Psych 229: Language Acquisition

Lecture 1
Introduction to Language Acquisition

Administrivia

Class web page:

Accessible from EEE and my home page, as well. Contains overview, schedule, readings, course assignments, and grading policies.

Important to access readings
user name = psych229
user password = langacq

Knowledge of Language

It’s so natural for us to produce and comprehend language that we often don’t think about what an accomplishment this is.

Or how we learned language in the first place.

Jackendoff (1994)

“Rules” of language = grammar

So About That Universal Translator…

Language is a complex system of knowledge: includes sound structure, word structure, sentence structure, mapping from sentence structure to meaning, unspoken rules of conversation…

Languages can differ significantly on how they instantiate this knowledge.


Kids Do Amazing Things

Much of the linguistic system is already known by age 3.

…when kids can’t tie their own shoes or even count to 4.

What kids are doing: extracting patterns and making generalizations from noisy data sets without explicit instruction.

“Rules” of language = grammar
A learning analogy: Set
Here are some cards - they have some salient properties associated with them.

Task: Find Sets.
Here’s one:

What generalizations might you make about Sets?

A learning analogy: Set

Task: Find Sets.
Here’s another one:

Does this fit your generalization?

A learning analogy: Set

Task: Find Sets.
Here’s another one:

What about this one?

A learning analogy: Set

Task: Find Sets.
Are these Sets?

Yes
Yes
No
A learning analogy: Set

Task: Find Sets.
Here are some more examples:

What generalization can you make now?

A learning analogy: Set

Task: Find Sets.
Are these Sets?

Can you guess the rule of Set?

A learning analogy: Set

Task: Find Sets.
Are these Sets?

Can you guess the rule of Set?

Yes

Yes

No

No

No

No

The Grammar of Set

A 'set' consists of these cards in which each feature is EITHER the same on each card or different on each card. This is to say, any feature in the 'set' of three cards is common to all three cards or different on each card.

Knowledge of Language & Hidden Rules

Some examples from language:

You know that...

...step is a possible word of English, while step isn't.

..."Who did you see who did that?" is not a grammatical question in English.

...In "She ate the peach while Sarah was reading", she ≠ Sarah.

...In "Hoggle has a ripe peach, and Sarah has one, too," one ≠ 'ripe peach'.

...In 'cats', the 's' sounds like 's'; in 'dogs', the 's' sounds like 'z'.

...If the nonsense word 'pa th keh' became used in English, it is much more likely to be pronounced 'PA-th keh' than 'pa th KEH'.

Back to Kids & Language

Children infer rules with this amount of complexity (and more!) from examples of language. And sometimes, even when there's noise.

Noise Analogy: All these are Sets.

Yes
Chomsky’s Arguments
First laid out in late 1950s and early 1960s

These two arguments lead to conclusion that learning language (English, French, Japanese, Zulu, Mohawk, …) is a complex interaction of nature and nurture.

The argument for mental grammar
Harry tells Sam about a tree - this is a fairly involved process.

The argument for mental grammar
Other things Harry might say:
- There’s a bird in the tree.
- It has a nest in the tree.
- It is very big.
- It is a brown bird.
- It is a big bird.
- The bird looks like a fox.

These show off the expressive variety of language. (This differs from animal communication.)

The argument for mental grammar
“The expressive variety of language use implies that a language user’s brain contains unconscious grammatical principles” - Jackendoff (1994)

- most sentences we have never seen or used before, but we can still understand them
- Can speakers simply memorize all the possible sentences of a language the way they learn vocabulary of their language?

Linguistic Infinity

There are many ways to make lots of sentences. There are at least some ways to make lots of sentences, but there are so many ways that we can’t even imagine them all. We can use pronouns and other words to make new sentences.

Example sentences:
1. A man is not a monkey.
2. A man is not a dog.
3. A man is not a fish.
4. A man is not a bird.
5. A man is not a cat.
6. A man is not a cat.
7. A man is not a dog.
8. A man is not a monkey.

These are all completely absurd, but they are sentences of English.
Linguistic Infinity

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Linguistic Infinity

Patterns:

- Amy ate n peanuts.
- An X is not a Y.
- Since an X is not a Y, a Z is not a W.

Linguistic Infinity

Two more examples

- Hoggle thinks that [Sentence]
- Hoggle thinks that [Sentence]
- Hoggle thinks that [Sentence]

The argument for mental grammar

Note: some people object to this, and believe humans don't abstract this much...or at least don't do it for a lot of things. Instead, there's a more "item-based" approach that is sensitive to the frequency of usage of an individual lexical item or constructions.