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AI Seduces Stanford Students

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Psychologists and salesmen call it the "chameleon effect": People are perceived as more honest and likeable if they subtly mimic the body language of the person they're speaking with. Now scientists have demonstrated that computers can exploit the same phenomenon, but with greater success and on a larger scale.

Researchers at Stanford University's Virtual Human Interaction Lab strapped 69 student volunteers into an immersive, 3-D virtual-reality rig, where test subjects found themselves sitting across the table from a "digital agent" -- a computer-generated man or woman -- programmed to deliver a three-minute pitch advocating a notional university security policy requiring students to carry ID whenever they're on campus.

The anthropomorphic cyberhuckster featured moving lips and blinking eyes on a head that nodded and swayed realistically. But unbeknownst to the test subjects, the head movements weren't random. In half the sessions, the computer was programmed to mimic the student's movements exactly, with a precise four-second delay; if a test subject tilted her head thoughtfully and looked up at a 15-degree angle, the computer would repeat the gesture four seconds later.

For the other half of the participants, the program used head movements recorded from earlier students, ensuring they were realistic but unconnected to the test subject.

The results (.pdf), to be published in the August issue of the journal *Psychological Science*, were dramatic: Only eight of the subjects detected the mimicry (one of them falsely). The remaining students liked the mimicking agent more than the recorded agent, rating the former more friendly, interesting, honest and persuasive. They also paid better attention to the parroting presenter, looking away less often. Most significantly, they were more likely to come around to the mimicking agent's way of thinking on the issue of mandatory ID.

In all, the mimicry accounted for 20 percent of all the variance in the subjects' perception of the agent and its Ashcroftian message. "This is the biggest effect that we've found," says Stanford communications assistant professor Jeremy Bailenson, head of the lab. "It's not fragile, it doesn't depend on gender. Across the board, everyone found the mimicker more persuasive."

"This opens the door to digital agents taking advantage of this strategy and using it for or against us, depending on how you look at it," says researcher Nick Yee, a doctoral student at Stanford and co-author of the paper.

Bailenson says the research not only shows that computers can take advantage of our psychological quirks, but that they can do it more effectively than humans can because they can execute precise movements with scientifically optimized timing. The killer app is in virtual worlds, where each inhabitant can be presented with a different image, and the chameleon effect is no longer limited to one-on-one interaction. A single speaker -- whether an AI or a human avatar -- could mimic a thousand people at once, undetected, transforming a cheap salesman's trick into a tool of mass influence.

The principle even has application in today's cyberspace, where most denizens communicate through their fingertips and not virtual-reality headsets, he says. "How fast you type, the ways that you formulate sentences, the way you use capital letters -- all of these things are very mimickable," says Bailenson.

The experiment wasn't Bailenson's first exploration of how computers can be used to mold opinion subliminally. One week before last November's presidential election, the lab conducted an experiment in influencing voters that proved stunningly successful.

The lab recruited a national sample of voting-age test subjects and had them complete a survey of their attitudes toward President Bush and Sen. John Kerry while viewing side-by-side photos of the presidential candidates. What the subjects didn't know is that for one-third of them, their own faces had been digitally blended, or "morphed," into the photo of Bush at a 40-60 ratio. A different one-third had their faces morphed with Kerry's. The final third saw only undoctored photos.

The control group favored Bush by about the same three-point margin as the national election to come. But among the test subjects who were morphed with Dubya, "Bush won by 15 points in a landslide," says Bailenson. And the voters who were blended with Kerry? "Kerry won by 6 percent," he says. "We actually made Kerry win the election when his face was morphed with the observer, and we had a zero-percent detection rate."

Even Bailenson calls that experiment scary. But he says his lab isn't about using computers to dominate the human will. "Digital representations of people are inherently flexible," Bailenson says. "I can look however I want and behave however I want. What I study is, in this brave new world where people are represented by ones and zeros, what's going to happen and how are people going to react?"

And Yee, an expert in virtual worlds, says the work will have real and positive applications. For example, "If kids learn better sitting in front of the teacher, than you can build an online environment where each kid is in front of the teacher," he said.

But Yee admits the lab's findings could lend themselves to unsavory exploitation. "You could get a postcard from President Bush that has 20 percent of your facial features."