Bonding with your virtual self may alter your actual perceptions

May 2 2013

When people create and modify their virtual reality avatars, the hardships faced by their alter egos can influence how they perceive virtual environments, according to researchers.

A group of students who saw that a backpack was attached to an avatar that they had created overestimated the heights of virtual hills, just as people in real life tend to overestimate heights and distances while carrying extra weight, according to Sangseok You, a doctoral student in the school of information, University of Michigan.

"You exert more of your agency through an avatar when you design it yourself," said S. Shyam Sundar, Distinguished Professor of Communications and co-director of the Media Effects Research Laboratory, Penn State, who worked with You. "Your identity mixes in with the identity of that avatar and, as a result, your visual perception of the virtual environment is colored by the physical resources of your avatar."

Researchers assigned random avatars to one group of participants, but allowed another group to customize their avatars. In each of these two groups, half of the participants saw that their avatar had a backpack, while the other half had avatars without backpacks, according to You.

When placed in a virtual environment with three hills of different heights and angles of incline, participants who customized their avatars perceived those hills as higher and steeper than participants who were

assigned avatars by the researchers, Sundar said. They also overestimated the amount of calories it would take to hike up the hill if their custom avatar had a backpack.

"If your avatar is carrying a backpack, you feel like you are going to have trouble climbing that hill, but this only happens when you customize the avatar," said Sundar.

The researchers, who present their findings at 2013 Annual Conference on Human Factors in Computing Systems in Paris today (May 2) recruited 121 college-aged participants—58 female and 63 male—from Sungkyunkwan University in Seoul, South Korea, to take part in the study. The students entered a virtual reality lab and were asked to evaluate the hills. To keep the students from guessing why the researchers added a backpack, they created a cover story saying the backpack made the hiking experience as lifelike as possible.

Sundar said the study may help trainers and game developers design virtual reality exercises and games that are more realistic and more immersive. For instance, just as participants who customized their avatars with a backpack in this study changed their perception of their virtual environment, people with disabilities may feel more empowered designing their own avatars to have physical aids to navigate a virtual environment. Soldiers may want to create their own avatars to better simulate their perceptions of actual conditions in virtual reality exercises.

"Because building avatar identity is critical, it's important to let users customize it," Sundar said. "You are your avatar when it is customized." Future research will look at whether altering more elements of the users' avatar will lead to more extensive changes in how people perceive virtual environments.

Provided by Pennsylvania State University