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What information do child and adult readers use when they read?

Comparing reliance on orthographic-phonologic and orthographic-semantic routes

Deanne Tak On Wah¹ (dwah@uwo.ca), Marc Joanisse^{1,2}

¹Department of Psychology, University of Western Ontario, ²Haskins Laboratories, New Haven CT, USA

Introduction

- English is partially regular: orthography (O; letters) and phonology (P; sounds) do not always match
- Children may oversimplify OP correspondences and focus on 1:1 vowel correspondences¹
- Adults may access a richer set of context-dependent cues¹
- Reliance on semantics (S; meaning) predicts poorer reading in children with reading disabilities²

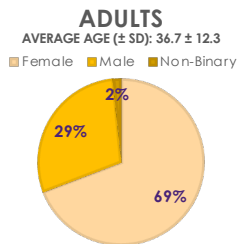
Research Questions:

- Do children and adults rely on different grain sizes of OP information (**vowel surprisal vs. context dependent vowel surprisal**)?
- Do children and adults differ in reliance on **OP vs. OS** information?

Methods

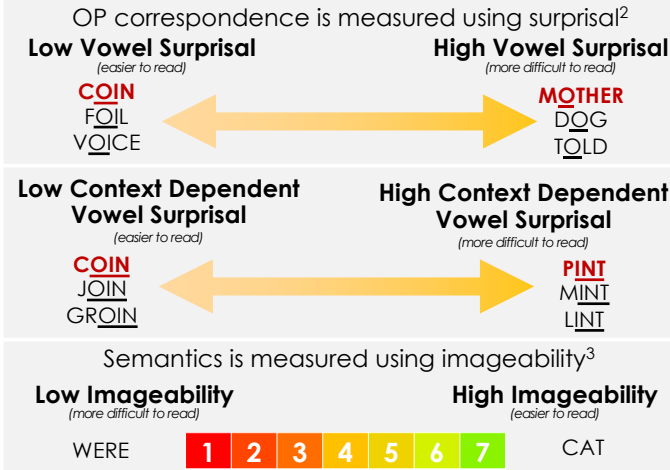
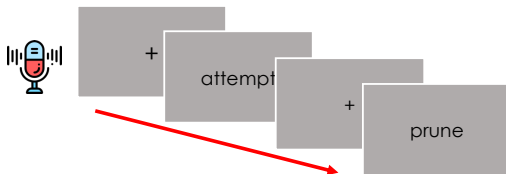
Participants:

- Adults (N = 65)
- Children (N = 65) – to be recruited
- Monolingual English
- Neurologically healthy



Word naming task:

- 300 monosyllabic & disyllabic words (2 words removed in analyses)
- Measure: reaction time (RT)



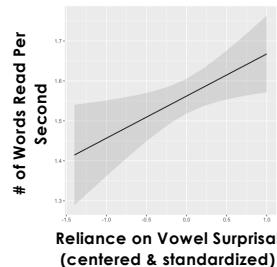
Results

Individual Models:

- Linear mixed effects models of **vowel surprisal, context dependent vowel surprisal, imageability** on RT & random intercepts (word & participant)
- For each participant, standardized coefficients indicated degree of reliance on reading routes

Reliance on Reading Routes on RT:

- Greater reliance on vowel surprisal & faster RT, $p = .015$
- Imageability & RT, ns
- Context dependent vowel surprisal & RT, ns



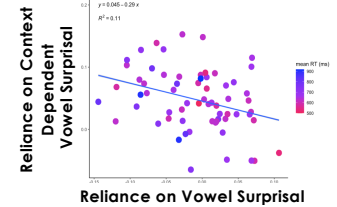
References

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Results

Comparing Degree of Reliance on Reading Routes:

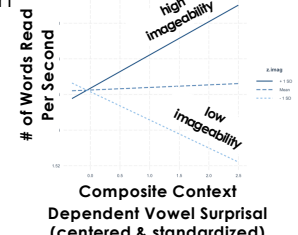
- Tradeoff between vowel surprisal & context dependent vowel surprisal, $p = .007$
- Vowel surprisal & imageability, ns
- Context dependent vowel surprisal & imageability, ns



Item Analysis – Predictors of Reading in Adults:

Stepwise backwards elimination of linear mixed effects regression predictors:

- age, $p = .011$
- word frequency, $p = .029$
- number of syllables, $p = .001$
- individual's reliance on vowel surprisal, $p = .029$
- interaction between word's context dependent vowel surprisal & imageability, $p = .033$



Discussion

- In adults, greater reliance on one-to-one vowel correspondences is related to faster reading speed
- Reliance on one-to-one vowel correspondences may compete with reliance on context dependent correspondences
- For low imageability words, greater context dependent vowel surprisal is related to slower reading

Next Steps:

- Investigate context dependent surprisal effects
- Determine if latent profiles of reading exist using mixture modelling
- Recruit children