Relativized minimality: A systematic investigation on intervention effects

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The extraction of a wh-phrase (extractee) across another wh-phrase (intervener) causes acceptability degradation:

1. *What* do you wonder who solved the problem?

However, acceptability is reported to improve whenever the extracted wh-element is lexically restricted (e.g., which problem) [1]:

2. *Which problem* do you wonder who solved the problem?

(Featural) Relativized Minimality [2,3] accounts for this asymmetry in acceptability judgment by stating that a local relation between an extracted element and its trace is disrupted by an intervening element as a function of the feature overlap between the intervener and the extracted element.

### Predictions

**FULL MATCH OF FEATURES: MAXIMAL INTERFERENCE**

- (a) $+Q \ldots +Q \ldots <+Q>$
- (b) $+Q, +N \ldots +Q, +N \ldots <+Q, +N>$
- (c) $+Q, +N \ldots <+Q>$

Bare Identity

**PARTIAL MATCH OF FEATURES: MODERATE INTERFERENCE**

- (d) $+Q, +N \ldots <+Q, +N>$

Inverse Inclusion

### Present Study

The present study provides a systematic empirical investigation of these predictions through:

1. Manipulation of the relevant variables within a factorial design
2. Control for lexical variables independent of intervention (baseline)
3. Use of different experimental methods

### Methods

#### Experiment 1

- **Participants**: 40 French-speaking adults
- **Material**: 82 sentences (10 training sentences, 32 test sentences, 40 filler sentences)
- **Variables manipulated**: (i) Extraction of a wh-phrase over another wh-phrase; (ii) Lexical restriction of the 1st wh-phrase (Wh1); (iii) Lexical restriction of the 2nd wh-phrase (Wh2)
- **Dependent variable**: Acceptability judgment on a 7-point Likert scale

#### Experiment 2

- **Participants**: 20 French-speaking adults
- **Material**: 640 sentences (320 test sentences, 320 filler sentences)
- **Variables manipulated**: (i) Extraction of a wh-phrase over another wh-phrase; (ii) Lexical restriction of the 1st wh-phrase (Wh1); (iii) Lexical restriction of the 2nd wh-phrase (Wh2)
- **Dependent variable**: Acceptability judgment on a binary scale

#### Experiment 3

- **Participants**: 49 French-speaking adults
- **Material**: Identical to Experiment 1 except that sentences were preceded by a context story to explore the potential role of D-linking in modulating acceptability judgments

### Results

#### Experiment 1

- **No Extraction**
  - Extraction (baseline corrected): $\beta = 2.093$, t = 12.24, p < 0.001
  - Pairwise comparisons: (1)=(2)> (3)= (4)

- **Extraction**
  - Extraction (baseline corrected): $\beta = 5.713$, t = 15.36, p < 0.001
  - Pairwise comparisons: (1)=(2)> (3)= (4)

#### Experiment 2

- **No Extraction**
  - Extraction (baseline corrected): $\beta = 3.541$, t = 6.49, p < 0.001
  - Pairwise comparisons: (1)=(2)> (3)= (4)

- **Extraction**
  - Extraction (baseline corrected): $\beta = 5.713$, t = 15.36, p < 0.001
  - Pairwise comparisons: (1)=(2)> (3)= (4)

#### Experiment 3

- **No Extraction**
  - Interaction Wh1*Wh2: $\beta = 0.354$, t = 2.49, p = 0.01
  - Pairwise comparisons: (5)=(6)< (7)< (8)

- **Extraction (baseline corrected)**
  - Interaction Wh1*Wh2: $\beta = 0.358$, t = 3.88, p < 0.001
  - Pairwise comparisons: (5)=(6)< (7)< (8)

### Discussion

- Results in line with (Featural) Relativized Minimality:
  - General effect of intervention in Extraction conditions as compared to No Extraction conditions;
  - Maximal intervention effect in Bare Identity and Inverse Inclusion, both more degraded than Inclusion.

- However, (Featural) Relativized Minimality fails to account for the higher acceptability of Complex Identity as compared to the three other feature sets. The advantage of Complex identity may lie in the greater syntactic and semantic richness of lexically restricted wh-phrases as compared to bare wh-phrases. Building on content-addressable models of memory retrieval [4, 5], it is arguable that the extracted element has to be retrieved from memory. Similarity-based interference occurs when retrieval cues overlap with cues on other elements in memory. Lexical restriction of the two wh-phrases provides maximal syntactic and semantic information, therefore increasing distinctiveness between the wh-phrase to be retrieved and the intervening wh-phrase [6]. Future research is needed to characterize the exact nature of features entering into the similarity metric, and explore the possibility to enrich the memory-based explanation with the fine assumptions of formal syntax that have proven to capture the wider range of island phenomena in grammar.

### References

[3] Rizzi, 2001. In M. Baltin & C. Collins (Eds.), Handbook of Contemporary Syntactic Theory
[5] Lewis et al., 2006. TICS