

WHAT DID I JUST HEAR? PHONOLOGICAL SIMILARITY AS AN INDEX OF SHORT-TERM MEMORY PRECISION FOR WORDS AND NONWORDS

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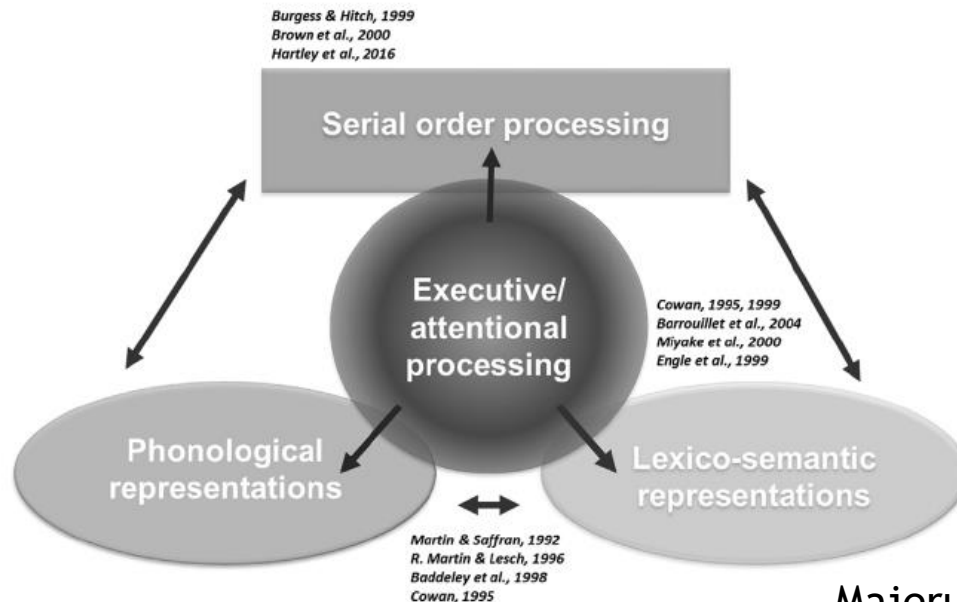
BAPS meeting 18.05.2018

Introduction

- ▶ Short-term memory (STM): ability to hold in mind a certain amount of stimuli
- ▶ STM precision
 - ▶ Resolution at which items are stored in STM (Joseph et al., 2015)
 - ▶ Differs from STM capacity, which is binary
 - ▶ Trace weakened, but still active
 - ▶ Mainly studied in the visual domain (Bays et al., 2009; Zokaei et al., 2011; Burnett Heyes et al., 2012; Klyszejko et al., 2014)
 - ▶ And, to some extent, in the auditory-verbal domain (Joseph et al., 2015; Gilbert et al., 2017; Clark et al., 2017)

Introduction

- ▶ STM precision at a more functional, word-like level?
- ▶ Understand the nature of representations in verbal STM
- ▶ Interdependence between verbal STM and language



Majerus, 2017

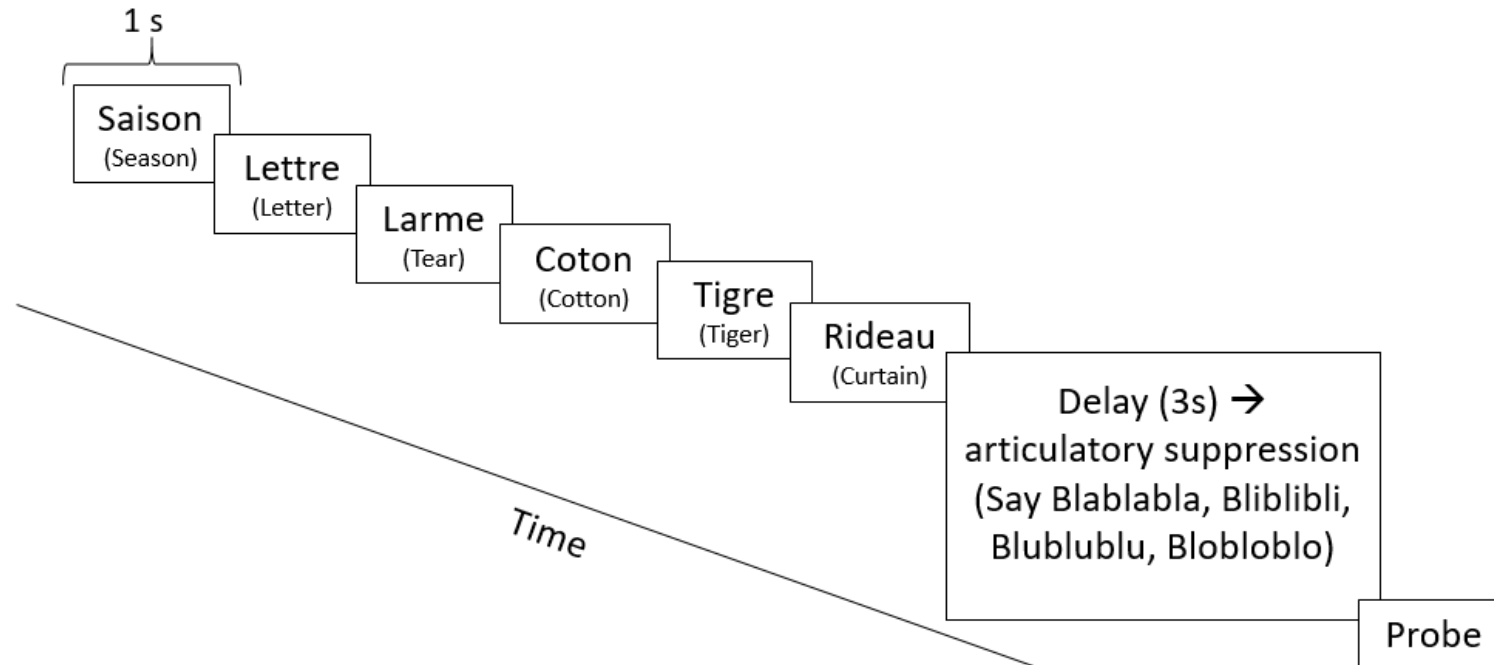
Introduction

- ▶ STM precision for different levels of similarity between memory and probe items
 - ▶ Phonological similarity for words (Study 1)
 - ▶ Phonological similarity for nonwords (Study 2)
- ▶ Hypotheses
 - ▶ More errors with increased similarity
 - ▶ Interindividual differences
 - ▶ Potential index of STM performance

Study 1

- ▶ Phonological similarity for whole words
 - ▶ Probe recognition task
 - ▶ Phonological similarity gradient
- ▶ Participants
 - ▶ 60 French-speaking participants (30 women)
 - ▶ 18-30 years ($\bar{x} = 22.63$; $\sigma = 2.840$)
 - ▶ No neurological disorder or learning disability

Study 1: Methods



Possible probes: Cotton (positive probe)

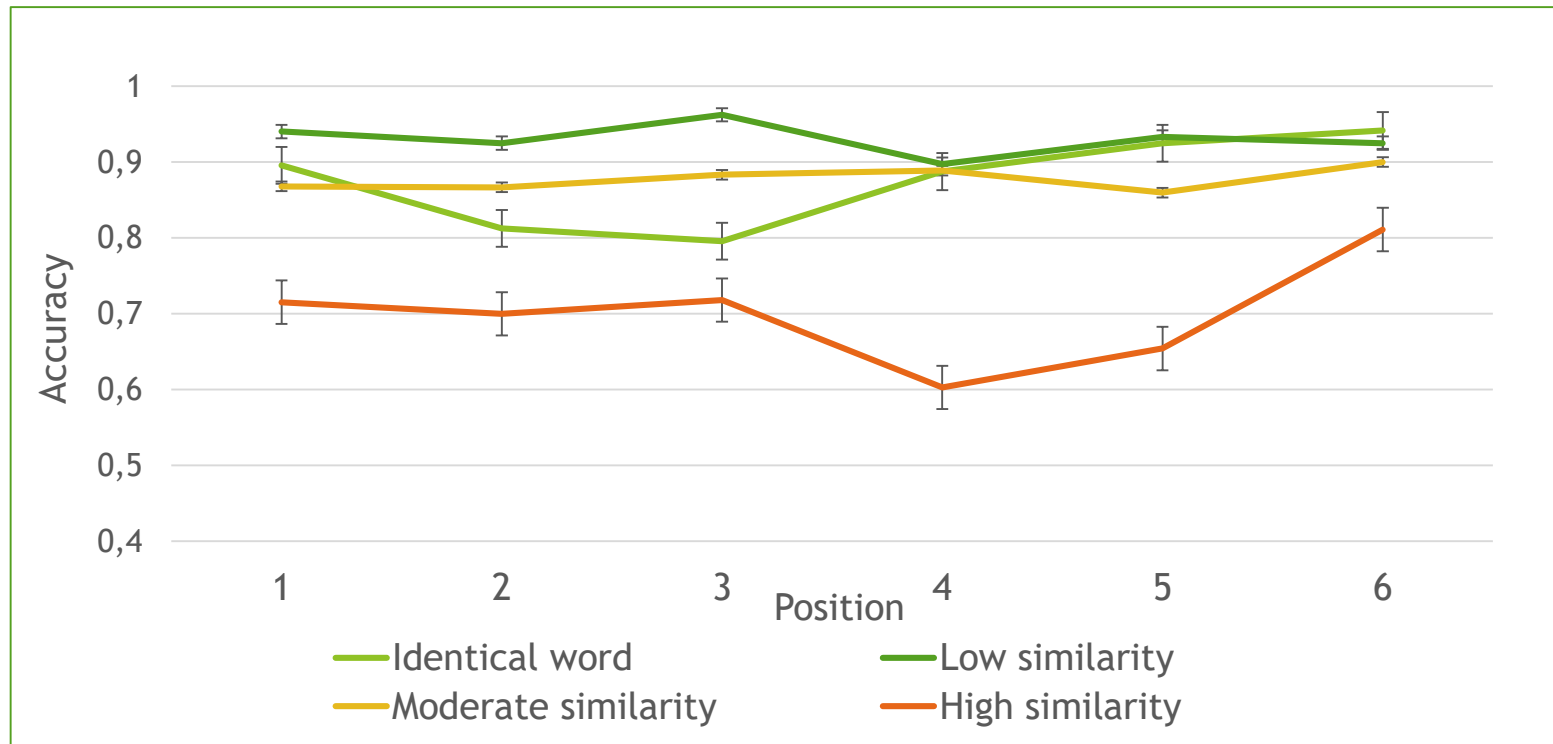
Raison (Reason) (→ Saison)

Ferme (Farm) (→ Larme)

Lèvre (Lip) (→ Tigre)

Study 1: Results

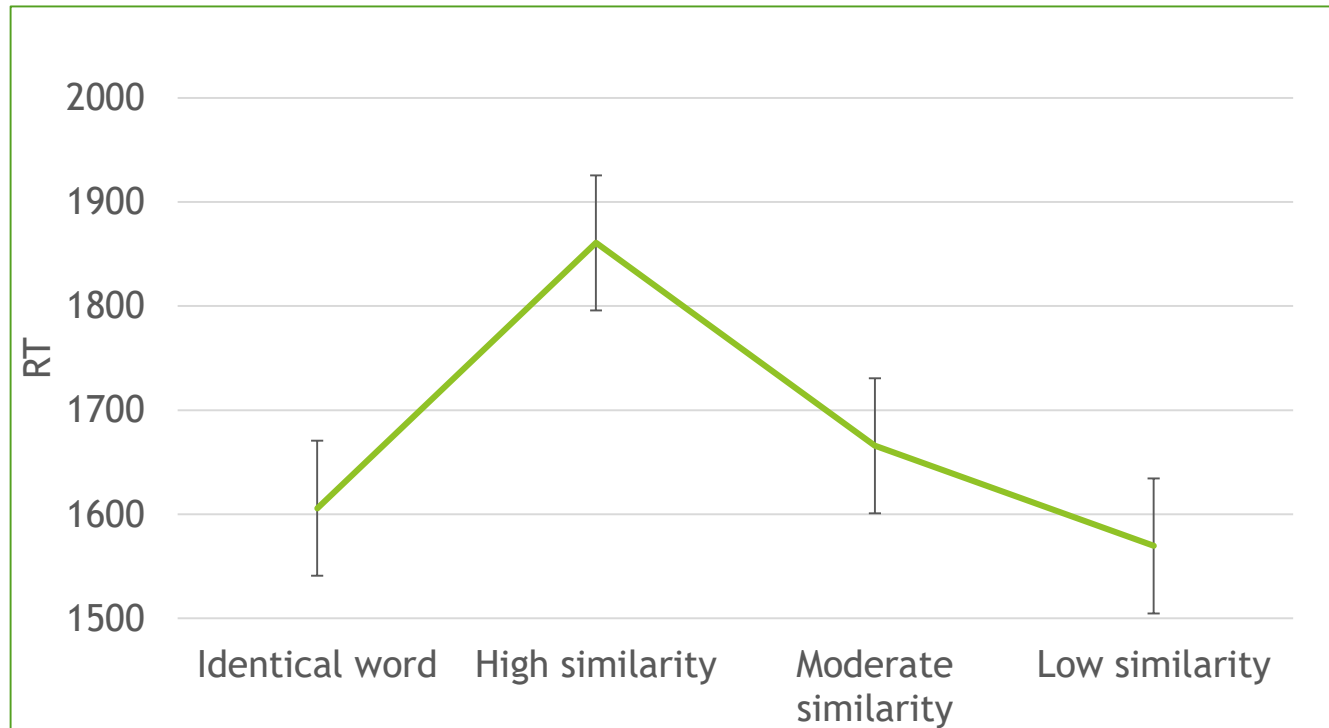
► Accuracy (correct rejection+ hits)



BF_{Inclusion}: 87.66

Study 1: Results

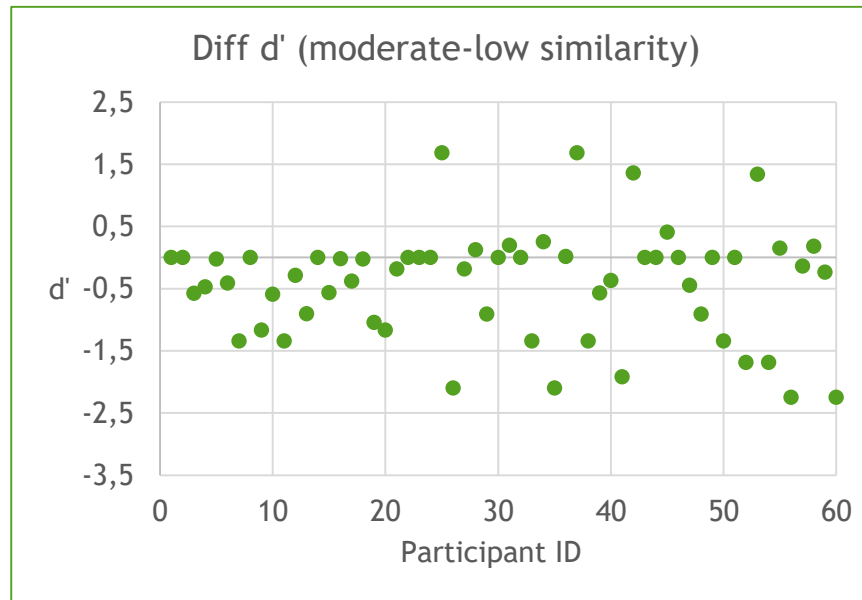
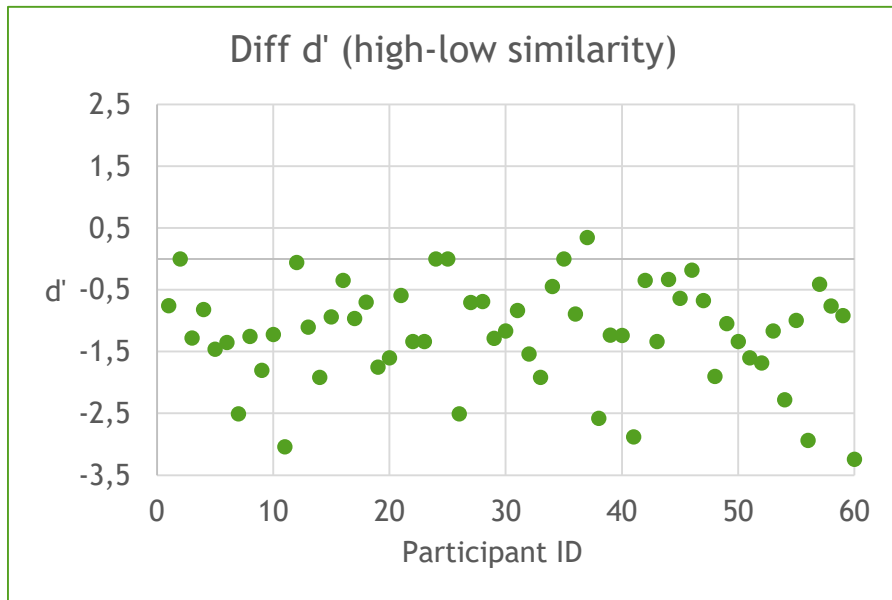
► Response times



BF_{Inclusion}: ∞

Study 1: Results

► Individual differences

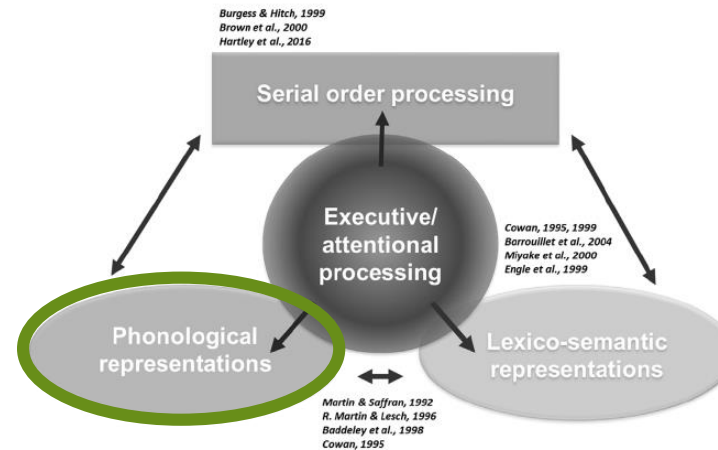


Study 1: Conclusions

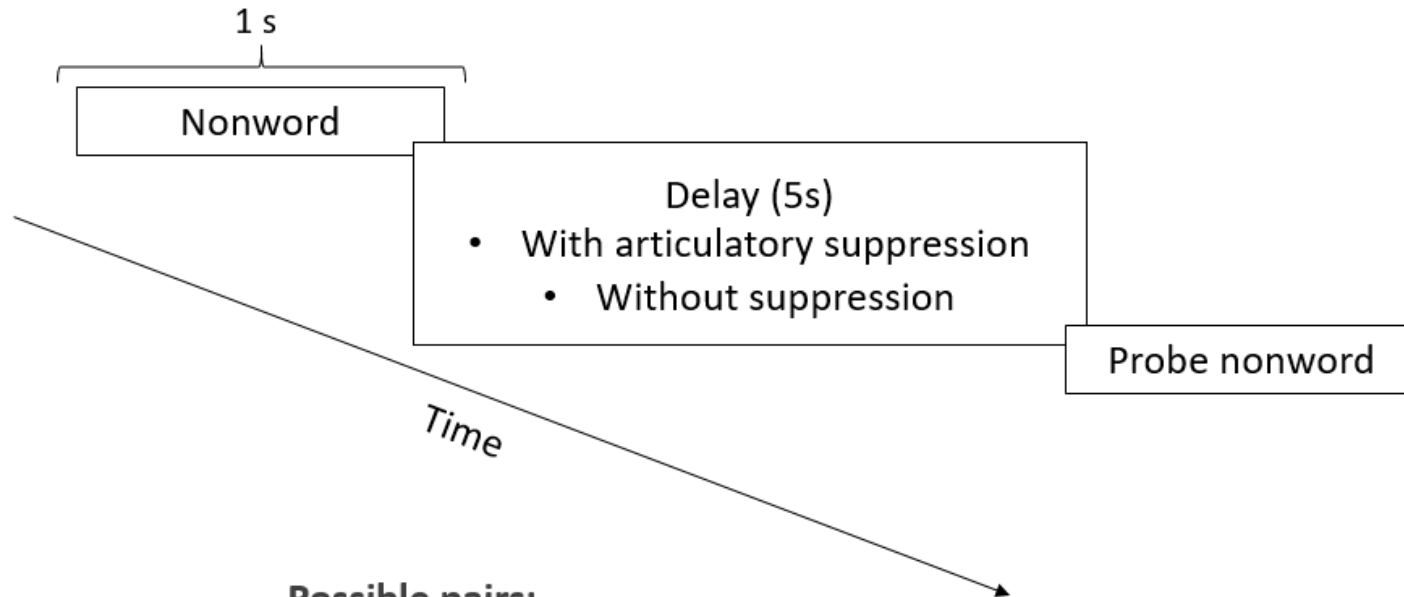
- ▶ Effect of similarity gradient for **words**
- ▶ Variable accuracy of representations
- ▶ What about non-words?
 - ▶ « Words » that do not exist

Study 2

- ▶ Phonological similarity for nonwords
 - ▶ Why nonwords?
 - ▶ Little help from semantic knowledge
 - ▶ Phonological representations alone
 - ▶ Precursor to fMRI study
- ▶ Participants
 - ▶ 20 participants
 - ▶ 18-30 years ($\bar{x} = 22.9$; $\sigma = 2.292$)
 - ▶ No neurological disorder or learning disability



Study 2: Methods

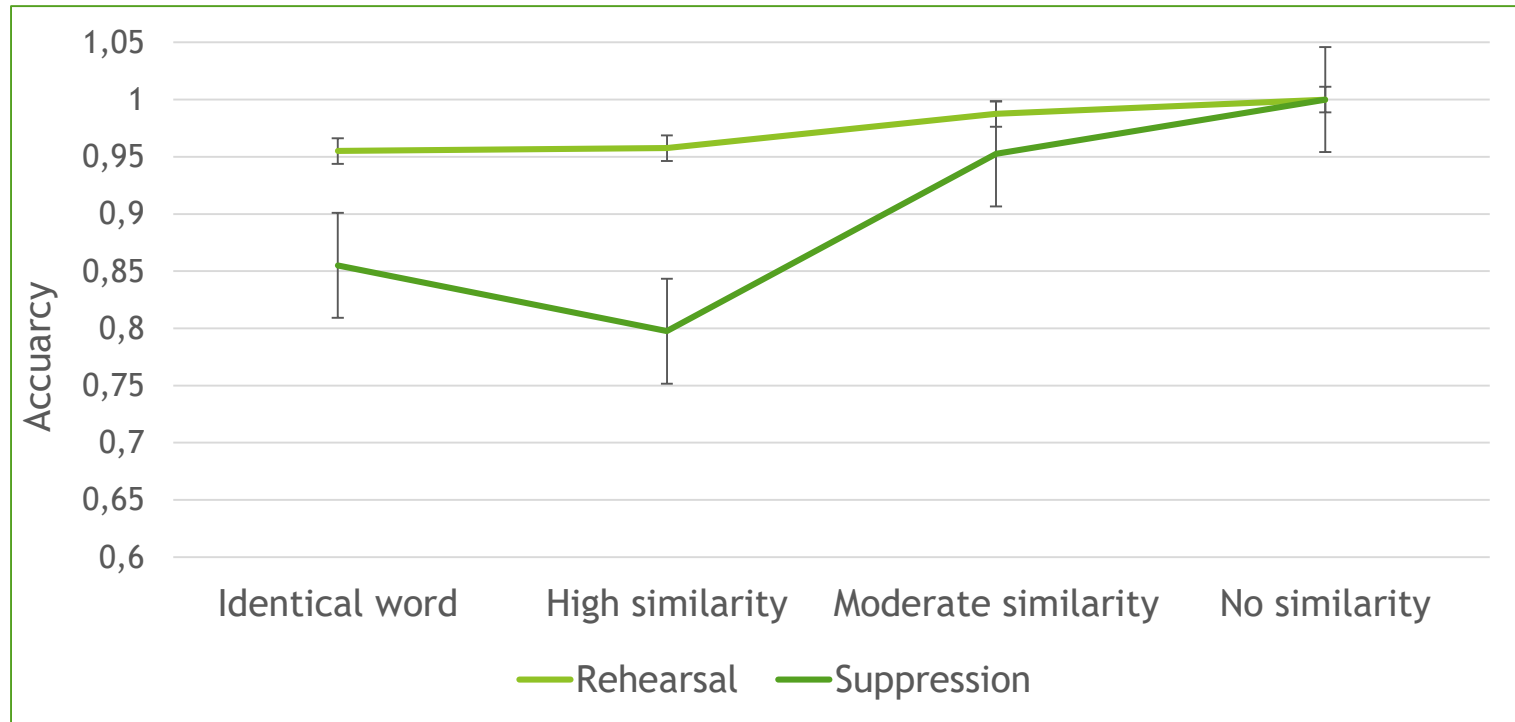


Possible pairs:

Telraissachin - Telraissachin
Vielpéveucer - Pielpéveucer
Mortalevant - Pertalevant
Rescontoueur - Laminpofin

Study 2: Results

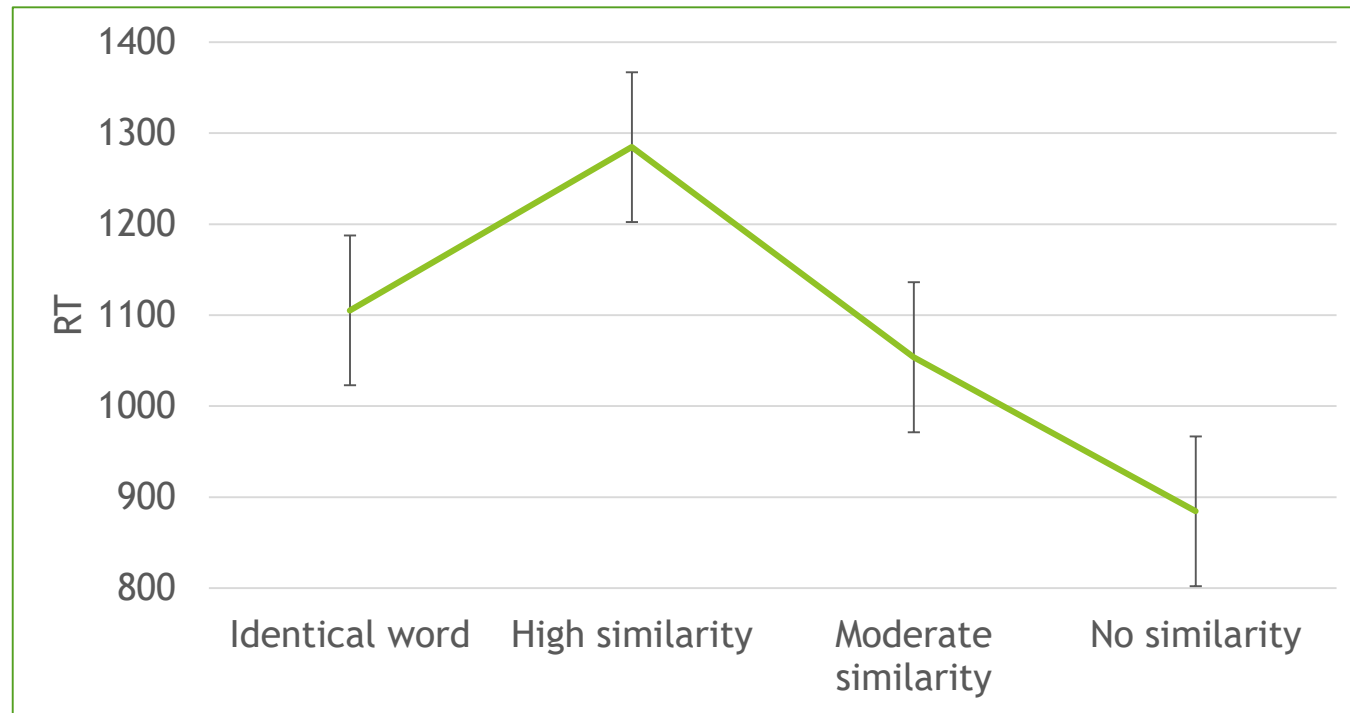
► Accuracy (correct rejection+ hits)



BF_{Inclusion}: 622167

Study 2: Results

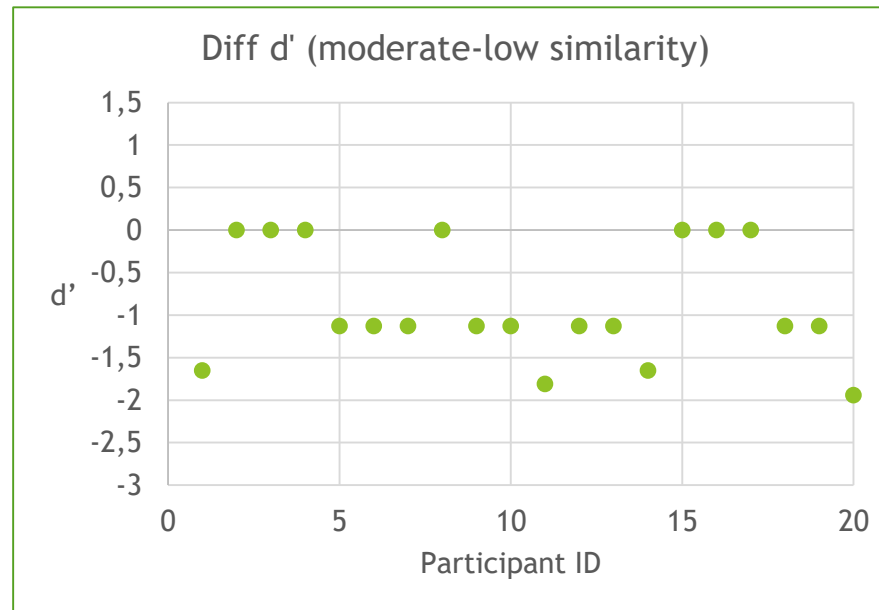
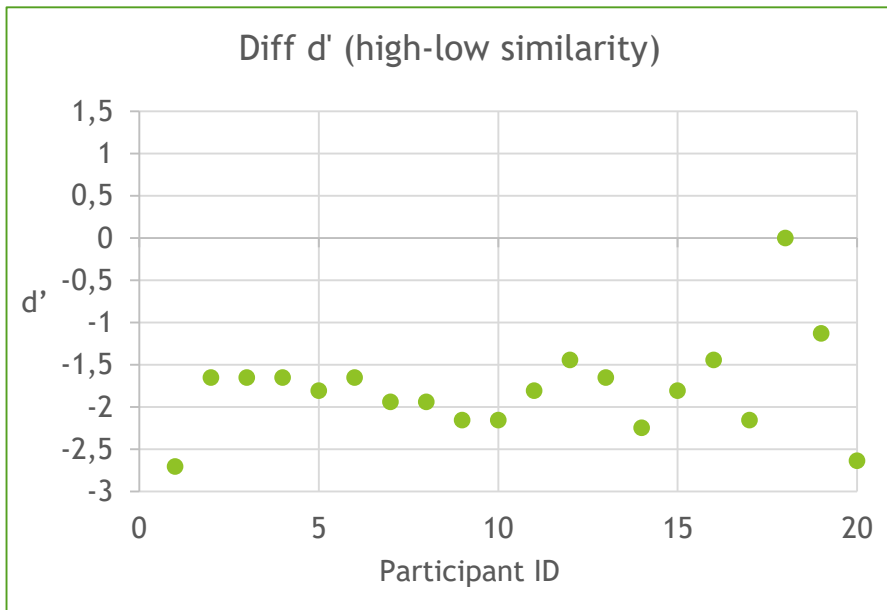
► Response times



BF_{Inclusion}: 51.92

Study 2: Results

► Individual differences



General discussion

- ▶ Importance of a phonological similarity **gradient**
 - ▶ Importance of articulatory suppression
 - ▶ Interindividual differences
- ➡ Sensitive measure of STM performance?
- ➡ Fine-grained differences in STM representations

Thank you for your attention!

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the slide, creating a modern, layered effect. The rest of the slide is a plain white background.