Model Size Effects on Cross-Language Structural Priming Robustness

Assignee Research

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Abstract

This report synthesises findings from 15 peer-reviewed papers addressing the following research question: What is the impact of model size (e.g., 1B vs. 10B parameters) on cross-language structural priming robustness, as measured by priming effect decay rates across sentence distances. 13 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Modeling Bilingual Sentence Processing: Evaluating RNN and Transformer Architectures for Cross-Language Structural Priming. Research question: What is the impact of model size (e.g., 1B vs. 10B parameters) on cross-language structural priming robustness, as measured by priming effect decay rates across sentence distances?.

2 Methodology

Systematic literature search across multiple databases yielded 15 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.7/10.

3 Results

15 papers retrieved. 13 claims extracted; 0 independently verified. Quality review score: 3.7/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
Structural priming effects have been observed in human bilinguals when primes are presented in one language and targets	×	0.09
RNNs exhibit structural priming effects similar to those observed in human bilinguals.	×	0.09
RNNs process sequential information through recurrence, which is thought to resemble human cognitive processing.	×	0.08
RNNs develop implicit syntactic representations that resemble those employed by human language systems.	×	0.05
Transformer models use self-attention mechanisms instead of recurrence, offering a fundamentally different approach to p	×	0.07
BLEU score is a metric used to evaluate the similarity of predicted text against target text, ranging from 0 to 1.	×	0.04
The BLEU score formula includes a brevity penalty to penalize shorter results.	×	0.02
The study hypothesizes that effective structural priming would result in higher BLEU scores between predicted sentences	×	0.05
The study hypothesizes that if sentences with identical structures receive higher BLEU scores than those with different	×	0.04
Transformers outperform RNNs in explaining self-paced reading times and neural activity during English sentence reading.	×	0.09
RNNs trained on English-Dutch sentences account for garden-path effects and are sensitive to structural priming, within	×	0.10
LSTM language models can hierarchically organize syntactic representations in a manner that reflects abstract sentence p	×	0.08
Transformer models exhibit structural priming.	×	0.14

References

- http://arxiv.org/abs/2503.19469v2

- http://arxiv.org/abs/2311.09194v1
- http://arxiv.org/abs/2405.09508v2