Chinese dyslexia complicated: study
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Dyslexia among English-speaking and Chinese-speaking people may be the result of different patterns of brain disorder, according to new research.

Work done by the Laboratory of Brain and Cognitive Sciences at Hong Kong University (http://www.hku.hk/) , published today in the journal Current Biology (http://www.cell.com/current-biology/), shows that developmental dyslexia in Chinese-speaking children may be a more complicated and harder to treat condition than its English counterpart.

Control trials of Chinese children with dyslexia show that the majority have difficulties in both the visual processing required to interpret the images of Chinese script, as well as in the process of relating sounds to words, known as phonology.

For those from alphabetic language backgrounds, such as English, dyslexia is predominantly a phonological disorder.

One of the authors of the paper, psycholinguist Dr Li-Hai Tan says the findings suggest there may be a more fundamental mechanism behind the cause of dyslexia than previously thought.

Brain mapping
Earlier research by the same group showed that different parts of the brain are affected in Chinese speakers with dyslexia as compared to those who speak English.

"Different sites of the brain are responsible for the phonological dysfunction: the left middle frontal gyrus for the phonological problem of Chinese dyslexia and the left temporoparietal regions for the phonological problem of English dyslexia," says Tan.

Because written Chinese is an intricate map of symbols requiring rote learning of pronunciation, the researchers were then prompted to study how Chinese-speaking children with dyslexia were able to process such images.

This was done by measuring how 12 children with dyslexia were able to judge the physical size of different block images on a screen, and where in the brain these judgements were made. The results were compared with 12 children who did not suffer from dyslexia.

The results indicated that 10 out of the 12 dyslexic children, who had previously shown difficulty in processing sounds, also had difficulty processing images. It is extremely rare for English-speaking children with dyslexia to have both disorders.

New treatment
The most immediate implication of the finding is likely to be a shift in the way Chinese-speaking dyslexic children are treated.

As the visual and speech problems appear to be equally severe in many Chinese-speaking children with dyslexia, Tan says that treatment may be more effective if both disorders are treated.

"Given that Chinese children with dyslexia exhibit multiple problems, the treatment of Chinese reading
impairments should include several strategies relating both to phonological and visual dysfunction," says Tan.

For most English-speaking children with dyslexia, relating sounds to letters is the major hurdle so treatment is unlikely to change.

However Tan points out that as the previous research has shown that different areas of the brain are responsible for reading in Chinese and English, English-speaking children with dyslexia may actually find it easier to read in Chinese.