

Visualized heartbeat can trigger 'out-of-body experience'

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A visual projection of human heartbeats can be used to generate an "out-of-body experience," according to new research to be published in *Psychological Science*, a journal of the Association for Psychological Science. The findings could inform new kinds of treatment for people with self-perception disorders, including anorexia.

The study, conducted by Jane Aspell of Anglia Ruskin University in the UK and Lukas Heydrich of the Swiss Federal Institute of Technology in Lausanne, is novel in that it shows that information about the internal state of the body—in this case, the [heartbeat](#)—can be used to change how people experience their own body and self.

Volunteers in the study were fitted with a [head mounted display](#) (HMD), which served as "virtual reality [goggles](#)." They were filmed in real time by a video camera connected to the HMD, which allowed them to view their own body standing two meters in front of them.

By also recording the volunteers' heartbeat signals using [electrodes](#), the timing of the heartbeat was used to trigger a bright flashing outline which was superimposed on the virtual body shown via the HMD.

After watching the outline flash on and off in sync with the heartbeat for several minutes, the subjects experienced a stronger identification with the [virtual body](#), reporting that it felt more like their own body. They also perceived that they were at a different location in the room than their physical body, reporting feeling closer to their double than they

actually were, and they experienced touch at a different location to their physical body.

"This research demonstrates that the experience of one's self can be altered when presented with information about the internal state of one's body, such as a heartbeat," says Aspell.

"This is compatible with the theory that the brain generates our experience of self by merging information about our body from multiple sources, including the eyes, the skin, the ears, and even one's [internal organs](#)."

In the future, Aspell hopes the research might help people suffering with self-perception problems, including anorexia and body dysmorphic disorder. She is currently working on a study about "yo-yo dieters" and how their self-perception changes as they gain and lose weight.

"Patients with anorexia, for example, have a disconnection from their own body," Aspell added. "They look in the mirror and think they are larger than they actually are. This may be because their brain does not update its representation of the body after losing weight, and the patient is therefore stuck with a perception of a larger self that is out of date."

Aspell concludes that "this experiment could be adapted to help people 'reconnect' with their current physical appearance. It could help them realize what the 'real me' actually looks like."

Provided by Association for Psychological Science

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