

Mobile-Based Language Learning in Adults: What Promotes Learning Performance the Best?

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Background

- Factors supporting second language learning(L2) in adults remains poorly understood
- Serial order short-term memory (STM), compared to item STM, is a strong predictor of new word learning in L1 (Majerus et al., 2008)
- Language acquisition relies on phonological development that relies on temporal processing skills (Goswami, 2011)
 - People with dyslexia that experienced difficulties in phonological processing have poorer rhythmic skills (Thomson et al., 2006)

Hypothesis

- Item and order STM contribute independently to L2 word learning. Both are expected to correlate with learning efficiency
 - Item → important for maintaining phonological information of a word
 - Order → important for maintaining phoneme order of a word
- Exploring the role of rhythm production in L2 vocabulary learning
 - It is expected that rhythm production abilities correlate with L2 learning efficiency

Methods

Phase 1

Pre-intervention measures

- Item short-term memory (non-words recognition task)
- Order short-term memory (serial reconstruction task)
- Rhythm production (tapping continuation task)

Phase 2

2-week vocabulary learning

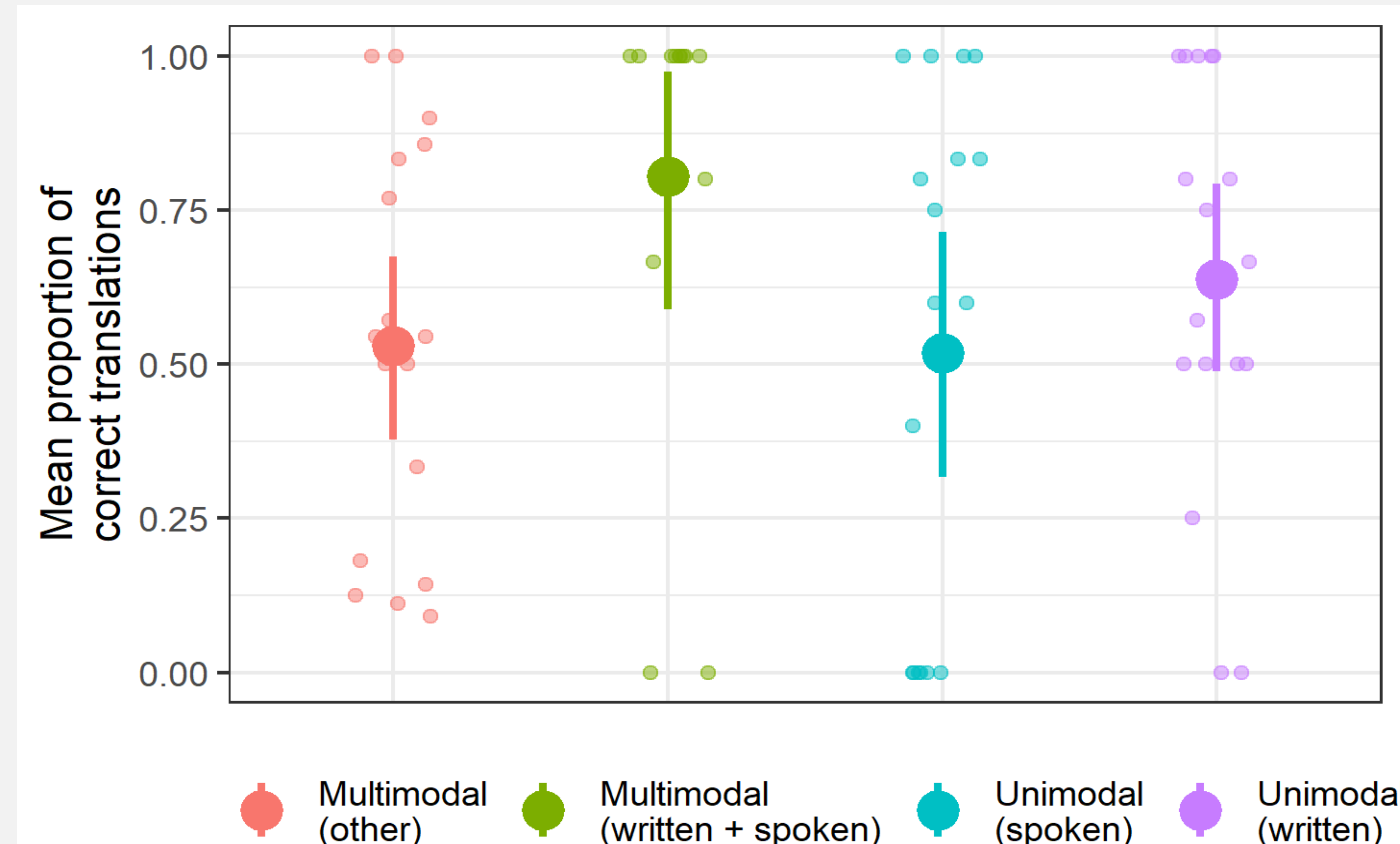
- 17 participants
- Learning of 48 Finnish word translations using a dedicated app (stellar-learning.app)
- Manipulation of presentation modality
 - Unimodal (written)
 - Unimodal (spoken)
 - Multimodal (written + spoken)
 - Multimodal (other)

Learning efficiency Post-intervention

- Proportion of correct written translations of the 48 Finnish words (L1 to L2)

Preliminary results

Translation performances



Correlations (one-sided)

Modality	Item memory	Order memory	Rhythm production
Unimodal (written)	$r = 0.226$ ($p = 0.025$)	$r = 0.044$ ($p = .353$)	$r = 0.122$ ($p = 0.851$)
Unimodal (spoken)	$r = 0.289$ ($p = .016$)	$r = -0.123$ ($p = .186$)	$r = -0.035$ ($p = .401$)
Multimodal (written + spoken)	$r = 0.078$ ($p = 0.347$)	$r = -0.146$ ($p = .771$)	$r = 0.166$ ($p = .801$)
Multimodal (other)	$r = 0.369$ ($p < .001$)	$r = -0.009$ ($p = .542$)	$r = 0.186$ ($p = .989$)

References

- Leclercq, A.-L., & Majerus, S. (2010). Serial-order short-term memory predicts vocabulary development: Evidence from a longitudinal study. *Developmental Psychology*, 46(2), 417–427. <https://doi.org/10.1037/a0018540>
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