Child's play may revolutionize video gaming, police work

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(PhysOrg.com) -- What do hide-and-seek, police searches and video games such as Half-Life 2 have in common? More than you would think, say two University of Alberta researchers.

Experimental psychologist Marcia Spetch and computer scientist Vadim Bulitko, co-wrote and recently published an article in *Learning and Motivation*, and are using their research to understand the reasoning and decision-making process involved in hiding and searching for objects. They hope it will lead to more realistic game environments and, one day, advanced search-enhancing tools for law enforcement.

Their research revolves around a multi-phase study that involved adult participants searching for and hiding objects in a room in a virtual-reality setting resembling the real room's dimensions. While research on hiding and searching strategies had been done with animals and children, Spetch says little is known about hiding strategies used by adults.

The researchers found that people who were searching for objects tended to look in places closer to their starting location, whereas people tended to move farthest away from the starting point when hiding objects. The hiders would disperse objects over a wider area to make them harder to find. When their role was reversed, this group provided the researchers with some interesting observations.

"People that had already hidden objects tended to move further away from the starting place consistent with where people normally hide

objects," said Spetch. "It was as though the hiding primed them into what kinds of locations things might be hidden in."

Understanding peoples' hiding behaviours and considering their motivations and other factors (time, stress, value of an object) will help researchers in mapping out and predicting ideal hiding spots in any given space. Gamers will benefit directly from this knowledge, as it will allow programmers to hide objects in more interesting locations within a game, based on peoples' real-life search strategies.

This information will give the programmers more information they can use to make computer-generated characters, or game-bots, more human-like by giving them human characteristics and limitations. This, in Bulitko's opinion, levels the playing field and makes the game more fun for the players.

"It's very easy for a computer-controlled 'bot to know exactly where you've hidden some things, or to see through walls. All these extra-human abilities are easily implemented, but they appear as cheating to the player," said Bulitko. "I think players expect human-like characters in the game to behave like humans. And if somebody appears like a human in a game, they should also have the same sort of abilities as the human player."

Bulitko envisions the law enforcement application using computer-enhanced eyewear similar to technology currently available in military circles. By analyzing a room, the search-enhancing goggles could help limit the number of possible spots where an object may be hidden.

"A computer can recognize spots in a room, and maybe it can make some suggestions like 'OK, check under that plank on the floor,'" he said.

While there are still many variables to uncover and many scenarios to play out to help the researchers more fully understand what goes into this complex activity of hide-and-seek, Spetch is enthusiastic about the opportunities that this study opens up for her research team.

"What was exciting for us was that the same pattern of results appeared in both a virtual room and a real room," she said. "People seemed to make the same spatial decisions in the two environments.

"This means that we can more confidently use gaming technology and virtual environments for all sorts of psychological studies on navigation and spatial decision-making."

Provided by University of Alberta (news : [web](web))