Processing and grammar constraints in extraction from wh-islands

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Long-distance dependencies are subject to locality constraints: the relation between an extracted element and its trace is disrupted when it crosses a **similar** intervening element.

Two hypotheses:
1. **Narrow Similarity**: only morphosyntactic features triggering movement modulate similarity
2. **Broad Similarity**: both syntactic and semantic features modulate similarity

**NARROW SIMILARITY**

According to **Featural Relativized Minimality (fRM)** (1,2), the local relation between an extracted element and its trace is disrupted when an intervening element fully matches the morphosyntactic featural specication of the extracted element.

(1) What do you wonder who built ___? **FULL MATCH**
   +Q  
   +Q

(2) Which building do you wonder which engineer built ___? **FULL MATCH**: +Q,+N  

(3) What do you believe that the engineer built ___? **ZERO MATCH**: +Q  
   +N

**BROAD SIMILARITY**

Long-distance dependencies require the retrieval of the extracted element at the verb. According to **Cue-based memory models** (3,4,5), the probability of successfully retrieving the intended representation is determined by the feature match between the target (the extracted element) and the probe (the verb), and by the feature distinctiveness between the target and irrelevant memory representations (the intervener).

Moreover, retrieval is driven by both **syntactic and semantic cues** at the verb. Hence, the retrieval of the extracted object is expected to be easier when rich semantic information increases the distinctiveness between the target and the intervener (as in (2)), as compared to when no such additional information is present (as in (1)).

**AIMS OF THE STUDY**

Adjudicate between Narrow and Broad Similarity in testing the role of semantic features in the acceptability of long-distance dependencies in wh-island environments. We conducted two acceptability judgment studies in French on a 7-point Likert scale:

**EXPERIMENT 1** investigates the role of Animacy, a semantic feature with a syntactic counterpart.

**EXPERIMENT 2** investigates the role of the **Specificity of the Verb**, a pure semantic feature.

**METHOD**

**EXPERIMENT 1**

Participants: 42 French-speaking adults

Materials: 32 sets of 4 sentences each

Variables manipulated:
1. **Lexical restriction** of the wh-elements (Bare vs. Restricted)
2. **Animacy of the extractee** (Animate vs. Inanimate)

**EXPERIMENT 2**

Participants: 42 French-speaking adults

Materials: 32 sets of 4 sentences each

Variables manipulated:
1. **Lexical restriction** of the wh-elements (Bare vs. Restricted)
2. **Specificity of the Verb** (Specific vs. Non-Specific)

When both NPs are animate, thematic roles are reversible. Thus, in order to tease apart these two factors, Experiment 2 manipulates the specificity of the verb with respect to its arguments in sentences that only have animate NPs, since highly specific verbs are likely to block reversibility.

**RESULTS**

**EXPERIMENT 1**

- **Effect of Lexical Restriction** (β=0.634, t=7.699, p<.001)
- **No Effect of Animacy** (β=0.016, t=1.690, p=0.236)
- **Lexical Restriction** Animacy (β=0.167, t=3.060, p=0.003)

**EXPERIMENT 2**

- **Effect of Lexical Restriction** (β=0.463, t=6.034, p<.001)
- **Effect of Verb Specificity** (β=0.091, t=3.043, p=0.004)
- **Lexical Restriction** Verb Specificity (β=0.078, t=2.164, p=0.037)

Comparing the Inanimate condition of Experiment 1 and the Animate condition with specific verbs of Experiment 2 allows assessing the role of Animacy independently of the reversibility of thematic roles (“pure” effect of Animacy).

**EXPERIMENTS 1 AND 2**

Pure effect of Animacy (β=0.123, t=2.081, p=0.041)

**CONCLUSIONS**

1. Semantic information (Animacy and Specificity of the verb) modulates the acceptability of weak islands, in line with an approach in terms of Broad similarity.
2. This finding challenges the core claim of fRM according to which only morphosyntactic features triggering movement modulate the acceptability of weak islands.
3. Across the two experiments, semantic factors only played a role in sentences with restricted wh-elements. Why?
   - As for Animacy, it suggests either that bare wh-elements do not carry animacy features, or that highly degraded sentences do not allow animacy effects to show up.
   - As for the Specificity of the verb, it suggests that what matters is not the specificity of the verb itself (fired vs. saw), but rather the specificity of the relation of the verb with its arguments. This fits well with a Cue-based approach to memory retrieval, in which the ease of retrieval is a function of the match between the cues on the probe (the verb) and the features on the target (the extracted object).
4. Nevertheless, even in conditions with rich semantic cues, wh-islands remain poorly rated (M < 4, on a 7-points scale). These conditions involve a full match of syntactic features triggering movement. Therefore, it may still be the case that these features have a special role to play, as suggested by fRM.
5. The Cue-based memory model has:
   - the advantage of providing a processing account of long-distance dependences in terms of well-defined memory retrieval mechanisms;
   - the inconvenience of not providing a fine account of the features that come into play, and of the structural configurations sensitive to intervention.

**References**