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Scientists Shed New Light On Right Brain Activity

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It's a world first: thanks to new technology developed by the University of Victoria, Canada, researchers can now show how multiple parts of the right brain dynamically process spatial relationships.

"We already know that most people's right brains deal with the relationship between things in 3-D space," says UVic researcher Phil Zeman. "But until now we didn't know how multiple areas in the right brain interact with each other for spatial processing. This information is vital to understanding the key functions of the right brain, including why people with traumatic brain injury have difficulties with spatial navigation and how pharmaceuticals such as antidepressants affect the brain."

Zeman, along with his supervisor Dr. Ron Skelton, and PhD student Sharon Lee, are using UVic-developed technology to show how people process information. The MOST-EEG (Multiple Origin Spatio-Temporal -EEG) uses the electrical activity obtained from a person's scalp, recorded while a study participant plays a video game for example, to construct a meaningful representation of the brain activity that took place while the participant learned and used the layout of the virtual environment. In general, the tool provides a 3-D representation of the coordination of multiple regions of the brain during different mental states and can be applied in multiple applications and contexts.

The UVic researchers found that the brain activity of healthy adults shows strong and predominantly right hemisphere involvement during

navigation tasks in the video game space. When subjects were instructed to find their way to a hidden target location in the 3-D game environment (a common video game task) they used their right hemisphere as they navigated. This right brain activity was greater during the navigation task compared to when people were simply told to go to a target that they could see from their starting position. The results strongly suggest the act of finding our way requires the right hemisphere of the brain. A 3-D model showing the active brain areas and connections is posted at www.spatialbrain.com.

The UVic team hopes to apply the MOST-EEG technique and navigation in virtual environments to develop a better understanding of neural and cognitive deficits after traumatic brain injury.

Provided by University of Victoria