

# Brain abnormalities discovered in people who have trouble reading fast

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Some people who have problems reading quickly appear to have abnormalities in the white matter of their brains, according to research published in the December 4, 2007, issue of *Neurology*, the medical journal of the American Academy of Neurology. Researchers say these findings provide a model to better understand ways in which the brain may have developed differently in people with learning disabilities.

For the study, researchers tested the reading and cognitive abilities of 30 adults, 10 of whom had periventricular nodular heterotopia (PNH), a rare genetic brain disease that causes seizures and reading disabilities. Ten of the adults had dyslexia, one of the most common learning problems in the general population, and the other 10 participants were healthy and had no reading problems. Six of the 10 people with PNH also underwent a specialized form of brain scan.

The researchers found that the people with PNH had a specific form of dyslexia that affected their ability to read words and name things quickly. These individuals had visible disruptions in their white matter, the part of the brain that consists mostly of fiber tracts, or wiring, that connect together other brain regions. The more their white matter was abnormal, the worse they performed on rapid reading tests.

“Our findings suggest that white matter integrity plays a critical role in reading fluency and that defects in white matter serve as the structural basis for the type of dyslexia we see in this brain malformation,” said the study’s lead author Bernard S. Chang, MD, with Harvard Medical School

in Boston, and member of the American Academy of Neurology. "Our work highlights the importance of studying white matter structure in order to understand cognitive problems and learning disabilities more fully."

Chang says there are several limitations to the study, including the small sample size and the fact that brain scans cannot definitively show how the white matter fibers are actually connected.

Source: American Academy of Neurology

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