Language and Mind
HONR 218L

Class #11
Testing Condition C in Children
Sapir-Whorf Hypothesis

Sum Up: What determines what counts as a well-formed sentence?

• Templates for phrases and sentences
  – Phrase structure rules or trees
• The lexicon
  – Individual words dictate requirements for obligatory phrases (arguments)
• Transformations
  – Rules for transforming basic sentences in systematic ways (yes-no question transformation)
• System-wide Constraints and Requirements
  – Coordinate Structure Constraint (universal)
  – Tensed Clauses Have to Have an Overt Subject (or not)
  – that-gap constraint (or not)
  – Negative polarity items have to “get licensed” in a very particular way (universal)
  – A constraint on interpretation: Condition C (universal)

A Constraint on Interpretation

• A pronoun can’t c-command a name that co-refers with it
• ‘Principle C’ (Chomsky 1981)

Structural Relations

A node c-commands only its sister(s), and any nodes contained inside its sister(s)
Structural Relations

A node c-commands only its sister(s), and any nodes contained inside its sister(s)

A Constraint on Interpretation

John thinks that he is a great cook

He thinks that John is a great cook
Principle C in Other Languages

a. While he was reading the book, Pooh ate an apple
b. *He ate an apple while Pooh was reading the book

- French
- Italian
- Russian
- Greek, Amharic, Gujarati, Hebrew, Spanish, etc.

Principle C in Other Languages

Mohawk
Native American language, Quebec & upstate New York

- Free Word Order
  - Sak: ra-nühwe'-s ako-[a]tyä'tawi
  - Sak: MsS-like-hab FSP-dress
  
  "Sak likes her dress."
- Ra-nühwe'-s Sak ako-[a]tyä'tawi
- Ra-nühwe'-s ako-[a]tyä'tawi Sak
- Ako-[a]tyä'tawi ra-nühwe'-s Sak
- Ako-[a]tyä'tawi Sak ra-nühwe'-s
Principle C in Other Languages
Mohawk
Native American language, Quebec & upstate New York
• Omission of arguments
Ra-núhwe'-s
MsS-like-hab
‘He likes it.’

Principle C in Other Languages
Mohawk
Native American language, Quebec & upstate New York
• Discontinuous constituents
Ne kíke wa-hi-yéna'-s
MsS-like-hab
ne kwéskwes
ne this fact-1sS/MsO-catch-punc
‘I caught this pig.’

Principle C in Other Languages
Mohawk
Native American language, Quebec & upstate New York
• Discontinuous constituents
Ne kíke wa-hi-yéna'-s
MsS-like-hab
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ne this fact-1sS/MsO-catch-punc
‘I caught this pig.’

Principle C in Other Languages
Mohawk
Native American language, Quebec & upstate New York
Condition C Effects
• Wa-ho-nakuni'-tsi
MsS/MsO-anger-punc
fact-1sS/MsO-anger-punc
‘That I punished Sak, made him, mad.’
• Wa-shako-hrori'-tsi
MsS/MsO-tell-punc
fact-1sS/MsO-tell-punc
‘He, told her that I punished Sak,.’
(coreference possible)
• Wa-shako-hrori'-tsi
MsS/MsO-tell-punc
fact-1sS/MsO-tell-punc
‘He, told her that I punished Sak,.’
(coreference impossible)
Language Acquisition

a. While he was reading the book, Pooh ate an apple
b. *He ate an apple while Pooh was reading the book

- How could a child ever learn that Principle C applies?
- In a language like Mohawk, its effects are quite obscure
- Why does Principle C apply in every language?

Language Acquisition

a. While he was reading the book, Pooh ate an apple
b. *He ate an apple while Pooh was reading the book

- Universal Principles may not need to be learned - they may be part of the child’s innate knowledge of language
- This would explain why the principle is universal
- It would also set aside the language acquisition problem
- …but it also predicts that young children should know constraints like Principle C

Language Acquisition

a. While John was reading the book, he ate an apple
b. While he was reading the book, John ate an apple
c. John ate an apple while he was reading the book
d. *He ate an apple while John was reading the book

- Young children never say sentences like this, and probably almost never hear them
- Question is: what meanings do children allow?
- Strategy: set up a situation in which the relevant meaning is present – can a child associate that meaning with the relevant sentence?
- Truth Value Judgment Task
Truth Value Judgment Task

“I know what happened in this story…”

“Hello, Eeyore! I see that you’re reading a book.”

Truth Value Judgment Task

“I know what happened in this story…”

“What a fine-looking apple.”
“No, Pooh. You can’t eat the apple - that’s my apple.”

“Ok, I’ll have to eat a banana instead.”

“Ok, Pooh. I’ve finished reading. Now you can read the book.”

“Great. Now that Pooh is reading the book, I can eat this delicious apple.”
“I shouldn’t be such a greedy donkey - I should let Pooh eat the apple.”

“I suppose I have to eat a banana instead.”

“Here you are, Pooh. You can have the apple.”

“Oh, I’m such a lucky bear! I can read the book, and I can eat the apple, at the same time.”
Apple is eaten up.

OK, that was a story about Eeyore and Winnie-the-Pooh. First Eeyore was reading the book and then Winnie-the-Pooh was reading the book. I know one thing that happened...

While Pooh was reading the book, he ate the apple.

While he was reading the book, Pooh ate the apple.

Pooh ate the apple while he was reading the book.
OK, that was a story about Eeyore and Winnie-the-Pooh. First Eeyore was reading the book and then Winnie-the-Pooh was reading the book. I know one thing that happened...

🌟 He ate the apple while Pooh was reading the book.

How 3-4 Year Olds Perform

a. While Pooh was reading the book, he ate an apple
   - yes!

b. While he was reading the book, Pooh ate an apple
   - yes!

c. Pooh ate an apple while he was reading the book
   - yes!

d. *He ate an apple while Pooh was reading the book
   - no!

Works for English, Italian, Russian etc.
How the Task Works

- Child is not being judged
- Identical story for all test sentences
- Avoids child’s ‘yes’ bias - child shows knowledge by answering “no”
- Story favors the ungrammatical meaning
- Story is set up to make “no” answer felicitous

How the Task Works

- Child is not being judged
- Identical story for all test sentences
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How the Task Works

- Child is not being judged
  – child understands that (s)he is helping the experimenter to test a puppet (e.g. Kermit)
  – child does not feel that (s)he is being tested, and so feels under less pressure
  – child’s response is very simple yes/no

How the Task Works

- Child is not being judged
- Identical story for all test sentences
- Avoids child’s ‘yes’ bias - child shows knowledge by answering “no”
- Story favors the ungrammatical meaning
- Story is set up to make “no” answer felicitous
How the Task Works

• Identical story for all test sentences
  – only difference is in the final sentence that Kermit utters
  – if children respond differently to the different test sentences, this can’t be due to any differences in the stories

OK, that was a story about Eeyore and Winnie-the-Pooh. First Eeyore was reading the book and then Winnie-the-Pooh was reading the book. I know one thing that happened...

☀ He ate the apple while Pooh was reading the book.

How the Task Works

• Child is not being judged
• Identical story for all test sentences
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OK, that was a story about Eeyore and Winnie-the-Pooh. First Eeyore was reading the book and then Winnie-the-Pooh was reading the book. I know one thing that happened...

He ate the apple while Pooh was reading the book.

How the Task Works

- Child is not being judged
- Identical story for all test sentences
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- Story is set up to make “no” answer felicitous

Making “no” answers possible

He ate the apple while Pooh was reading the book.
Plausible Denial

He ate the apple while Pooh was reading the book.

Plausible Denial

He ate the apple while Pooh was reading the book.

He ate the apple while Pooh was reading the book.

TRUE - but ungrammatical

He ate the apple while Pooh was reading the book.

TRUE - but ungrammatical

He ate the apple while Pooh was reading the book.
Plausible Denial

He ate the apple while Pooh was reading the book.
TRUE - but ungrammatical

He ate the apple while Pooh was reading the book.
Eeyore

Plausible Denial

He ate the apple while Pooh was reading the book.
TRUE - but ungrammatical

He ate the apple while Pooh was reading the book.
Eeyore
Grammatical - but FALSE

clearly FALSE, since it almost happened, but then didn’t

Plausible Denial

He ate the apple while Pooh was reading the book.
TRUE - but ungrammatical

He ate the apple while Pooh was reading the book.
Eeyore

“Great. Now that Pooh is reading the book, I can eat this delicious apple.”
“I shouldn’t be such a greedy donkey -
I should let Pooh eat the apple.”

“I suppose I have to eat a banana instead.”

Sum Up:
Cross-linguistic Variation

• Variation itself varies for different aspects of language:
  – Some things are invariant
  – Some things show highly limited variation
  – Some things vary continuously

What is the source of limited variation and of invariance?

• Condition C?
• Mis-matching of polarity in tag questions?
Sapir Whorf Hypothesis

- Languages vary in their semantic partitioning of the world
- The structure of one’s language influences the manner in which one perceives and understands the world
- Therefore, speakers of different languages will perceive the world differently

We tacitly buy these claims: Witness *politically correct language*:
- hearing impaired (not deaf)
- Senior citizens (not old people)
Degrees of Whorfianism

**Linguistic Determinism.** Language determines our perception of the world. (strong Whorfian claim)

**Linguistic Relativity.** Language biases our perception of the world. (weak Whorfian claim)

Relevance, if strong Whorfian claim is true

Possibility of Thought Control

• If the foundational categories of reality are not “in” the world, but are imposed by one’s language…

• Then people’s thoughts can be manipulated by simply manipulating the language
  – Remove words that express ideas that you don’t want people to entertain (e.g. Newspeak)

Different Whorfian Questions

*(Gentner & Goldin-Meadow)*

**Language as a Lens.** Do grammatical characteristics of a language shape speakers’ perception of the world?

**Language as a Toolkit.** Does language augment our capacity for representation and reasoning?

**Language as a Category Maker.** Does the language we acquire influence where we make our category distinctions?

Different Whorfian Questions

*(Gentner & Goldin-Meadow)*

**Language as a Lens.** Do grammatical characteristics of a language shape speakers’ perception of the world?

• Source of evidence for utterance (direct observation vs. hearsay)

• Motion Events (manner of motion as a verb vs. an adverb)

• Language for Spatial Location Relationships (in/on vs. tight fitting/loose fitting)

• Spatial frames of reference (egocentric vs. allocentric)
Different Whorfian Questions
(Gentner & Goldin-Meadow)

Language as a Toolkit. Does language augment our capacity for representation and reasoning?

• Language allows for the formation of expressions like ‘left of the blue wall’ that allow humans to navigate using complex concepts that are not available in individual core knowledge systems (Spelke)

• Some languages allow for the formation of expressions like ‘two’ and ‘five hundred and twelve’, concepts that are not available in individual core knowledge systems.

• Complement clauses foster the development of theory of mind (de Villiers)

Different Whorfian Questions
(Gentner & Goldin-Meadow)

Language as a Category Maker. Does the language we acquire influence where we make our category distinctions?

• Color terms and color perception

• Sound inventory of a language and perception of speech sounds in native and foreign languages

What types of methods could one use to test these questions?

Road Map

Next week: Intro to Theory of Mind, motion events, language for spatial location relationships

Mar 21-23: Spring Break

Mar 28-30: Student Presentations of original research reports on navigation, number, and theory of mind

April/May: Speech perception, color, spatial frames of reference
Whorf (1939)
The Relation of Habitual Thought & Behavior to Language

Whorf’s questions in his own words:

1) Are our own concepts of time, space, and matter given in substantially the same form by experience to all men, or are they in part conditioned by the structure of particular languages?

2) Are there traceable affinities between a) cultural and behavioral norms and b) large-scale linguistic patterns?

Whorf (1939)
The Relation of Habitual Thought & Behavior to Language

The name of the situation as affecting behavior
Less careful around “empty” gasoline drums