

Reality Bytes

by *
Jeremy Bailenson | [virtual reality](#) | [Stanford University](#) | Virtual Human Interaction Lab

Whether you dream of having a smaller waistline or greater self-confidence, advancing technology can help you become whomever you want to be.



A HORN HONKS. Tires screech on the pavement. Out of nowhere, a car comes careening toward me. I dodge out of the way, and it narrowly misses me. All of a sudden, I'm in the middle of an earthquake. The ground is shaking, and debris is falling from the sky. Just as quickly, I'm standing before a 30-foot pit. I have no choice but to leap into it, and I land with a thud.

Yet I escape with no broken bones, no concussion, not even so much as a scratch. That's because what I'm experiencing isn't actually happening. Rather, it's being controlled on a nearby computer monitor by Stanford PhD candidate Kathryn Segovia. A \$25,000 helmet atop my head is my personal transportation device, zapping me to different places and situations with the touch of a button.

The technology here at the Virtual Human Interaction Lab at Stanford University is cooler than any ride at Disney World and more entertaining than anything the wizards behind the Nintendo Wii have conjured up. Studies being done with this program are showing that virtual reality can do much more than just entertain in the form of video games like Second Life. Researchers here believe this technology can make you lose weight, be a better student, and have more confidence. It can even help you save for retirement. Basically, it can build a better you, one false "reality" at a time.

Professor Jeremy Bailenson and his small army of graduate students are demonstrating how online lives affect off-line behavior, challenging a long-held assumption that it's the other way around. If you want to lose weight, for example, Bailenson says you just need to get a life -- a virtual life.

Here's how it works: Modeling graphic software is used to create an avatar, a three-dimensional digital representation of the user. A researcher cues up an appropriate setting for reaching the end goal. If it's weight loss a user is after, that setting might be a gym. On a screen inside the aforementioned helmet, the user can view himself from a third-person perspective while his avatar behaves autonomously, or he can view the world from the avatar's eyes, controlling the avatar's movements.

"Now imagine seeing your virtual self exercising and running on a treadmill," says PhD candidate Jesse Fox. He puts an image of an exercising avatar on his monitor. We watch the avatar run and later, when faced with food, pick carrots over candy. The avatar gets slimmer and slimmer. This process of seeing your virtual self eat right, exercise, and as a result get thinner has proven to be a strong stimulus for the user to eat right and exercise in real life as well.

"In the physical world, we take cues from examining ourselves all the time. For example, a glance in the mirror can confirm we are 'dressed for success,'" Bailenson says. "In the virtual world, we can extend this idea to examining the self as it performs activities we cannot yet do on a personal level in the physical world, whether it's eating healthily, investing our money instead of wasting it, or even having the perfect golf swing."

This phenomenon is what Bailenson calls "vicarious reinforcement." We are encouraged to believe that our goals are attainable by seeing them played out on-screen. Bailenson and his crew have performed numerous studies to examine the effects of virtual lives on users. In a weight-loss study, subjects whose avatars worked out and lost weight also worked out more over a 24-hour period than they had before and were more likely to skip fattening foods.

In another study, subjects were assigned avatars ranging from attractive (avatars that were tall, thin, and had fine features) to plain (short, heavy avatars with rough features). Those with attractive avatars exhibited higher self-confidence when interacting with others in life, while those with homelier avatars displayed more antisocial behaviors. And that isn't all. Those with good-looking avatars picked more attractive potential matches after being asked to join an online dating site and showed a deeper confidence when talking to better-looking potential mates whom they normally wouldn't have felt they had a shot with. Not surprisingly, the subjects with less-attractive virtual selves selected less-attractive online matches for themselves.

Other studies have shown similarly astonishing results in everything from marketing and advertising (people with avatars that drink a certain soft drink are likely to purchase it themselves) to saving money (those who bond with their future 65-year-old selves are encouraged to be more financially prudent).

Bailenson is proving that what happens in the virtual world can affect one's thinking in both the short term (making me believe I was falling into a deep hole when I was actually jumping in place) and the long term (significantly affecting behavior outside the confines of the lab). He believes these implications could reach far beyond solving America's obesity epidemic and helping eliminate phobias, to matters such as changing the way police identify crime suspects. He is convinced this technology could help cut down on eyewitness error, a leading cause of wrongful conviction in the United States. Studies of DNA exoneration cases show that more than 75 percent of the convictions were made using eyewitness accusations, usually given in the form of identification at a police lineup or of a mug shot. Virtual reality could transport witnesses to the crime scene, where they could walk right up to a suspect, able to get close enough to see the hairs on the back of his or her neck.

"You recall things better if you're reminded of the location where you first stored that memory," Segovia says. "If it happened in an alley, no problem. We can recreate the alley."

Bailenson says that currently, 95 percent of police lineups in the United States are done by having witnesses examine photographs of potential suspects.

"By having the lineups be in immersive virtual reality, the victim can acquire a more realistic set of memory cues by viewing the suspects from a variety of angles, distances, and contexts," Bailenson says. "Our hope is a reduction in the number of innocent people in prison."

The National Science Foundation hopes so as well; it has granted Bailenson and his team \$500,000 to continue their work. Bailenson, who at just 35 years old is considered a pioneer in his field, has advised the National Institutes of Health, the National Research Council, and a number of colleges about the advantages of such technology. He has just signed a deal with HarperCollins to pen a book on the psychology of virtual reality. His work has flourished since being hired at Stanford, an institute known for its willingness to arm researchers with the time and money to create.

But don't hold your breath for a build-your-own-avatar program to hit the shelves at Best Buy. Bailenson doesn't know when or how this technology will become available for public use. Right now, the work is still preliminary and being done solely in a controlled setting. However, as his work advances and more people catch on to the freeing and limitless nature of the virtual world, demand will undoubtedly rise. Because although we're sitting in a cluttered office in a lab at Stanford, with the flip of a switch and the help of one very expensive helmet, we could be anywhere -- and anyone -- we want to be.