1. Introduction

Syntactic Priming: Exposure to a syntactic structure facilitates later processing of same structure [1].

- Two types of structural priming:
  1. Activation Decay: Residual structural activation decays; effects short-term
  2. Implicit Learning: Priming is function of gradual learning; effects long-term

Factors typically associated with structural priming include: [2]

1. Proximity to Exposure: distinguishes between short vs long-term priming
2. Lexical Retrieval: can provide independent priming 'boost'

'Good Enough' Processing: Even for fully grammatical sentences, the parser does not always produce complete and detailed representations; structures are under-specified. [3]

- Prior work shows priming possible for marginally grammatical sentences, but unclear what type of priming is at work [4]

2. Current Study

We use ungrammatical, potentially 'unbuildable' sentences (cf. satiation) to test how much structure is required for structural priming.

Research Question: Can structural priming occur even in extreme cases of structural under-specification? If so, what type of priming is possible?

3. Experiment Design

Task: Native English speakers rated 12 prime-target pairs on 5-pt scale (1=completely unacceptable; 5= completely acceptable)

2 Exposure Types (between-subjects):
- Lag 1 (n=40): 1 Unrelated sentence between prime & target
- Lag 5 (n=40): 5 Unrelated sentences between prime and target

2 Critical Sentence Types:
- CNPC Islands (ex. 1): ‘Weak’ wh-island; processing-related [4]
- Subject Islands (ex. 2): ‘Strong’ wh-island; not processing-related [5]

2 Repetition Types: Repeated Island (ex. a) vs Unrelated phrase (ex. c)

2 Trial Types: Prime Sentence (ex. a,c) vs Target Sentence (ex. b,d)

Fillers: 6 different sentence types, ranging in complexity and acceptability
- 54 fillers in Lag1 version; 126 fillers in Lag5 version of study

4. Hypothesis & Predictions

- Priming under-specified structure is not possible
- Priming under-specified structure is short-term
- Priming under-specified structure is long-term

Targets > primes in both Lag1 and Lag5
Targets > Primes in Lag1, but not Lag5
Targets > Primes in both Lag1 and Lag5

Island repetition may provide rating ‘boost’ over Unrelated repetition

5. Lag 1 Results

- Significant Sentence type effect
- Significant Trial type effect
- Marginal Sentence x Trial interaction

6. Lag 5 Results

- CNPC Islands rated sig. higher than Subject Islands (|t|=2.82)
- Targets rated sig. higher than prime trials (|t|=2.3)
- Marginally larger increase for CNPC than Subject Islands (|t|=1.81)
- Repetition types did not differ from each other

7. Lag 1 vs Lag 5 Comparison

- Difference Scores: Subtracted Target from Prime Score for each prime-target pair
- Differences sig. larger for CNPC than Subject Islands (|t|=1.97)
- No differences in Lag type or Repetition type

8. Discussion & Conclusion

- Priming when primes & targets very close (Lag1), but effects less clear when pairs were further apart (Lag5).
- Priming of under-specified structures is short-lived, initially suggesting activation decay of structural representations
- Observed priming for CNPC islands, but for Subject islands
  - Type of under-specification & type of grammaticality violation matters for priming
  - Though underspecified, representations were fine-grained enough to distinguish between two grammaticality violations.
- Future Work:
  - No observed effect of lexical repetition: perhaps island phrase is too degraded to ‘boost’ priming.
  - What is responsible for two different priming effects observed in CNPC vs Subject islands? (e.g. What is the role of semantic/conceptual priming here?)
  - How generalizable are these priming effects?

References