Would Super Mario Bros. be better if you could play as yourself? Well, not exactly

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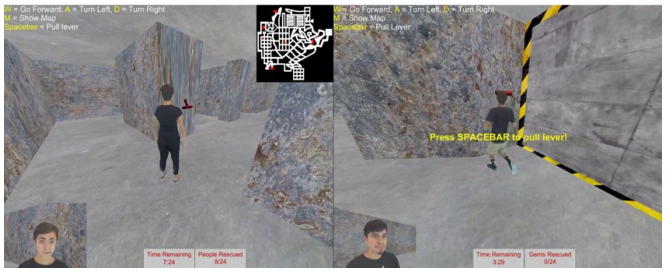

Figure 1. Screenshots of participants playing the search and rescue game with photorealistic avatars. Left: Participant stops and brings up the map (upper right corner) to figure out which hallway to take. Right: Participant runs toward a lever to open a blast door and rescue the gems inside. Credit: USC Institute for Creative Technologies and University of Illinois at Urbana-Champaign.

The gaming experience over the last decade has evolved tremendously and player-customized avatars, or virtual doppelgangers, are becoming more realistic every day. Past studies have shown women may prefer avatars that don't look like them but a new study by USC Institute for Creative Technologies and University of Illinois at Urbana-Champaign shows no gender difference or negative effect on player's performance or subjective involvement based on whether a photorealistic avatar looked like them or like their friend.

The study is the latest to examine benefits to using self-similar avatars in virtual experiences, and builds primarily on a study by Gale Lucas that analyzed players' performance and subjective involvement with a photorealistic self-similar avatar in a maze running game. Results showed effects based on avatar appearance as well as gender differences in participants' experiences.

"In the previous work, we found that players felt more connected and engaged—and that their avatar was more attractive—when they navigated the game with a photorealistic self-similar avatar, compared to a photorealistic avatar that looked like a stranger," said Gale Lucas, senior research associate for USC Institute for Creative Technologies.

"While previous research shows that male players also found that the game was more enjoyable with self-similar avatars, women if anything, enjoyed it more with a stranger's avatar. However, we found no effects on performance. Although there were no performance benefits of self-similar avatars, we wanted to confirm that these subjective benefits of self-similar avatars were because they looked like the player, not just that they were familiar."

Thus, to help researchers and game designers assess the cost-benefit tradeoffs of self-similar avatars, Lucas and co-authors Helen Wauck, Ari Shapiro, Wei-Wen Feng, Jill Boberg and Jonathan Gratch conducted an experiment inviting pairs of friends to visit the USC Institute of Creative Technologies lab for a full-body scan to be generated in photorealistic avatars. Shapiro, a USC Viterbi research assistant professor in computer science, is one of the pioneers of "fast avatar capture" that creates a photorealistic, 3-D double of you in the span of 20 minutes. One of the friends in the pair was instructed to play a search and rescue game with their own avatar, and the other friend in the pair played the game with their friend's avatar.

"By comparing people who played the game with their own avatar to those who played with their friends' avatar, we could test the effect of self-similarity without confounding it with familiarity," Lucas said.

Lucas also mentioned that because she and the team did not replicate the previous findings in this new study, those prior discoveries could have been due to familiarity rather than self-similarity per se.

This suggests that having an avatar resembling someone you know personally may be just as good as having one that looks like you. So, rather than creating a personalized avatar for each member of a military troop or classroom, it may be enough to create one avatar that looks like someone in the group, and everyone in the group could benefit from it—compared to an avatar that looked like a stranger.

"We also found that women's experiences with self-similar avatars was no more negative than men's," said Lucas. "This second study used even more high fidelity avatars than the previous study we ran, so it seems that with better rendering (e.g., of face, hair, hands), women no longer felt less enjoyment with their own avatar."

The new findings reveal how important it is to carefully consider the extent to which high fidelity self-similar avatars align with the purpose and structure of an interactive experience before deciding whether it is worth the investment of time and money to implement.

The study was published on April 25th in *The Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*, the premier international conference of Human-Computer Interaction.

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