Dyslexia in different languages

Dyslexia may manifest itself differently for speakers of different languages, according to a study published online in the October 12 issue of Current Biology. Using visual and audio tests, as well as functional magnetic resonance imaging (fMRI) brain scans, researchers from the University of Hong Kong determined that, while dyslexia in English-speakers is primarily due to a sound-related processing problem, among Chinese language speakers, it is likely driven by both visual and sound processing disorders.

Dyslexia among English-speakers is generally attributed to the presence of a phonological disorder—or the struggle to separate and keep track of specific, individual sounds. Very broadly, this leading theory holds that dyslexics have trouble with the written word as an extension of their struggle to innately process phonemes, or snippets of verbal language. (When asked to decouple the "r" sound from the word "rock," dyslexic children would struggle significantly more than non-dyslexic children, for example.) As a result, dyslexics get tangled up during reading because the process requires them to connect the phonics—or specific utterances associated with written letters or groups of letters—to the phonemes.

Yet, whereas in English readers can use letters to sound words out, pronunciation of specific characters in Chinese languages is dependent on rote memorization, the researchers point out. And knowing which character's pronunciation to pull up is dependent on a complete understanding of the intricate combination of strokes included in each character. In the analysis of 12 Chinese children with dyslexia, researchers found that, in addition to struggling with phonological processing exercises, the children also had trouble with exercises in which they were asked to judge the dimensions of images, as compared with non-dyslexic children. What's more, while performing visual identification tasks, brain scans revealed that dyslexics had less activity in the part of the brain associated with visuospatial processing, as compared with non-dyslexics.

The findings, the researchers say, suggest that dyslexia among Chinese language speakers may be more complex and multifaceted than that of English speakers. Or, as they put it, "[D]evelopmental dyslexia in Chinese is typically characterized by the co-existence of visuospatial and phonological disorders..." In English, however, it "is generally associated with a core phonological deficit in the absence of abnormal visual processing."