

More Than One Agreement Planning Mechanism? Reflexive Number Source Sensitive to Syntactic Structures

INTRODUCTION

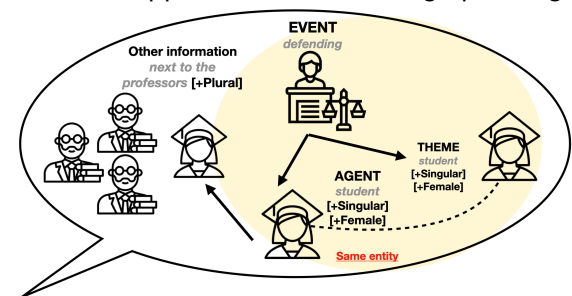
- Two types of number agreement attractions:
- Subject-Verb Agreement (VERB):**
 - The student next to the professors **are* singing.
- Reflexive-Antecedent Agreement (REF):**
 - The student next to the professors defended **themselves*.
- Previous studies (specifically, Kandel & Philips 2022) showed that in naturalistic sentence production, they have different error rates:
 - Mean error rate for VERB $\approx 12.5\%$ $\gg$ REF $\approx 1.5\%$
- Assume the consensus framework (e.g., Levelt 1994), sentence production involves mapping from *preverbal message encoding* to sentence utterance.

Research Questions:

- Where is number agreement in the sentence planning & production process?
- Are there different underlying mechanisms between verb and reflexives?

HYPOTHESIS 1: PLANNING ORDER (PO)

Planning Order Hypothesis: one single mechanism for both VERB and REF, but applied at different timing / planning stages:

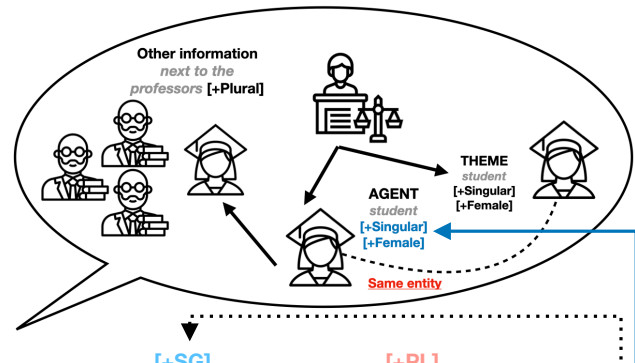


- Retrieving numbers from the morpho-syntactic features of the planned materials;
- REF: applied *before* intervener is planned;
- VERB: applied *after* the intervener is planned.

Planned: The student next to the professors defended *herself*.

HYPOTHESIS 2: NUMBER SOURCE (NS)

Number Source Hypothesis: two distinct mechanisms for both VERB and REF regarding to the source of the number feature retrieval:



- REF: directly retrieve number from preverbal conceptual representations;
- VERB: retrieving number from the morpho-syntactic features of the planned materials.

Planned: The student next to the professors defended *herself*.

CURRENT STUDY

- Both hypotheses are compatible with previous experimental results.
- Current study examines two additional reflexive cases where the two hypotheses diverge:

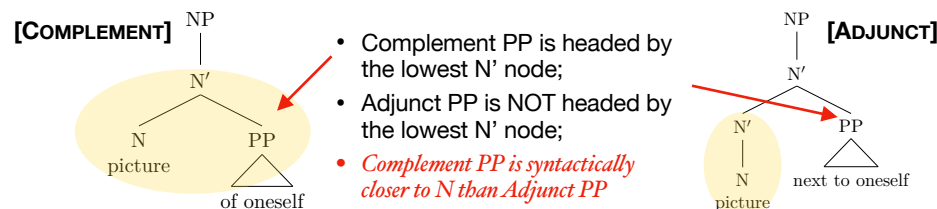
VERB The bluey above the greenies was mimming.

COARGUMENT The bluey above the greenies mimmed [itself].

COMPLEMENT The bluey above the greenies mimmed [the picture of itself].

ADJUNCT The bluey above the greenies mimmed [the picture [next to itself]].

* For each condition, we tested all SS SP PS PP number combinations.



- Complement PP is headed by the lowest N' node;
- Adjunct PP is NOT headed by the lowest N' node;
- Complement PP is syntactically closer to N than Adjunct PP

PREDICTIONS

- Planning Order:** COARGUMENT < COMPLEMENT < ADJUNCT < VERB
- Number Source:** COARGUMENT = COMPLEMENT = ADJUNCT < VERB

COMPLEMENT & ADJUNCTS:

- PO: the PP (thus REF) are less obligatory than in COARGUMENT, could be planned later;
- NS: always retrieving number feature from conceptual representation, thus no change;



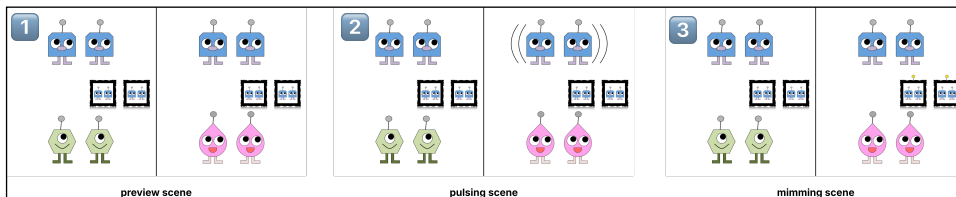
VERB: both PO and NS predict high error rates than the REF conditions.

The student next to the professors {was, *were} singing.

Number Morpheme: ④ ①

METHOD: SCENE DESCRIPTION TASK

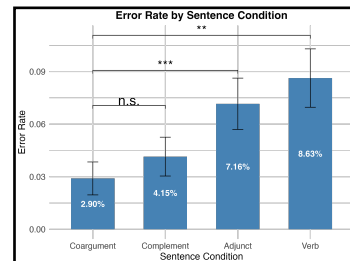
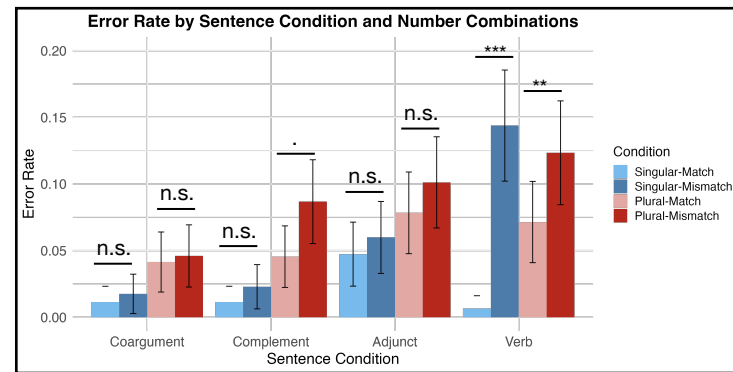
- Goal** = to elicit the naturalistic process of sentence production: from generating preverbal messages to planning the sentence structure.
- Current Approach** (extending Kandel & Philips) = alien world with nonce words: participants see a series of pictures and produce a sentence to describe the depicted event.



Stimuli for sentence: The blueys above the pinkies mimmed the pictures of themselves.

RESULTS

- 2672 production trials from 88 participants after exclusion.
- Fitted with a GLMM model and Emmeans to interpret the model.

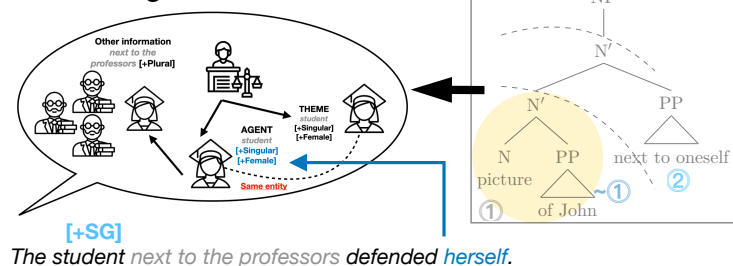


- Replication: verb has significant attraction effect
- For all three reflexives: **attraction-prone but insignificant attraction** effect for each condition.
- Significant markedness effect: PL more error than SG subj.

COARGUMENT $\approx$ COMPLEMENT $\approx$ ADJUNCT

INTERPRETATIONS

Reconciling the two accounts?



The student next to the professors defended *herself*.

- Reflexives do not show reliable agreement attraction across syntactic positions;
- A Hybrid Account:** conceptual access mediated by syntactic structure (here, height of merging sites).

CONCLUSION

- We extended Kandel & Philips with 2 reflexive conditions;
- Results replicate K&P; new evidence suggesting Number Source (conceptual route) dominating Planning Order (syntactic route).
- Hybrid mechanisms are needed for current observations.