# Scientists Probe the Origins of Dyslexia

**By Amanda Gardner**
HealthDay, Dec. 21, 2011

WEDNESDAY, Dec. 21 (HealthDay News) -- Problems in how people with dyslexia process the sounds they hear may be at the heart of this learning disorder, new research suggests.

The study findings, published in the Dec. 22 issue of the journal *Neuron*, may one day lead to better therapies for children and adults who are diagnosed with this common yet still ultimately mysterious condition.

And different people with dyslexia may have differences in brain-processing patterns, which could help distinguish subtypes of the disorder.

Dyslexia affects about 5 percent of school-aged children.

Although we "typically think of dyslexia as an impairment of reading or the printed word, previous research has suggested that there's an auditory-processing component. . . It's not just the printed word but also auditory," said Dr. Andrew Adesman, who was not involved with the study but is familiar with the findings.

Indeed, one of the biggest risk factors for dyslexia is delays in spoken language in young children, said Adesman, chief of developmental and behavioral pediatrics at the Steven & Alexandra Cohen Children's Medical Center of New York, in New Hyde Park.

Previous brain imaging studies had shown abnormal processing of brief sounds in people with dyslexia, but it has been unclear what the neurophysiological mechanism was behind the abnormalities, according to study authors Katia Lehongre, from the Ecole Normale Superieure in Paris, and colleagues.

The French authors focused on a phenomenon called "sampling," which refers to how the brain initially responds to sounds. Specifically, sampling involves the processing of phonemes, which are the basic elements of sound.

"They're looking at where and how sound is processed," Adesman explained.

What the investigators found in people with dyslexia, as compared to people who did not have dyslexia (control-group members), were abnormalities in the left auditory cortex of the brain.

The brains of people with dyslexia may "overreact" to phonemes at high-frequency rhythms. This could interfere with verbal memory and, hence, speech, the study found.

"The left auditory cortex may be less responsive to certain sound frequencies that are optimal [for processing] phonemes," Adesman explained.

Although the research is "important," said Dr. Harold Levinson, clinical/research director of the Levinson Medical Center for Learning Disabilities in Great Neck, N.Y., it may not take into account the complexity of dyslexia and the many brain processes involved.

The particular brain abnormalities identified in this study may just be a reflection of other problems in the cerebellum region of the brain, he said.

A number of questions remained unanswered, Levinson added.

SOURCES: Andrew Adesman, M.D., chief, developmental and behavioral pediatrics, Steven & Alexandra Cohen Children's Medical Center of New York, New Hyde Park, N.Y.; Harold Levinson, M.D., clinical/research director, Levinson Medical Center for Learning Disabilities, Great Neck, N.Y.; Dec. 22, 2011, *Neuron*