Effect of Gender on Interaction with Embodied Conversational Agents

Procheta Nag and Özge Nilay Yalçin
pnag@sfu.ca , oyalcin@sfu.ca
Simon Fraser University

Embodied Conversational Agent (ECA)

3D virtual character controlled with AI Empathy framework [1-4]

facial expressions, gaze, head and body gestures, verbal behaviours demonstrate real time face to face conversation

Empathy Framework → Evaluating Empathy → Evaluating Level of Emotion → Engagement ECA

Research Question

Does the gender-related appearance of the Embodied conversational agents have an effect on the interaction?

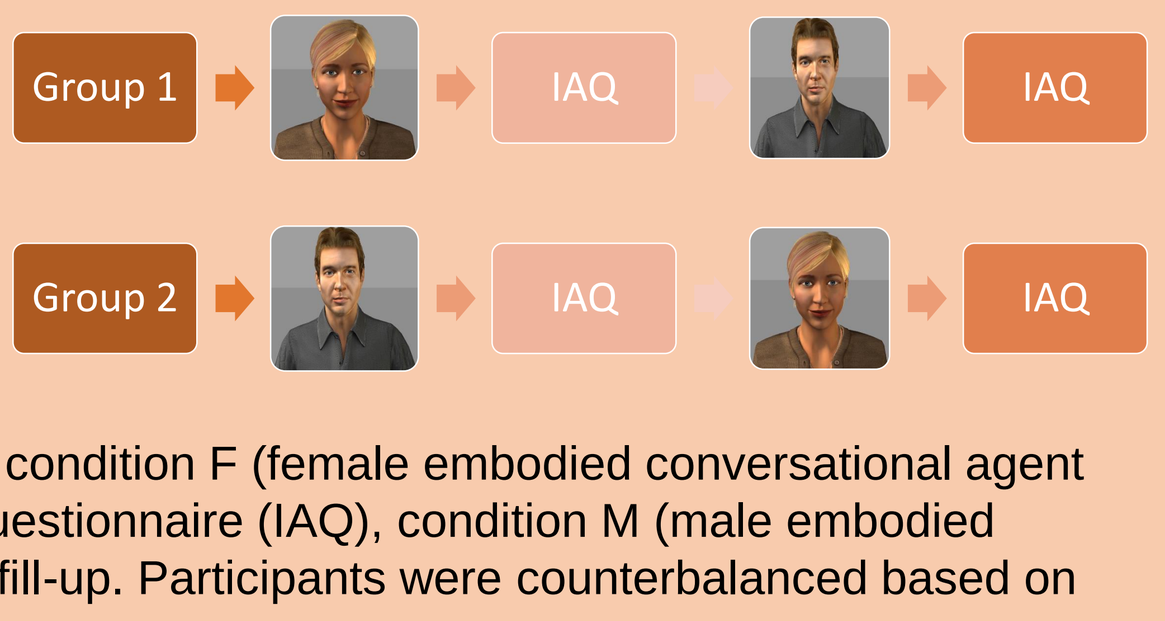
Within Subjects Design

Independent Variables

Gender of ECAs	Gender of Participants	Dependent Variable
Male	Male	Engagement
Female	Female	Comfort
	Other	

Participants= 70

Male=35 Female=35



Half of the participants (Group 1) were randomly assigned into condition F (female embodied conversational agent talking with a human person), fill-up Interactive assessment questionnaire (IAQ), condition M (male embodied conversational agent talking with a human person), lastly, IAQ fill-up. Participants were counterbalanced based on conditions.

Conclusion

People not only liked feminine voice but also feminine physical appearance.

Men and Women generally prefer female agent over male agent.

Future Plan

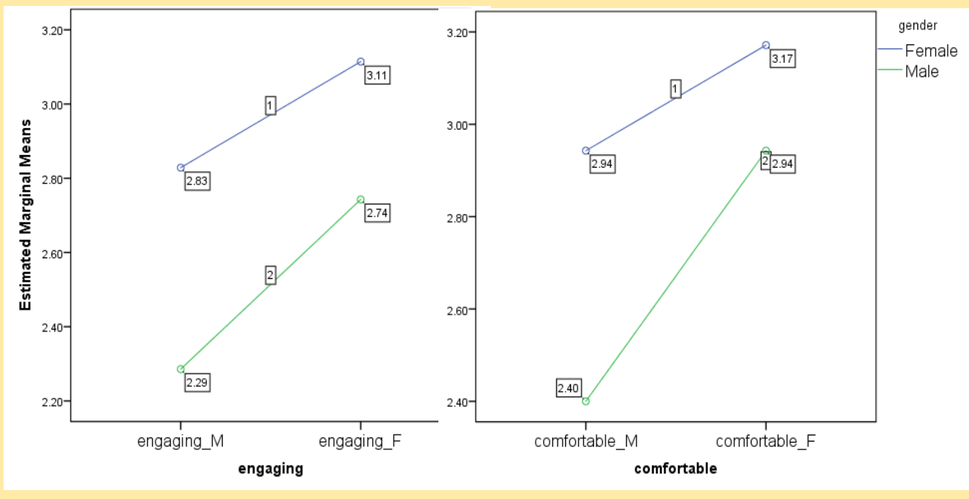
Transgender participants

Androgynous ECA (differing voices)

Quantitative Research Method

Two way 2 (ECAs gender: male or female) *2 (participant's gender: male, female) mixed ANOVA with repeated measures

Participants' gender had a significant effect on rating ECAs engaging, $F(1,68) = 8.814$, $p = .004$, $np2 = .115$.
Both male and female participants rated ECAs differently, $f(1,68) = 16.48$, $p < .001$, $np2 = .195$.



Participants found female ECA more engaging, $F(1,68) = .878$, $p = .352$, $np2 = .013$ and comfortable, $F(1,68) = 2.406$, $p = .126$, $np2 = .034$ than male ECA in the conversation.

References

[1] Yalcin, N., and DiPaola, S. 2018. A computational model of empathy for interactive agents. *Biologically inspired cognitive architectures* 26:20–25.

[2] Yalçın, Ö. N., and DiPaola, S. 2019a. M-path: a conversational system for the empathic virtual agent. In *Biologically Inspired Cognitive Architectures Meeting*, 597–607. Springer

[3] Yalçın, Ö. N. 2019. Evaluating empathy in artificial agents. *arXiv preprint arXiv:1908.05341*.

[4] Yalçın, Ö. N. 2020. Empathy framework for embodied conversational agents. *Cognitive Systems Research* 59:123–132.

About Us: Ö. Nilay Yalçin, Procheta Nag