

Tongues on the Mind

By [Constance Holden](#) Nov. 2, 2006 , 12:00 AM

For a practice that's been around for thousands of years, scientists understand very little about what goes on when people "speak in tongues." Currently, glossolalia--as it's called--can be found in Pentecostal and Charismatic Christian sects, where those affected believe they are uttering a message directly from God. Now scientists say they have captured glossolalia on brain scans, which link decreased frontal lobe activity to a loss of self control.

To conduct the study, psychiatrist Andrew Newberg of the University of Pennsylvania in Philadelphia and his colleagues recruited five African-American women who belong to a local Pentecostal congregation. All had been in the habit of speaking in tongues "almost on a daily basis" for the past 5 years, says Newberg. As a control activity, subjects stood and sang gospel songs with musical accompaniment, moving their arms and swaying. Then they were asked to repeat the behavior, but this time the researchers encouraged them to speak in tongues rather than sing.

In each case, the scientists gave the subjects an intravenous injection of a radioactive tracer that provided, in effect, a freeze-frame of which brain areas were most active during the behavior, as indicated by increased blood flow. This was captured by then scanning the women's brains in a single photon emission computed tomography (SPECT) machine.

Glossolalia produced a significantly different pattern of brain activity than singing, the team reports in the November issue of **Psychiatry Research: Neuroimaging**. Perhaps the most important difference was a decrease in frontal lobe function, Newberg says. "The part of the brain that normally makes them feel in control has been essentially shut down." Another notable change was increased activity in the parietal region--the part of the brain that "takes sensory information and tries to create a sense of self and how you relate to the rest of the world," Newberg says. The findings make sense, says Newberg, because speaking in tongues involves relinquishing control while gaining a "very intense experience of how the self relates to God." Interestingly, he notes, the glossolalia responses were the opposite of those seen in subjects in a meditative state. When people meditate on a particular sacred object, Newberg has found that their frontal lobe activity increases, while their parietal activity goes down. This conforms with the notion that in meditation one has a controlled focus while losing a sense of self.

It's an excellent study, says psychologist Michael Persinger of Laurentian University in Ontario, Canada, who has done brainwave research with glossolalia. "Each of Dr. Newberg's results have specific implications," he says. For example, increased parietal activity would go with a sense of one's self being "touched by the spirit."