

# Effects of Customised AI Shopping Assistant in Virtual Reality Shopping

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## I. Background

Customisation has been used in Virtual Reality (VR) to enhance user experience and presence. Presence within VR is split into three separate categories, tele-presence the user's sense of being in the virtual space, co-presence the user's sense of sharing the space with others and social presence the user's sense of being able to interact with another mind [2]. Presence is used as a key measurement for user experience within VR. Current literature on customisation within VR generally focuses on user embodied avatars or non-avatar related customisation [1, 3]. This research seeks to study the effects of customisation on non-user embodied avatars by allowing users to customise the appearance of a VR shopping assistant.



Figure 1: A Few of the Customisation Options for Shopping Assistant with the default Assistant on the right.

## II. Research Questions

How does customisation of VR shopping assistants affect user experience in VR space?

- H1a: User's sense of Social Presence will increase when given the ability to customise
- H1b: User's sense of Co-Presence will increase when given the ability to customise
- H2: User's will have more positive emotional reactions to Assistants they customised
- H3: User's shopping with their customised assistant will be less stressed and anxious

## Comparison of Customisable and Non-Customisable Assistant VR Shopping Experiences

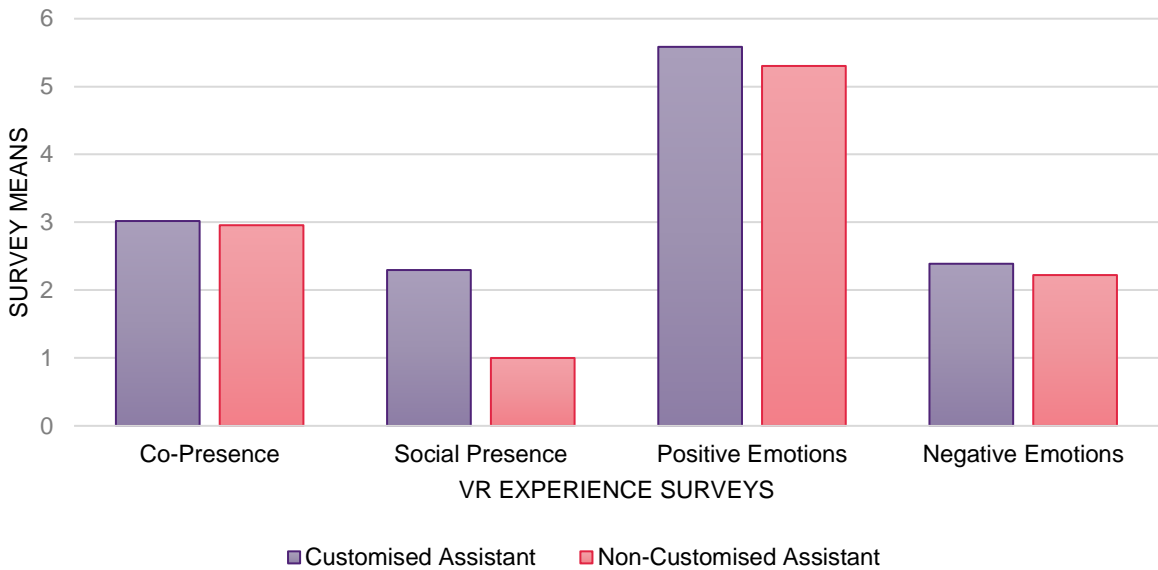
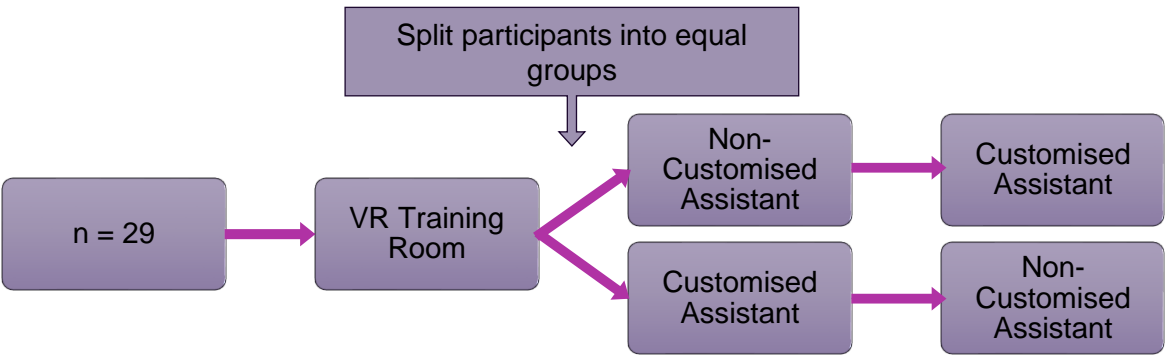


Figure 2: Results comparison of User Co-Presence, Social Presence, Positive and Negative Emotional Response Against Customised and Non-Customised Assisted VR Shopping

## III. Methodology

29 Participants who were 18+ and physically capable of using VR were recruited. Each participant had pre and post tests taken during the Customised and Non-Customised assistant sessions. After each session participants took the VR Presence and Usability surveys. The Preference survey was only taken at the end of the experiment.



## Measurements

**Pre/Post Test:** Stress and Anxiety 5-point Likert Scale.  
**Virtual Reality Presence:** Slater-Usuh-Steed Presence Questionnaire, Co-Presence Questionnaire, Social Presence Questionnaire, Emotional Response Questionnaire.  
**Usability:** Virtual Reality Sickness Questionnaire, User Experience Questionnaire.  
**Preference:** User Preference Questionnaire.

## References

[1] R. Cuthbert, S. Turkay, and R. Brown, "The Effects of Customisation on Player Experiences and Motivation in a Virtual Reality Game," presented at the Proceedings of the 31st Australian Conference on Human-Computer-Interaction, Fremantle, WA, Australia, 2020. [Online]. Available: <https://doi.org/10.1145/3369457.3369475>.  
[2] K. L. Nowak and F. Biocca, "The Effect of the Agency and Anthropomorphism on Users' Sense of Telepresence, Copresence, and Social Presence in Virtual Environments," *Presence: Teleoperators and Virtual Environments*, vol. 12, no. 5, pp. 481-494, 2003, doi: 10.1162/105474603322761289.  
[3] S. Türkay and C. K. Kinzer, "The Effects of Avatar: Based Customization on Player Identification," *Int. J. Gaming Comput. Mediat. Simulations*, vol. 6, pp. 1-25, 2014.

## User Preference of Shopping Assistant

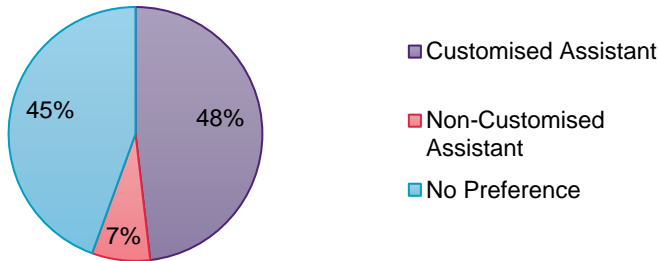


Figure 3: Pie Chart of User Preference obtained through survey

## IV. Results

- Users generally preferred to being able to customise their assistant (48%).
- Users felt an increase in social presence with regards to the customised assistant ( $t = 2.266$ ,  $p = 0.016 < 0.05$ ).
- Users did not feel any difference in co-presence, emotions nor stress and anxiety with regards to the customised assistant ( $p > 0.05$ ).

## V. Discussion and Conclusion

The increase in social presence for the customised assistant suggests that users felt customised assistants were more conscious despite the lack of functional difference. This could be because of the increased sense of familiarity induced by the effort of customisation or because users were allowed to choose an assistant which they would more like to interact with. This is further corroborated as users mentioned,

"I liked the customised assistant more. I could choose someone more friendly looking/approachable - made me want to interact with them more."

The results of this research will hopefully improve development of VR experiences and help better understand the effects of avatars and customisation on users within virtual spaces. This could be further expanded upon for different types of avatars in terms of role and appearance, as this study only focused on humanoid shopping assistants.