

Modality effects in novel picture-word form associations

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Introduction

Does modality affect the efficiency of learning novel word forms and meanings? Previous literature reports both spoken¹ written learning advantages².

Contradictory findings result from differences in:

1. Exposure times to the stimuli in different modalities
2. Congruency of training and test modality³
3. Orthographic and phonological transparency
4. Congruency of format of word form and word meaning
5. Explicit learning strategies

Our study

How does modality of word form affect learning?

- Implicit learning task
- Learning novel word - novel object pairs
- Training: **spoken** training condition; **equal written** training condition providing equal exposure time and **reduced written** training condition, providing sufficient time to read (300 ms), but less than in the spoken training condition, as reading is faster than listening to speech
- Test: written and spoken modality

Methods

Participants. 90 participants ($M = 22.99$ years, $SD = 2.47$; 72 female).

Design. 3x2 between-subjects design:

		Test phase	
		Spoken	Written
Training phase	Spoken	SS	SW
	Equal written exposure	WeS	WeW
	Reduced written exposure	WrS	WrW

Materials. 24 orthographically and phonologically transparent Dutch pseudowords created with Wuggy⁴ and 24 pictures from the NOUN Database⁵.

Procedure.

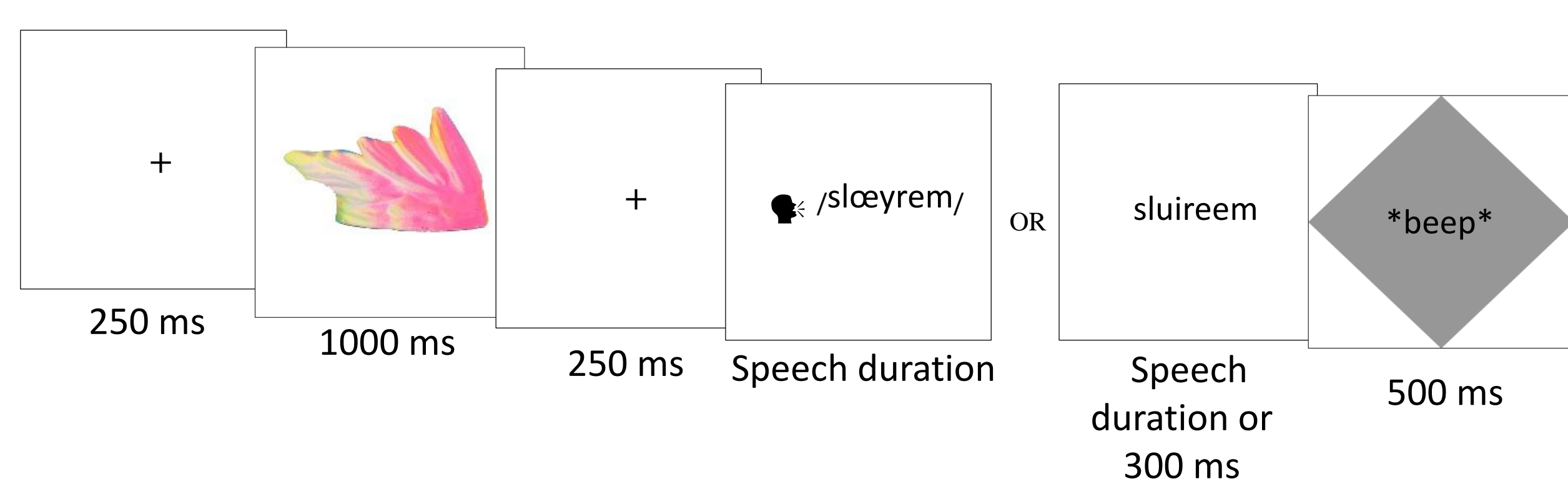


Figure 1. Training phase trial. Each pair was repeated 7 times.

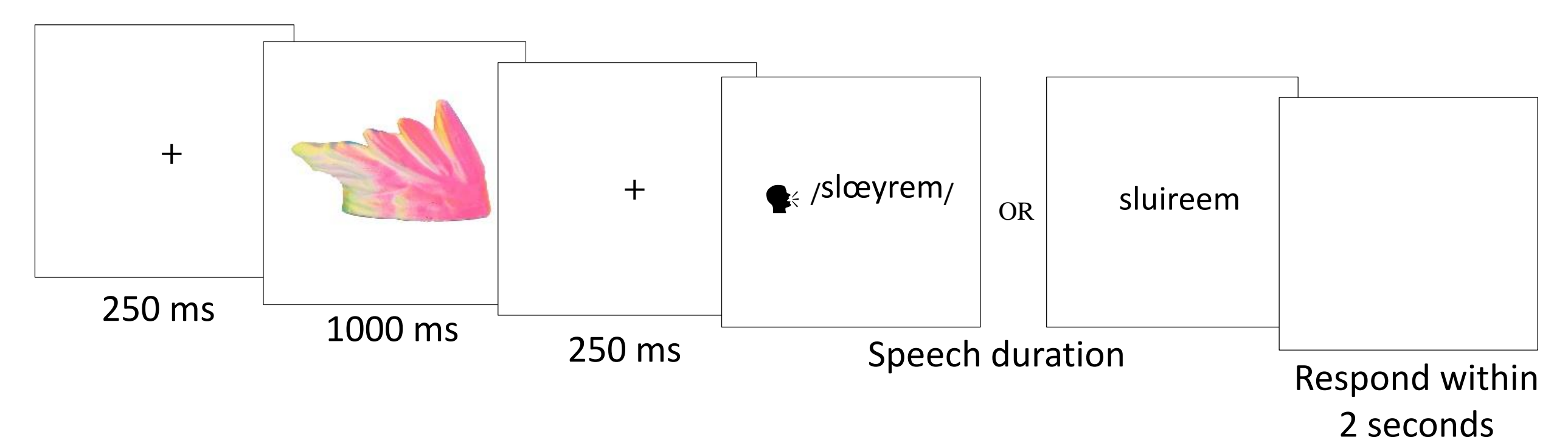
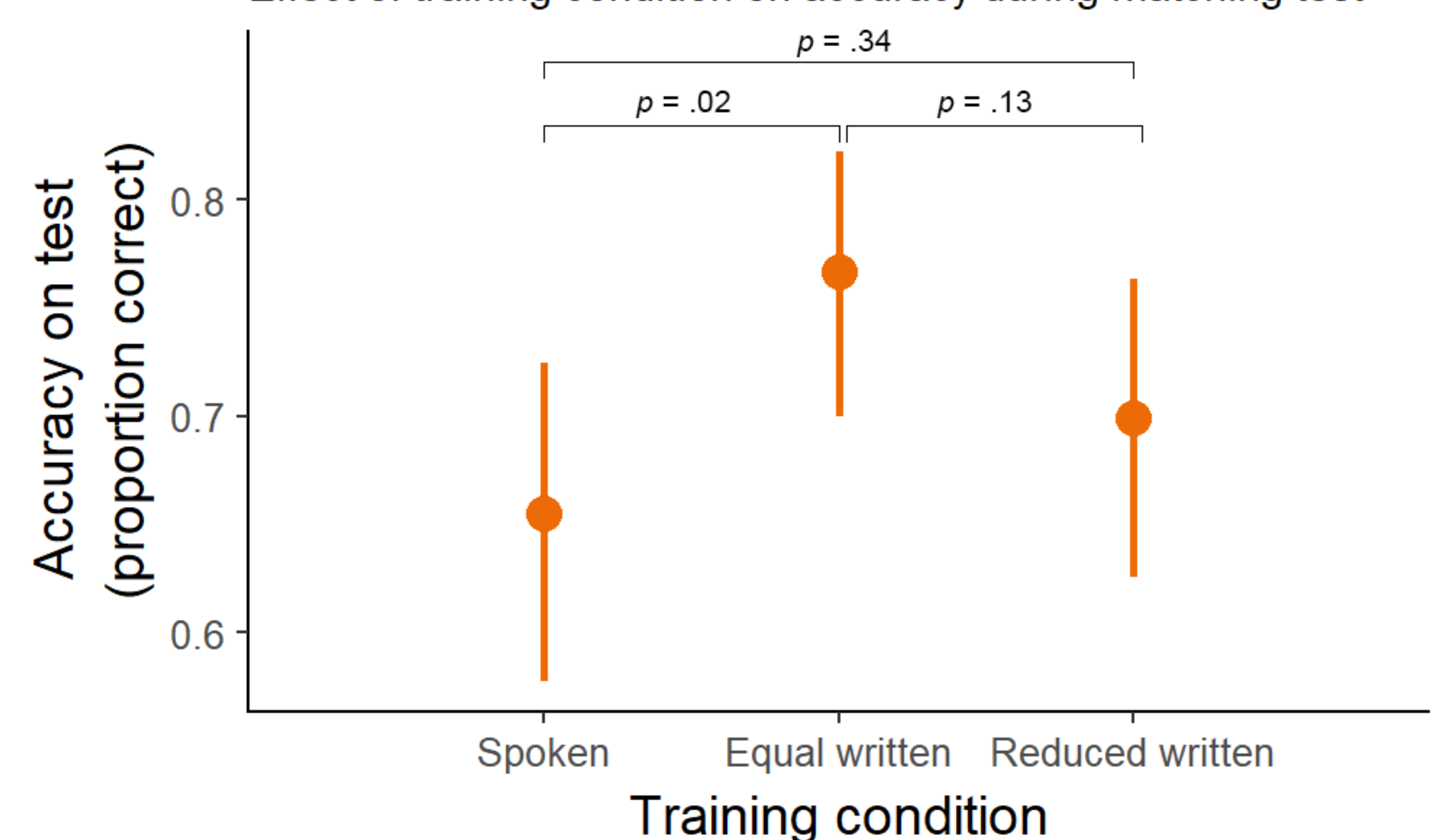


Figure 2. Test phase trial. Do picture and word match or mismatch according to what was learned in training phase?

Results¹

Effect of training condition on accuracy during matching test



- Spoken training < written training when exposure is equal (estimate = 0.55, $SE = 0.24$, $z = 2.26$, $p = .02$).
- Spoken training = written training when written exposure is reduced (estimate = 0.21, $SE = 0.22$, $z = 0.95$, $p = .34$).
- Equal written exposure = reduced written exposure (estimate = 0.34, $SE = 0.22$, $z = 1.52$, $p = .13$).

Discussion

- Controlled for several confounds, including reading being faster than listening.
- Proficient readers **learn** novel written and spoken words and meanings **equally effectively**.

References

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