

# Researchers use neuroimaging to explore reading deficits after left stroke

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October 16, 2015 Researchers at Kessler Foundation and Rutgers University correlated neuroimaging data with reading deficits in patients with subacute left hemispheric stroke. Their findings add to our knowledge of the neural mechanisms of reading and may be useful in the development of reading interventions that address specific neurological deficits. The article, "Neurally dissociable cognitive components of reading deficits in subacute stroke" was published in *Frontiers in Human Neuroscience*.

Although impaired reading can cause significant disability, few studies have focused on the cognitive components of reading. The objective of this study was to link each of the three components: visual form (orthography), sound (phonology) and meaning (semantics), with their neural substrates. In this study, 11 [stroke patients](#) underwent neuropsychological testing and neuroimaging, which enabled investigators to correlate their cognitive deficits with respect to lesion location.

Participants were studied during inpatient rehabilitation, within 5 weeks of left-sided stroke. All underwent functional magnetic resonance imaging, psychometric testing, neurological examination and tests for phonological, orthographic and semantic impairments. One interesting finding was the association between phonological deficits and lesions in the anterior temporal lobe and mid-fusiform gyrus.

"Although this lesion-deficit approach is not widely used, it offers a way to define impairments in reading in relation to specific cognitive deficits," said Dr. Barrett, director of stroke rehabilitation research at Kessler Foundation. "This novel framework could provide the basis for targeted interventions for addressing acquired reading deficits. Research that advances our understanding of the cognitive processes involved in reading will improve the rehabilitative care of

individuals with left-sided [stroke](#), and benefit other populations with acquired reading impairments."

**More information:** Olga Boukrina et al. Neurally dissociable cognitive components of reading deficits in subacute stroke, *Frontiers in Human Neuroscience* (2015). [DOI: 10.3389/fnhum.2015.00298](#)

Provided by Kessler Foundation

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