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How can we stlil raed words wehn teh lettres are jmbuled up?

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Researchers in the UK have taken an important step towards understanding how the human brain 'decodes' letters on a page to read a word. The work will help psychologists unravel the subtle thinking mechanisms involved in reading, and could provide solutions for helping people who find it difficult to read, for example in conditions such as dyslexia.

In order to read successfully, readers need not only to identify the letters in words, but also to accurately code the positions of those letters, so that they can distinguish words like CAT and ACT. At the same time, however, it's clear that raeders can dael wtih wodrs in wihch not all teh leettrs aer in thier corerct psotiions.

"How the brain can make sense of some jumbled sequences of letters but not others is a key question that psychologists need to answer to understand the code that the brain uses when reading," says Professor Colin Davis of Royal Holloway, University of London, who led the research.

For many years researchers have used a standard psychological test to try to work out which sequences of letters in a word are important cues that the brain uses, where jumbled words are flashed momentarily on a screen to see if they help the brain to recognise the properly spelt word.

But, this technique had limitations that made it impossible to probe more extreme rearrangements of sequences of letters. Professor Davis's team

used computer simulations to work out that a simple modification to the test would allow it to question these more complex changes to words. This increases the test's sensitivity significantly and makes it far more valuable for comparing different coding theories.

"For example, if we take the word VACATION and change it to AVACITNO, previously the test would not tell us if the brain recognises it as VACATION because other words such as AVOCADO or AVIATION might start popping into the person's head," says Professor Davis. "With our modification we can show that indeed the brain does relate AVACITNO to VACATION, and this starts to give us much more of an insight into the nature of the code that the brain is using – something that was not possible with the existing test."

The modified test should allow researchers not only to crack the code that the brain uses to make sense of strings of letters, but also to examine differences between individuals – how a 'good' reader decodes letter sequences compared with someone who finds reading difficult.

"These kinds of methods can be very sensitive to individual differences in reading ability and we are starting to get a better idea of some of the issues that underpin people's difficulty in reading," says Professor Davis. Ultimately, this could lead to new approaches to helping people to overcome reading problems.

More information: This release is based on the findings from 'How do readers code letter position?' funded by the ESRC and carried out by Colin Davis of Royal Holloway, University of London, and Stephen Lupker of the University of Western Ontario, Canada.

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