

Vision trumps hearing in study

September 11 2013, by Josh Shaffer

A Duke University study used puppet-based comedy to demonstrate the complicated inner-workings of the brain and shows what every ventriloquist knows: The eye is more convincing than the ear.

The study, which appears in the journal *PLOS ONE*, seeks to explain how the brain combines information coming from two different senses. How, asks Duke psychology and [neuroscience](#) professor Jennifer Groh, does the brain determine where a [sound](#) is coming from?

In your eyes, the [retina](#) takes a snapshot, she said. It makes a topographic image of what's in front of you. But the ears have nothing concrete to go on. They have to rely on how loud the sound is, how far away and from what direction.

That's where a ventriloquist comes in, providing a model for this problem. With a puppet, the noise and the movement are coming from different places. So how does the brain fix this and choose where to look?

Duke researchers tested their [hypotheses](#) on 11 people and two [monkeys](#), placing them in a soundproof booth.

They arranged speakers in various locations and attached lights to them.

Then they played a sound from one speaker and flashed a light from another, tracking people's [eye movements](#). Sometimes they played the sound in time with the light, but only for just a fraction of a second.

Sometimes they played the sound first, then followed up with the light.

Results: People moved their eyes much more when the light came at a different time with the sound. To sum up, it doesn't matter if sounds and lights happen at the same time, in the same place. It's more important that the eyes get a clue to give back to the brain.

"Vision is so much better at informing location," Groh said. "Why do we have the ventriloquist [illusion](#)? That illusion occurs because of the power of vision to correct errors."

This rings true to Cynthia Foust, a real ventriloquist in Rocky Mount.

She spent about six months practicing on her own before taking her show to day cares, where she aims to keep children's eyes on the puppet's mouth.

"You kind of keep things animated with the puppet so they're not looking at me," Foust said.

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