# Neuroscientists get yes-no answers via brain activity

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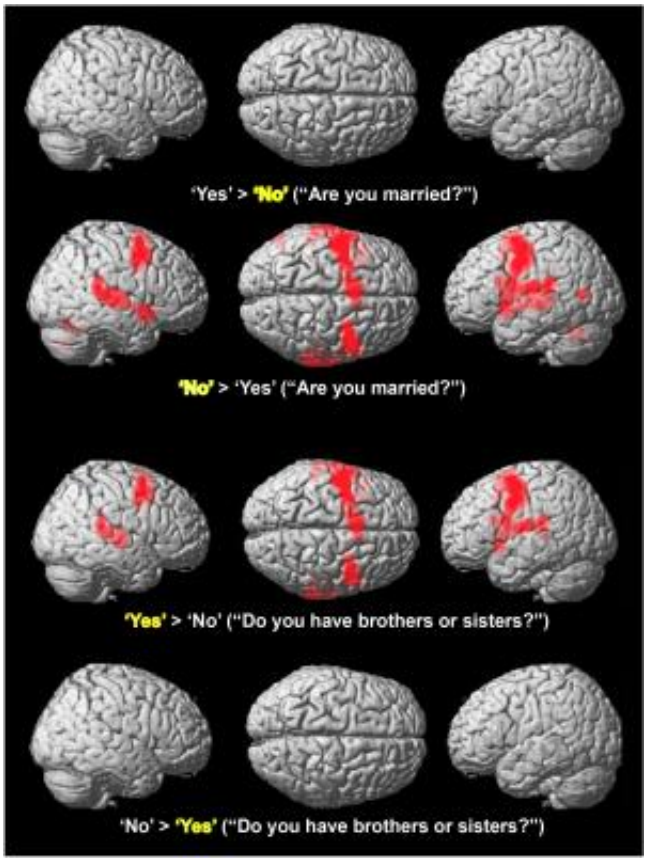


(Medical Xpress)—Western researchers have used neuroimaging to read human thought via brain activity when they are conveying specific 'yes' or 'no' answers.

Their findings were published today in *The Journal of Neuroscience* in a study titled, "The Brain's Silent Messenger: Using Selective Attention to Decode Human Thought for Brain-Based Communication."

According to lead researcher Lorina Naci, the interpretation of human thought from brain activity – without depending on speech or action – is one of the most provoking and challenging frontiers of modern neuroscience. Specifically, patients who are fully conscious and awake, yet, due to brain damage, are unable to show any behavioral responsivity, expose the limits of the neuromuscular system and the necessity for alternate forms of communication.

Participants were asked to concentrate on a 'yes' or 'no' response to questions like "Are you married?" or "Do you have brothers and sisters?" and only think their response, not speak it.

"This novel method allowed healthy individuals to answers questions asked in the scanner, simply by paying attention to the word they wanted to convey. By looking at their brain activity we were able to correctly decode the correct answers for each individual," said Naci, a postdoctoral fellow at Western's Brain and Mind Institute. "The majority of volunteers conveyed their answers within three minutes of scanning, a time window that is well-suited for communication with brain-computer interfaces."

Naci and her Western colleagues Rhodri Cusack, Vivian Z. Jia and Adrian Owen are now utilizing this method to communicate with behaviorally non-responsive patients, who may be misdiagnosed as being in a vegetative state.

"The strengths of this technique, especially its ease of use, robustness, and rapid detection, may maximize the chances that any such patient will be able to achieve brain-based communication," Naci said.

Provided by University of Western Ontario