

Study: Video game players show enhanced brain activity, decision-making skill

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Frequent players of video games show superior sensorimotor decision-making skills and enhanced activity in key regions of the brain as compared to non-players, according to a recent study by Georgia State University researchers.

The authors, who used [functional magnetic resonance](#) imaging (fMRI) in the study, said the findings suggest that video games could be a useful tool for training in perceptual decision-making.

"Video games are played by the overwhelming majority of our youth more than three hours every week, but the beneficial effects on decision-making abilities and the [brain](#) are not exactly known," said lead researcher Mukesh Dhamala, associate professor in Georgia State's Department of Physics and Astronomy and the university's Neuroscience Institute.

"Our work provides some answers on that," Dhamala said. "Video game playing can effectively be used for training—for example, decision-making efficiency training and therapeutic

interventions—once the relevant brain networks are identified."

Dhamala was the adviser for Tim Jordan, the lead author of the paper, who offered a personal example of how such research could inform the use of video games for training the brain.

Jordan, who received a Ph.D. in physics and astronomy from Georgia State in 2021, had weak vision in one eye as a child. As part of a research study when he was about 5, he was asked to cover his good eye and play video games as a way to strengthen the vision in the weak one. Jordan credits [video game](#) training with helping him go from legally blind in one eye to building strong capacity for [visual processing](#), allowing him to eventually play lacrosse and paintball. He is now a postdoctoral researcher at UCLA.

The Georgia State research project involved 47 college-age participants, with 28 categorized as regular video game players and 19 as non-players.

The subjects laid inside an fMRI machine with a mirror that allowed them to see a cue immediately followed by a display of moving dots. Participants were asked to press a button in their right or left hand to indicate the direction the dots were moving, or resist pressing either button if there was no directional movement.

The study found that video game players were faster and more accurate with their responses.

Analysis of the resulting brain scans found that the differences were correlated with enhanced activity in certain parts of the brain.

"These results indicate that [video game playing](#) potentially enhances several of the subprocesses for sensation, perception and mapping to action to improve decision-making skills," the authors wrote. "These findings begin to illuminate how video game

playing alters the brain in order to improve task performance and their potential implications for increasing task-specific activity."

The study also notes there was no trade-off between speed and accuracy of response—the video game players were better on both measures.

"This lack of speed-accuracy trade-off would indicate video game playing as a good candidate for cognitive training as it pertains to [decision-making](#)," the authors wrote.

The paper, "Video Game Players Have Improved Decision-Making Abilities and Enhanced Brain Activities," was published in the journal *Neuroimage: Reports*.

More information: Timothy Jordan et al, Video game players have improved decision-making abilities and enhanced brain activities, *Neuroimage: Reports* (2022). [DOI: 10.1016/j.ynirp.2022.100112](https://doi.org/10.1016/j.ynirp.2022.100112)

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