On the processing of ‘before’ and ‘after’ clauses
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Introduction
- Our study examined the processing of sentences with presuppositional content introduced by ‘before’ and ‘after’ clauses:
  - e.g. After playing tennis, John played soccer.
- In our study we investigated how
  1. choice of temporal adverb (‘before’/‘after’)
  2. whether the presupposition of the temporal clause was met
  3. clause order (temporal iconicity)
- The complement of ‘after’ is veridical, but that of ‘before’ is not. (Beaver and Condoravdi: 2003: 1).

Experimental Design & Task

**TASK:** Picture-matching task: the ‘covered box’ paradigm
- Participants visually presented with one sentence and two visual contexts.
- Instructed to pick the visual context which corresponded with their interpretation of the sentence.
- One ‘visual context’ was always a ‘covered box’, e.g. After playing tennis, John played soccer

- Choice of ‘covered box’ indicates no possible interpretation of the sentence which matches the (non-covered) visual context.
- To visually represent a context with an unmet presupposition, we crossed out the activity:

**DESIGN:**
- 2 sub-experiments with 24 items: temporal adverb ‘before’ and ‘after’
- In each sub-experiment: 2 variables with 2 conditions were crossed: presupposition met or unmet and clause order (temporal iconicity).
  - Asserted content always true
  - Temporally **iconic:** John played baseball before going swimming.
  - Temporally **non iconic:** John played baseball after going swimming.
- 48 fillers: John played tennis and soccer.
- Measured covered box selection and reaction time.

**PARTICIPANTS:**
- 26 adults from Penn’s Psychology Participant pool participated, receiving course credit for their participation.

Costers BOX CHOICE:
- Decreased covered box selection in unmet ‘before’ conditions.
- Mixed effect logistic regression: Main effect of temporal adverb (p < .001).
- No effect of adverb found for met conditions.

Proportion covered box selection for ‘before’ and ‘after’ clauses

**RESULTS:**

- Decreased covered box selection in unmet ‘before’ clauses.
- Presuppositional failure is more frequently accepted when introduced by ‘before’, an effect we attribute to the availability of non-veridical interpretations.

**DISCUSSION:**
(1) Decreased covered box selection in unmet ‘before’ clauses.
- Presuppositional failure is more frequently accepted when introduced by ‘before’, an effect we attribute to the availability of non-veridical interpretations.

(2) Large effect of temporal iconicity
- ‘After’-clauses in this study affected by temporal iconicity (processing delay for non-chronological presentations, Mandler 1986):
  - Found in previous implementations for both ‘before’ and ‘after’.
- Research involving temporal adverbs should control for temporal iconicity.

(3) Increased reaction time for iconic ‘before’-clauses
- Availability of non-veridical interpretation increases reaction time.
- Effect not as strong for clause-initia (non-iconic) ‘before’-clauses.
- Sentence-initial position makes non-veridical interpretation less available?
  - Corresponds to intuitions about: “Before Mary ran into the street, John shouted.” vs. “John shouted, before Mary ran into the street.”

**Questions for further consideration:**
- How is the presuppositional content introduced by ‘after’ processed?
- No anticipated ‘false but slow’ (Schwarz 2013) effect (slower reaction times for presupposition failure in ‘after’ clauses than for simple falsity)
- How non-veridical interacts with presuppositional vs. no presuppositional.
- How clause-initial position interacts with notion of ‘pivot’: constituent based on which a sentence is verified (Abrusán & Szendrő: 2012).
- Limitations of visually presented linguistic stimuli, e.g. prosody.

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**Selected References**