LSci 51/Psych 56L: Acquisition of Language

Lecture 18

Development of syntax II

Announcements

HW 5 is due 11/19/21 - be working on it

Be working on the review questions for morphology and syntax

Check out the language science (LSci) courses next quarter!

From one word to many

The one-word stage

https://www.youtube.com/watch?v=zmghbKNiI1k&feature=youtu.be

0:42-2:03: The one-word stage & the focus on new information

Beyond single word speech

Unanalyzed combinations: most children have transitional forms that combine multiple words, but which the child doesn't realize are multiple words

Ex: "Iwant" (I want), "Idunno" (I don't know)

The two-word stage

https://www.youtube.com/watch?v=zmghbKNiI1k&feature=youtu.be

2:57-3:54: The two-word stage

Beyond two words

Even when children produce multiword utterances, they still produce single word utterances.

Point: children's development measured by the *maximum* number of words they produce in a given utterance.

Beyond two words

When children start to put 3 words together, many of these utterances are combinations of the relational meanings expressed in the two word stage.

"I watching cars" = "I watching" + "watching cars"

"Put it table" = "Put it" + "it table"

Beyond two words

Early sentences tend to be imperatives (commands), as well as affirmative, declarative statements. Questions and negations come later.

Imperative:

"Dance with them!"

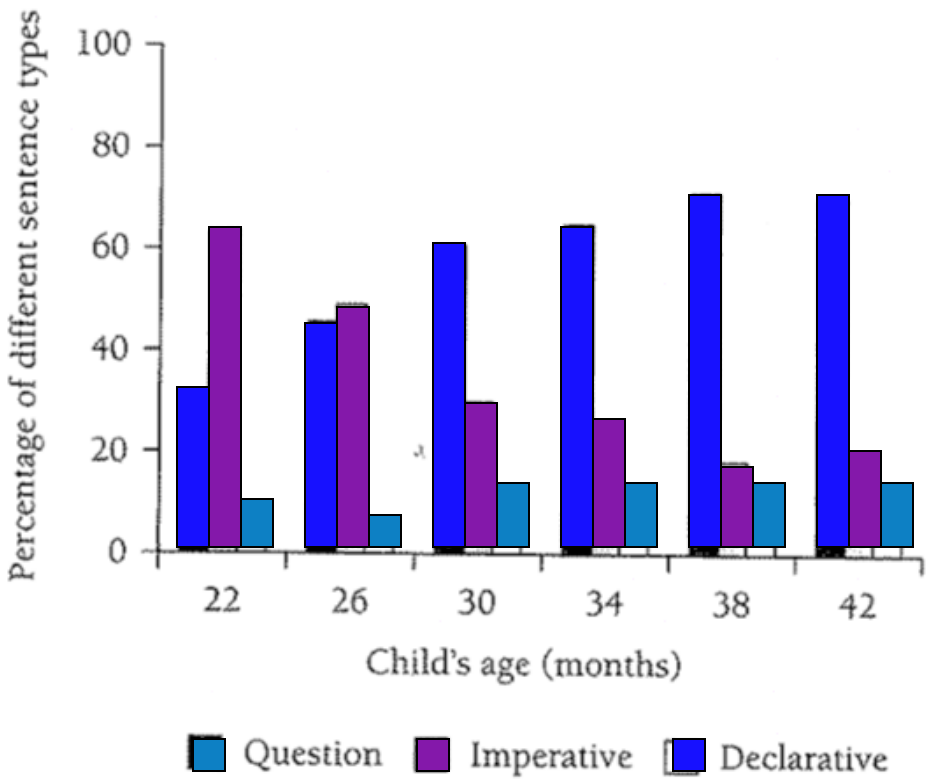
Affirmative, declarative:

"I dance with them."

Question: "Can I dance with them?"

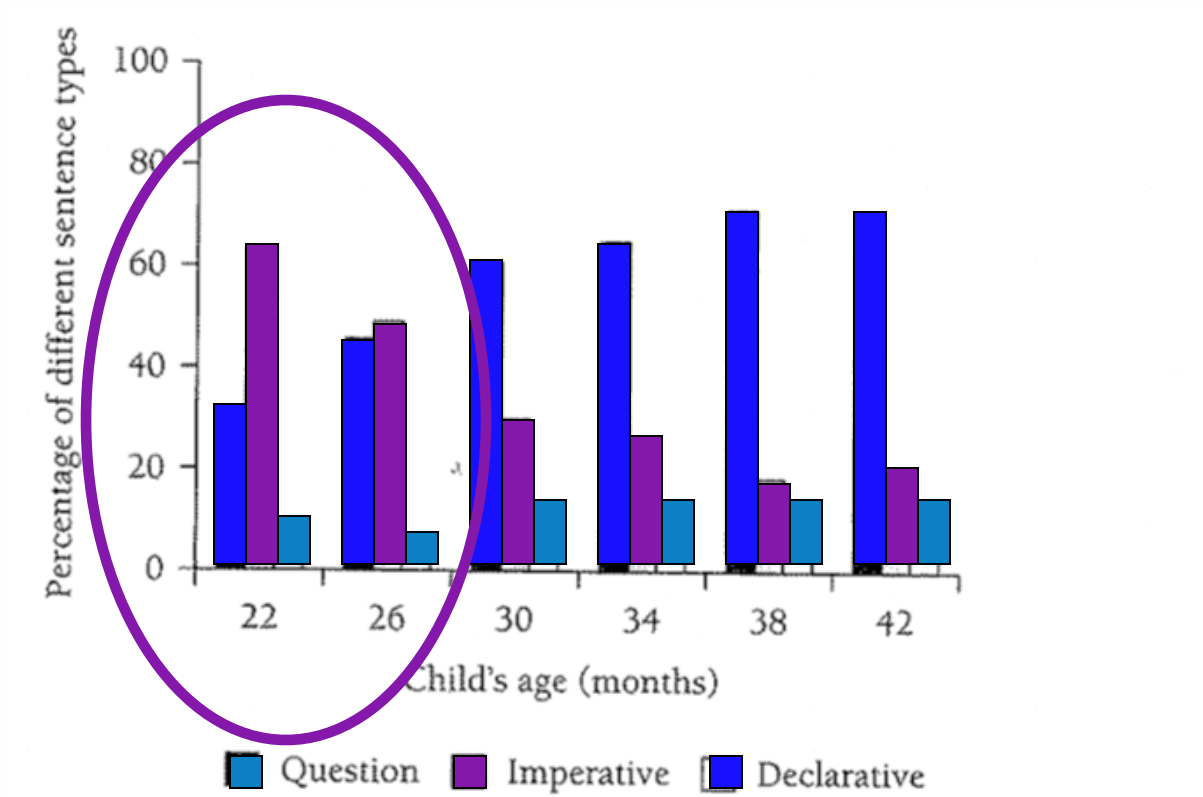
Negation: "I don't dance with them."

Beyond two words



DEVELOPMENTAL CHANGES IN THE TYPES OF SIMPLE SENTENCES CHILDREN PRODUCE FROM 22 TO 42 MONTHS

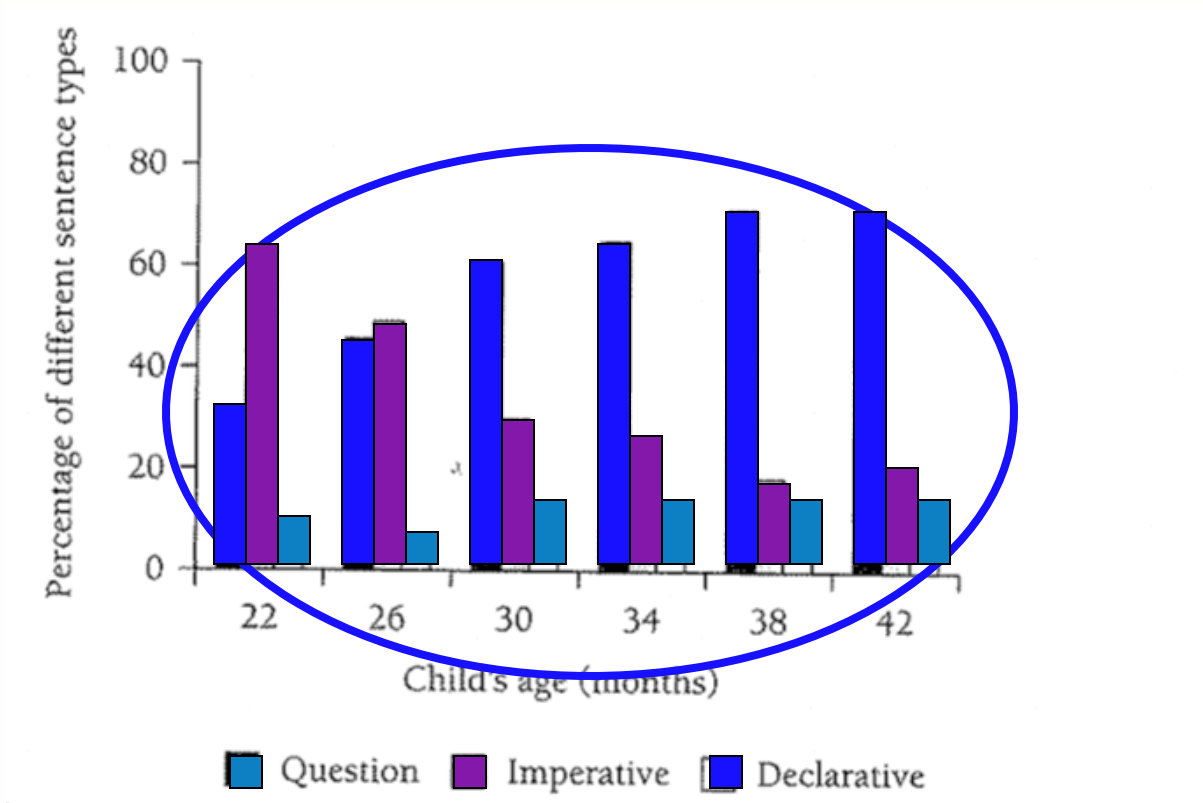
Beyond two words



DEVELOPMENTAL CHANGES IN THE TYPES OF SIMPLE SENTENCES CHILDREN PRODUCE FROM 22 TO 42 MONTHS

Imperatives dominate early on, then taper off.

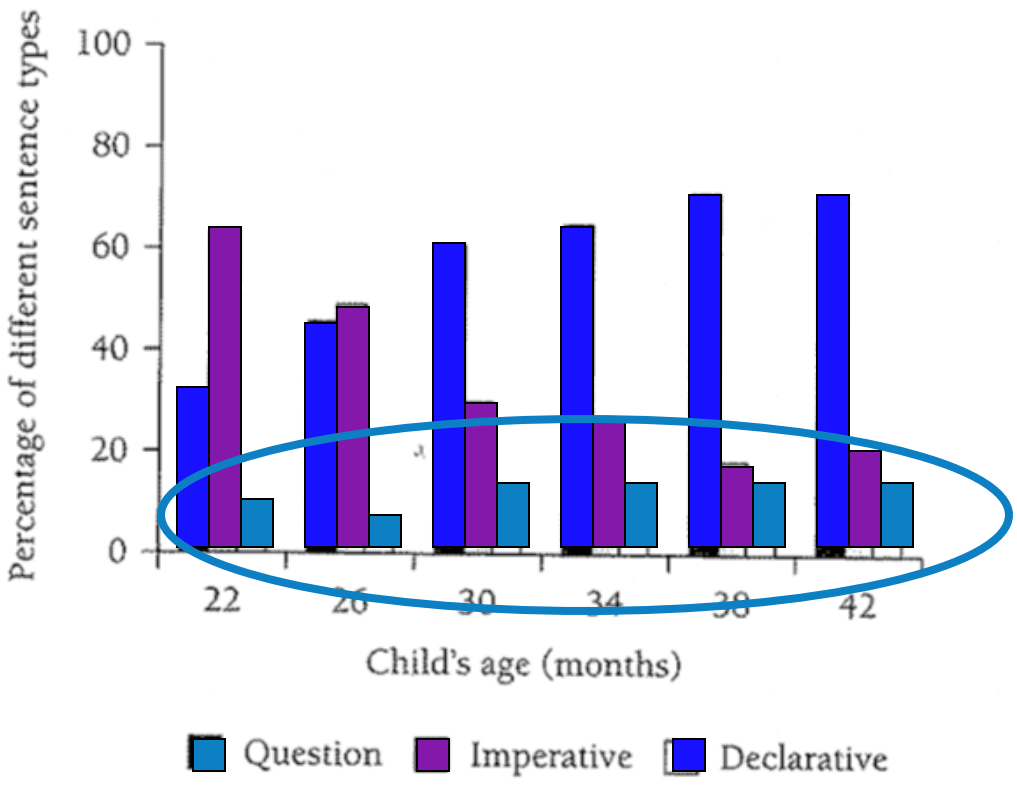
Beyond two words



DEVELOPMENTAL CHANGES IN THE TYPES OF SIMPLE SENTENCES CHILDREN PRODUCE FROM 22 TO 42 MONTHS

Declaratives always a fairly large proportion

Beyond two words



DEVELOPMENTAL CHANGES IN THE TYPES OF SIMPLE SENTENCES CHILDREN PRODUCE FROM 22 TO 42 MONTHS

Questions always a fairly small proportion

Development of sentence forms

Not all sentence forms are created equal - some are harder to get the hang of than others.

Negation: requires use of negative word and auxiliary verb

Stage 1: external negative marker

No wipe finger.

No the sun shining.

No mitten.

Wear mitten no.

Development of sentence forms

Not all sentence forms are created equal - some are harder to get the hang of than others.

Negation: requires use of negative word and auxiliary verb

Stage 2: internal negative marker

I can't see you.

I don't like you.

I no want envelope.

Development of sentence forms

Not all sentence forms are created equal - some are harder to get the hang of than others.

Negation: requires use of negative word and auxiliary verb

Stage 3: auxiliary constructions

I didn't did it.

Donna won't let go.

No, it isn't.

Development of sentence forms

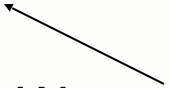
Not all sentence forms are created equal - some are harder to get the hang of than others.

Questions: yes/no questions vs. wh-questions

Yes/No: Questions that can be answered with yes/no.

Usually require permutation of main verb and auxiliary verb, or insertion of dummy “do” in English.

Can we dance with all the goblins?



We can dance with all the goblins

Development of sentence forms

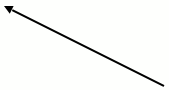
Not all sentence forms are created equal - some are harder to get the hang of than others.

Questions: yes/no questions vs. wh-questions

Yes/No: Questions that can be answered with yes/no.

Usually require permutation of main verb and auxiliary verb, or insertion of dummy “do” in English.

Did we dance with all the goblins?



We did dance with all the goblins.

We danced with all the goblins.

Development of sentence forms

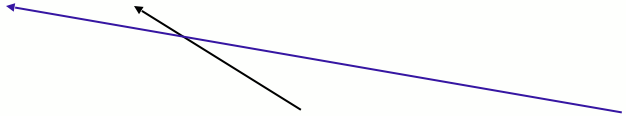
Not all sentence forms are created equal - some are harder to get the hang of than others.

Questions: yes/no questions vs. wh-questions

Wh-Questions: Questions that begin with “wh” words.

Require permutation of auxiliary verbs and use of “wh” word.

Who can we dance with?



We can dance with who

Development of sentence forms

Not all sentence forms are created equal - some are harder to get the hang of than others.

Questions: yes/no questions vs. wh-questions

Stage 1: external question marker

Y/N

I ride train?

Sit chair?

Wh

What cowboy doing?

What a bandaid is?

Development of sentence forms

Not all sentence forms are created equal - some are harder to get the hang of than others.

Questions: yes/no questions vs. wh-questions

Stage 2: auxiliaries without inversion in wh-questions,
even while yes/no questions show inversion

Y/N

Does the kitty stand up?

Did I caught it?

Wh

Where the other Joe will drive?

Why kitty can't stand up?

Development of sentence forms

Not all sentence forms are created equal - some are harder to get the hang of than others.

Questions: yes/no questions vs. wh-questions

Stage 3: auxiliaries with inversion in wh-questions

Y/N

(N/A)

Wh

What did you doed?

What does whiskey taste like?

Telegraphic speech

https://www.youtube.com/watch?v=zmghbKNiI1k&feature=youtu.be

5:34-6:22: Telegraphic speech

Telegraphic speech

Typical grammatical categories included in children's multiword speech: nouns, verbs, adjectives

Typical categories missing: determiners (the, a, …), prepositions (to, by, from, …), auxiliary verbs (am, are, was, …), bound morphemes (-s plural marker, …)

Basic division of meaning:

more contentful vs. more grammatical

You can communicate quite well without the more "grammatical" categories.

Telegraphic speech examples

Intended:

"I have to go to the castle to rescue my baby brother!"

Telegraphic:

"I go castle rescue baby brother!

Intended:

"The air is sweet and fragrant – and none may pass without my permission!"

Telegraphic:

"Air sweet fragrant – none pass without permission!"

Telegraphic speech

https://www.youtube.com/watch?v=zmghbKNiI1k&feature=youtu.be

6:22-7:38: Few errors & comprehension better than production

Early grammatical knowledge

Just because children don't use grammatical morphemes in their own speech doesn't mean they don't understand that adults use them and they should use them, too.

Shipley, Smith, & Gleitman (1969): children who are telegraphic speakers prefer to respond to full commands like "Throw me the ball" over their own telegraphic versions ("Throw ball")

Gerken & McIntosh (1993): children are particular about which grammatical morphemes occur where - they can tell the difference between "Find the dog for me" and "Find was dog for me"

Development of comprehension

Getting to children's knowledge

Clever comprehension strategies children use:

Recognized words in utterance: "knight", "dwarf", "bump"

Getting to children's knowledge

Clever comprehension strategies children use:

Recognized words in utterance: "knight", "dwarf", "bump"

Use the **order** of words to predict who did what to whom: first mention is the one doing the action, second mention is the one the action is done to.

Works really well for active sentences:

"The **knight bump**ed the **dwarf**."

Actual event: knight-bumps-dwarf

[Matches word order]

Getting to children's knowledge

Clever comprehension strategies children use:

Recognized words in utterance: "knight", "dwarf", "bump"

Use the **order** of words to predict who did what to whom: first mention is the one doing the action, second mention is the one the action is done to.

…but not so well for passives:

"The **knight** was **bump**ed by the **dwarf**."

Actual event: dwarf-bumps-knight

[Does not match word order]

Getting to children's knowledge

Clever comprehension strategies children use:

Recognized words in utterance: "cowered", "threw", "disguise", "Hoggle", "Jareth"

Use the **order** of words to predict who did what to whom: first mention is what happened first.

Works really well for sentences where order-of-mention is the order of action:

"Jareth threw off his disguise before Hoggle cowered."

Actual event: Jareth-throw-disguise, then Hoggle-cower. [Matches word order.]

Getting to children's knowledge

Clever comprehension strategies children use:

Recognized words in utterance: "cowered", "threw", "disguise", "Hoggle", "Jareth"

Use the **order** of words to predict who did what to whom: first mention is what happened first.

…but not so well for ones where it's not:

"Hoggle cowered after Jareth threw off his disguise."

Actual event: Jareth-throw-disguise, then Hoggle-cower. [Does not match word order]

Getting to children's knowledge

Clever comprehension strategies children use:

Recognized words in utterance: "Hoggle", "Jareth", "scared"

Use **world knowledge** to figure out likely sequence of events.

Works really well for sentences that are predictable from world knowledge (in a world where Jareth is often doing the scaring and Hoggle is often being scared):

"Jareth scared Hoggle."

…but not so well for ones where the events are not predictable from world knowledge:

"Hoggle scared Jareth."

Testing true comprehension

https://www.youtube.com/watch?v=zmghbKNiI1k&feature=youtu.be

2:03-2:57: Experiments with children

Getting around the clever strategies

Using indirect methods like the preferential looking paradigm, we can test children's comprehension of multiword combinations even when they can only produce one word utterances themselves

Preferential looking paradigm

http://www.thelingspace.com/episode-16
https://www.youtube.com/watch?v=3-A9TnuSVa8
5:48 - 6:57

Getting around the clever strategies

Hirsh-Pasek & Golinkoff (1991): 13- to 15-month-olds can comprehend improbable sentences with relational properties like

"She's kissing the keys."

Hirsh-Pasek & Golinkoff (1991): 16- to 18-month-olds can tell the difference between complex questions like

"Where is Cookie Monster washing Big Bird?" and

"Where is Big Bird washing Cookie Monster?"

Children understand more about structural relationships than they let on with their production!

Early grammatical knowledge

Children have knowledge of grammatical constructions even before they can produce all the words themselves – and what was previously thought to be telegraphic speech might just be a severe form of “baby accent”.

Dye 2011: 2- and 3-year-old French children have phonetic placeholders for auxiliary words (like “am” and “are”), and use them as they would use the actual words.

“The continuum ranged from target or near-target forms down to barely audible forms (some of which required identification through spectral analysis) or even puffs of air.”

Early grammatical knowledge

An example of how much production can underestimate children's underlying knowledge:

From a 2-year-old who previously said only 4 words (mama, dad, yaya = "doll", wawa = "dog"):

"You know, Dad, what I like about going to the doctor's office is getting to play with all of the toys in the waiting room."
(contributed by Jim Morgan)

Early grammatical knowledge

Another example of how much production can underestimate children's underlying knowledge:

My own mother's first words at age three, when she hadn't spoken a single word out loud before:

(after her aunt had knocked something over)
"That was very sloppy of you."

Early grammatical knowledge

Children have knowledge of grammatical constructions even before they can produce all the words themselves — clues about what type of utterance something is don't come just from prosody.

Geffen & Mintz 2014: 12-month-olds can distinguish between declaratives like "You remembered the popcorn" and yes/no questions like "Did you remember the popcorn?" on the basis of word order alone.

Another example of early grammatical knowledge

De Villiers 1995: comprehension task with 3- to 6-year-olds

> "Once there was a boy who loved climbing trees in the forest. One afternoon he slipped and fell to the ground. He picked himself up and went home. That night when he had a bath, he saw a big bruise on his arm. He said to his Dad, 'I must have hurt myself when I fell this afternoon.'"

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When did the boy say he fell?

—> When did the boy say __ he fell?

—> When did the boy say he fell __?

Two interpretations possible

When did the saying happen?

When did the falling happen?

Another example of early grammatical knowledge

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When did the boy say he fell?

—> When did the boy say __ he fell?

—> When did the boy say he fell __?

Two interpretations possible

That night

This afternoon

Children allow both these structures (and their interpretations), too.

Another example of early grammatical knowledge

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When did the boy say how he fell?

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When did the boy say how he fell?

—> When did the boy say __ [how he fell]?

When did the boy say [how he fell __]?

Only one interpretation

When did the saying happen?

~~***When** did the **falling** happen?*~~

Another example of early grammatical knowledge

De Villiers 1995: comprehension task with 3- to 6-year-olds

> "Once there was a boy who loved climbing trees in the forest. One afternoon he slipped and fell to the ground. He picked himself up and went home. That night when he had a bath, he saw a big bruise on his arm. He said to his Dad, 'I must have hurt myself when I fell this afternoon.'"

When did the boy say how he fell?

—> When did the boy say __ [how he fell]?

When did the boy say [how he fell __]?

Only one interpretation

At night

In the afternoon

Children allow only the top structure (and its interpretation), too.

Another example of early grammatical knowledge

De Villiers 1995: comprehension task with 3- to 6-year-olds

> "Once there was a boy who loved climbing trees in the forest. One afternoon he slipped and fell to the ground. He picked himself up and went home. That night when he had a bath, he saw a big bruise on his arm. He said to his Dad, 'I must have hurt myself when I fell this afternoon.'"

Children as young as 3 years old have these adult interpretations!

Why we may not always realize how much children know

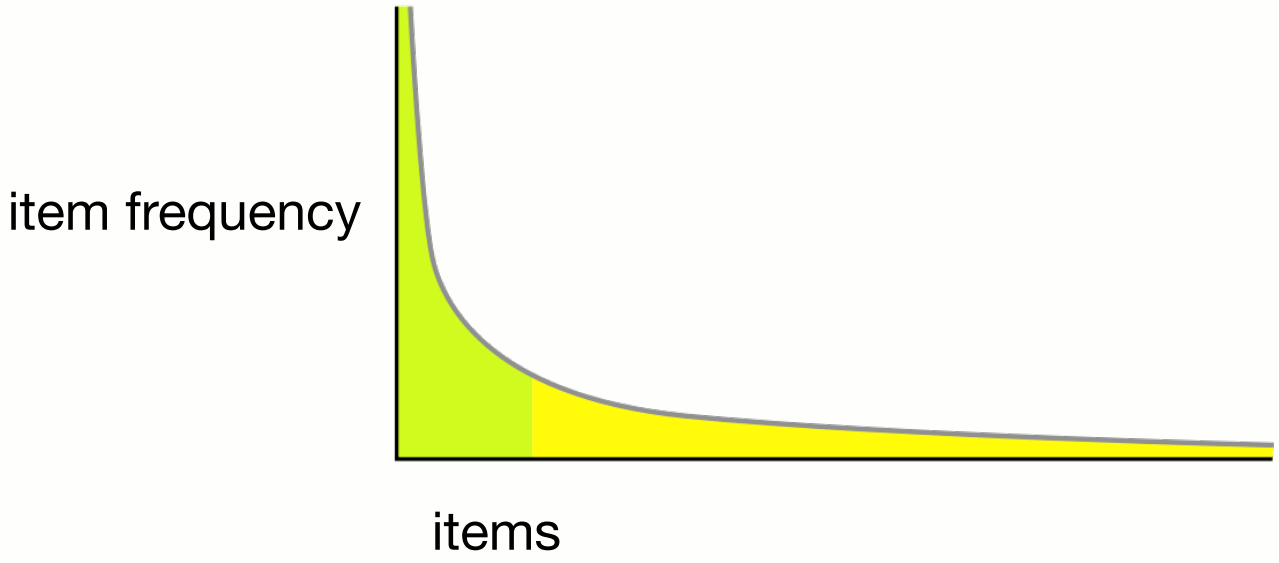
https://www.youtube.com/watch?v=zmghbKNil1k&feature=youtu.be

7:38-9:16: Processing constraints

A related point: Data distributions

Why is the speedy acquisition trajectory surprising?

Language has a Zipfian distribution: relatively few items are used very frequently while most items occur rarely, with many occurring only once even in very large data samples.



A related point: Data distributions

Why is the speedy acquisition trajectory surprising?

"To attain full linguistic competence, the child learner must overcome the Zipfian distribution and draw generalizations about language on the basis of few and narrow types of linguistic expressions." – Yang 2010

Basic point: The distribution of natural language data really makes the child's job hard, since the child must extract patterns and build a system despite not encountering most of the grammatical forms in the language very often.

Early syntax development: Recap

Children progress from single word utterances to multiword utterances, learning to combine items in their lexicon in a productive manner to express the meanings they want.

The sequence of grammatical development that occurs in comprehension is like the sequence in production, but it occurs earlier.

Children's developmental patterns tend to follow predictable paths, demonstrating their gradual acquisition of more grammatical knowledge.

Early syntax development: Recap

Children seem to have acquired a very complex system of grammar at a very young age, though it's not necessarily the complete adult system.

However grammatical rules are acquired, they must be acquired quickly. This places constraints on what kind of developmental theory can be proposed, because it must account for this speedy acquisition trajectory.

Questions?

You should be able to do up through question 11 on the review questions, and up through question 10 on HW5.