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HE OR SHE? IMPACT OF GENDER'S WELL-BEING CHATBOTS ON USER PERCEPTIONS AND INTENTIONS: A STUDY OF AGENCY, COMMUNALITY AND TRUST

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EXTENDED ABSTRACT

In light of the impact of digitalization on healthcare, along with the scarcity of professionals and the escalating expenses associated with accessing care, digital tools such as chatbots (Woebot and Nuna) have been created to promote well-being through accessibility and continuous support, offering non-judgmental and cost-effective alternatives to professional care (Inkster et al., 2018; Lin et al., 2023). Among the factors that influence the effectiveness of these well-being chatbots, anthropomorphization—assigning human-like attributes, including gender—plays a critical role (Rapp et al., 2021).

Previous studies have shown that gender stereotypes influence perceptions of chatbots. Female chatbots often appear more human and are better at meeting users' needs, potentially due to stereotypical associations of women with warmth and communal traits (Borau et al., 2021; Nass et al., 1994). These human attributes can enhance user interaction, leading to increased willingness to engage with the chatbot (Belanche et al., 2021). Despite extensive research in commercial settings, the impact of chatbot gender in non-commercial contexts, particularly well-being, remains underexplored (Borau et al., 2021).

This study investigates how the gender of text-based chatbots affects users' perceptions of agency, communality, trust, and intention to use the chatbot for well-being purposes. It hypothesizes that female-gendered chatbots elicit more positive attitudes, greater trust, and higher intentions to use than male-gendered chatbots. Also, relying on the stereotype content model (SCM) (Fiske et al., 2007), the warmth and competence framework (Belanche et al., 2021;) and Novak and Hoffman's Assemblage Theory (2018), this research assumes that Female (male)-gendered chatbots are perceived more communal (agentic) than male-gendered chatbots. Agentic orientation involves instrumentality, dominance, and competence in the pursuit of individuating the self. Communal orientation involves cooperativeness, helpfulness, and trustworthiness. Finally, following Pitardi et al. (2022) or Zogaj et al. (2023), this research assumes that the congruence of chatbot and user genders leads to more favourable evaluations.

Methodology

A total of 301 participants from the Prolific panel completed an online questionnaire, resulting in a final sample of 297 after excluding inconsistent responses. Participants were randomly assigned to interact with either a male-gendered or female-gendered chatbot. Gender was manipulated using names and avatars following Borau et al. (2021), ensuring correct gender assignment through pre-tests.

Measures for agency and communality were adapted from Eyssel and Hegel (2012), while trust, attitude, and behavioral intentions were measured using scales from Pitardi and Mariott (2021), Borau et al. (2021), and Liu and Tao (2022), respectively. Data were analysed using SPSS (version 28).

Main findings

ANOVA results indicated no significant direct effect of chatbot gender on attitude ($\bar{X}_{\text{Male}} = -0.101$, $\bar{X}_{\text{Female}} = 0.104$, $F = 3.190$, $p = 0.075$) or behavioral intentions ($\bar{X}_{\text{Male}} = -0.066$, $\bar{X}_{\text{Female}} = 0.068$, $F = 1.371$, $p = 0.243$). However, female-gendered chatbots generated higher trust ($\bar{X}_{\text{Male}} = -0.135$, $\bar{X}_{\text{Female}} = 0.139$, $F = 2.037$, $p = 0.017$). There were no significant differences in perceived communality or agency based on chatbot gender.

Regression analyses confirmed that both agency ($F = 78.76$, $p < 0.001$, $R = 0.456$) and communality ($F = 68.13$, $p < 0.001$, $R = 0.430$) positively influenced trust. Trust significantly impacted both attitude ($F = 255$, $p < 0.001$, $R = 0.678$) and behavioral intentions ($F = 171.5$, $p < 0.001$, $R = 0.603$). Attitude also significantly influenced behavioral intentions ($F = 457.2$, $p < 0.001$, $R = 0.777$).

Moderation analysis using Macro Process Model 1 (Hayes, 2013) revealed no significant moderating effect of user's gender on the relationships between chatbot gender and trust, attitude, or behavioral intentions.

Discussion

Findings suggest that agency and communality significantly influence trust and intention to use well-being chatbots. Trustworthy chatbots, perceived as competent, informative, polite, and empathetic, foster favorable attitudes and higher usage intentions (Følstad et al., 2018; Yen & Chiang, 2021; Wang et al., 2007). Contrary to expectations, chatbot gender did not significantly impact perceptions of agency or communality. The lack of influence may be attributed to the scenario-based experimental protocol, which may not have provided sufficient immersion for participants to form robust perceptions (Chung et al., 2018).

The study assesses the effectiveness of chatbots in mental health and well-being situations and highlights factors influencing user experience with well-being chatbots. It contributes to the literature on AI and gender by confirming that human gender stereotypes are transferred to chatbots through names and visual cues. It extends the concepts of agency and communality to chatbots as determinants of trust, attitudes, and behavioral intentions. For AI designers, the study emphasizes the importance of aligning chatbot attributes with intended objectives and brand image to enhance user engagement.

Limitations and Future Research

This exploratory study manipulated chatbot gender using names and avatars. Future research could enhance gender cues through voice and language style manipulations (Rapp et al., 2021). Real-time interaction with chatbots may improve ecological validity and better capture user perceptions of agency and communality. Such designs should carefully follow ethical guidelines, given the potential risks in well-being and mental health domains (Lin et al., 2023).

References

- Belanche D, Casaló LV, Schepers J, et al. (2021) Examining the effects of robots' physical appearance, warmth, and competence in frontline services: The Humanness-Value-Loyalty model. *Psychology & Marketing* 38(12): 2357–2376.
- Borau S, Otterbring T, Laporte S, et al. (2021) The most human bot: Female gendering increases humanness perceptions of bots and acceptance of AI. *Psychology & Marketing* 38(7): 1052–1068.
- Chew HSJ and Achananuparp P (2022) Perceptions and Needs of Artificial Intelligence in Health Care to Increase Adoption: Scoping Review. *Journal of Medical Internet Research* 24(1): e32939.

- Chung M, Ko E, Joung H and Kim SJ (2020). Chatbot e-service and customer satisfaction regarding luxury brands. *Journal of Business Research* 117, 587-595.
- Eyssel F and Hegel F (2012) (S)he's Got the Look: Gender Stereotyping of Robots. *Journal of Applied Social Psychology* 42(9): 2213–2230.
- Fiske ST, Cuddy AJC and Glick P (2007) Universal dimensions of social cognition: warmth and competence. *Trends in Cognitive Sciences* 11(2): 77–83.
- Følstad A, Nordheim C and Bjørkli C (2018) What Makes Users Trust a Chatbot for Customer Service? An Exploratory Interview Study: In *Internet Science: 5th International Conference, INSCI 2018, St. Petersburg, Russia, October 24–26, 2018, Proceedings 5* (194–208). Springer International Publishing.
- Go E and Sundar SS (2019) Humanizing chatbots: The effects of visual, identity and conversational cues on humanness perceptions. *Computers in Human Behavior* 97: 304–316.
- Hayes AF (2013) *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY, US: Guilford Press.
- Inkster B, Sarda S and Subramanian V (2018) An Empathy-Driven, Conversational Artificial Intelligence Agent (Wysa) for Digital Mental Well-Being: Real-World Data Evaluation Mixed-Methods Study. *JMIR mHealth and uHealth* 6(11): e12106.
- Kim A, Cho M, Ahn J, et al. (2019) Effects of Gender and Relationship Type on the Response to Artificial Intelligence. *Cyberpsychology, Behavior, and Social Networking* 22(4): 249–253.
- Lin X, Martinengo L, Jabir AI, et al. (2023) Scope, Characteristics, Behavior Change Techniques, and Quality of Conversational Agents for Mental Health and Well-Being: Systematic Assessment of Apps. *Journal of medical Internet research* 25. Canada: JMIR Publications: e45984–e45984.
- Liu K and Tao D (2022) The roles of trust, personalization, loss of privacy, and anthropomorphism in public acceptance of smart healthcare services. *Computers in Human Behavior* 127: 107026.
- Novak TP and Hoffman DL (2019) Relationship journeys in the internet of things: a new framework for understanding interactions between consumers and smart objects. *Journal of the Academy of Marketing Science* 47(2): 216–237.
- Pitardi V, Bartikowski B, Osburg V-S, et al. (2022) Effects of gender congruity in human-robot service interactions: The moderating role of masculinity. *International journal of information management*. Elsevier Ltd: 102489-.
- Pitardi V and Marriott HR. (2021) Alexa, she's not human but... Unveiling the drivers of consumers' trust in voice-based artificial intelligence. *Psychology & Marketing* 38(4): 626-642.
- Rapp A, Curti L and Boldi A (2021) The human side of human-chatbot interaction: A systematic literature review of ten years of research on text-based chatbots. *International journal of human-computer studies* 151. Elsevier Ltd: 102630-.
- Wang LC, Baker J, Wagner JA, et al. (2007) Can a Retail Web Site Be Social? *Journal of marketing* 71(3). Chicago: American Marketing Association: 143–157.
- Yen C and Chiang M-C (2021) Trust me, if you can: a study on the factors that influence consumers' purchase intention triggered by chatbots based on brain image evidence and self-reported assessments. *Behaviour & information technology* 40(11). London: Taylor & Francis: 1177–1194.
- Zogaj A, Mähner PM, Yang L, et al. (2023) It's a Match! The effects of chatbot anthropomorphization and chatbot gender on consumer behavior. *Journal of Business Research* 155: 113412.