customer satisfaction and is mediated by enjoyment, attitude, and trust that might increase consumer happiness (Klein & Martinez, 2022), which is a component of the affective experience. Users' pleasure can be increased when AI agents have the capacity to express particular emotions (Jiang et al., 2022). In addition, AI agents' social dialogue can increase the sense of connectedness (Waytz et al., 2014). Given

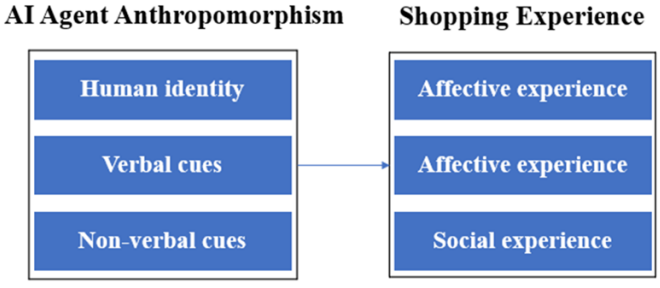

Figure 1. *A Conceptual Model of AI Agent Anthropomorphism and Shopping Experience*

this, we propose that **(Proposition 1)** AI agents' anthropomorphism enhances consumers' affective shopping experience.

Agent Anthropomorphism and Cognitive Experience. According to the technology acceptance model (Davis, 1989), the acceptability of information technology is predicted by perceptions of usefulness and ease of use. AI agents' anthropomorphic cues can enhance the perception of the agent' utility and efficacy. For example, an AI agents' demographic characteristics can systematically affect how people perceive its propensities and talents (Goetz et al., 2003), impacting the evaluation of its service excellence. AI agents' social dialogue might affect consumers' perception of their reliability (Cassell & Bickmore, 2003), while their gender and voice may impact their perception of their credibility, trust, and engagement (Siegel et al., 2009). Given this, we propose that **(Proposition 2)** AI agents' anthropomorphism enhances consumers' cognitive shopping experience.

Agent Anthropomorphism and Social Experience. AI agents' anthropomorphic cues may increase the perception of their utility as a social agent by increasing the user's sense of social connection to them (Epley et al., 2007). Anthropomorphism can reduce the gap between humans and AI agents and influence consumers' social experience. AI agents' anthropomorphism can often increase user engagement by making them feel more connected (Waytz et al., 2014). Given this, we propose that **(Proposition 3)** AI agents' anthropomorphism enhances consumers' social shopping experience.

Conclusion and Implications. This conceptual paper offers valuable insights into the relationships between AI agents' anthropomorphism and consumer shopping experiences. Empirical research is needed to delve into each proposition suggested in this paper to generate actionable recommendations for designing the anthropomorphic characteristics of an AI agent as a shopping companion. Further, future research could employ diverse theoretical approaches (e.g., social response theory, technology acceptance model, anthropomorphism theory) to address each proposition presented in this paper.

References

Barari, M., Ross, M., & Surachartkumtonkun, J. (2020). Negative and positive customer shopping experience in an online context. *Journal of Retailing and Consumer Services*, *53*, 101985. https://doi.org/10.1016/j.jretconser.2019.101985

Cassell, J., & Bickmore, T. (2003). Negotiated collusion: Modeling social language and its relationship effects in intelligent agents. *User Modeling and User-Adapted Interaction, 13*, 89–132 https://doi.org/10.1023/A:1024026532471

Chaves, A. C., & Gerosa, M. A. (2021). How should my chatbot interact? A survey on social characteristics in human–chatbot interaction design. *International Journal of Human-Computer Interaction, 37*(8), 729–758. https://doi.org/10.1080/10447318.2020.1841438

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *Management Information Systems Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review, 114*(4), 864–886. https://doi.org/10.1037/0033-295x.114.4.864

Guadagno, R. E., Blascovich, J., Bailenson, J. N., & McCall, C. (2007). Virtual humans and persuasion: The effects of agency and behavioral realism. *Media Psychology, 10*(1), 1–22. https://doi.org/10.1080/15213260701300865

Goetz, J., Kiesler, S., & Powers, A. (2003). Matching robot appearance and behavior to tasks to improve human-robot cooperation. *Robot and Human Interactive Communication.* https://doi.org/10.1109/roman.2003.1251796

Jiang, C., Zhang, C., Ji, Y., Hu, Z., Zhan, Z., & Yang, G. (2022). An affective chatbot with controlled specific emotion expression. *Science China Information Sciences, 65*(10), 202102. https://doi.org/10.1007/s11432-020-3356-4

Klein, K., & Martinez, L. D. (2022). The impact of anthropomorphism on customer satisfaction in chatbot commerce: An experimental study in the food sector. *Electronic Commerce Research, 23*, 2789–2825. https://doi.org/10.1007/s10660-022-09562-8

Kwon, W., Chattaraman, V., Ross, K., Alikhademi, K., & Gilbert, J. E. (2018). Modeling Conversational Flows for In-Store Mobile Decision Aids. In C. Stephandis (Ed.), HCI International 2018 – Posters' Extended Abstracts. HCI 2018. Communications in Computer and Information Science (Vol. 852, pp. 302-308). Springer, Cham. https://doi.org/10.1007/978-3-319-92285-0_42

Moon, Y. (2000). Intimate Exchanges: Using computers to elicit self-disclosure from consumers. *Journal of Consumer Research, 26*(4), 323–339. https://doi.org/10.1086/209566

Seeger, A., Pfeiffer, J., & Heinzl, A. (2021). Texting with humanlike conversational agents: Designing for anthropomorphism. *Journal of the Association for Information Systems, 22*(4), 931–967. https://doi.org/10.17705/1jais.00685

Siegel, M., Breazeal, C., & Norton, M. I. (2009). Persuasive robotics: The influence of robot gender on human behavior. In *2009 IEEE/RSJ International Conference on Intelligent Robots and Systems* (pp. 2563-2568). https://doi.org/10.1109/iros.2009.5354116

Waytz, A., Heafner, J., & Epley, N. (2014). The mind in the machine: Anthropomorphism increases trust in an autonomous vehicle. *Journal of Experimental Social Psychology, 52*, 113–117. https://doi.org/10.1016/j.jesp.2014.01.005

Yang, Y., Liu, Y., Lv, X., Ai, J., & Li, Y. (2021). Anthropomorphism and customers' willingness to use artificial intelligence service agents. *Journal of Hospitality Marketing & Management, 31*(1), 1–23. https://doi.org/10.1080/19368623.2021.1926037

Zhang, A., & Rau, P. P. (2022). Tools or peers? Impacts of anthropomorphism level and social role on emotional attachment and disclosure tendency towards intelligent agents. *Computers in Human Behavior, 138*, 107415. https://doi.org/10.1016/j.chb.2022.107415