**PRONOUN RESOLUTION**

When we encounter a pronoun, the task of identifying its referent involves a retrospective search for an antecedent in memory. The antecedent must satisfy a particular structural constraint (Principle B: it cannot be a clausemate of the pronoun), as well as match in features (e.g., gender and number).

(1) Arthur believed that Bill owed him a second chance.

ience subject local subject pronoun

*Pronoun has ONE structurally-accessible and feature-matched antecedent.

(2) Arthur believed that Bill owed his brother a second chance.

ience subject local subject pronoun

*Pronoun has TWO structurally-accessible and feature-matched antecedents.

Retrospective search processes do not necessarily implement structural constraints and feature-matching simultaneously. In some domains (e.g., reflexives) the search seems to be sensitive to structure from its earliest stages (e.g., 4.8.10)). In other domains (e.g., agreement), the search process appears to initially rely on feature cues rather than structure (e.g., 2.9)). In principle, antecedent retrieval for pronouns could be implemented with either a structure-sensitive or a structure-insensitive search process.

Given the diverse places within and across sentences in which a pronoun’s antecedent can occur, one might expect pronoun resolution to show the hallmarks of a structure-insensitive retrieval process. Previous studies have looked for evidence of interference from structurally-inaccessible NPs during pronoun resolution. The results have been mixed (interference: [1.6]; no interference: [3.5.7]).

In 5 experiments using different manipulations and methods, we investigated the scope of interference effects in pronoun resolution. Perhaps surprisingly, these effects were very hard to find.

**EXPERIMENTS 1-3: Does quantification affect interference from an inaccessible antecedent?**

**Rationale:** Theoretical studies suggest that structural constraints on pronouns can impact quantified and referential antecedents differently. (See supplement on Binding vs. Coreference.)

**Hypothesis:** Interference effects might arise due to the availability of referential antecedents for structure-insensitive ‘coreference’; they should be absent when the antecedents are quantified and therefore only available for structurally constrained ‘binding’.

**Design:**
- **Pronton:** HIM vs. HIS
- **Local Subject Gender:** MATCH vs. MISMATCH
- **Local Subject Quantification:** REFERENTIAL vs. QUANTIFIED

**Experiment 1**

The actor revealed that the (every) (producer/dancer) who was involved in the show had doubted (him/his ability) before the first performance.

**Experiment 2 & 3**

The choreography of the show had proved very controversial. Tyler revealed that the (every) (producer/dancer) had doubted (him/his choices) even after several successful performances of the show.

**RESULTS:** (also see summary plots at top)
- **HIM:** No consistent effects of Local (inaccessible) Subject Gender: NO “multiple match” effects.
- **HIS:** Some slow-down when the (accessible) Local Subject MISMATCHED the pronoun.
- **No interactions with Local Subject Quantification.

**EXPERIMENT 4: Do linear distance or the type of the inaccessible antecedent affect interference?**

**Rationale:** Badecker & Straub (2002) used proper name antecedents in their experiments showing interference effects. In that case, we should see interference only in the NAME condition.

**Hypothesis:** Interference effects could be modulated by the similarity between accessible and inaccessible antecedents. In this case, we should see interference only in the NAME condition.

**Design:**
- **Matrix Subject Gender:** MATCH vs. MISMATCH
- **Local Subject Gender:** MATCH vs. MISMATCH
- **Local Subject Type/Length:** COMMON NOUN WITH MODIFIER (like Exp 1) vs. COMMON NOUN (like Exp 2) vs. NAME (like B&S)

(Ethan/Lea) revealed that the (producer/dancer) who helped with the reception the (producer/dancer) (Ronald/Marissa)

... had doubted him even after several successful performances of the show.

**EXPERIMENT 5: Can the original finding of interference (Badecker & Straub 2002) be directly replicated?**

**Rationale:** In a final attempt to replicate Badecker & Straub’s (2002) interference effect, we included their materials (as well as additional items to increase power) and replicated their method, using a probe-recognition task and center presentation. Rather than counterbalancing male and female pronouns, we included pronoun gender as an additional factor to look for potential effects of the temporary ambiguity of “her”.

**Design:**
- **Matrix Subject Gender:** MATCH vs. MISMATCH
- **Local Subject Gender:** MATCH vs. MISMATCH
- **Pronoun Gender:** HIM vs. HER

**RESULTS:**
- **Matrix Subject Mismatch effect (as in Exp 4)**
- **No evidence of sensitivity to Local Subject Gender -> non-replication of B. & S. (2002)**
- **No difference between HIM and HER conditions.**
- **No difference between our items and B. & S.’s items.**

**REFERENCES**


**ACKNOWLEDGEMENTS**

Special thanks to Jeff Lida, Steve Kliger, Ewan Dunbar, and Alex Drummond. This work was supported in part by NSF BCS-0848554 to Colle Phillips and NSF IGERT DGE-0801466 to Colle Phillips/University of Maryland.

Correspondence: yechow@umd.edu (W.Y. Chow), shevau@umd.edu (S. Lewis)
Two types of dependency between pronouns and antecedents:

1. Structure-dependent: variable binding by a non-local, c-commanding antecedent
2. Structure-independent: coreference with a discourse entity

⇒ It is unknown whether they are implemented by separate search mechanisms.

Observation:
Previous studies used only referential structurally inaccessible NPs (e.g., definite NPs and names).

Hypothesis:
If interference effects arise from a structure-independent coreference search mechanism, then these effects should be mitigated when only a structure-dependent binding mechanism is possible.

A Useful Test Case: Quantified NPs are unavailable for coreference.
Example: The counselor who supervised the*/every boy, said that he, had to go to school.