

# Phonological overlap in German affects English lexical processing in German-English bilinguals

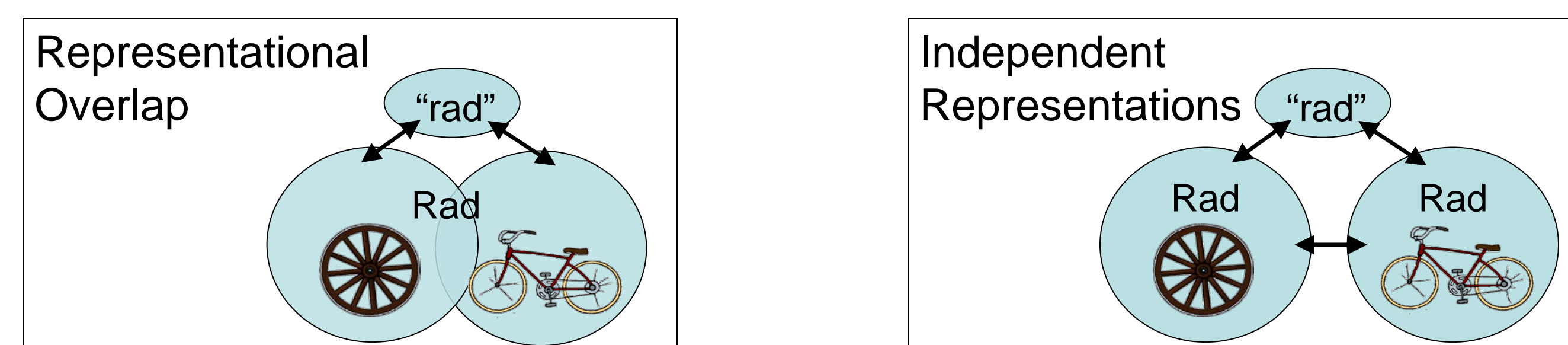
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## Lexical Ambiguity

- Continuum from homophony to polysemy (German examples)  
**homophony**  $\longleftrightarrow$  **polysemy**  
*Kiefer* = pine tree/jaw  $\longleftrightarrow$  *Rad* = wheel / bicycle

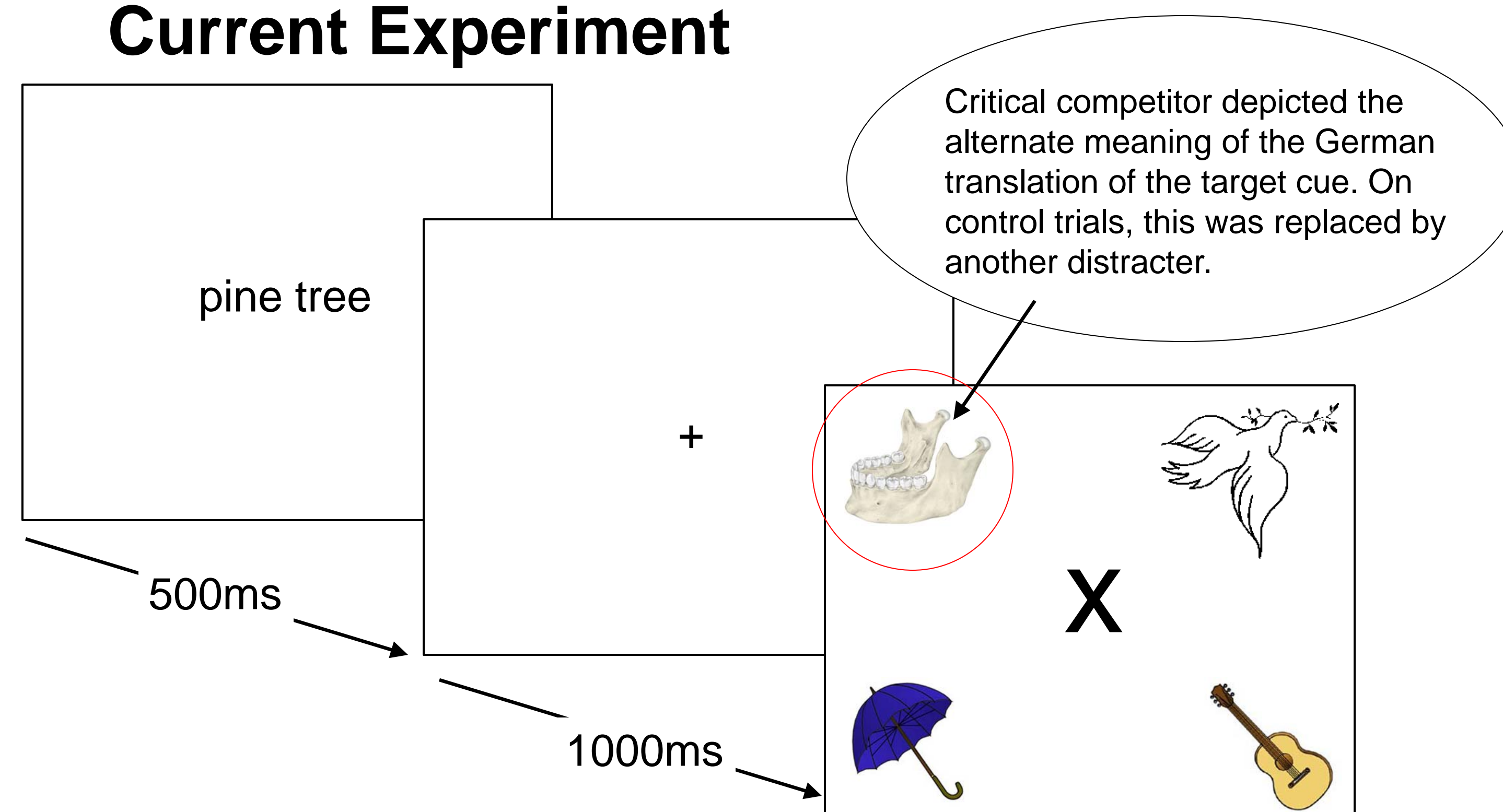
- What is the effect of semantic overlap on lexical representation/processing of ambiguous word-forms?



## Insights from Bilingualism

- Cross-linguistic variation in lexical ambiguity
  - Separate English word-forms are needed to express the two meanings of both *kiefer* and *rad*
- L1 representations also activated during L2 processing<sup>1,2,3</sup>
  - Items that are only ambiguous in L1 should be activated to the extent that they share underlying representations
  - Examine effect of semantic-relatedness on lexical representations

## Current Experiment



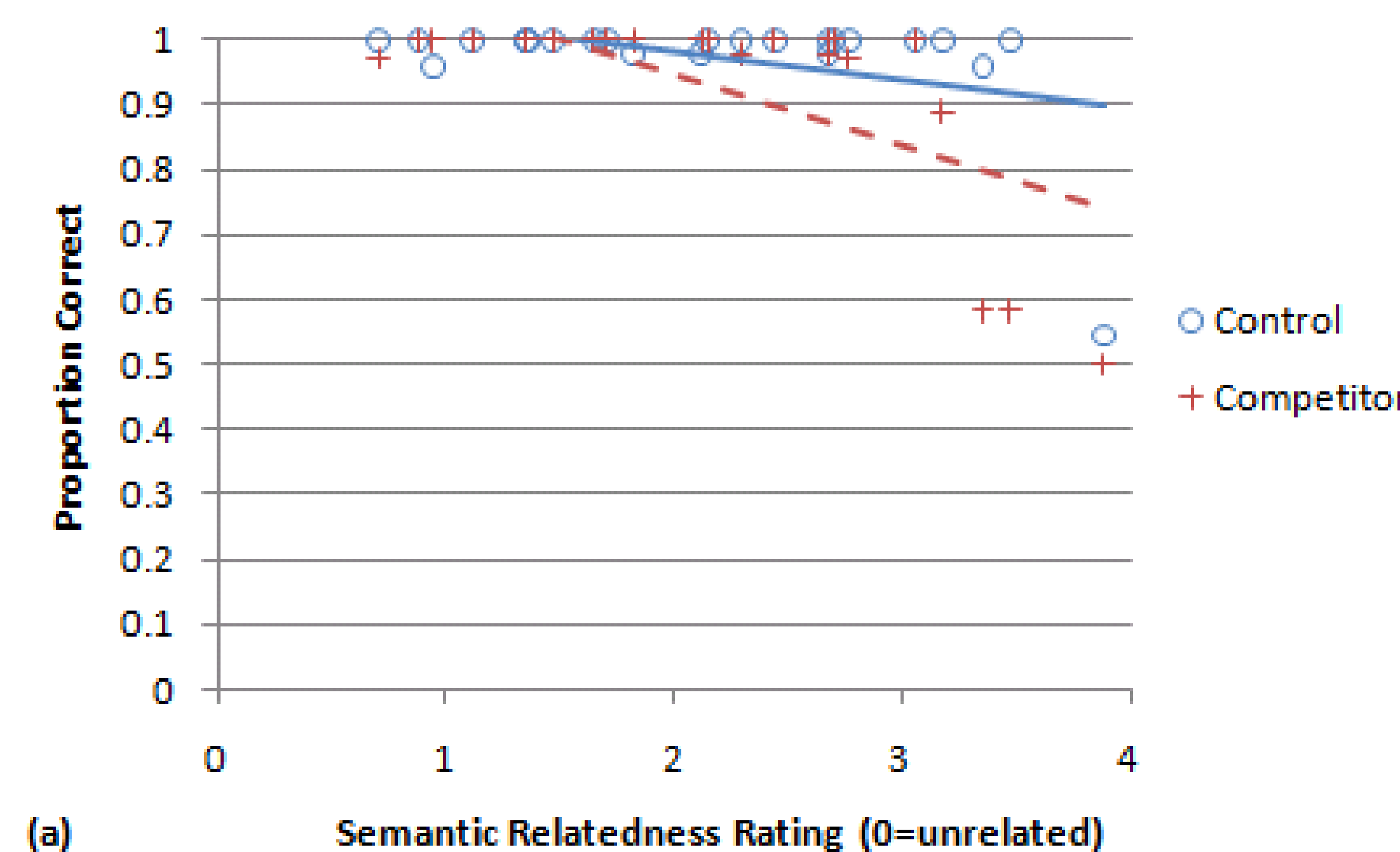
- 14 German-English bilingual and 14 English monolinguals
- Visual search task<sup>4</sup> conducted in English
  - 384 trials: 24 items x Target Present/Absent x Competitor/Control x 4 Blocks
- Target cue was an English word and its German translation (not presented) was ambiguous
- Ranged from semantically unrelated (*kiefer*) to related (*rad*)
  - Norms collected from independent group of subjects

## Predictions and Hypotheses

- More semantically-related critical competitors will be stronger distracters than semantically-unrelated competitors
  - Across both language groups
- If phonological overlap in German affects English lexical processing for German-English bilinguals...
  - Semantically-unrelated competitors should distract German-English bilinguals but not English monolinguals
- If semantic-relatedness  $\rightarrow$  Representational Overlap...
  - Semantic-relatedness should have a larger effect in the German-English bilingual group than the English monolingual group
  - Would reflect greater lexical and/or greater conceptual overlap
- If Independent Representations (no effect of relatedness on lexical representations)...
  - Same semantic-relatedness effect across language groups
  - Independent effects of ambiguity (language group) and semantic relatedness

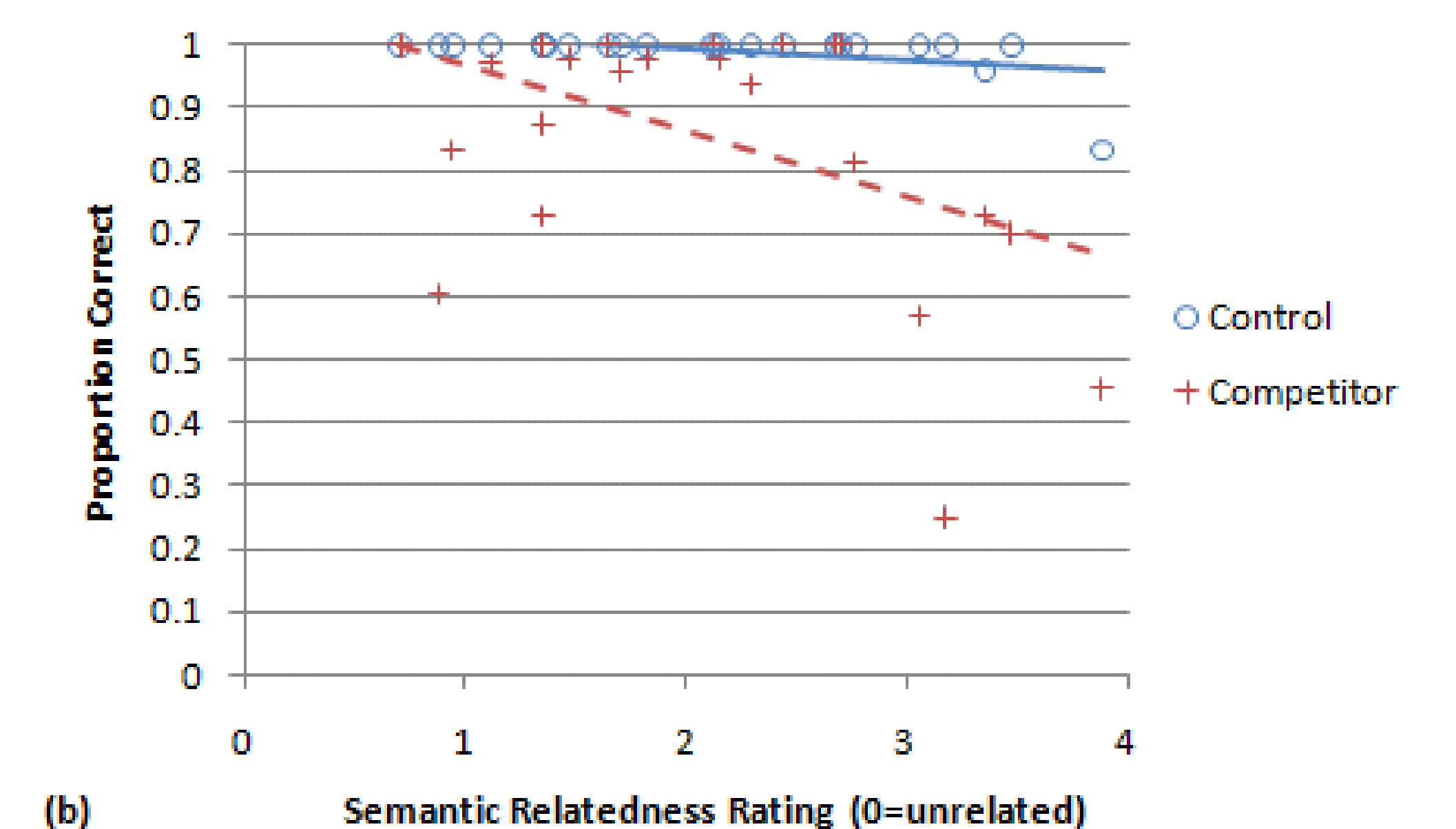
## Results: Accuracy

- Analyzed Target-Absent trials
  - Compared trials with a Critical Competitor to trials where it had been replaced by a Control item
- English Monolingual participants
  - Greater semantic-relatedness  $\rightarrow$  more errors on Critical Competitor trials



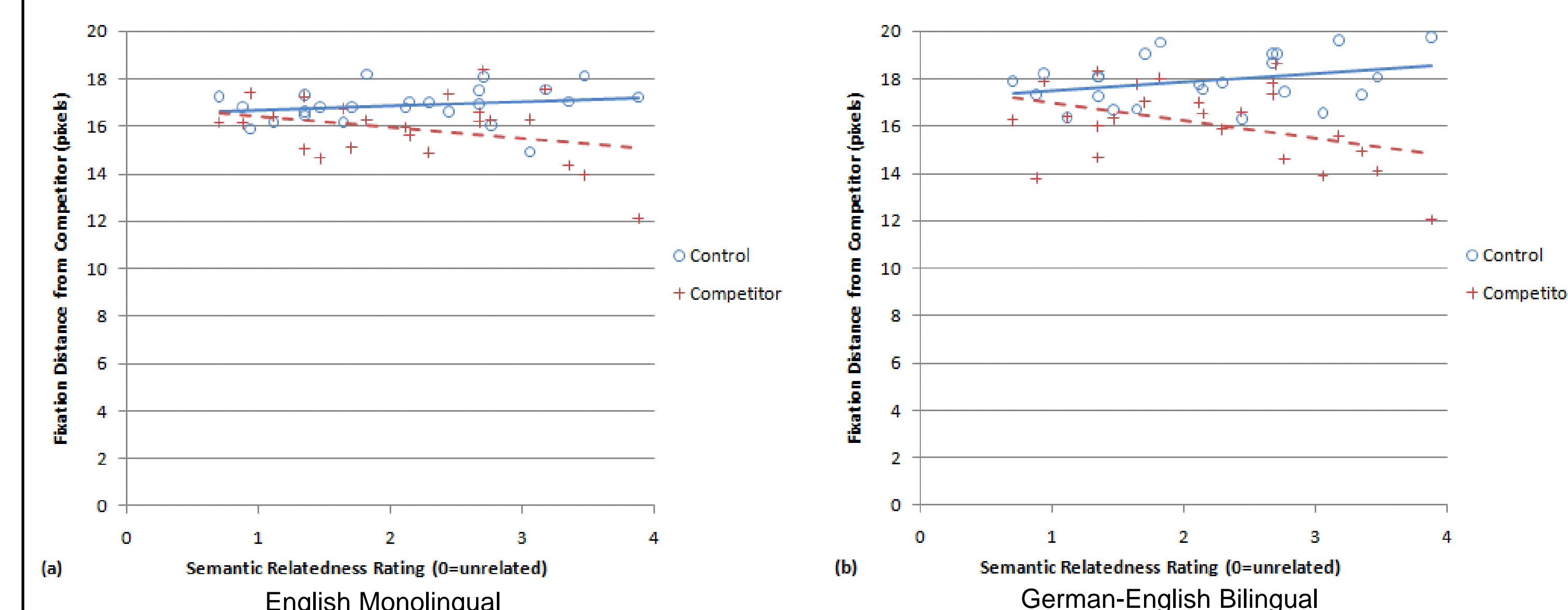
- German-English Bilingual participants

- Similar semantic-relatedness effect as English group; overall main effect of semantic relatedness,  $p < .01$
- Competitor effects from items with low semantic-relatedness reflects ambiguity of German translation of cue; interaction of Lang. Group x Competitor/Control,  $p < .05$
- Three way interaction driven by items with low relatedness: Lang. Group x Competitor/Control x Relatedness,  $p < .05$



## Results: Eye Tracking

- Analyzed average fixation distance from Critical Competitor or Control items on Target-Absent trials
- Fixation patterns corroborate accuracy data



## Discussion

- Phonological ambiguity of German translation created interference while processing English
  - Further insight into bilingual language processing
- Not conclusive evidence that semantic relatedness of ambiguous meanings results in further representational overlap
  - Our items comprised irregular forms of polysemy: what about more regular forms of polysemy?

### References

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