New theory on cause of dyslexia

Scientists have cast doubt on the theory that there is probably a single cause for the word disorder dyslexia.

They have found that Chinese children do have similar reading difficulties - but they can be traced to different parts of the brain than in Westerners.

The researchers, from the US National Institute of Mental Health, say their work suggests the cause of dyslexia varies in different cultures.

Their work is published in the journal Nature.

Many researchers think the biological root of dyslexia lies in an area of the brain called the left temporoparietal region.

But most studies of the condition have focused on letter-based, alphabetic languages such as English.

The new study concentrated on Chinese children because their language is based not on letters, but on symbols.

The researchers used sophisticated imaging technology to study the brain activity of 16 Chinese dyslexic children as they performed various language-based tasks.

Their study suggests that for these children, the problem lies in another area of the brain - the left middle frontal gyrus (LMFG).

Different task

The researchers, led by Dr Li-Hai Tan believe that this region is implicated because reading Chinese is a different mental task compared with reading an alphabetic language.

With an alphabetic language, reading is done sequentially - the letters are recognised and broken up into blocks of sound which are then matched to a known meaning.

But with Chinese, the reading is more like parallel processing, in which the brain has to seize the meaning of the pictogram almost as simultaneously as it figures out its
The researchers believe their findings suggest that dyslexia may vary depending on the culture in which it is found.

It may also suggest that tasks to stimulate different areas of the brain are needed to treat people with dyslexia in different cultures.

Professor Dr Charles Perfetti, of the University of Pittsburgh who also worked on the study, said: "Our findings argue against a simple biological unity hypothesis of dyslexia."

Dr Ian Smythe, an international dyslexia consultant, agreed that the condition was linked to different deficits in different languages.

For instance, in English it was linked to a problem with manipulating sounds, while in Hungarian the major difficulty is with short-term memory.

He also stressed that differences in teaching methods might play a role. For instance, the Chinese often encourage children to memorise facts.

He said: "The manifestation of dyslexia in any individual will depend upon not only individual cognitive differences, but also the language and culture of the individual."