

## **Today's topic:**

- **Presentation and discussion:  
Orthographic learning and  
reading difficulty**

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*Background:*

- Wang, Marinus, Nickels, & Castles (2014),  
“Tracking orthographic learning...”

## 0. Course info and announcements

- **Group 3:** Remember to fill out the **self and peer evaluation form** by **5pm** on **Tu Mar 26** (GDoc form; see link via Canvas “Assignments”)

# 0. Key points today

- Group 3 presentation
- Follow-up discussion on the article
- Models and model-building in scientific research

# 1. Article presentation

- **Group 3 article presentation**

Wang, Hua-Chen, Eva Marinus, Lyndsey Nickels, and Anne Castles. 2014. Tracking orthographic learning in children with different profiles of reading difficulty. *Frontiers in Human Neuroscience* 8: article 468, 1-14.

- [Article link](#) (UNC Libraries)

## 2. Discussion: Wang et al. (2014)

- Any additional comments or questions?

## 2. Discussion: Wang et al. (2014)

- Types of results in this article
  - Group comparisons
  - Relationships between predictors and outcomes (correlations, regressions)

### 3. Meta-discussion: On article presentations

- Now that we have seen three presentations...

Does anyone have any suggestions or ideas for the **presenters** or the **audience** to consider, going forward?

## 4. Model-building in scientific research

- In scientific investigation, what is a **model**?
  - Can you think of any examples of models from various areas of science?



## 4. Model-building in scientific research

- A model is an **abstract explanatory device** designed to **account for data**
  - ‘Abstract’ = exists in the minds of the explainers
  - Data = facts that we observe about the world
- What does having a model allow us to do?

## 4. Model-building in scientific research

- A model is an **abstract explanatory device** designed to **account for data**
- What does having a model allow us to do?
  - **Describe** what we observe
  - **Predict** what else should happen
  - (Attempt to) **explain** why phenomena occur
- If we can get our model to be a **good match** with how the world works, we conclude that properties of the world are like properties of our model
  - We check this by **testing hypotheses**

## 4. Model-building in scientific research

- When we propose a model, what are some of the characteristics we have to give it?
  - We propose **entities** that exist in the model
  - We propose ways in which those entities **behave** or **interact**
  - We **carefully define** those elements or entities and their relations, so that it is clear what the model allows, or requires, them to do

## 4. Model-building in scientific research

- Testing the “self-teaching” model of orthographic learning against two groups of poor readers
  - How did this research question relate to the structure of the experiments?

## 4. Model-building in scientific research

- Testing the “self-teaching” model of orthographic learning against two groups of poor readers
  - The model:
    - Phono. decoding → orthographic learning
    - Role of “orthographic processing?”
  - Types of poor readers:
    - Surface group (normal performance in phonological decoding)
    - Phonological group (below normal performance in phonological decoding)

## 4. Model-building in scientific research

- What was the Coltheart et al. (1993, 2001) Dual-Route Model originally proposed in order to describe/predict/explain?
- How do Wang et al. (2014) test further predictions of this model?
- Do Wang et al.'s (2014) results help to...
  - confirm vs. find problems for the model?
  - describe/predict/explain additional phenomena?

## 4. Model-building in scientific research

- Do the components of the Dual-Route Model of reading aloud predict:
  - a) different skill profiles for phonological vs. surface dyslexics?
  - b) orthographic learning?
    - letter analysis
    - phonemic buffer
    - semantics
    - letter-sound conversion
    - orthographic lexicon
    - phonological lexicon

## 5. Upcoming

- Group 4 article presentation next Tu
- RE #4 due next Tu
- Well-being day next Th
- After that: we'll talk about final projects!