1. Background

Orthography-to-Semantic Focus

Does print−meaning training improve comprehension?

Does print−sound training improve reading aloud?

Simple Questions (Box 3)

Transfer Questions (Box 4)

Days 1-4, 6-9 also involved 3 x print−meaning tasks.

Days 1-4, 6-9 also involved 3 x print−sound tasks.

Instead, reading aloud accuracy depends only on practice with print−sound mappings.

No difference in activity when saying word meanings.

Asymmetric differences of print−sound and print−meaning training

Participants received pre-training in phonology–semantic mappings (establish an oral vocabulary).

Following this, we found that:

Orthography–Phonology training was beneficial for both reading aloud and comprehension.

Orthography–Semantic training was a slower way to learn to comprehend and was detrimental for reading aloud as well as generalising to untrained words.

Thus, even with minimal oral vocabulary training, it was easier for learners to use print−sound knowledge to access word meanings, than to map from print−meaning practice.

Our precisely controlled experiment supports existing UK teaching practice, which focuses on phonics (sounds and letters) in the early years.

2. Method

24 adults each learn to read two different artificial orthographies, each consisting of 24 novel words:

Orthography-to-Phonology focus: for one orthography, more training on systematic print−sound mappings

Orthography-to-Semantics focus: for another orthography, more training on arbitrary print−meaning mappings

3. Learning to read aloud and comprehend

Orthography-to-Phonology focused training: benefits speed of reading aloud.

Orthography-to-Semantic focused training: benefits speed but not accuracy of saying meanings.

4. Print−sound training benefits comprehension

If we equate practice on the specific task, does learning transfer to the alternative mapping?

Orthography-to-Phonology Focus

Orthography-to-Semantic Focus

5. Asymmetric differences in brain activity

Differences in activity during reading aloud

Orthography-to-Semantics vs. Orthography-to-Phonology Focus

Within regions active for pseudowords – words in English implicated in print−to-sound mappings.

Within regions active for words – pseudowords in English implicated in print−to-meaning mappings.

6. Conclusions

Asymmetric benefits of print−sound and print−meaning training

Participants received pre-training in phonology–semantic mappings (establish an oral vocabulary).

Following this, we found that:

Orthography–Phonology training was beneficial for both reading aloud and comprehension.

Orthography–Semantic training was a slower way to learn to comprehend and was detrimental for reading aloud as well as generalising to untrained words.

Thus, even with minimal oral vocabulary training, it was easier for learners to use print−sound knowledge to access word meanings, than to map from print−meaning directly.

Our precisely controlled experiment supports existing UK teaching practice, which focuses on phonics (sounds and letters) in the early years.

7. References


