Processing Raising and Control: A Visual World Paradigm Study

1. Abstract

Raising and Control structures have been a focus for theoretical approaches to language for many years (Rosenbaum 1967, Postal 1974), but relatively little is known about the online sentence processing of these gapped structures. We present the results from a visual world paradigm study (Cooper 1974, Tanenhaus et. al. 1995) that show a processing difference between raising and control structures. Specifically, we show a greater semantic reactivation of the matrix subject in the raising condition compared to the control condition.

2. Background

- The core theoretical difference between raising and control is in thematic role (θ-role) assignment:
  (1) Subject raising: The soldier continued __ to write to his new bride. (NP-trace) The soldier receives a thematic role from write.
  (2) Subject control: The soldier decided __ to write to his new bride. (PRO) The soldier is assigned a θ-role by decided.
- Walenski (2002) conducted a series of Cross-Modal Lexical Priming studies finding that Raising structures show a semantic priming effect at the gap position while Control structures show a priming effect delay of 300 ms from the gap, indicating that the matrix subject is semantically reactivated earlier in a Raising construction.
- Current goal: replicate this finding using a visual world paradigm (Cooper 1974, Tanenhaus et al. 1995).

3. Materials

- The experimental items consisted of eighteen sentence pairs formed from frequency matched raising and control verbs.
- Two lists, such that a participant heard only one of each critical verb.
- Recorded by a female native English speaker with normal prosody.
- Four-image scenes were created to pair with the experimental stimuli.
- Three images correspond to nouns in the auditory sentence: subject, foil (noun intervening between the subject and gap), and object.
- Foil used to prevent participants from continuously fixating on the matrix subject from the start of the sentence until the object was reached. Their frequencies were significantly higher than the subjects.
- Fourth image was a filler.
- Images were balanced for position across items.

4. Results

Based on our predictions, we focus on looks to the subject picture.

5. Discussion

- 200ms windows were formed surrounding the gap site.
- ANOVA: significant difference for condition x window (p<0.03).
- Marginal main effect (p=0.08) of condition only by items.
- Significant main effect of window (p=0.02) only by items.

6. Conclusion

- Partially replicated Walenski (2002) with visual world paradigm.
- Online processing difference between raising and control.
- Raising: easier semantic reactivation of the matrix subject at the infinitive.
- Visual world paradigm is sensitive to gapped constructions.
- Additional research is needed to understand the nature of the raising-control processing difference.
- One possible explanation could be one of expectancy differences caused by the differing number of complement types for the two groups of verbs.

7. References


The 22nd Annual CUNY, March 26th through 28th, 2009, University of California, Davis. Contact: dmichel@ling.ucsd.edu

Dan Michel1 and Wind Cowles2
1University of California, San Diego 2University of Florida

Subject Semantic Reactivation

Control Raising