Effects of Predictability and Optionality on Pronominalization
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Abstract

Problem: Predictability is shown to influence production at multiple levels of linguistic structure, but evidence for the influence of predictability on speakers’ choice of reference is mixed.

Proposal: To test predictability effects, we follow prior work and compare pronominalization rates between referents that convey different thematic roles which are more vs less predictable. We also control for prior confounds in referential optionality. Prior experiments with the well-studied class of transfer verbs often use non-minimal pairs. Transfer events with the Source referent in subject position have an obligatory Goal argument (1a), whereas events with the Goal referent in subject position have an optional. Source (1b).

We test the optional-vs-obligatory status of competitor referents on the pronominalization rate of subject referents. We hold constant grammatical and thematic roles but vary optionality to establish if this confound explains prior results: (1c) Patrick bores/is boring to Emily. (1d) Sue received a book (from Kyle).

Possible confound in studies that find an effect of predictability: obligatory-vs-obligatory status of referents

We manipulated referent predictability in contexts with NP1-biased Implicit Causality verbs (IC; Garvey et al. 1976):

(2a) Patrick is boring 1 referent
(2b) Patrick is boring to Emily. 1 referent, optional competitor
(2c) Patrick bores Emily. 2 referents, obligatory competitor

Pre-test (n=21): How interchangeable are (2b)–(2c) across 30 verbs?
Rating scale: 1-5
Overall mean: 3.40
Study materials: We chose 18 verbs with highest mean and least variation.
Mean rating target items: 4.55

4. Story continuation experiment

Task: Write a natural continuation for the experimental prompts
Materials: 18 NP1-biased IC verbs, 6 per condition (2a-c)
Coding: • Who the continuation is about
• What form of referring expression is used

Number of participants: 65 (Exp1), 54 (Exp2), 63 (Exp3)

(1a) Kyle gave a book to Sue. (1b) Sue received a book (from Kyle).

Analysis: For the binary outcomes of re-mention (subject or not) and referential form of the subject (pronoun or not), LMER models showed main effects of condition. Pairwise comparisons show:

- Subj re-mention was highest in the 1ref (2a) condition (p<.01). No difference found between the two 2ref conditions (2b-c), p=.70.
- Pronominalization of the subject was lowest in the condition with an obligatory competitor referent (2c), ps<.05. No difference (2b-a), p=.61.
- The optional-vs-obligatory status of competitor referents influences the pronominalization rate of the subject.
- Referent predictability does not affect pronominalization rates.

5. Experiment 1

Figure 1: Proportion of subject re-mentions Exp1
Figure 2: Proportion of pronouns used for subject re-mentions Exp1
Figure 3: Proportion of subject re-mentions Exp1

6. (Not) Replicating the results

Figure 4: Proportion of pronouns used for subject re-mentions Exp2, conditions (2b-c).
Figure 5: Proportion of subject re-mentions Exp2
Figure 6: Proportion of subject re-mentions Exp2, conditions (2b-c).
Figure 7: Proportion of subject re-mentions Exp2

Experiment 2: replication of Exp1 with the two 2ref conditions (2b-c) only.

Re-mention: no difference between (2b-c)
Referring expression: no difference between (2b-c)
Effect in Exp1 possibly due to the absence of the 1ref condition?

Experiment 3: Direct replication of Exp1.

Re-mention: no difference between (2b-c)
Referring expression: no difference between (2b-c) and (2a-b)
Entire dataset (conditions 2b-c only): no difference between (2b-c)

The optional-vs-obligatory status of competitor referents does not influence the pronominalization rate of the subject.

7. Post-hoc correlation analysis

Does the predictability of a referent in a particular item account for any variation in pronominalization rates?

Across all items, the subject referent was the preferred referent for re-mention. However, this bias is stronger for some items than others.

In a post-hoc analysis of the two 2ref conditions (2b-c), we test whether pronominalization rates vary with referent predictability.

- For each item, we calculated the re-mention rate of the subject and the non-subject.
  - e.g., 59% Patrick, 36% Emily (with 5% other)
- For each item, we calculated the pronominalization rate of the subject and the non-subject.
  - e.g., Patrick 94%, Emily 46%

Results:
- Main effect of referent position: more pronominalization for re-mention of subject referent
- Referent position x re-mention rate: re-mention rate influences pronominalization differently for subjects and non-subjects. For non-subjects, higher predictability yields more pronominalization.

8. Conclusions

Our study has not yielded any evidence that obligatory referents compete more with the subject for being pronominalized than optional referents.


Our post-hoc by-item analysis does suggest an effect of predictability on pronominalization rate (in line with e.g., Arnold 2001, Rosa & Arnold 2017).

- Raises the question of whether similar predictability effects have gone undetected in prior work because of lack of by-item correlations (e.g., Fukumura & van Gompel 2010, Rohde & Kehler 2014).

References