

Ling 51/Psych 56L:
Acquisition of Language

Lecture 13
Development of morphology & syntax II

Announcements

HW 5 is due 11/22/16 - be working on it

Be working on the review questions for morphology and syntax

From one word to many



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)



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.

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:

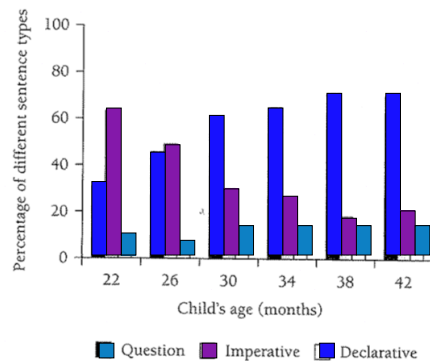
"I dance with them."



Question: "Can I dance with them?"

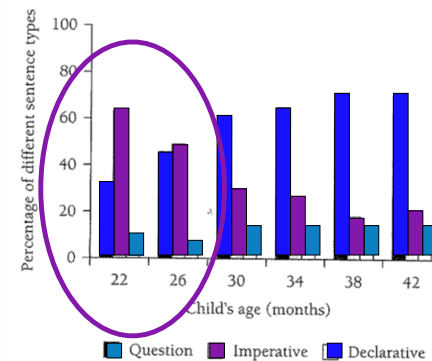
Negation: "I don't dance with them."

Beyond two words



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

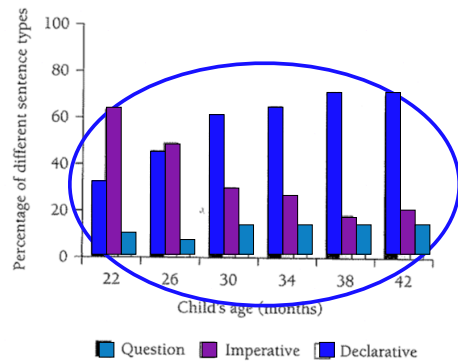
Beyond two words



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

Imperatives dominate early on, then taper off.

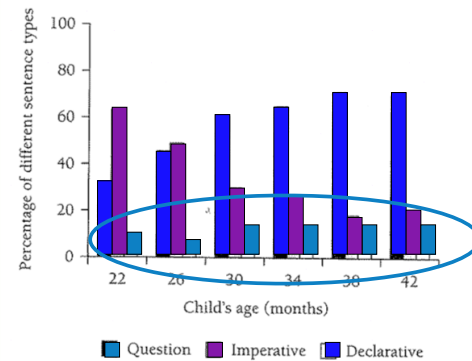
Beyond two words



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

↪
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

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

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!"



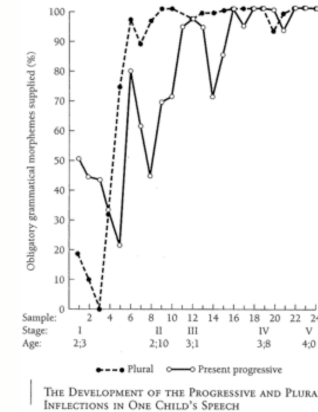
Telegraphic:

"Air sweet fragrant – none pass without permission!"

Morphological development

Between 2 and 3 years old, children begin adding in the more "grammatical" categories - in particular the bound morphemes.

Usage of bound morpheme (either -ing progressive or -s plural) when required

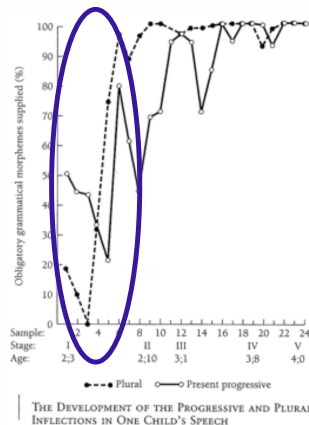


Morphological development

Between 2 and 3 years old, children begin adding in the more "grammatical" categories - in particular the bound morphemes.

Usage of bound morpheme (either -ing progressive or -s plural) when required

Development is gradual (though may have spurt-like parts), and there are large ranges - not all bound morphemes come in at the same time



Something tricky:

English has multipurpose morphology

<https://www.youtube.com/watch?v=Ts2DS0ZsTyo&feature=youtu.be>
4:31-4:52



Morphological development

The order of acquisition for bound morphemes in English does appear to be similar across different children, however (even if their rates of development are quite different).

Brown (1973): three children (Adam, Eve, Sarah)

- (1) present progressive: laugh**ing** /ɪŋ/
- (2) plural: cat**s** /s/, dog**s** /z/, glass**e**s /əz/
- (3) possessive: cat'**s** /s/, dog'**s** /z/, glass'**s** /əz/
- (4) regular past tense: touch**e**d /t/, hugg**e**d /d/, want**e**d /əd/
- (5) 3rd person singular: laugh**s** /s/, hugg**s** /z/, touch**e**s /əz/
- (6) contracted *be*: The cat'**s** going to /s/, he'**s** going to /z/
- (7) contracted auxiliary verb: he'**d** like to /d/, he'**ll** have to /l/

Note: Chan & Lignos (2011) describe a learning strategy that could cause English children to produce this order, based on how hard or easy it is to recognize that a derived form like "hugs" is related to a base form like "hug".

Morphological development

The order of acquisition for bound morphemes in English does appear to be similar across different children, however (even if their rates of development are quite different).

But what about development cross-linguistically? Remember, English is fairly impoverished morphologically when compared to languages like Hungarian.

English: "the goblin" = always the same form
 Hungarian: "the goblin" may have up to 16 different forms, depending on what "the goblin" 's role in the sentence is

Forms of "I go" in Turkish:

gidiyorum, gidiyordum, gidiyorsam, gidiyordusam, gidiyormuşum, gidiyormuşsam, giderim, giderdim, gidersem, gidermişem, gidermişim, gidermişsem, gideceğim, gidecektim, gideceksem, gidecektiysem, gidecekmişim, gidecekmişsem, gitmişim, gitmiştim, gitmişsem, ...

(<http://cromwell-intl.com/turkish/verbs.html>)

	Simple I	Past -di/-e + II	Conditional -ise + II	Past conditional -idi/-ise + II	Inferential -miş + I	Inferential conditional -miş + -ise + II
Present (0)or-	<i>Konya'ya gidiyorum.</i> I am going to Konya.	<i>Konya'ya gidiyordum.</i> I was going to Konya.	<i>Konya'ya gidiyorsam, ...</i> If I am going to Konya, ...	<i>Konya'ya gidiyordusam, ...</i> If I was going to Konya, ...	<i>Konya'ya gidiyormuşum.</i> I am said to be going to Konya.	<i>Konya'ya gidiyormuşsam, ...</i> If, as they say, I am going to Konya, ... — or — If I am said to be going to Konya, ...
General (aorist) -Dir-	<i>Konya'ya giderim.</i> I go to Konya.	<i>Konya'ya giderdim.</i> I used to go to Konya.	<i>Konya'ya gidersem, ...</i> If I go to Konya, ...	<i>Konya'ya giderirdiysem, ...</i> If I used to go to Konya, ...	<i>Konya'ya gidermişim.</i> I am said to go to Konya.	<i>Konya'ya gidermişsam, ...</i> If, as they say, I go to Konya, ... — or — If I am said to go to Konya, ...
Future ecek-	<i>Konya'ya gideceğim.</i> I will go to Konya.	<i>Konya'ya gidecektim.</i> I was going to go to Konya.	<i>Konya'ya gideceksem, ...</i> If I am going to go to Konya, ...	<i>Konya'ya gidecektiysem, ...</i> If I was going to go to Konya, ...	<i>Konya'ya gidecektimşim.</i> I am said to be going to go to Konya.	<i>Konya'ya gidecektimşsam, ...</i> If, as they say, I am going to go to Konya, ... — or — If I am said to be going to go to Konya, ...
miş-past miş-	<i>Konya'ya gitmişim.</i> I went to Konya. (so they say)	<i>Konya'ya gitmişdim.</i> I had gone to Konya. (so they say)	<i>Konya'ya gitmişsem, ...</i> If I have gone to Konya, ...	<i>Konya'ya gitmiş idiysem, ...</i> If I had gone to Konya, ...	<i>Konya'ya gitmiş imişim.</i> I am said to have gone to Konya.	<i>Konya'ya gitmiş imişsam, ...</i> If, as they say, I have gone to Konya, ... — or — If I am said to have gone to Konya, ...
di-past di-	<i>Konya'ya gittim.</i> I went to Konya. — or — I had gone to Konya. (I)	<i>Konya'ya gittiydim.</i> I had gone to Konya.	<i>Konya'ya gitsenim, ...</i> If I have gone to Konya, ...	<i>Konya'ya gitti idiysem, ...</i> If I had gone to Konya, ...	—	—
Necessity meli-	<i>Konya'ya gitmeliyim.</i> I must go to Konya.	<i>Konya'ya gitmeliydim.</i> I needed to go to Konya.	—	—	<i>Konya'ya gitmeliyimmişim.</i> They say I ought to go to Konya.	—
Conditional se-	<i>Konya'ya gitsem, ...</i> If I were to go to Konya, ...	<i>Konya'ya gitseydim, ...</i> If only I had gone to Konya, ...	—	—	<i>Konya'ya gitseymişim.</i> They say that if I were to go to Konya, ... — or — They say, "If only I would go to Konya!"	—
Subjunctive e-	<i>Konya'ya giderdim.</i> I might go to Konya, maybe later	<i>Konya'ya giderdim!</i> Would that I had gone to Konya!	—	—	<i>Konya'ya gidermişim!</i> They say, "Would that I had gone to Konya!"	—

Morphological variation cross-linguistically

<http://www.thelingspace.com/episode-17>

<https://www.youtube.com/watch?v=PN1DxuVt4hI>

2:22 - 3:46



Morphological development

Note: Morphologically rich languages are not necessarily more difficult for children to learn. Regular/predictable systems are easier for children to learn than languages that have multiple exceptions (like English often does).

Regularity vs. exceptions in English (ex: past tense):

We **laughed**.

We **hugged**.

We **danced**.

* We **singed**. (We sang.)

* We **runned**. (We ran.)

Morphological development

Note: Morphologically rich languages are not necessarily more difficult for children to learn. Regular/predictable systems are easier for children to learn than languages that have multiple exceptions (like English often does).

Regular morphologically rich language: Turkish

Inflected forms seem no harder for Turkish children to acquire. In fact, they often produce inflected forms (equivalent to English “*laughed*”) before they even combine words in multiple word utterances.

Morphological development

Other factors that help make morphology easier to learn:

- **high frequency** (more frequent morphemes are easier)
- **regularity** in form (morpheme is always the same)
- **fixed position** relative to the stem (ex: morpheme always attaches to the end of the word)
- morpheme is easy to recognize as **separate** from the stem (ex: laugh + **ing**)
- rhythm of language makes morpheme **perceptually salient** (ex: receives stress)

Development of comprehension



Getting to children's knowledge

Clever comprehension strategies children use:

Use the order of words to predict who did what to whom.

Works really well for active sentences:

"The knight bumped the dwarf."

Actual event: knight-bumps-dwarf

[Matches word order]

...but not so well for passives:

"The knight was bumped by the dwarf."

Actual event: dwarf-bumps-knight

[Does not match word order]



knight

dwarf

Getting to children's knowledge

Clever comprehension strategies children use:

Use the order of words to predict who did what to whom.

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.]

...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]



Jareth

Hoggle

Getting to children's knowledge

Clever comprehension strategies children use:

Use world knowledge to figure out likely sequence of events.

Works really well for normal sentences (in a world where Jareth is often doing the intimidating and Hoggle is often doing the cowering):

"Jareth intimidated Hoggle."

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

"Hoggle intimidated Jareth."



Jareth

Hoggle

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

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!

Preferential looking paradigm

<http://www.thelingspace.com/episode-16>

<https://www.youtube.com/watch?v=3-A9TnuSVa8>

5:48 - 6:57



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 four, 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.



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”

General points

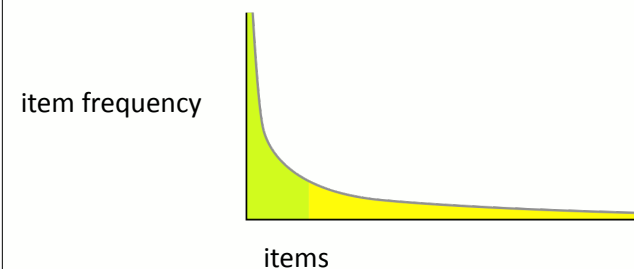
The sequence of grammatical development that occurs in comprehension is like the sequence in production, but it occurs earlier.

Grammatical competence seems to be achieved fairly early. 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.

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.**

Another example of grammatical competence

Comprehension of complex sentences

(from J. de Villiers 1995)

“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?

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When did the boy say he fell?

Ambiguous!

When did the boy say he fell?

In the afternoon.

When did the boy say he fell?

At night.

Another example of grammatical competence

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When did the boy say how he fell?

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When did the boy say how he fell? Unambiguous

~~When did the boy say how he fell? In the afternoon.~~

When did the boy say how he fell? At night.

Another example of grammatical competence

Comprehension of complex sentences

(from J. de Villiers 1995)

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



Morphology & 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.

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

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

Questions?



You should be able to do up through question 9 on the review questions, and up through question 12 on HW5.