The Case of Different Scripts:

Cross-Linguistic Effects in Japanese-English Bilingual Word Recognition

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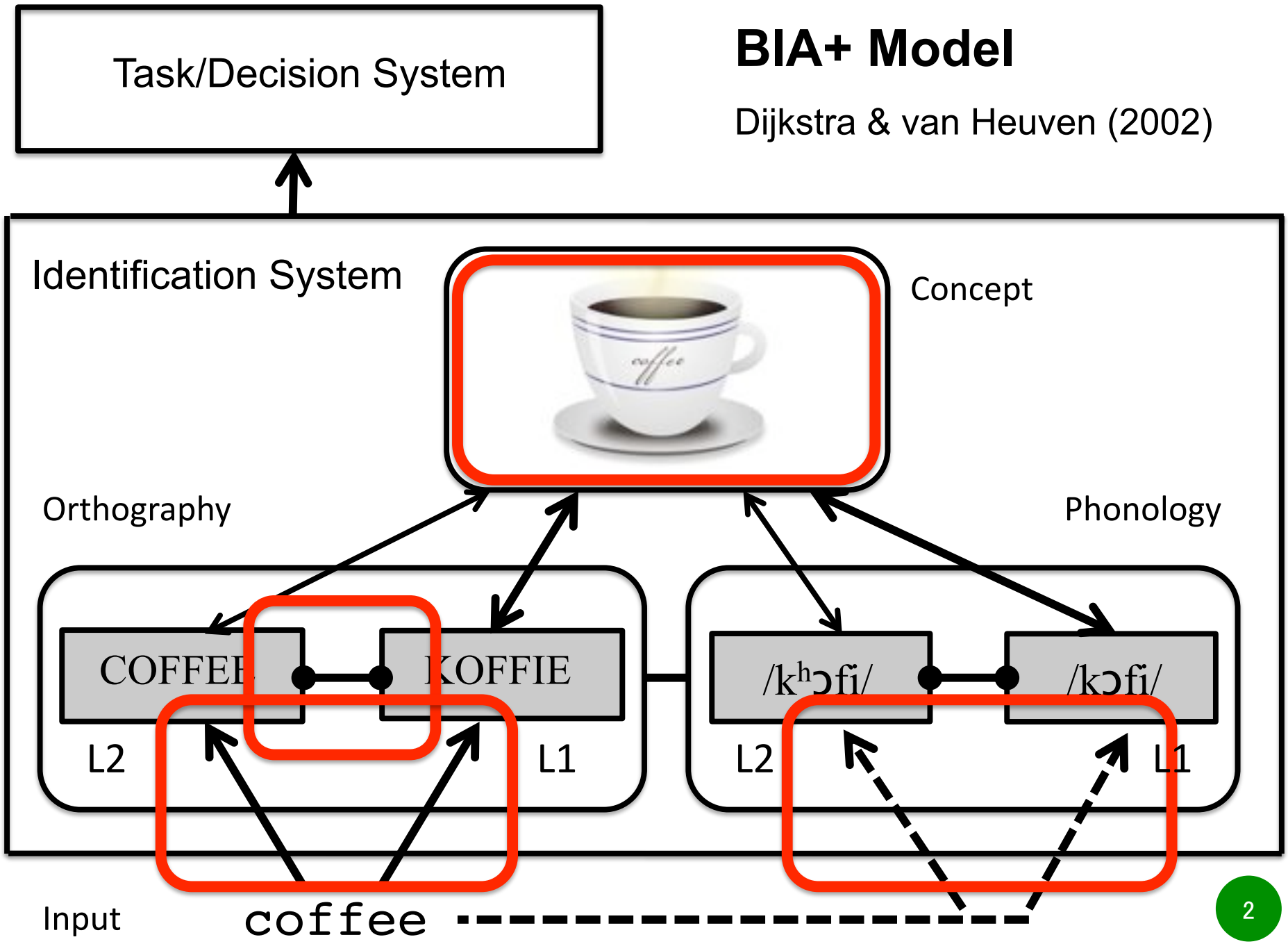
BIA+ Model

Dijkstra & van Heuven (2002)



The Case of Different Scripts

Can BIA+ Model be generalized to bilinguals' recognition of L2 words for languages with different scripts?

English coffee

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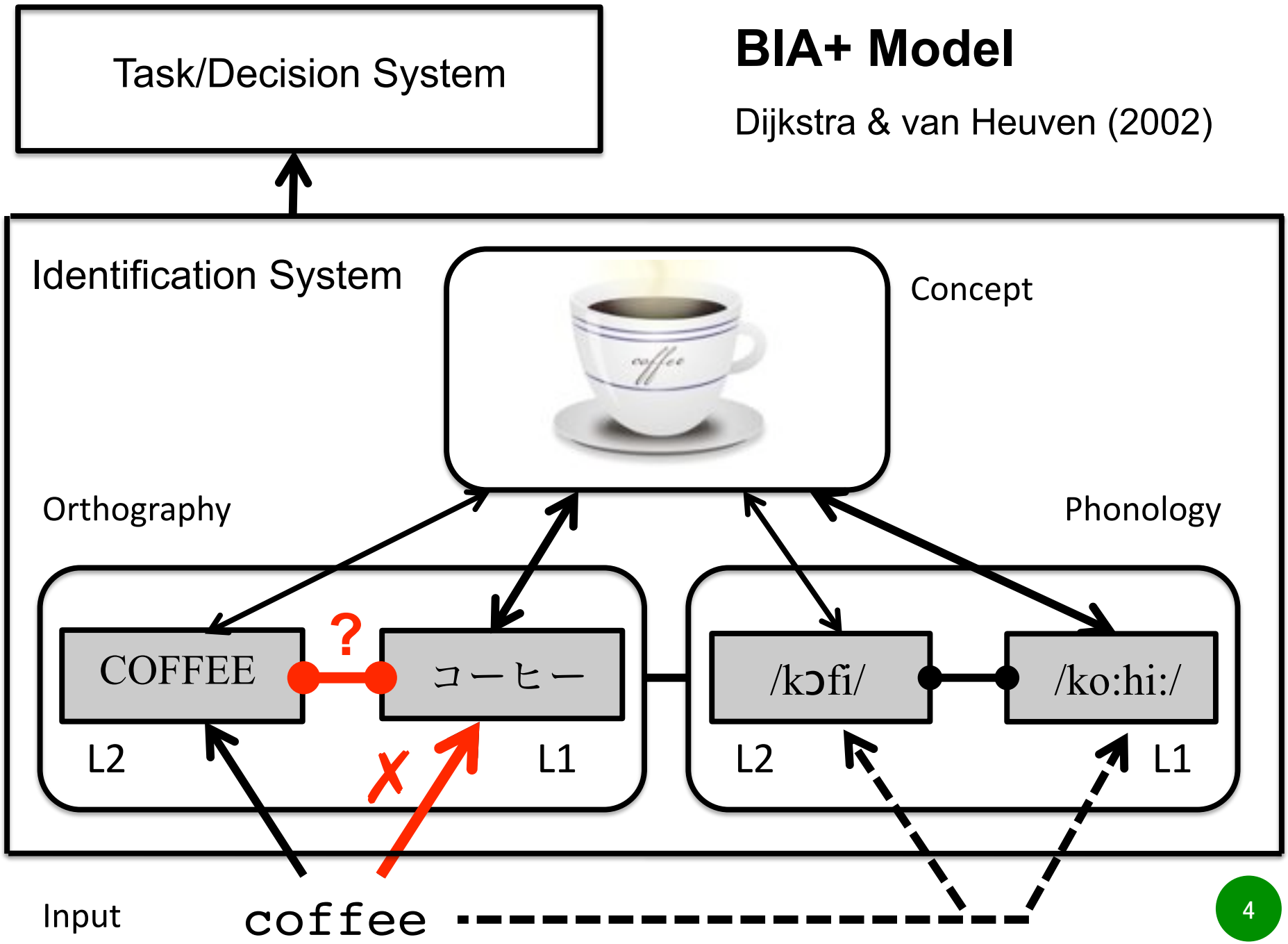
Japanese コーヒー

BIA+ Model

Dijkstra & van Heuven (2002)



The goals of this study

- Do Japanese words become co-activated without cross-linguistic orthographic similarity?

- Does **competition** between English target words and Japanese words occur at a later stage? (Diagnostic: English Word Frequency * Japanese Word Frequency)
- Does a cross-language **phonological similarity** effect arise early? (Diagnostic: Phonological Similarity rating)
- Does a cross-language **translation (semantic) equivalence** matter? (Diagnostic: Translation Equivalence rating)

Method: LDT with eye-tracking

Participants

- 19 Japanese-English late-bilingual readers
- 19 native English monolingual readers (control group)

Materials

- 250 English simplex words
- 200 English-derived nonwords

Predictors

Bilingual-specific predictors

- **Japanese Word Frequency**

  Loanword word frequency in Japanese

- **Phonological Similarity**

  rated cross-language phonological similarity

- **Translation Equivalence**

  based on rated translation similarity in meaning

Predictors of the English target words

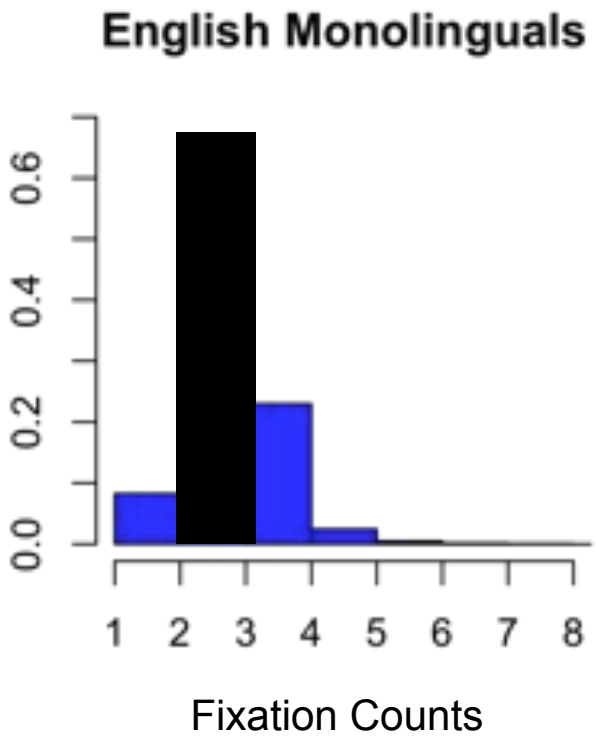
- **English Word Frequency**

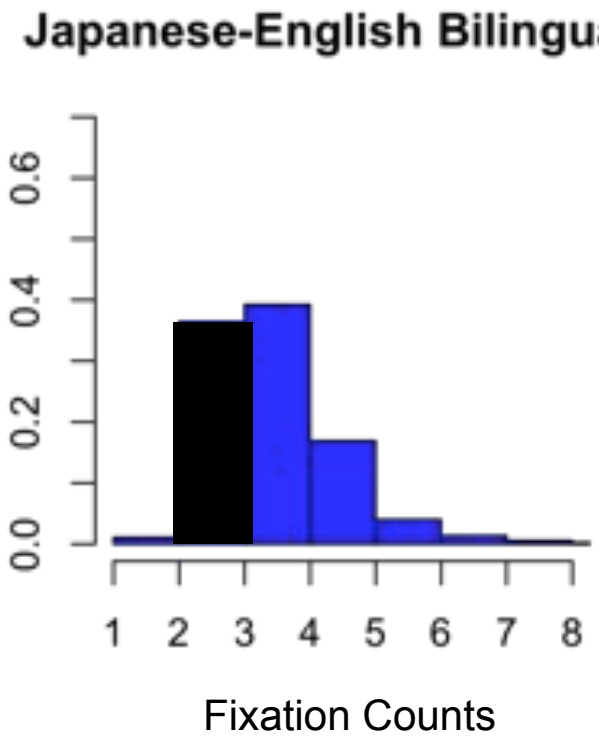
Control predictors

- **Trial** and **Previous RT**

Distributions of Fixations

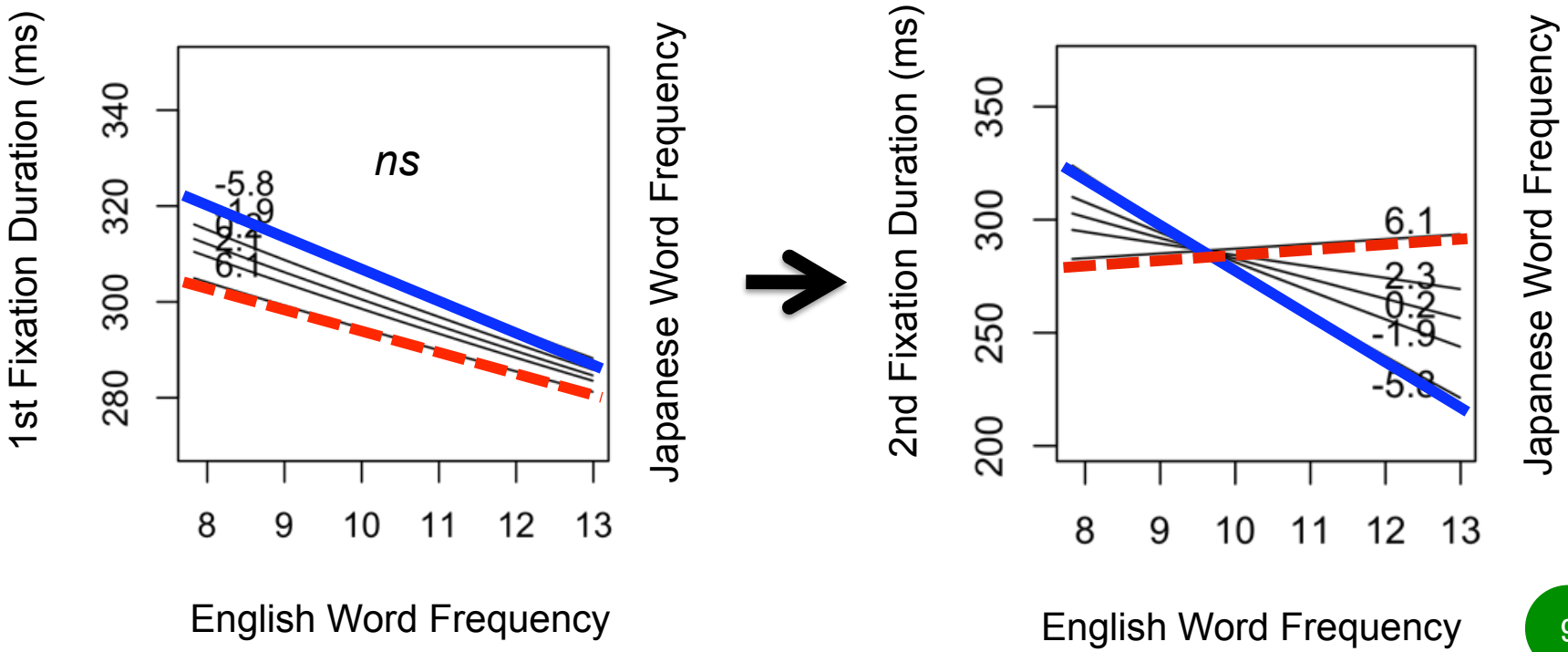
- Single fixations were rare, and the majority of words were scanned by two fixations by English monolingual readers.
- Mode was 3 fixations for Japanese-English bilinguals.





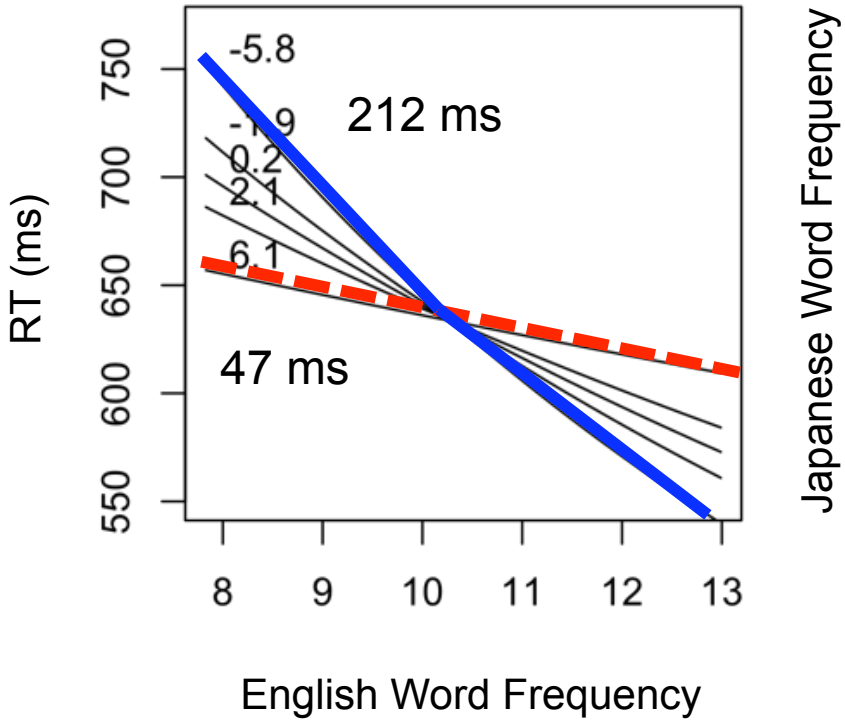
L1*L2 Word Frequency Effect

- The competition between L1 and L2 frequencies did not appear at the 1st fixation but appeared at the 2nd fixation, as predicted.



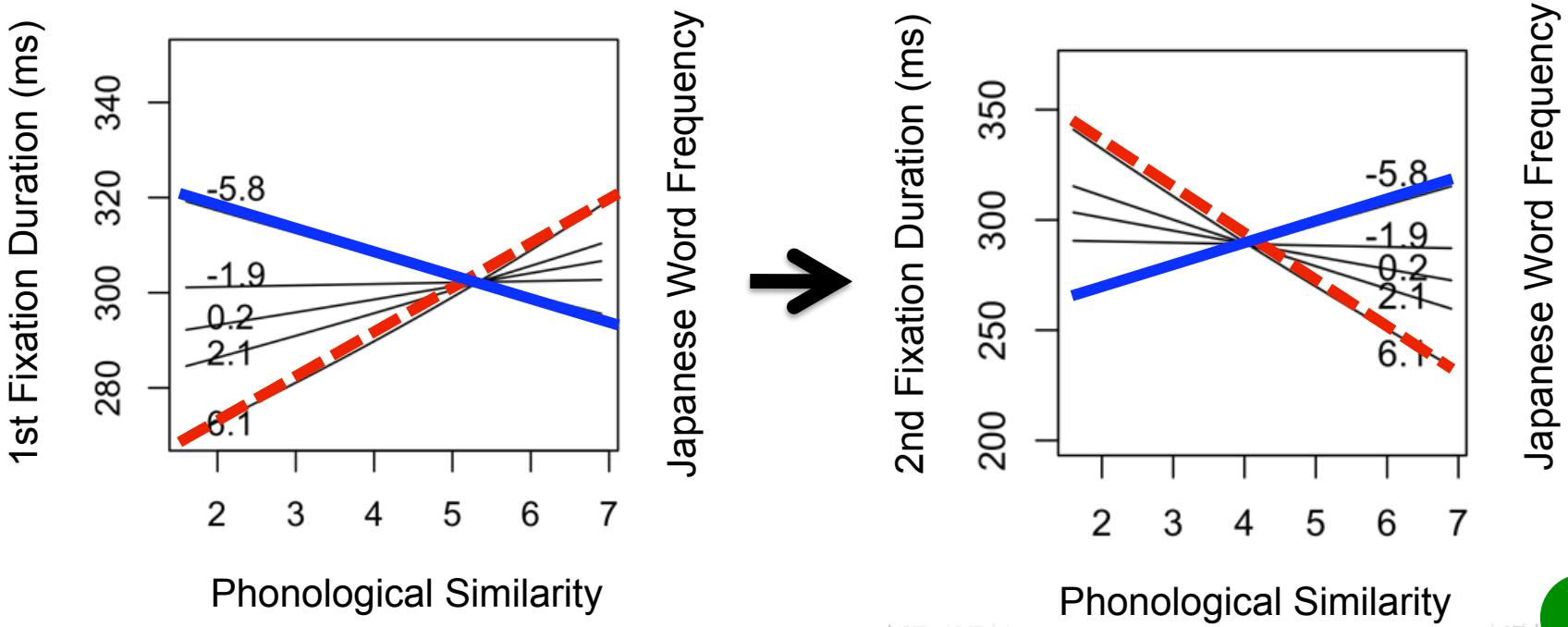
L1*L2 Word Frequency Effect

- Response latencies, too, reflected the competition between L2 target word frequency and L1 Japanese word frequency.



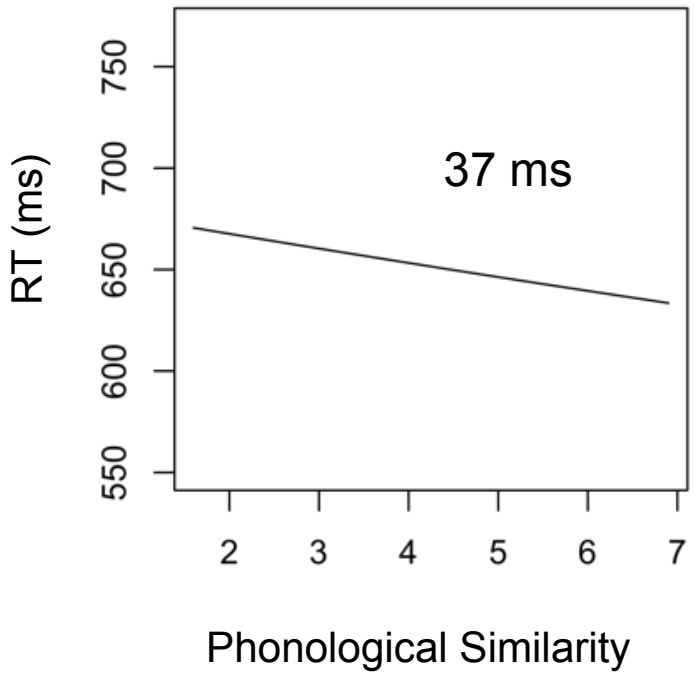
Phonological Similarity Effect

- Very early **Phonological Similarity** effect, as predicted.
- **Phonological Similarity** effects were modulated by **Japanese Word Frequency** at both 1st and 2nd fixations.



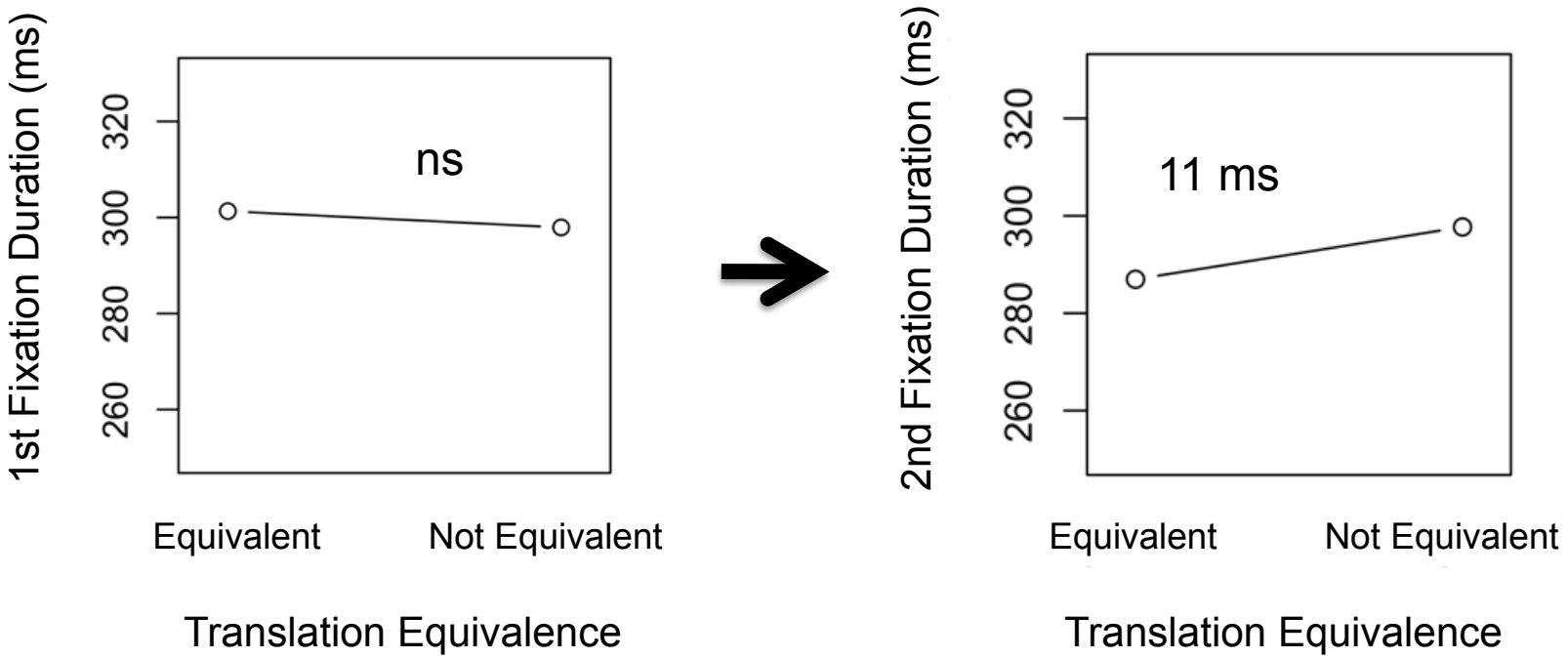
Phonological Similarity Effect

- Overall, larger cross-language **Phonological Similarity** led to shorter response latencies.



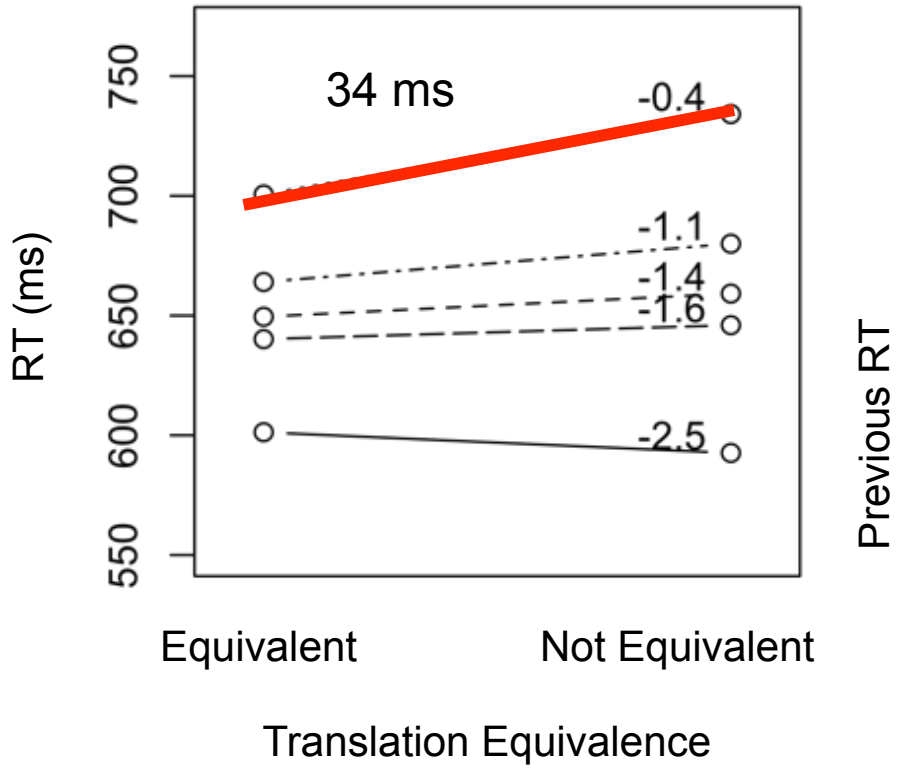
Translation Equivalence Effect

- Cross-language **Translation Equivalence** did not contribute to the 1st fixation but shortened the 2nd fixation duration.



Translation Equivalence Effect

- Cross-language **Translation Equivalence** facilitated responses (particularly noticeable when **Previous RT** was long).



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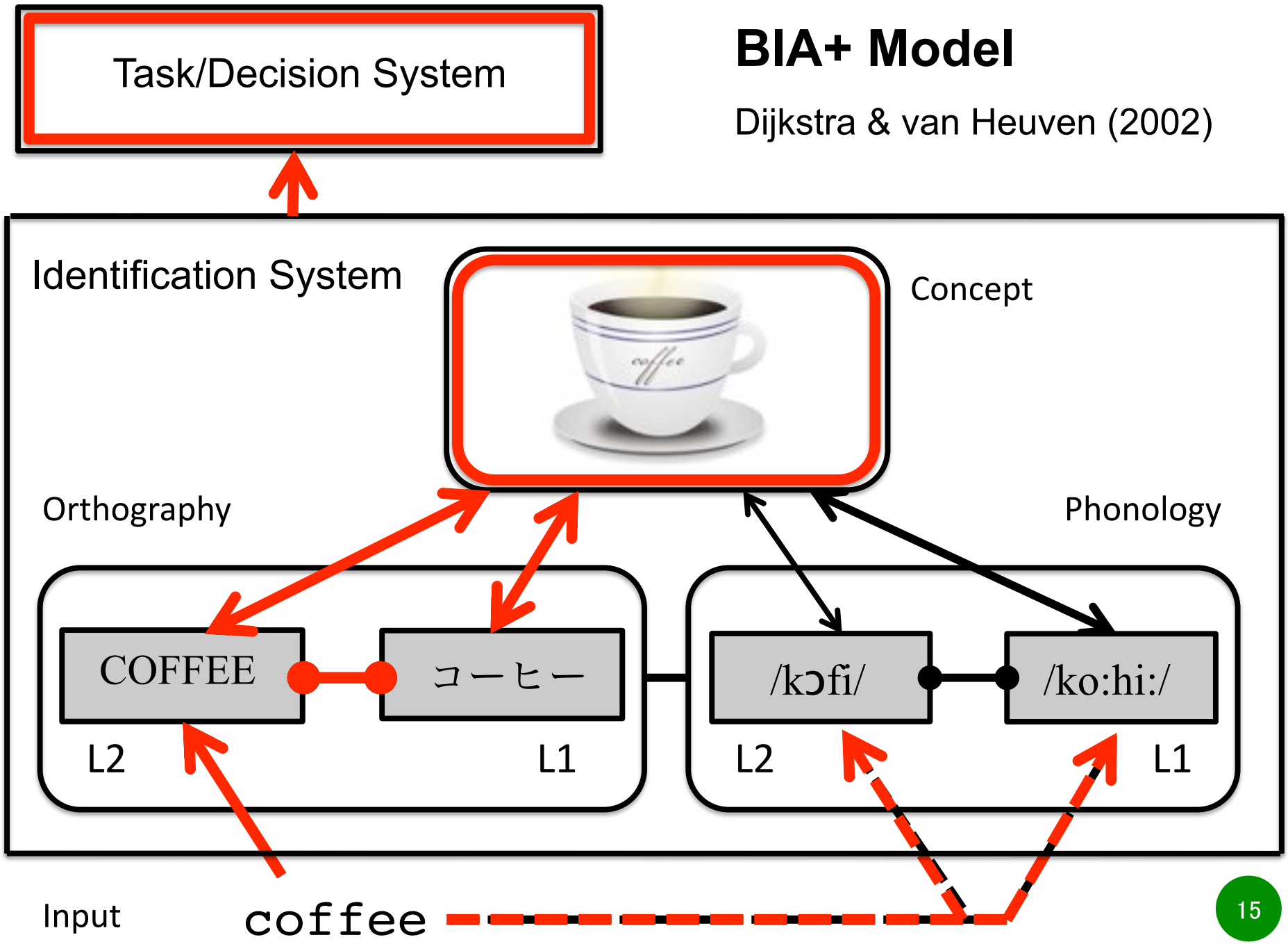


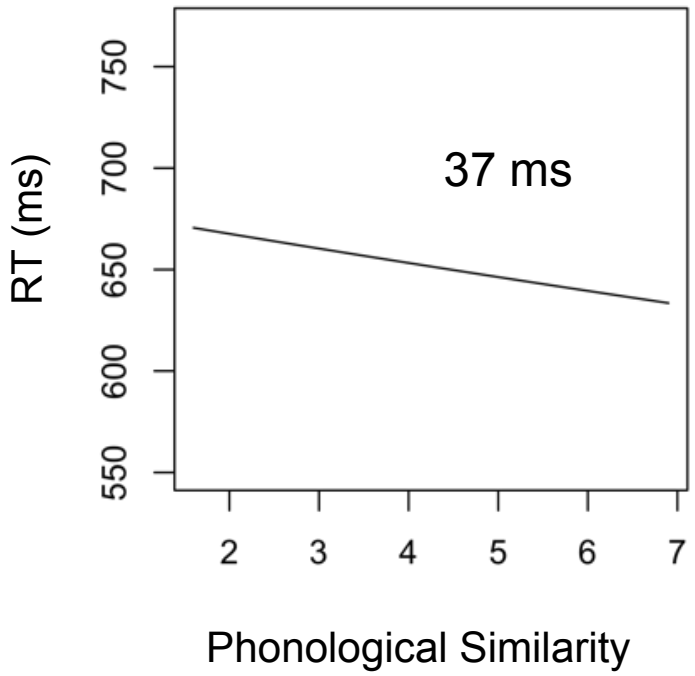
Summary

- Japanese words become co-activated without cross-linguistic orthographic similarity:

- Competition between English target words and Japanese words occurs late. (**English word frequency** * **Japanese word frequency** at 2nd fixation)
- A cross-language **Phonological Similarity** effect arises early.
- A cross-language **Translation Equivalence** effect arises late.

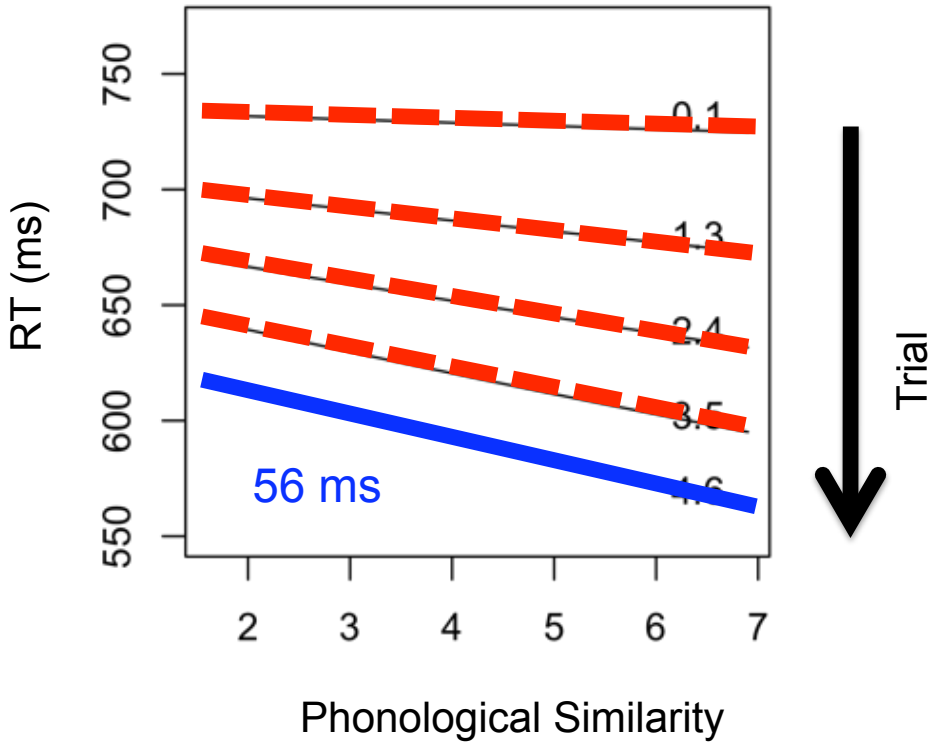
Phonological Similarity Effect

- Overall, larger cross-language **Phonological Similarity** led to shorter response latencies.



Consideration of Response Criteria: Phonological Similarity Effect

- **Phonological Similarity** facilitated responses as the experiment went by (a more important as a response criterion).



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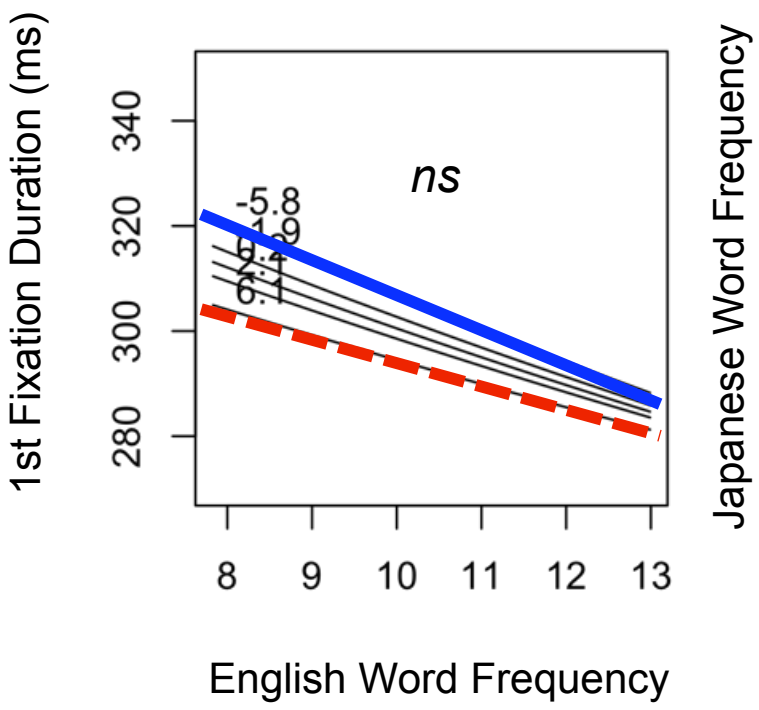
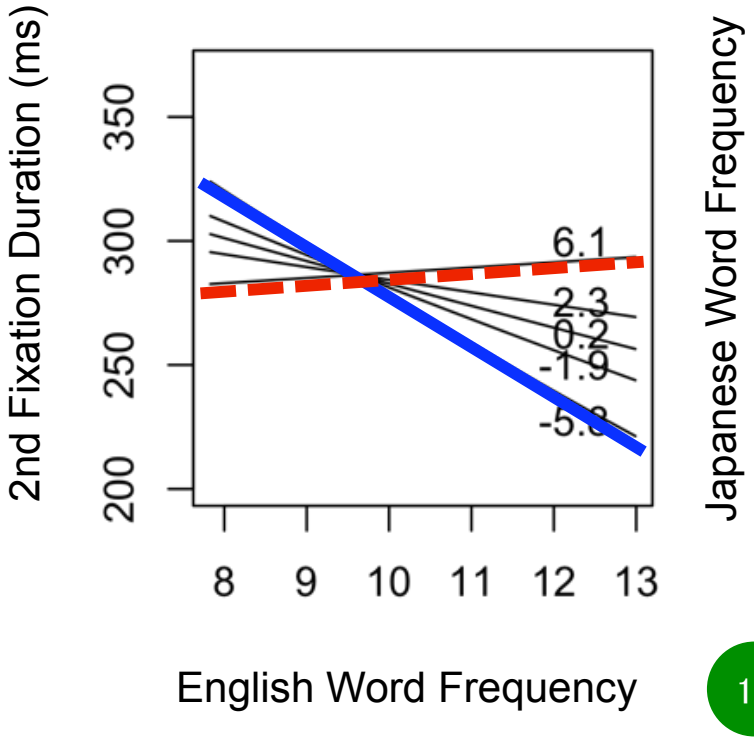
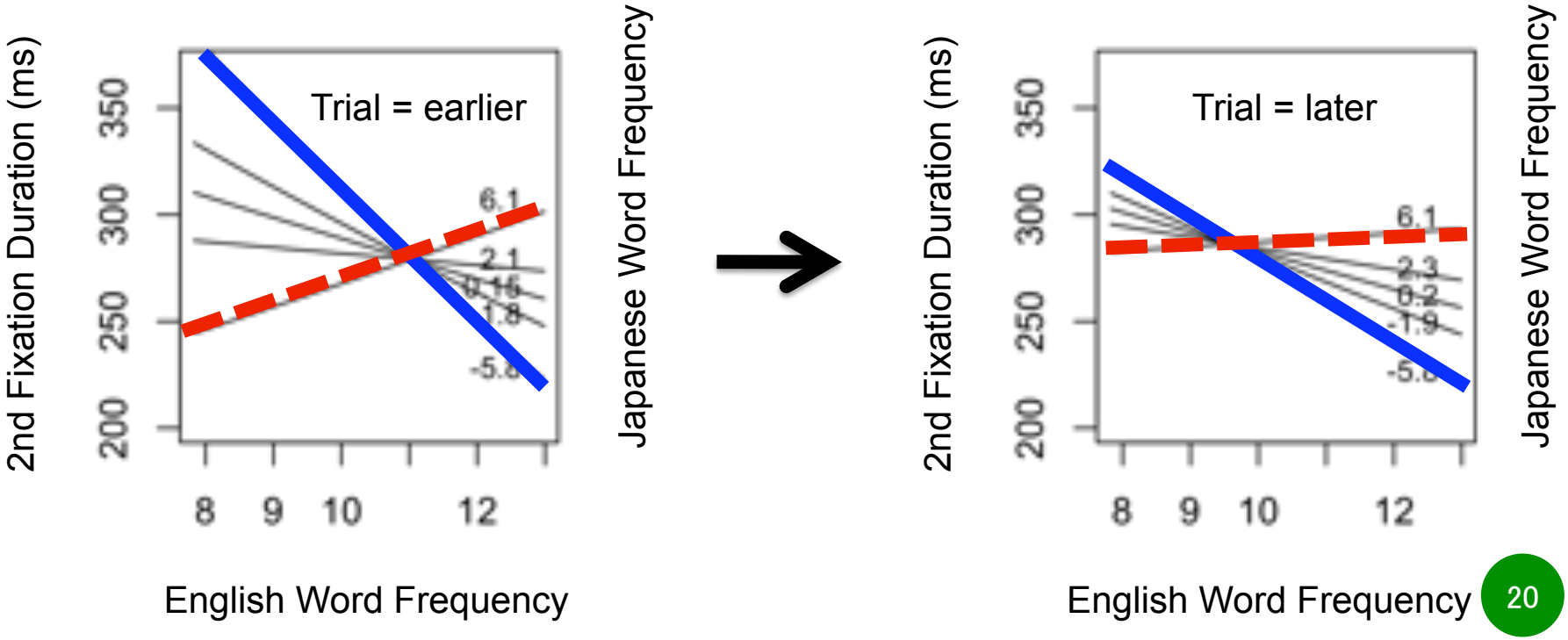




Consideration of Response Criteria L1*L2 Word Frequency Effect

- The magnitude of the late **English Word Frequency** * **Japanese Word Frequency** became smaller, as the experiment went by (Japanese words as a response criterion).



Phonological Similarity Effect in Detail

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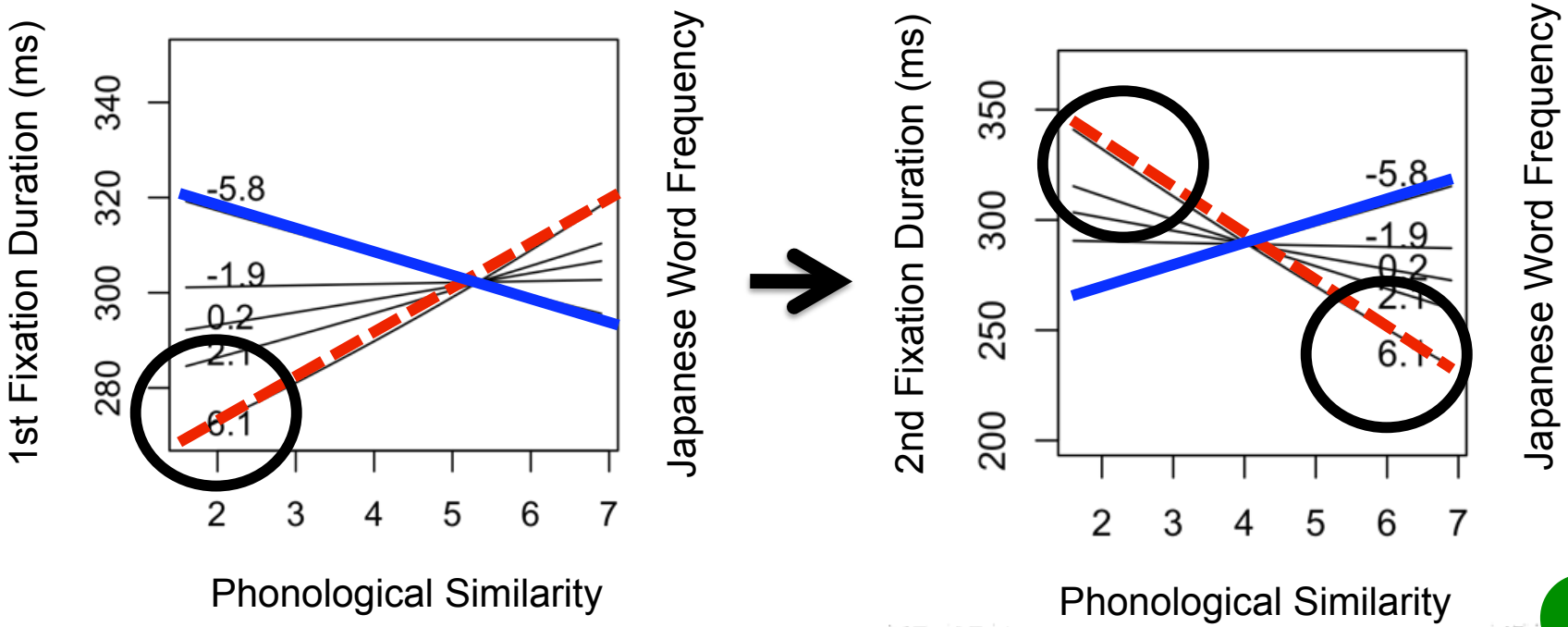
- **Phonological Similarity** effects were modulated by **Japanese Word Frequency** at both 1st and 2nd fixations.



Fixation Counts