

**24.904**

# **Language Acquisition**

**Class 18: Syntax/Semantics: Binding, continued**

# Reference

Look at **the ball!**



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# Reference

I want **another ball!**



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# Reference

What a nice  
red ball!



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# Reference



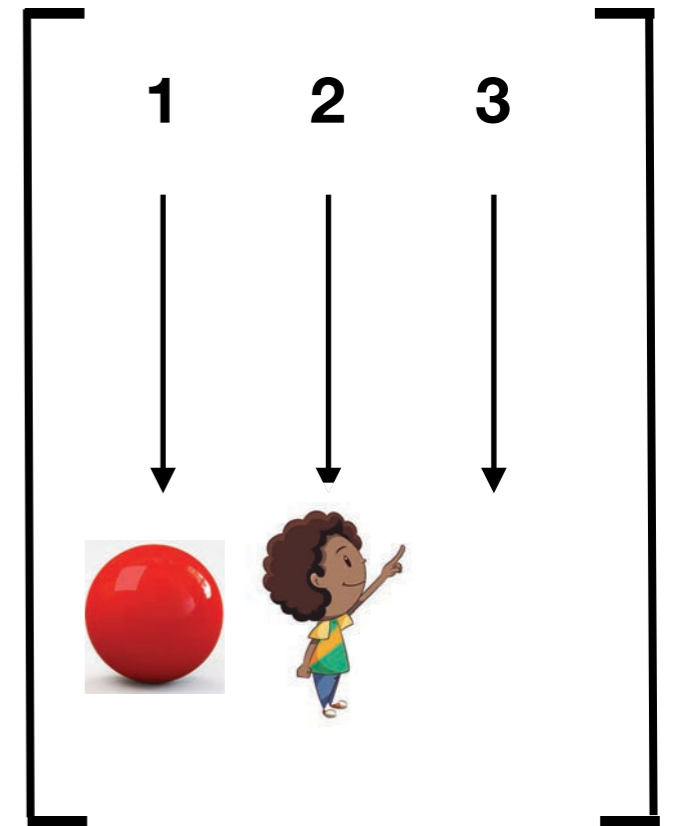
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# What these examples show us

- Reference is *mediated*:
  - What a noun phrase can and cannot pick out in a situation seems to be modulated not by what things are present in that situation, but the grammatical expressions used and the nature of the conversation thus far.

# Reference is mediated

- Noun phrases are merged in the syntax with indices, which are directly relevant for the interpretation of that nominal.
- Sentences are interpreted relative to a conversational context, which provides an “assignment function”, a function that specifies for each index in the sentence, how that index is to be interpreted, by mapping it to an individual.
- There are expressions that place restrictions on the assignment function



# Back to binding theory

- Binding theory can be thought of as a theory of how indices can be distributed in the syntax, which in turn has consequences for interpretation



# Reminder: Binding principles for pronouns and anaphors

- **Principle A:** Anaphors must be co-indexed with a c-commanding local antecedent.
- **Principle B:** Pronouns must not be co-indexed with a c-commanding local antecedent.
- Responsible for ruling out sentences like:
  - (1) a. \*Bill<sub>1</sub> said that Sam praised himself<sub>1</sub>.  
b. \*Bill<sub>1</sub> praised him<sub>1</sub>.

# Pronouns and anaphors in acquisition

- Wexler and Chien 1985; Chien and Wexler 1990
  - ▶ by ~4 yo, children know when the use of a reflexive is grammatical in a language like English.
    - e.g. know that “Bill admires himself” only has a reading on which Bill thinks highly of himself
    - e.g. know that “Bill’s brother admires himself” only has a reading on which the brother thinks highly of himself, and not one in which Bill does, etc.
  - ▶ however, it’s not until ~6yo that children seem to know when the use of a pronoun is grammatical in a language like English
    - e.g. know that “Bill admires him” does *not* have a reading on which Bill thinks highly of himself.

# Co-reference vs. co-indexation

- Binding theory constrains co-indexation possibilities, not co-reference.
- If two noun phrases share the same index, they necessarily share the same referent. Coindexation implies coreference.
- If two noun phrases do not share the same index, does this mean they can't share the same referent? Does *contra-indexation* imply *non-coreference*?

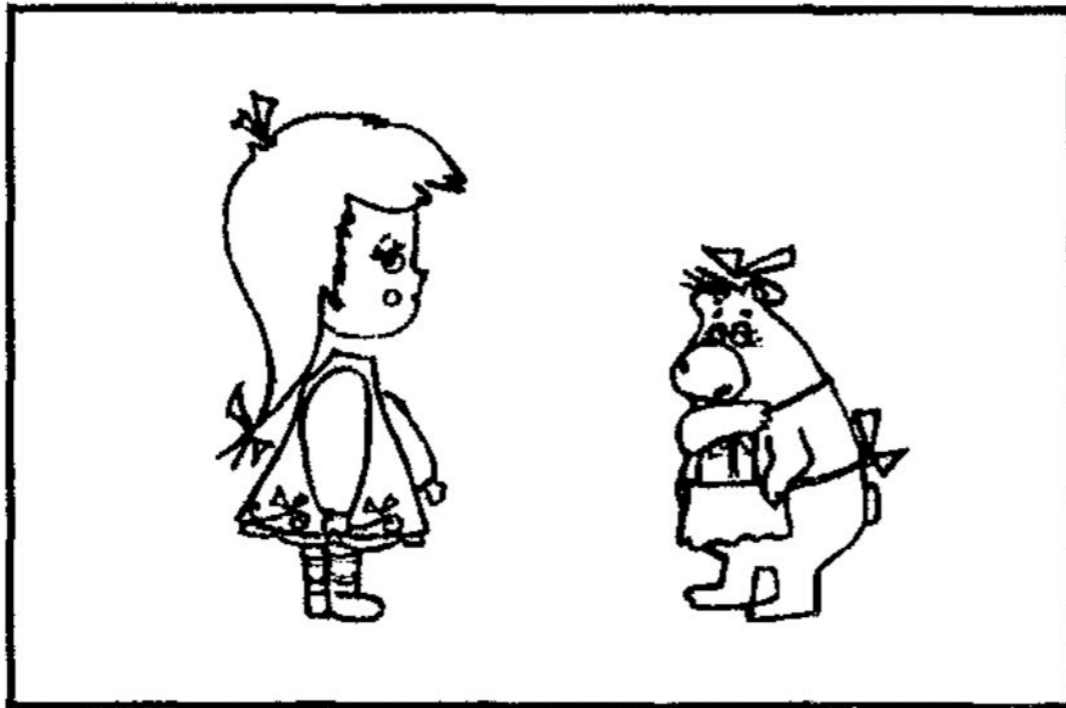
# Reminder: Delay of Principle B Effect

The basic phenomenon:

- Kids often accept coreferential readings for pronouns and local antecedents:
  - ▶ Mama Bear washed her = 'Mama Bear washed herself'
- Adult-like performance on reflexives at a younger age:
  - ▶ Mama Bear washed herself  $\neq$  Mama Bear washed someone else

# Chien & Wexler 1990

This is Mama Bear; this is Goldilocks.  
Is Mama Bear touching her?



**Adults: ~0% acceptance**  
**Children 5;0-6;0: 51%**  
acceptance

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# Illuminating asymmetries

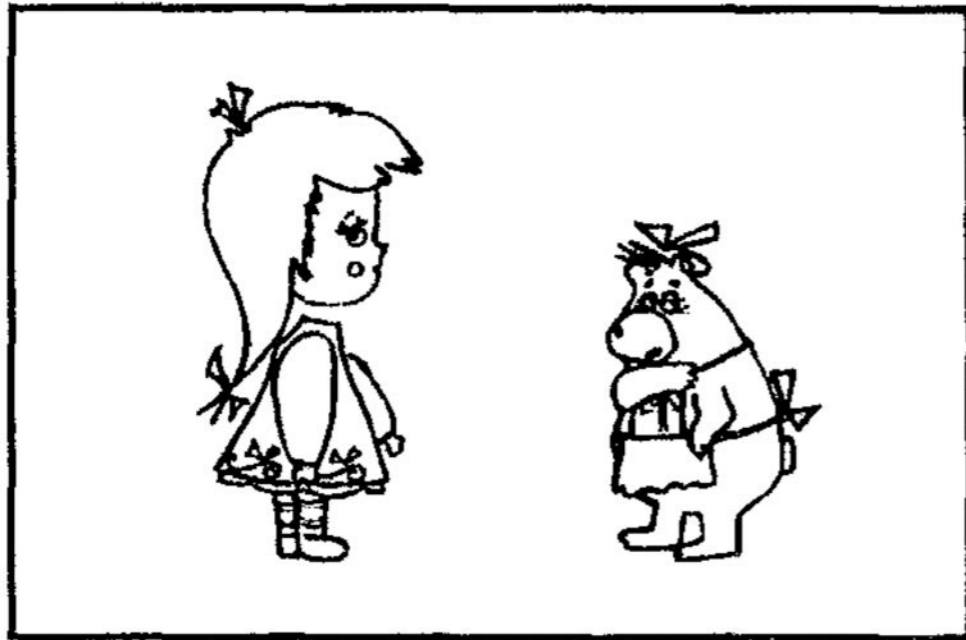
- Referential vs. quantificational antecedents:

(1) Mama bear washed her                      vs.

(2) Every bear washed her

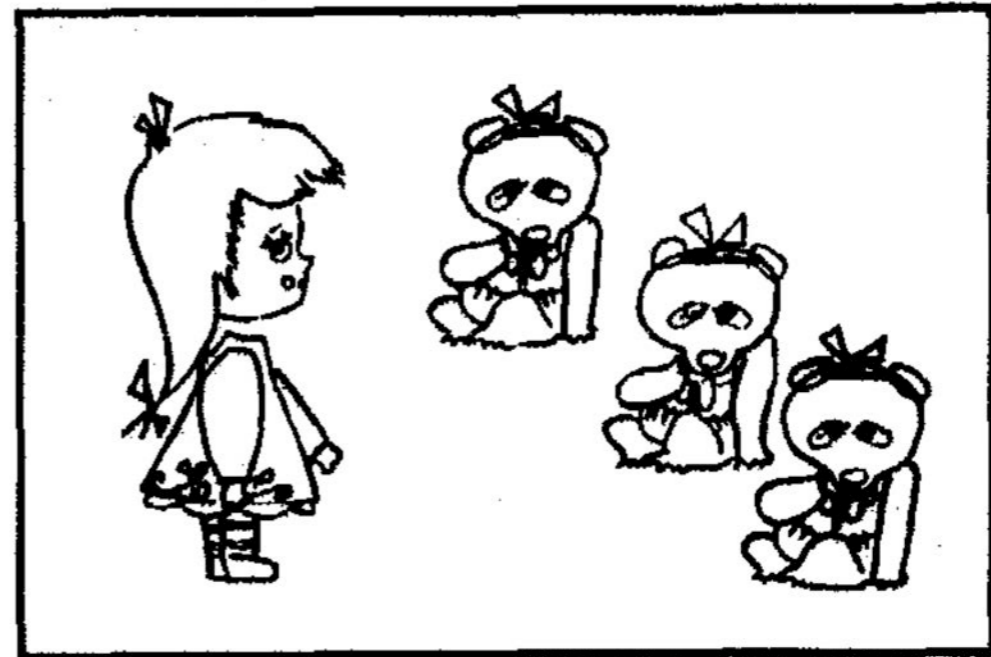
# Quantificational Asymmetry

This is Mama Bear; this is Goldilocks.  
Is Mama Bear touching her?



Adults: ~0% acceptance  
Children 5-6: **51%** acceptance

These are the bears; this is Goldilocks  
Is every bear touching her?



Adults: ~0% acceptance  
Children 5-6: **16%** acceptance

# Quantificational Asymmetry

**Name-Pronoun**  
Is Mama Bear touching her?

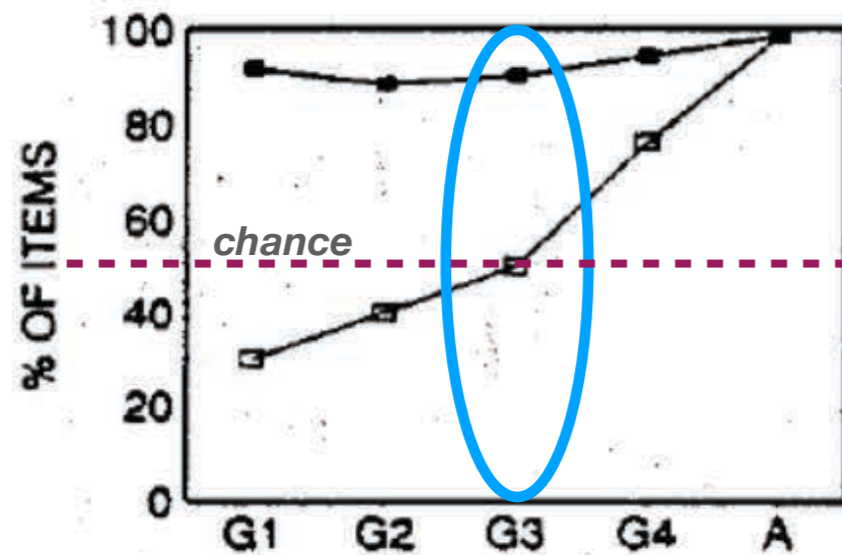


FIGURE 13

**Quantifier-Pronoun**  
Is every bear touching her?

Match: ■—■  
Mismatch: □—□

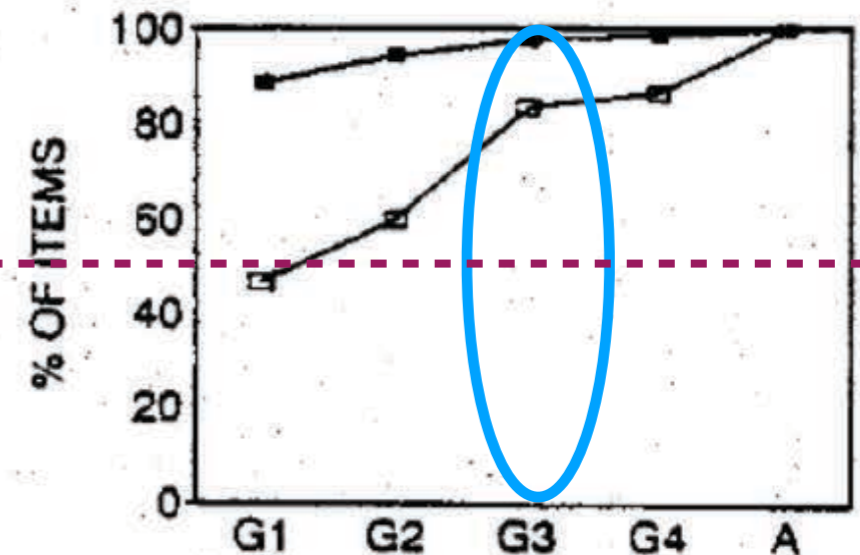


FIGURE 14

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# Replication: Thornton & Wexler 1999

- Truth-Value Judgment Task; 19 4-5-yos

**Context:** 3 reindeer + Bert, all covered with snow that needs to be brushed off. Two reindeer brush themselves, refuse to brush Bert. Third reindeer brushes Bert partially, then brushes himself. Bert finishes brushing himself.

Puppet says:

- A. “I know what happened. Bert brushed him.”
- B. “I know what happened. Every reindeer brushed him.”

**Table 4.11**

Results for sentence types used to establish children’s knowledge of binding in matrix structures ( $N = 19$ ; interpretation being tested is given in smaller type)

Sentence types	% “Yes”	Grammatical
Every reindeer brushed him (every reindeer brushed self)	8	x
Bert brushed him (Bert brushed self)	58	x
Every reindeer brushed himself (every reindeer brushed self)	88	✓

# Apparent violations of Principle B in adult language

(1) Oscar is such a nice person, and everyone likes him!  
John likes him, Sue likes him, it's even the case that  
Oscar likes him.

(2) I don't think anyone really likes John. His colleagues  
don't like him. His friends don't like him. Even his  
family members don't like him. At the end of the day,  
only John likes him.

- What allows co-reference in these "exceptional" cases?

# Interpreting co-indexation

- Co-indexed nominals receive a “bound” interpretation. Glossing over details, we’d get:
  - (1) John<sub>1</sub> likes him<sub>1</sub>  
John  $\in$  {x: x likes x }
- But BT alone cannot rule out something like the following:
  - (2) John<sub>1</sub> likes him<sub>2</sub> [2  $\rightarrow$  John]  
John  $\in$  {x: x likes John }
- Notice that the exceptional cases we looked at are those where the two readings come apart (i.e. “Only John likes him” = “Only John is a John-liker”, not “Only John is a self-liker”)

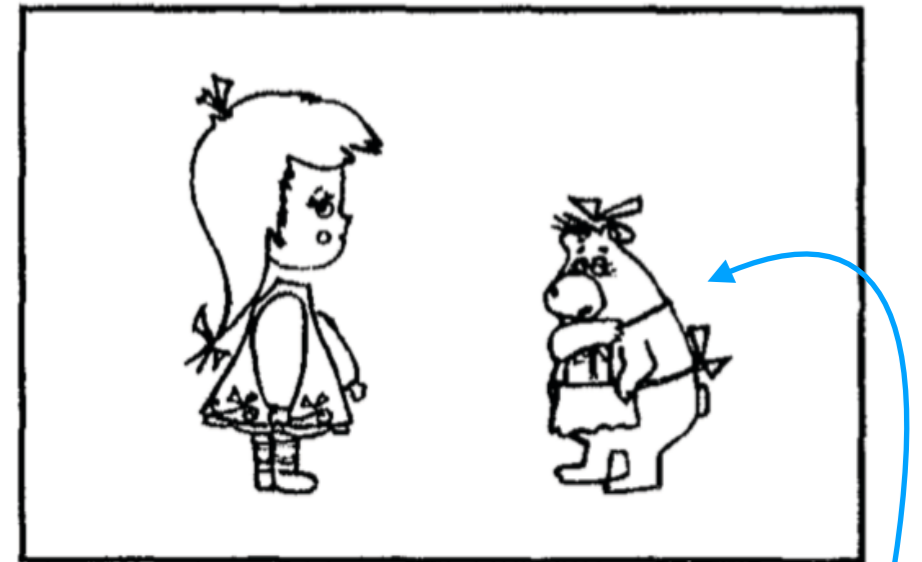
# Semantics vs. pragmatics

- 2 components determining pronoun interpretation:
  - BT(B): pronouns cannot be **bound** in their local syntactic environment
  - Pragmatics of co-reference: co-reference without co-indexing is not permitted if it results in the same interpretation as the co-indexed reading

# C&W's story: overpermissiveness of accidental coreference

- Children know BT(B) but they do not know the pragmatic principle that allows "exceptional co-reference" in BT(B) environments.
- Consequently, they allow accidental co-reference (without binding) between the antecedent and the pronoun
- Which is also why BT(B) misbehavior disappears with quantificational antecedents: they are not referring expressions!

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**Mama Bear<sub>i</sub> is touching *her*<sub>k</sub>**

# Further evidence: Clitic Exemption Effect

- With **clitic pronouns**, children correctly reject co-reference.
  - E.g., Italian (lo) l'amo (“I like him”)
- Baauw, Escobar, & Philip (1997): Spanish, 10% acceptance (3-5yo).
- Hamann, Kowalski & Philip (1997): French, 0% acceptance (5 yo)
- McKee (1992): Italian 15% acceptance in (3-5yo).

# Claim

- Accidental co-reference is unavailable for clitic pronouns
  - clitics are “referentially dependent” -- they can’t be deictic.
  - E.g., Italian: # (lo) l’amo. (I like him) [pointing to a person]

# Conroy et al.'s (2009) criticism

- Delay of Principle B effect, and Quantificational Asymmetry, are experimental artifacts of previous studies.
- The stories and images favored a non-adult-like response in the Referential Condition, but not in the Quantificational Condition.
  - In particular the referential condition, the other-directed interpretation was not plausible enough.
- With improved stories, effect disappears.



# Conroy et al. findings

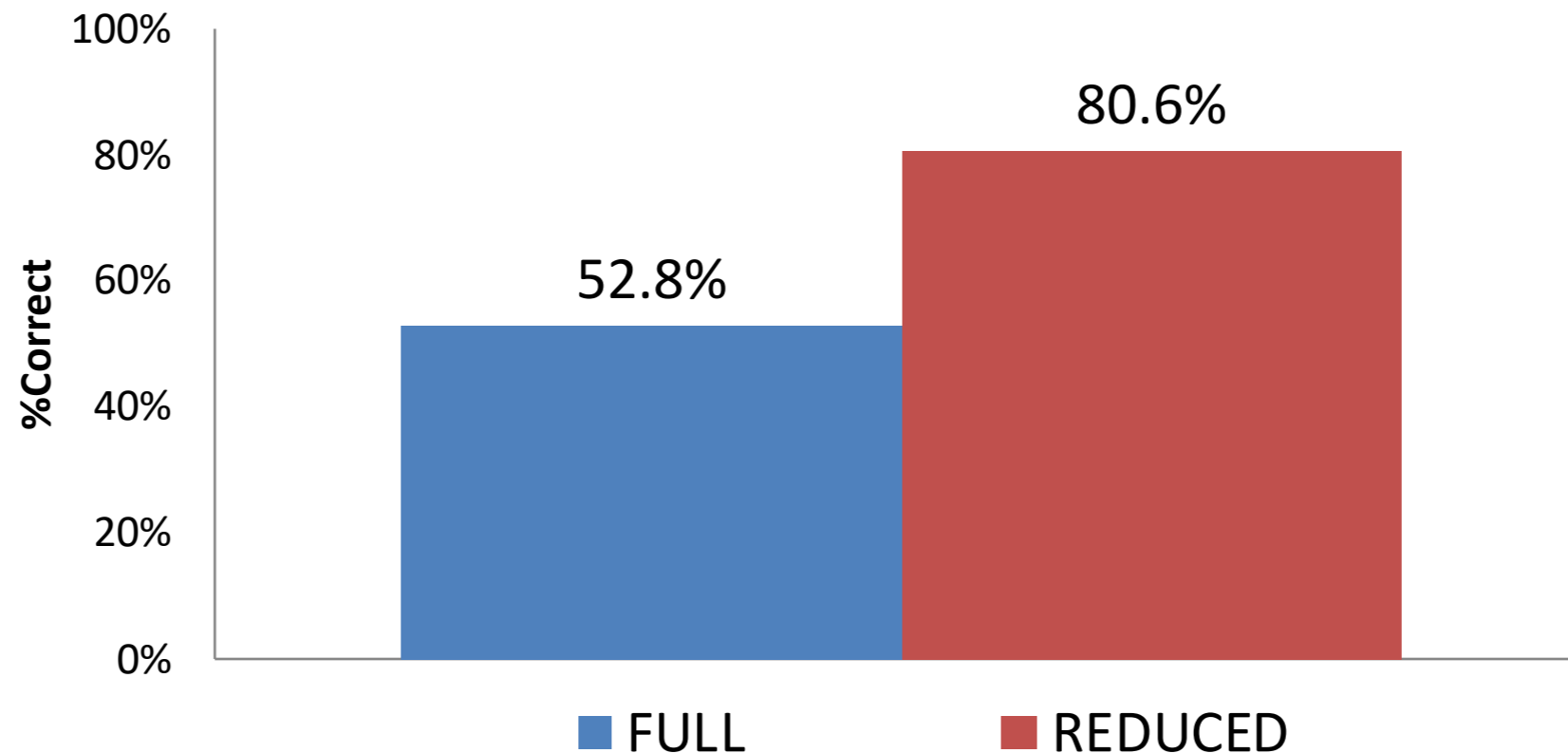
- No Delay of Principle B effect and no asymmetry:
  - children accepted the anaphoric interpretation in 11% (7/64) of referential trials and in 14% (9/64) of quantificational trials.

# A response: CEE in English

- English has *'m*, a reduced form of him and them, that also displays referential dependence.
  - a) ✓ John<sub>1</sub> knows that I like *'m*<sub>1</sub>
  - b) Who do you like? #I like *'m*. [pointing to a person]
- Conroy et al.'s study used the clitic *'m*, thus success is a version of the CEE

# Hartman et al. 2013

- Conroy et al.'s materials for the referential condition
- Two conditions (between): weak vs. strong pronouns



**N=18 3-5yo**

# Summary

- Early knowledge of structural binding principles
- Acquisition results underscore the modular division between:
  - (variable) binding, a grammatical matter, and thus subject to grammatical constraints
  - assigning reference and co-reference

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