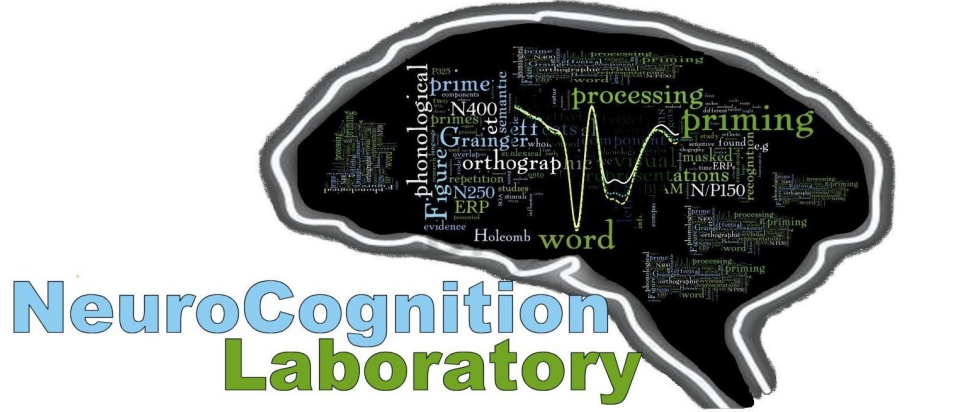




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Introduction & Questions

- Phonological awareness is a strong predictor of reading ability in hearing individuals.
- Morphology provides an alternative route to reading which deaf readers may prioritize.
- Dual route model of orthographic processing:¹
 - Morpho-semantic** → coarse-grained, whole word recognition, fast access to semantics
 - Morpho-orthographic** → complex words are broken down into component parts
- Previous work² has suggested that the ERP visual masked priming paradigm is sensitive to both routes of segmentation of complex words.

How do these processes compare in skilled deaf and hearing readers?

Do deaf readers rely more on a morpho-semantic or morpho-orthographic processing route?

Methods

Participants

- 7 Deaf, native-signers (mean age = 34)
- 10 Hearing, monolingual English speakers (mean age=25)

Critical stimuli

- 50 related and unrelated prime-target pairs of each:
 - Transparent complex primes (**hunter-HUNT**)
 - Pseudo-complex primes (**corner-CORN**)
 - Simplex primes (**scandal-SCAN**)

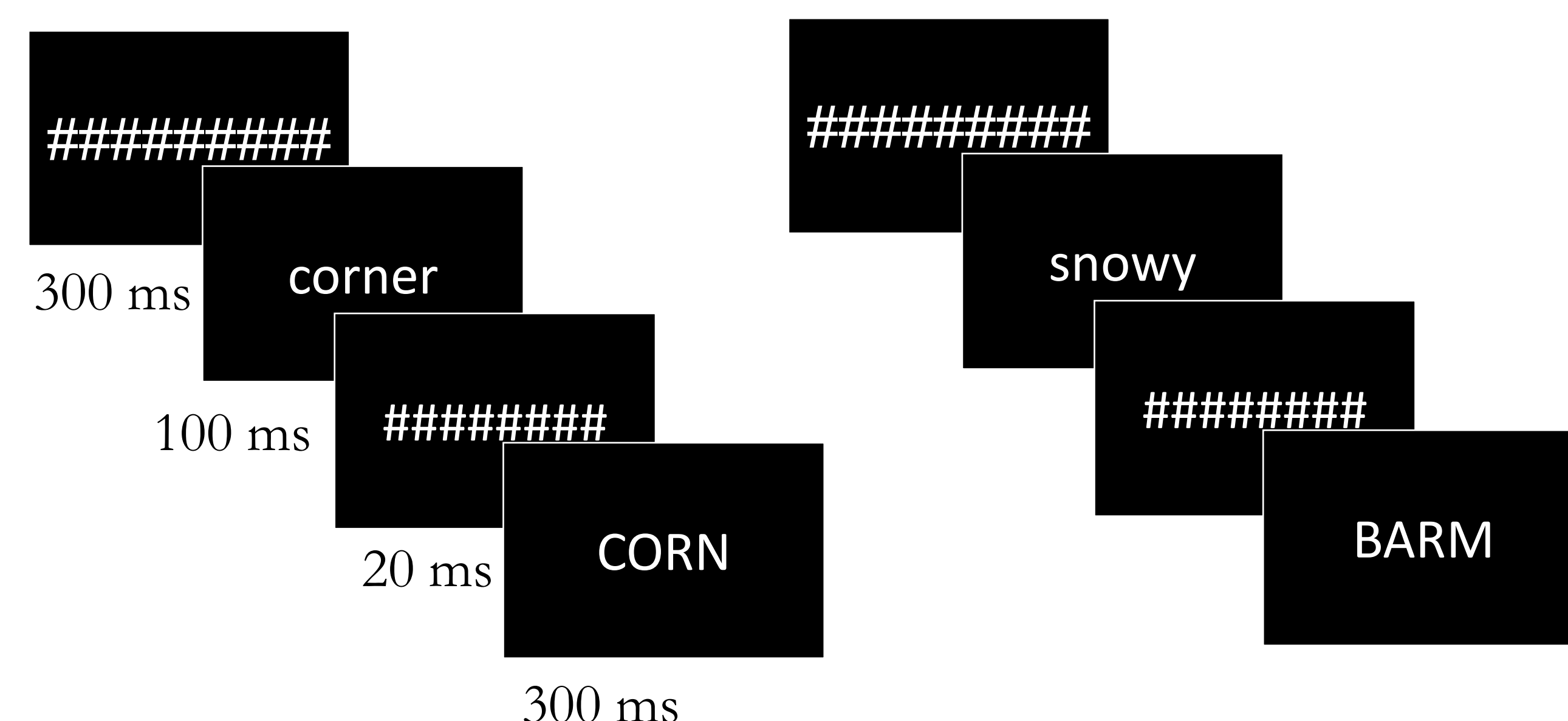
Probe stimuli

- 60 real word prime, non-word target pairs (snowy-BARM)
- 15 nonword prime, real word target pairs (galter-GOLF)

Procedure

Go/no-go lexical decision task:

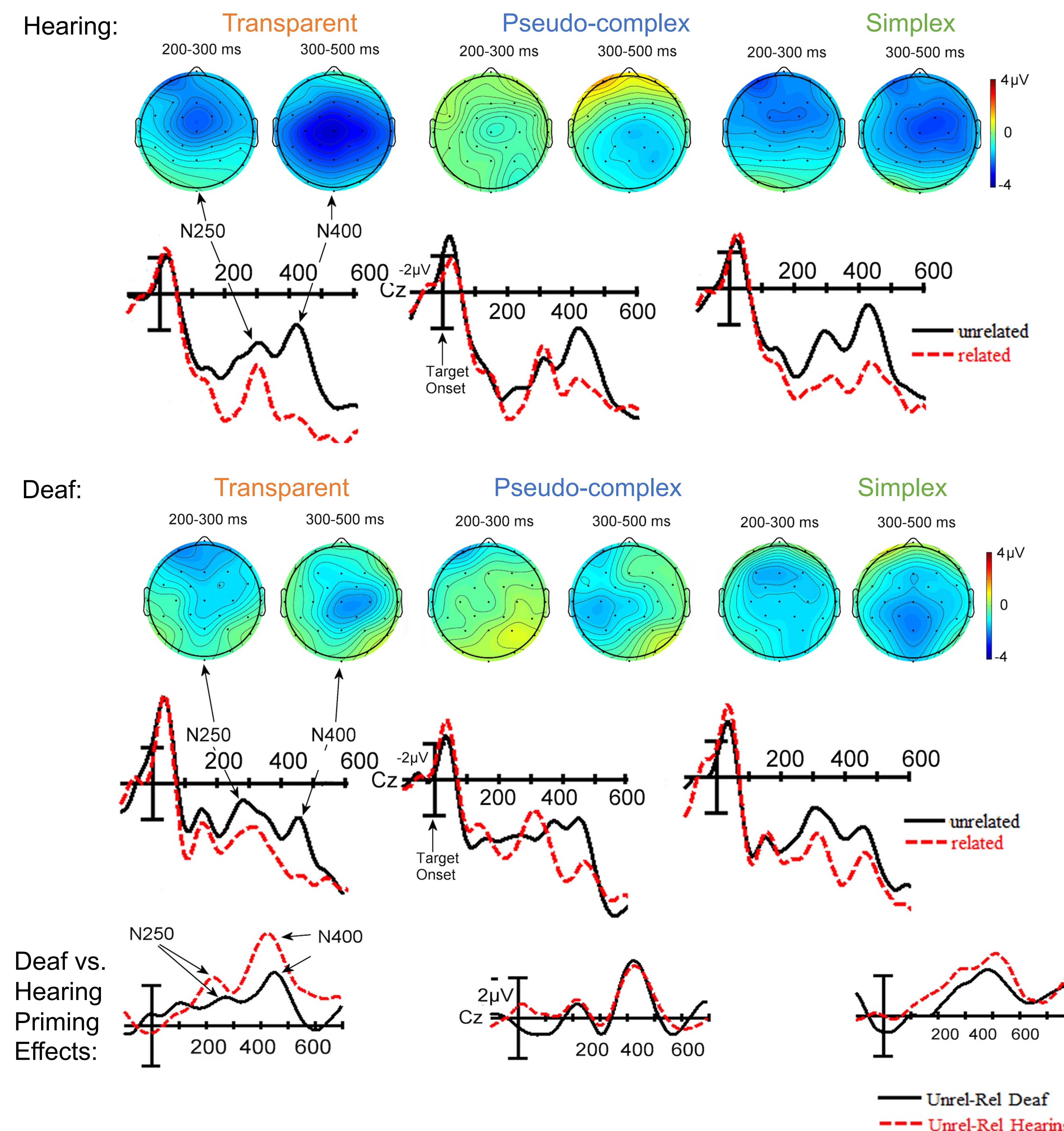
- Participants were instructed to press a button when they encountered a nonword



Predictions

- Evidence for priming will be indicated by reduction of two key ERP components in related vs. unrelated trials:
 - **N250** (orthographic processing)
 - **N400** (semantic activation)
- We expect hearing participants to pattern with the findings of Morris et al. (2007), displaying the strongest priming in the transparent prime condition, then the pseudo-complex condition, and finally the simplex condition
- Evidence for morpho-semantic processing: → priming effects for pseudo-complex and simplex trials would not differ
- Evidence for morpho-orthographic processing: → priming effects would be greater for pseudo-complex compared to simplex trials

ERP Results



Discussion

- Preliminary data show priming effects across conditions, with **transparent** pairs eliciting the strongest priming.
- Primes that were semantically related to the following target elicited reduced N250 and N400 effects compared to unrelated primes.
- The **pseudo-complex** pairs did not pattern as expected, showing the smallest priming effects.
 - Could be due to increased prime duration (100ms instead of 50ms)
- The **simplex** condition also exhibited moderate priming effects, suggesting a facilitation effect of orthographic overlap.
- Overall, the deaf and hearing groups show similar patterns of effects
 - Hearing group shows more priming in some conditions
- Further data collection will allow us to observe whether these trends hold.

References

¹Grainger, J., & Ziegler, J. (2011). A dual-route approach to orthographic processing. *Frontiers in psychology*, 2, 54.
²Morris, J., Frank, T., Grainger, J., & Holcomb, P. J. (2007). Semantic transparency and masked morphological priming: An ERP investigation. *Int J Psychophysiol*, 44(4), 506-521.