INTERFERENCE EFFECTS IN THE PROCESSING OF
CONTROL STRUCTURES IN GERMAN HEALTHY ADULTS

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Aims of the study

In our project, we investigate how different sentence structures are processed by people of different ages and people with aphasia, focusing on variability between and within participants.

content of the poster

Here, we use control structures to investigate how dependency length and the similarity of dependent and non-dependent elements influence sentence processing.

> We investigate how control structures are processed in healthy German adults.
> We test the assumptions of the cue-based retrieval model of Lewis & Vaisishth (2005).
> We investigate interference effects with a self-paced listening task with sentence-picture matching.

Control structures

In control structures, the subclause subject (controller) is identified with a noun of the main clause (controller). The controller can be covert (PRO, see (1)) or overt (pronoun, see (2)). The controller can be the subject (1a) or the object (1b).

We investigate two factors:

1. control type
   - subject control (a) vs. object control (b)
   a. Peter promises Lisa PRO to catch the chicken.
   b. Peter allows Lisa PRO to catch the chicken.

2. argument similarity
   - referents’ genders match (a) vs. mismatch (b)
   a. Peter promises Tom that he will catch the chicken.
   b. Peter promises Lisa that he will catch the chicken.

Methods & Design

participants: n=48 German-speaking healthy adults (18-83 years, M=49 years)
self-paced listening with sentence-picture matching
Who interacts with the animal?

A
B

Peter promises Lisa
Lisa promises
Peter promises
Lisa promises
now Lisa/
Thomas
that he
the chicken will catch
picture selection
listening time (ms)

Results: Listening times

control type
- listening time at the critical region: the chicken
  2.7ms faster for object control (t = 1.28, SE = 0.016)
  4.5ms faster for object control (t = 2.05, SE = 0.014)
- picture selection, reaction time:
  104ms faster for object control (t = 1.71, SE = 0.033)
- picture selection, accuracy:
  2.7% higher for object control (z = 2.57, SE = 0.43)

argument similarity
- listening time at the critical region: the chicken
  5ms faster for gender match (t (g.m) = 0.2, SE = 0.016)
  17ms faster for gender match (t (g.m) = 1.2, SE = 0.015)
- listening time at the critical region: the chicken
  5ms slower for gender match (t (g.m) = 0.65, SE = 0.015)
- picture selection, reaction time:
  209ms slower for gender match (t (m.g) = 4.1, SE = 0.03)
- picture selection, accuracy:
  4.7% higher for gender match (z (m.g) = 3.2, SE = 1.02)

Discussion

control type
- The direction of the effect in line with the cue-based parsing model.
- Interference effects were reflected in higher reaction times and lower accuracies in the gender match condition.
- We found no early interference effect at the pronoun.
- Effects occurred only in the question region. This speaks for a late integration effect (Schröder, 2007). Referents are easier to integrate into discourse if they are more distinct.

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