Scope of Planning as an Alternative to Hierarchical Feature Passing in Language Production

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INTRODUCTION
How are noun agreement errors tracked during language production?

Mismatch Effect: More subjects’ verb-agreement errors occur when the head noun of the subject NP is singular and local nouns, in PP modifiers, are plural than when local nouns are singular (Bock & Miller, 1991).

Hierarchical Distance: Number features of the head noun of the subject NP are passed to the verb; plural features of local nouns occasionally pass incorrectly to the verb, causing agreement errors.

Franck, Vigliocco, & Nicol (2002):
- N1 mismatches were larger than N2 mismatch effect.
- Segregation plural local nouns situated hierarchically closer to the verb have a greater chance of interfering with agreement computation than plural local nouns situated deeper in the syntactic tree.

Semantic Integration: Elements within a phrase that are conceptually linked are planned with more overlap, which allows their features to interfere with each other.

Solomon & Pearlmutter (2004): Elements within a phrase that are conceptually linked are planned with more overlap, which allows their features to interfere with each other.

Linear Distance to Head: Local nouns appearing closer to the head noun may interfere with agreement computation more than local nouns appearing farther from the head noun.
- Not previously tested, but could be an alternative explanation for Franck et al.’s (2002) results.

EXPERIMENT 1
Are there effects of semantic integration or linear distance to the head (controlling hierarchical distance)?

Method
Early-Integrated
The head noun is completed before the PP modifier.
Late-Integrated
The head noun is completed after the PP modifier.

- Precise N2 and N3 integration: Local nouns are located at the same linear distance to the head.
- 24 critical items (Flat, Descending)
- 32 participants
- Singular vs. plural local nouns; head noun always singular

Summary:
- Linear distance to the head initially determines the order in which elements of the phrase are planned, and semantic integration shifts the relative timing of planning.

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RESULTS
- Early-Integrated: N2 > N3 suggests Linear Distance to Head only.
- Late-Integrated: N2 > N3 suggests Semantic Integration only.
- N2 > N3 mismatch effect is larger than N2 and N3 mismatch effects should be smaller for Flat than Descending preamble types.

CONCLUSIONS
Scope of planning affects agreement computation.

No individual factor alone can explain the mismatch effects observed within these experiments.

Combination of linear distance to the head and semantic integration can explain Experiment 1, Experiment 2, and Franck et al.’s (2002) results.

Scope of Planning: Local nouns planned closer in time to the head noun are more likely to interfere with agreement computation.
- More semantically integrated local nouns are planned closer to the head noun.
- Order of production determines order of planning.

Local nouns planned relatively late after the head noun may not be outside the head noun’s scope of planning and may never have the chance to interfere with agreement computation.

REFERENCES & ACKNOWLEDGMENTS

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