

Motion-controlled video games may improve real world skills

February 18 2016



Credit: Cristie Guevara/public domain

Motion-controlled video games, such as those played on the Wii, may help boost skills when players compete in the real world, according to a

team of researchers.

Participants in a study who played 18 rounds of a video golf game that used a motion controller to simulate putting did significantly better at real-world putting than a group that played a [video-game](#) with a push-button controller and better than participants who had no video game training, said Edward Downs, former doctoral student in mass communications, Penn State, and currently associate professor of communication, University of Minnesota-Duluth. Motion controllers require players to use their own bodies to control the movements of the video game's avatar.

"What we can infer from this is that the putting motion in the game maps onto a real putting behavior closely enough that people who had 18 holes of practice putting with the motion controllers actually putt better than the group that spent 45 minutes or so, using the push-button controller to make putts," said Downs.

The researchers, who reported their findings in a recent issue of the *International Journal of Gaming and Computer-Mediated Simulations*, suggest that motion-controlled video games, as well as future virtual reality devices, such as Oculus Rift, are turning video games into simulations.

"It seems to us that we've crossed an evolutionary line in game history where video games are no longer just video games any more, they've become simulators," said Downs. "These games are getting people up and physically rehearsing, or simulating motion, so we were trying to see if gaming goes beyond symbolic rehearsal and physically simulates an action closely enough that it will change or modify someone's behavior."

Players who used the push-button video-game controller—a form of symbolic rehearsal—actually did worse in the real-world putting exercise

than the other groups, according to Downs, who worked with Mary Beth Oliver, Distinguished Professor in Media Studies and co-director of Media Effects Research Laboratory, Penn State.

"Why we suspect the symbolic rehearsal group did worse than the [control group](#) is because the control group didn't have to spend the previous 45 minutes translating button pushing into putting behavior, so they came in with more of a clean slate," said Downs.

Using these devices as simulators could have some drawbacks, including simulating skills, such as shooting or fighting, that could be used in negative ways.

"The study is really about process, and process is going to happen the same way whether the behavior is considered pro-social or anti-social," said Downs.

The researchers recruited 161 participants from a university and randomly divided them into three groups: one that would operate the motion-controlled game, one that would operate the symbolically controlled game and a control group. Most of the participants had a moderate level of experience with video games and motion-controlled video games. They had only limited knowledge of the Wii game used in the study.

After the video-game groups were finished playing the game, they were asked to putt balls from three different distances: 3 feet, 6 feet and 9 feet. Their accuracy was then recorded. The control group was sent directly to the putting test after they filled out a questionnaire.

Downs said the ability of motion-controlled games to improve real-world skills may go beyond just putting, but further research is needed to reveal just how far the effect goes.

"In this particular study we are talking about an action that would be considered a fine motor coordination. Putting doesn't use major muscle groups," said Downs. "But, going beyond this study, I think one of the areas we need to be looking at is to find to what extent consoles with motion controllers can be used as simulation devices to improve large-motor coordination."

Oliver said the research could be extended into other fields, such as music and art.

"The applications of these findings are very diverse—relevant to everything from sports to musical performance to physical therapy." Oliver said. "It's an exciting time to be looking at the vast array of ways that gaming can be utilized for prosocial purposes."

Provided by Pennsylvania State University

Citation: Motion-controlled video games may improve real world skills (2016, February 18) retrieved 27 April 2024 from

<https://medicalxpress.com/news/2016-02-motion-controlled-video-games-real-world.html>

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