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New Brain 'Hemispheres' Data

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Any movement of the gazing eye could cause "leakage" of information into the wrong hemisphere.

The Z-lens system developed by Zaidel eliminates the danger of leakage, no matter what eye movements are made.

Key to the system, Zaidel pointed out, is a contact lens which moves with the eye.

Because language and speech are centered in the dominant left hemisphere, it was believed that the right one, which cannot express itself in speech, was very poor in language.

It was thought to have no understanding of sentence structure, thought it is rich in intuitive talents, creative spatial vizualizing and appreciation of music and form.

However, Zaidel found that the right hemisphere can understand relatively complex spoken sentences and can read single words but not long phrases or sentences.

The new findings may have important clinical implications, Zaidel pointed out. They hopefully will point the way toward tapping the potential of the right hemisphere in persons whose verbal, left hemisphere has been damaged, as by stroke.

"We now know that the right hemisphere can support a lot of language," Zaidel said, "but it has to be trained in special ways.

"The Z lens also can simulate any visual field defect, and with it one can study what it means to see with only selected regions of the retina."

The Z lens system works in this way: To confine visual input to the right hemisphere, a patch is placed over the left eye and the contact lens fitted to the right one.

Each contact lens is tailor-made to fit an individual eye.

The right eye looks through a minute collimating tube and lens attached to the contact lens.

A half patch is fitted into the tube, blocking out the part of the right eye's retina which feeds information into the left hemisphere.

This leaves for seeing only the temporal part of the retina that is linked with the right hemisphere.

Along with the contact lens is a series of other lenses, a prism and a mirror or screen.

The stimulus image is reduced to 1/40th normal size and projects it at the focal plane of the collimating tube so that the tiny half patch (one-fifth inch diameter) in the tube will screen out the whole unwanted half of the visual field.

The tube is fitted onto the contact lens and its lens enlarges the stimulus image again to normal size.

Thus the subject is enabled to see normally and with clarity an object in front of him or on a testing panel as long as necessary — but with only one hemisphere.

The new Z lens technique, the scientists point out, makes it possible for the first time to determine in detail with visual tests the capabilities of the mute right hemisphere, in cases where the hemispheres have been severed by surgery.

Standard tests now can be given to measure cognitive, perceptual and linguistic abilities of "split brain" persons.

Although the severed corpus callosum prevents the two hemispheres from communicating with each other and makes it possible to test either one separately, there is some evidence of deeper links between the hemispheres on emotional matters, the scientist added.