

How do we understand written language?

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How do we know that certain combinations of letters have certain meanings? Reading and spelling are complex processes, involving several different areas of the brain, but researchers from Johns Hopkins University in the USA have now identified a specific part of the brain named the left fusiform gyrus - which is necessary for normal, rapid understanding of the meaning of written text as well as correct word spelling. Their findings are published in the February 2010 issue of *Cortex*.

Dr Kyrana Tsapkini, from the Department of <u>Neurology</u> at Johns Hopkins University School of Medicine, and Dr Brenda Rapp, from the Department of <u>Cognitive Science</u> at Johns Hopkins University, studied the reading comprehension and spelling abilities of a patient who had undergone surgical removal of part of his brain due to a tumor.

The patient's reading and <u>spelling</u> abilities had been above average prior to the surgery. They tested the patient and a group of control participants using 17 experimental tasks, which evaluated their comprehension and production of written language, spoken language, as well as their processing of other visual categories such as faces and objects.

The results of the study revealed that the patient was able to understand the meaning of spoken language as rapidly as the other participants and was similarly able to process objects and faces in a normal way. However, he showed significant delays in understanding the meaning of written text and also had difficulty in producing accurate spellings when writing dictated text, suggesting that these abilities required the use of



the brain area, which had been removed.

According to the authors, the findings provide clear evidence that there are particular structures within this part of the <u>brain</u> - the left mid-fusiform gyrus - that are "specialized and necessary for normal orthographic processing".

More information: The article is "The orthography-specific functions of the left fusiform gyrus: Evidence of modality and category specificity" by Kyrana Tsapkini and Brenda Rapp and appears in Cortex, Volume 46, Issue 2 (February 2010), published by Elsevier. <u>http://www.elsevier.com/locate/cortex</u>

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