

Cognitive neuropsychology

with Professor Jacqueline Cummine

Talking points

Knowledge

1. What is cognitive neuropsychology?
2. What is a phoneme?

Comprehension

3. How are hearing and touch related to our ability to read?
4. What are the three parts of the brain most relevant to reading, and how do they work together to enable us to read?

Application

5. Jacqueline mentions the broader effects of reading impairments, such as social anxiety. How do you think findings from cognitive neuropsychology could help mitigate these negative effects?
6. Studies on people with neurological impairments often yield new insights into how the brain functions. Why do you think this is? Use situations described in the article to illustrate your points.

Analysis

7. Why do you think the team uses several different methods of brain imaging, rather than just one?
8. Jacqueline talks about how adults with large lollipops in their mouths showed altered reading ability. Why do you think this is? Think about the role of different sensory systems in speech.

Evaluation

9. To what extent do you think people from the earliest human civilisations to invent written language took more time to learn to read? Drawing on information from the article, think about biological, evolutionary and cultural influences that might have been present.
10. "I hope that initiatives to increase diversity and inclusion can alter this trajectory, making space for a more holistic, flexible, and nuanced approach to advancing knowledge," says Jacqueline. What do you think this looks like in real terms? Think about current shortcomings in science that you are aware of, and how these might be overcome.

Activity

Jacqueline's article explains how vision, hearing and touch are all used when we read. Design a study to shed further light on this relationship, by giving participants a reading task and introducing a variable that affects one of these three senses. The 'lollipop' example from the article, for instance, affected participants' sense of touch.

Take the following steps:

1. State your hypothesis. What do you want to test exactly?
2. Design your methodology. This will involve several parts:
 - a. Participants – most likely your classmates. Think about how much information about the study's purpose you should tell them beforehand.
 - b. A reading task. Type one up or find a text online.
 - c. The independent variable: something that affects a sensory system of participants.
 - d. The dependent variable: how you will record and measure participants' reading proficiency?
 - e. Control variables: how will you design the test so that all other factors remain equal? For instance, how will you divide participants into different groups, or rotate them between groups?
3. Perform your experiment. Make sure that participants feel comfortable and are respected. Make sure to record your results systematically and accurately.
4. Analyse your results. What methods will you use to analyse your findings?
5. Present your results. How can you visualise your findings? What conclusions can you draw? What follow-up research would you recommend to shed further light on your research question?

More resources

- You can find a study by Jacqueline's team where adults with low literacy report on skill-based and life-based changes here: ideas.repec.org/a/gam/jscscx/v12y2023i6p315-d1153676.html
- This video from Hill Learning Center gives an insight into the psychology behind how we learn to read: www.youtube.com/watch?v=A2HHrKpjIYM
- This article in Psychology Today explains why many deaf people struggle to learn to read: www.psychologytoday.com/us/blog/talking-apes/201507/can-you-read-language-you-can-t-hear