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/*Herself is the President of the University.*

(2) *[The woman who walked into the room] admires herselfi/*heri.*

(3) *[The brother of [the woman who walked into the room]] admires *herselfi/heri.*

(4) *[The woman who walked into the room] thinks that her brother admires heri/*herselfi.*
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-comments 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

![Diagram]

- NP
- VP
- TP
- Sue's
- brother
- likes
- X₁
Binding theory

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

- $A$ and $B$ are co-indexed
- $A$ c-commands $B$
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
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 *cannot* 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

<table>
<thead>
<tr>
<th>Scenario: clown sitting down, Roger Rabbit self-covers</th>
<th>Scenario: clown sitting down, Roger Rabbit covers clown</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 clause</td>
<td></td>
</tr>
<tr>
<td>Roger Rabbit covered himself [TRUE]</td>
<td>Roger Rabbit covered himself [FALSE]</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>2 clause</td>
<td></td>
</tr>
<tr>
<td>While the clown was sitting down, Roger Rabbit covered himself [TRUE]</td>
<td>While the clown was sitting down, Roger Rabbit covered himself [FALSE]</td>
</tr>
</tbody>
</table>

Kids as young as 3 strongly prefer local antecedent for anaphors

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Locality of antecedent

- Locality profile of anaphors vary cross-linguistically. In addition 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

- 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

- 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

Fig. 1: Study 1: R vs P
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

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

Adults: Yes

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?

- 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

- 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


- **Dutch:** Deutsch, Koster, & Koster 1986, Philip & Coopmans 1996.

- **Icelandic:** Sigurjónsdóttir & Hyams 1992

- **Russian:** Avrutin & Wexler 1992

- **Brazilian Portuguese:** Grolla 2005