Could playing computer games improve your peripheral vision?

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Screen from the SuperVision suite of games. Credit: Argenis Ramirez Gomez

Playing computer games could help improve people's peripheral vision, new research reveals.

Researchers have found a significant improvement in the peripheral awareness of people who played computer games specially designed around using peripheral vision.

This finding opens up the possibility that these types of games can be used to help improve players' performance in team sports—so they can spot team-mates quicker—or to help them to identify potential hazards at the side of their vision.

Researchers at Lancaster University's School of Computing and Communications were keen to explore how players' peripheral vision might be used within computer games and if playing games could help to improve a players' peripheral awareness.

"Most computer games involve looking directly at targets, or following the movement of characters, because that is the most natural and intuitive way we use our eyes," said Mr Ramirez Gomez. "We wanted to explore the opposite—is it possible to play games just by using our peripheral vision, is it possible to develop strategies to overcome the challenge, would it be engaging and fun and could these games improve our peripheral awareness?"

They created three games, which are based on popular culture and mythology—such as the stories of Medusa and Cyclops. The Medusa game, for example, involved having Medusa dig up mushrooms in her garden while avoiding looking directly at the mushrooms—otherwise they would turn into stone.

The suite of games, collectively called SuperVision, require players to use a mouse to select, or steer, objects within the game using their peripheral vision. Eye-trackers check for when players look directly at objects within the game and players are penalised accordingly.

"Players struggled at first as they attempted to control and resist their instinctive impulse to look," said Argenis Ramirez Gomez, Ph.D. student and researcher at Lancaster University. "The games go against our natural behaviour. The players know they can't look but having to make decisions and interact with objects in the games forces players to lose control over their instincts and so they indulge their desire to look directly at the objects, failing in the game. But over time people developed strategies to overcome the challenge, such as focussing on a particular spot on the screen."

The researchers assessed each player's peripheral vision using a large protractor held to their eye level and by showing them coloured visual clues at different angles within a 180° radius.

Mr Ramirez Gomez said: "We evaluated the participants' peripheral visual capabilities before and after the games to test for skills development. We found a significant improvement in object recognition in the participants' peripheral vision after playing the games."

Even just one gaming session resulted in improvements in the players' peripheral awareness. The study continued over two weeks and the participants continued to show improvements in their peripheral vision throughout the duration of the research.

The participants did not play the games over the weekends during the study. This created a gap of three days between playing the games and researchers taking a measurement of the players' peripheral vision. There was no noticeable decline in performance over this gap, suggesting improvements in peripheral vision can be lasting, at least in the short-term.

More information: Argenis Ramirez Gomez et al. SuperVision, *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems - CHI '19* (2019). DOI: 10.1145/3290605.3300703

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