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Embodied Cognition: Using Movement to Understand the Mind

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Psychology Associate Professor Kevin Shockley helps graduate student Eli White set up virtual reality equipment used in their new study.

(PhysOrg.com) -- Psychology professors look at movement to study communication and cognition.

Interpersonal communication is more than just the exchange of words. Speech, gaze and body coordination are all utilized during conversation. A common example, such as hand gesturing while speaking, shows effective communication is more than just a linguistic dynamic.

This phenomenon, called embodied communication, is the focus of a new study by University of Cincinnati professors in the Department of Psychology.

"Collaborative Research: Dynamics of Interpersonal Coordination and Embodied Communication" is a $418,809 National Science Foundation grant given to Associate Professors Kevin Shockley, Michael Riley and Assistant Professor Michael Richardson to understand coordination of thought by studying coordination of action.

"We're using movement as a window to understand how people coordinate their thinking," says Shockley, the principal investigator for the study. "Normally people don't think of movement when they hear about psychology, but that's unfortunate because the embodied cognition approach illustrates so nicely how movement is integral to our understanding of the mind."

It's just one of the many studies on perception, action and cognition that take place in the Perceptual Motor Dynamics Lab. The researchers focus on how movement informs our understanding of perception and cognition through focal areas like limb coordination and postural control.

Utilizing motion-capture and eye-tracking technology—including eight cameras, virtual reality headsets, and full bodysuits that record every joint movement—the researchers will analyze the eye and body movements of two participants as they converse about the virtual world they're observing through the head mounted display.

By restricting participants' movements, speech or visual information, the scientists hope to illustrate the role of movement in effective communication.

Graduate students Julie Weast and Eli White don bodysuits that capture their motion through a number of attached sensors.

"We think the principles that govern coordination within a body are the same that govern coordination across two bodies that are interacting," Shockley explains. For example, if you notice someone nodding during conversation, does your head move as well? It's an unconventional method of studying cognition, Shockley adds, but one that could potentially open doors for studies about individuals with mental or physical disabilities.

As part of the NSF grant, the researchers will also create a Joint Action Research Database (JARD), a freely available repository for data collected from this and similar studies. The group hopes the database will serve as a vehicle for other researchers to study the coordination of minds and bodies.

"We're very excited about it," Shockley says. "We want to make all the data available for anyone who's interested, so they can take this research in new directions."

"In order to study how we think, we don't have to study only the brain," he adds. "Basically, we're trying to introduce a new paradigm for

studying cognition."

Provided by University of Cincinnati (news : web)

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