# 24.904
# Language Acquisition

## Class 17: Syntax/Semantics: Binding

# Types of nominal expressions

- **Referring NPs**
  *Athulya, the TAs of 24.904, the current president of the USA, those workers over there, ...*

- **Quantificational NPs**
  *every student in 24.904, no adult, most children, ...*

- **Pronouns**
  *I, you, he, they, me, them, his, ...*

- **Anaphors**
  *myself, himself, each other, his own, ...*

reflexives

reciprocals

# Dependent elements

- **Pronouns**
  *he, they, me, them, his, ...*

- **Anaphors**
  *myself, himself, each other, his own, ...*

- For both types, reference depends on something else, an **antecedent**

- What can serve as antecedent varies in systematic ways

# Basic patterns

(1) *Situation: A woman walks into the room.*
**She**$_{[points]}$**/*Herself**$_{[points]}$ is the President of the University.

(2) [The woman who walked into the room]$_i$ admires **herself**$_i$**/*her**$_i$**.**

(3) [The brother of [the woman who walked into the room]$_i$] admires ***herself**$_i$**/her**$_i$**.**

(4) [The woman who walked into the room]$_i$ thinks that her brother admires **her**$_i$**/*herself**$_i$**.**

# Her vs. herself

- Complementary distribution
  - In the positions in which a reflexive pronoun is allowed, a non-reflexive pronoun with the same meaning is out.
  - In the positions in which a non-reflexive pronoun is okay, we can’t get a reflexive pronoun with the same meaning.

# Binding theory

- Theory of how the interpretation of nominals—pronouns, anaphors and “R-expressions” (i.e. everything else)—is constrained

# Binding theory

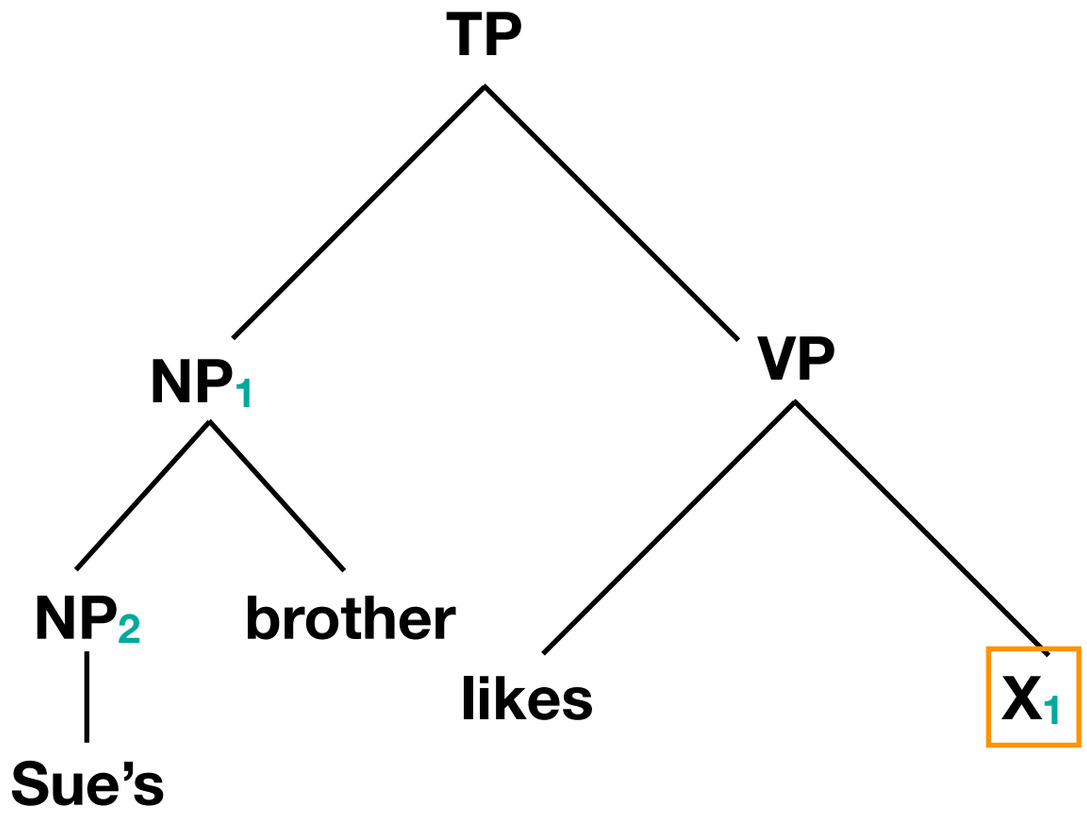
- Ingredient notions:
  - **Antecedent:** the entity/expression on which reflexives and pronouns are dependent
  - **C-command:**
    A c-commands B iff the first branching node dominating A also dominates B (and neither dominates the other)
  - **Locality (structural distance)**: “local” domain for some element X is the minimal clause/TP that X is contained in

# Binding theory

- **Binding:** Assume DPs come with indices in the syntax. A **binds** B iff:

– A and B are co-indexed

– A c-commands B



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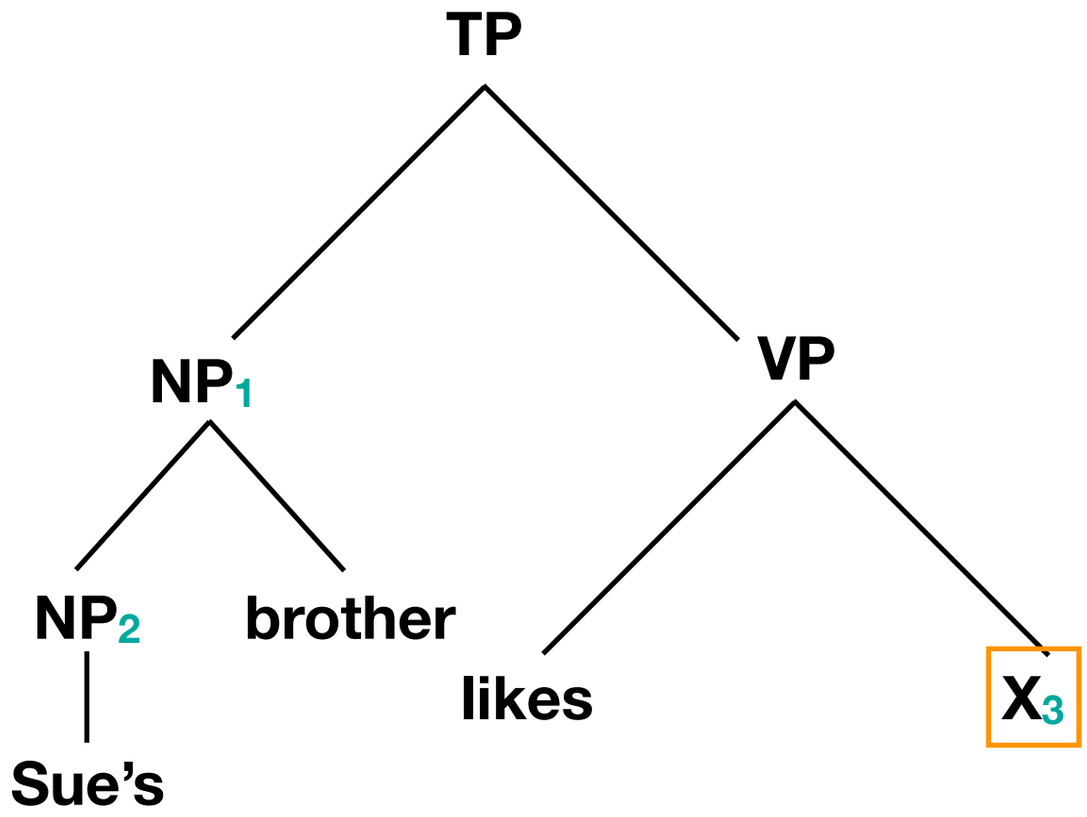

# Binding theory

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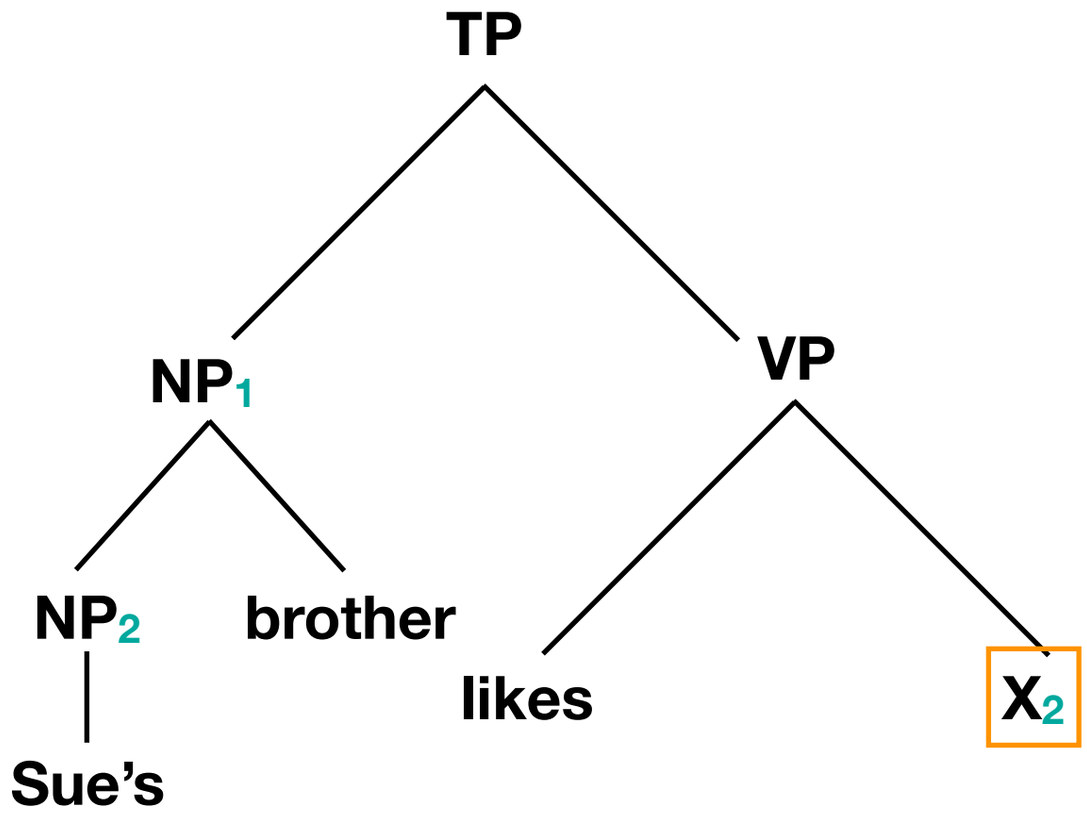


# Anaphors

- Anaphors (reflexives, reciprocals) are referentially dependent
- Anaphors require a linguistic antecedent which ...
  - c-commands the anaphor
  - is in the same clause as the anaphor (in the local domain)
  - matches the features (gender, number) of the anaphor
- **Binding Theory Principle A:** Anaphors need to be locally bound

# Pronouns

- Pronouns are referentially dependent
- Pronouns can get their reference either via ...
  - the context, i.e. a referent that is salient in the discourse and identified by the speaker as the entity that the pronoun refers to, or
  - a linguistic antecedent, which cannot *both* ...
    - c-command the pronoun and
    - be local/in the same clause as the pronoun
- **Binding Theory Principle B:** Pronouns <u>cannot</u> be bound locally

# “R-expressions”

- everything else (proper names, full referential DPs, quantificational DPs…)

- R-expressions cannot be c-commanded by a referentially dependent expression that receives its reference via that R-expression

- **Binding Theory Principle C:** R-expressions have to be free

# Acquisition of dependent elements

- What's there to be acquired?
  - Morphological and interpretive differences between anaphors and pronouns
  - C-command, as opposed to precedence, as the relevant notion
  - Appropriate binding domain

# Principle A

- McKee (1992)
- 30 2.5 - 5-year-olds
- Truth-Value Judgment Task: E1 uses toys to stage an event, E2 manipulates a puppet who tries to describe the event. Child evaluates puppet’s accuracy.

# Principle A

| | Scenario: clown sitting down, Roger Rabbit self-covers | Scenario: clown sitting down, Roger Rabbit covers clown |
|---|---|---|
| **1 clause** | Roger Rabbit covered himself [TRUE] | Roger Rabbit covered himself [FALSE] |
| **2 clause** | While the clown was sitting down, Roger Rabbit covered himself [TRUE] | While the clown was sitting down, Roger Rabbit covered himself [FALSE] |

TABLE 2
Percentage and Frequency of Correct Responses in A2 ($N = 30$, mean age 4;2)

| | *1IC (yes)* | *1XC (no)* | *2IC (yes)* | *2XC (no)* |
|---|---|---|---|---|
| % correct | 100 | 88 | 98 | 81 |
| Frequency | 120/120 | 105/120 | 117/120 | 97/120 |



➡ Kids as young as 3 strongly prefer local antecedent for anaphors

# Locality of antecedent

- Locality profile of anaphors vary cross-linguistically. In additional to English-type local anaphors, across languages, there are non-local and anti-local anaphors

  - **English *self*-anaphors:** c-commanding antecedent in the local clause

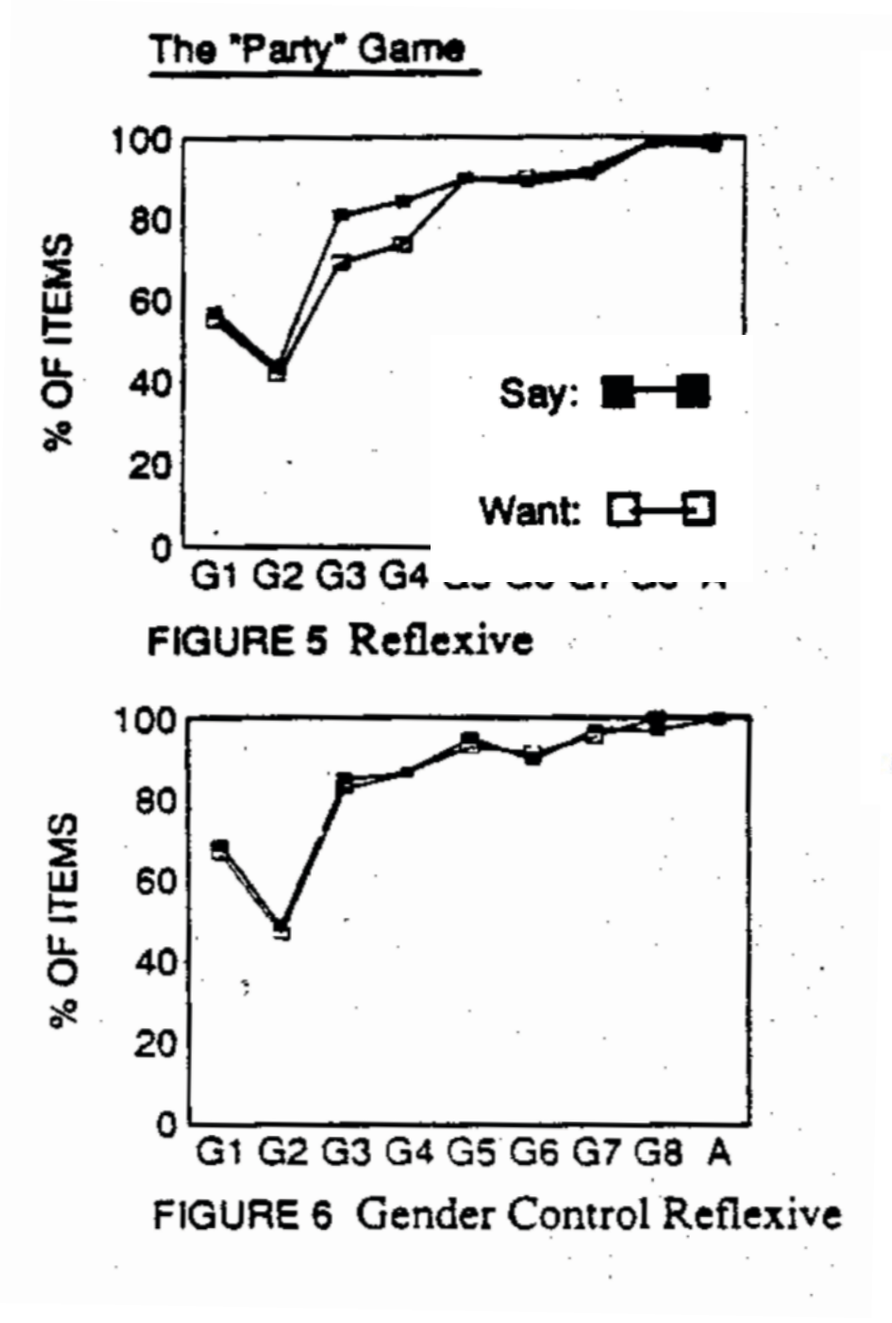
  - **Mandarin *ziji*:** c-commanding antecedent in any clause

  - **Malayalam *taan*:** c-commanding antecedent obligatorily in a non-local clause

# Locality of antecedent

- Chien & Wexler 1990
- 174 children 2;6-6;6 in a “Party Game”
  - “Kitty says that Sarah (participants own name) should give herself/her a cookie”
  - “Snoopy says that Sarah (participants own name) should give herself/him a cookie” [gender control]

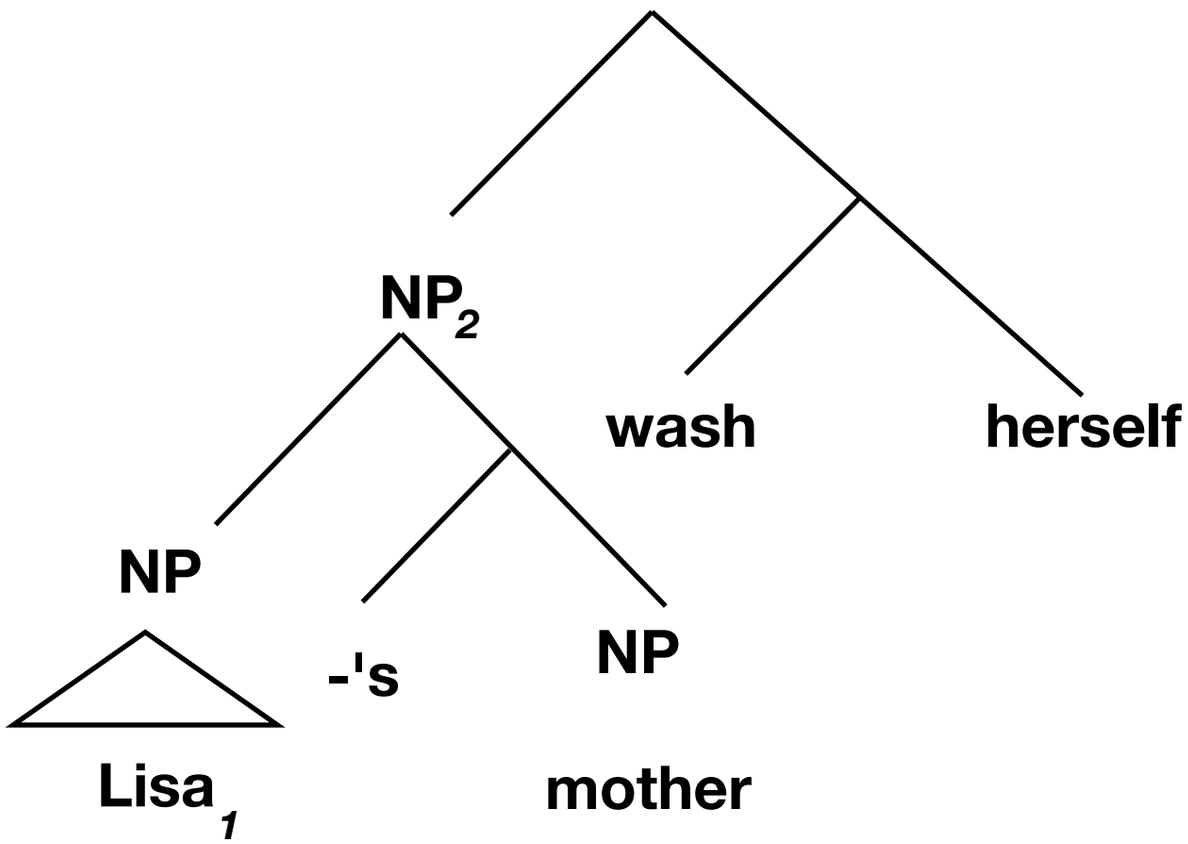
# Locality of antecedent



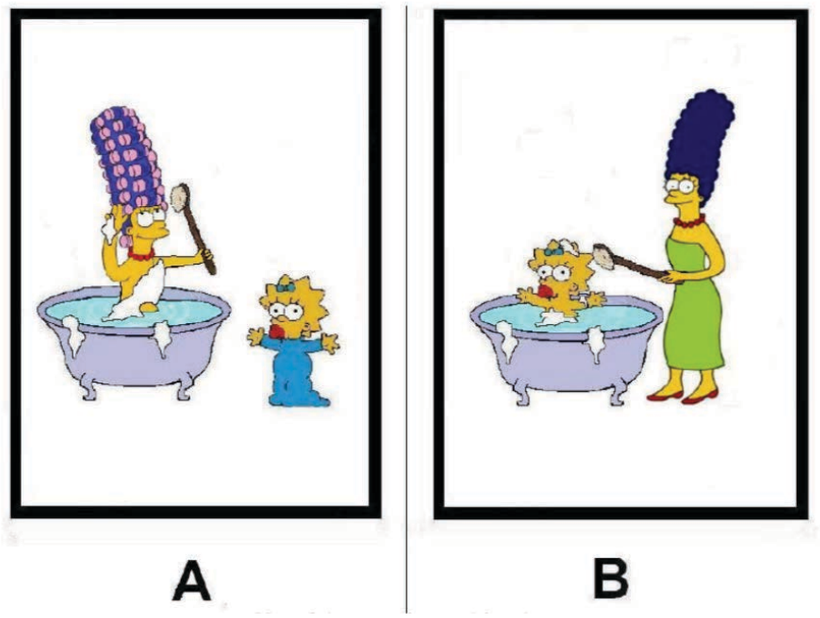

- X-axis: age group
  - G1 = 2;6-3;0
  - G2 = 3;0-3;6
  - G3 = 3;6-4;0
  - G4 = 4;0-4;6
  - G5 = 4;6-5;0
  - G6 = 5;0-5;6
  - G7 = 5;6-6;0
  - G8 = 6;0-6;6
- Y-axis: % correct

- locality conditions understood around 3;6
- ~45% of the responses of younger groups involve selection of non-local c-commanding antecedent
- small percentage choose external antecedent

# C-command requirement




- Wexler & Chien 1985
- 129 kids, 2;6-6;6
- Picture Identification Task




**Lisa's mom is washing herself/her**

# C-command requirement

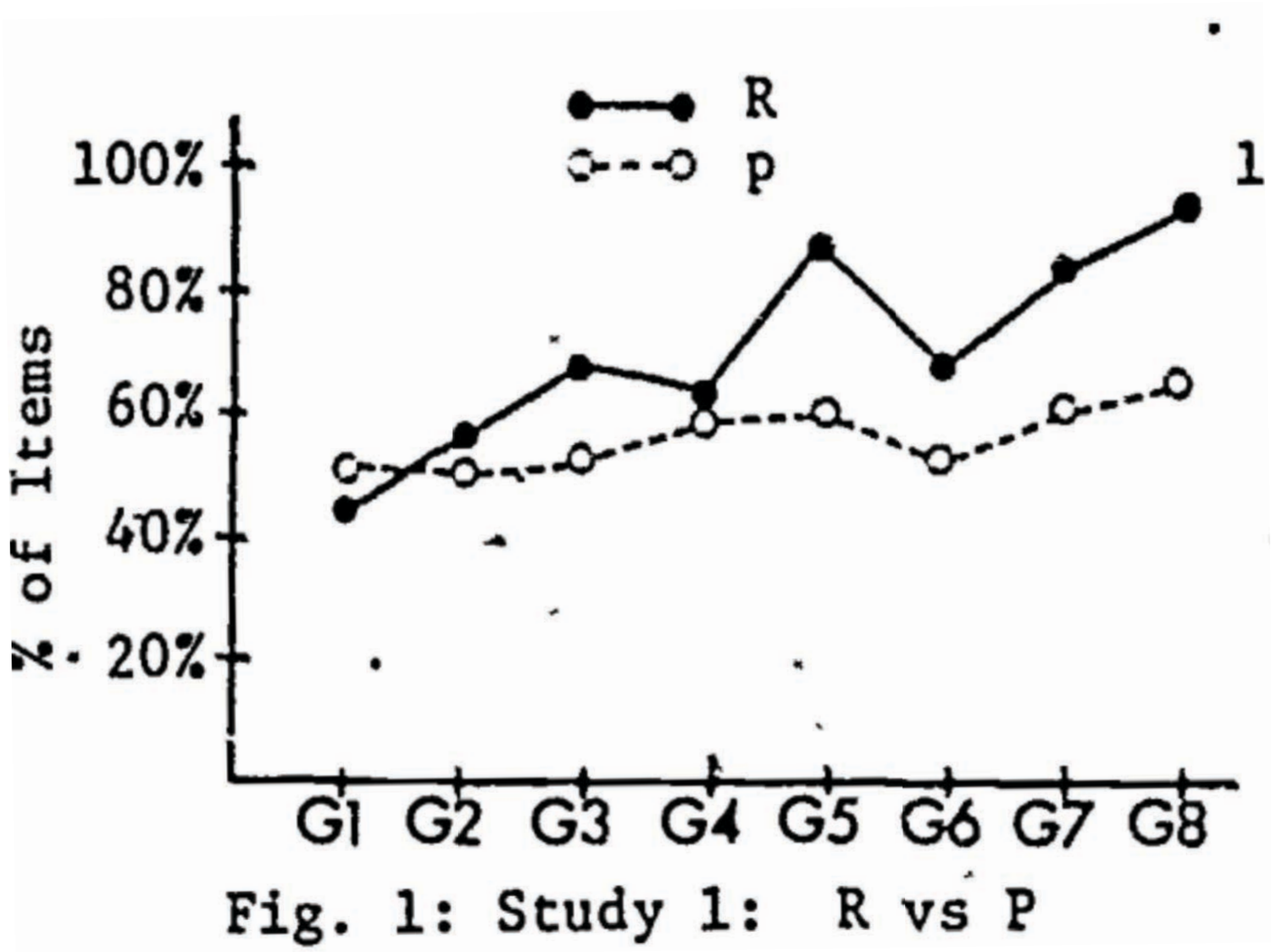


Fig. 1: Study 1: R vs P

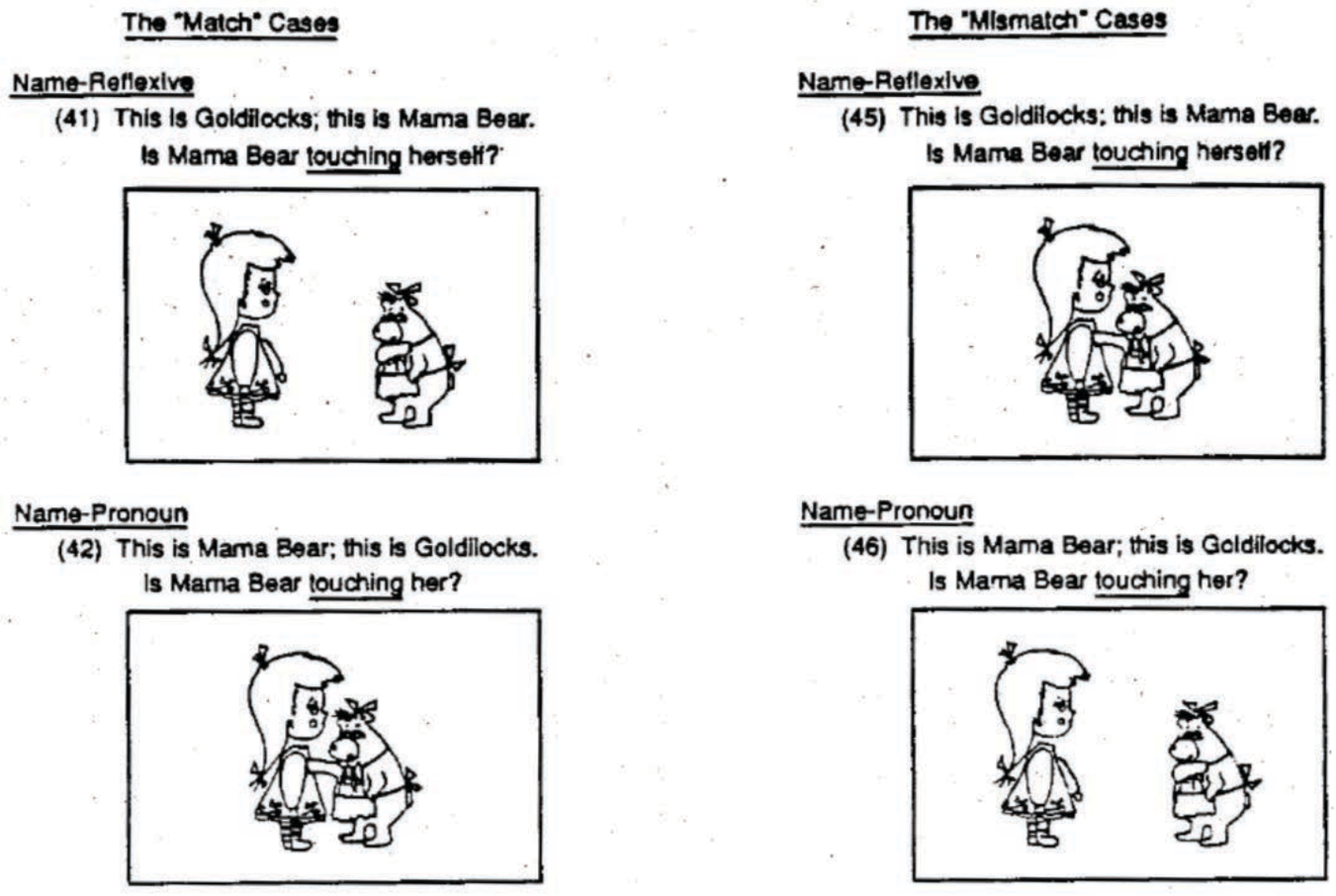
- X-axis: age group
  - G1 = 2;6-3;0
  - G2 = 3;0-3;6
  - G3 = 3;6-4;0
  - G4 = 4;0-4;6
  - G5 = 4;6-5;0
  - G6 = 5;0-5;6
  - G7 = 5;6-6;0
  - G8 = 6;0-6;6
- Y-axis: % correct

# C-command requirement

- By 3;6, children are above chance
- But pronouns - a control for reflexives (and a test for principle B): performance around 50% for all age groups!

# A pronoun problem

- Chien & Wexler 1990, Experiment 4
- Truth Value Judgment



# A pronoun problem

- Chien & Wexler 1990, Experiment 4
- Truth Value Judgment

**The "Match" Cases**

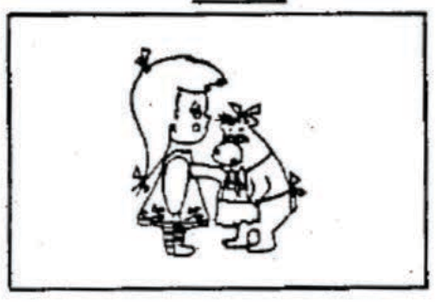
Name-Reflexive

(41) This is Goldilocks; this is Mama Bear.
Is Mama Bear touching herself?

**Adults: Yes**

Name-Pronoun

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



**Adults: Yes**

**The "Mismatch" Cases**

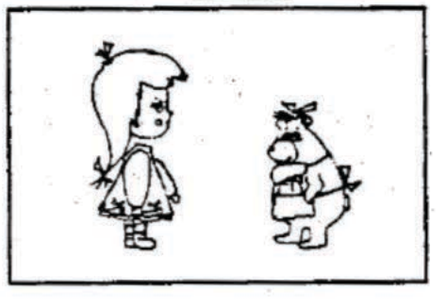
Name-Reflexive

(45) This is Goldilocks; this is Mama Bear.
Is Mama Bear touching herself?

**Adults: No (MB is touching G)**

Name-Pronoun

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



**Adults: No (MB is *not* touching G)**

# A pronoun problem

Name-Reflexive
Is Mama Bear touching herself?

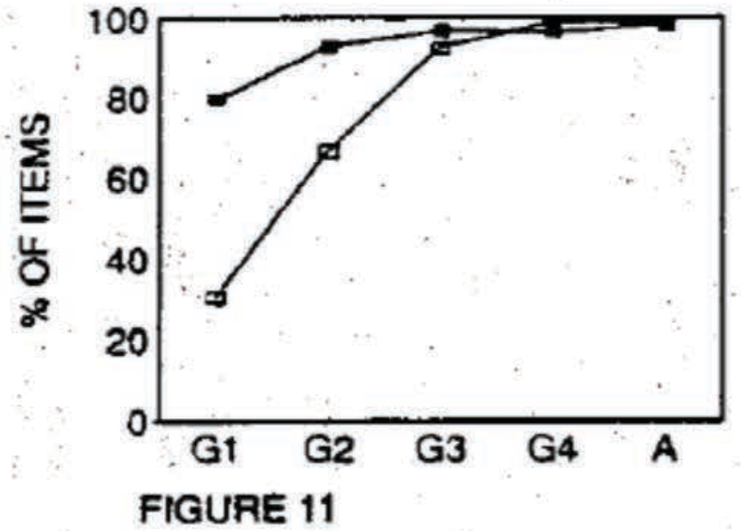


FIGURE 11

- X-axis: age group
  - G1 = 2;6-4;0
  - G2 = 4;0-5;0
  - G3 = 5;0-6;0
  - G4 = 6;0-7;0
  - A = adults
- Y-axis: % correct

- above chance by 4

# A pronoun problem

Name-Pronoun
Is Mama Bear touching her?

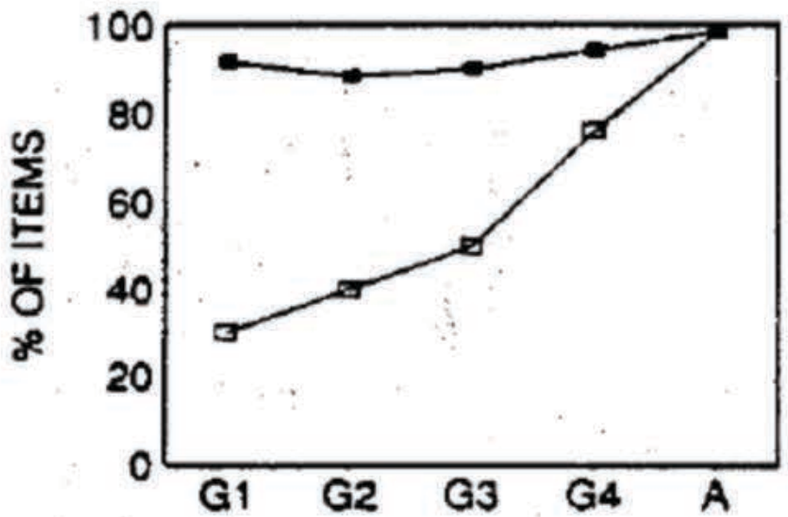



FIGURE 13

- X-axis: age group
  - G1 = 2;6-4;0
  - G2 = 4;0-5;0
  - G3 = 5;0-6;0
  - G4 = 6;0-7;0
  - A = adults
- Y-axis: % correct

- not till 6 are kids showing adult-like behavior

# The Delay of Principle B Effect (DPBE)

- **The basic phenomenon:** Kids accept coreferential readings for pronouns and local antecedents:
  - Mama Bear washed her = 'Mama Bear washed herself'
- **Apparent asymmetry:** kids at the same age do not accept non-coreferential readings for reflexives
  - Mama Bear washed herself ≠ 'Mama Bear washed someone else'

# Other studies reporting DPBE

- **English:** Wexler & Chien 1985, Solan 1987, Grimshaw & Rosen 1990, McKee 1992, Matsuoka 1997 …
- **Dutch:** Deutsch, Koster, & Koster 1986, Philip & Coopmans 1996.
- **Icelandic:** Sigurjónsdóttir & Hyams 1992
- **Russian:** Avrutin & Wexler 1992
- **Brazilian Portuguese:** Grolla 2005