

Language acquisition

LING 200: Introduction to the Study of Language

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Outline

- 1 Last time...
- 2 The study of language acquisition
 - Over-regularization
 - Stages of language acquisition
- 3 Acquisition of syntax
 - Questions
 - Negation

Slides credit: Lauren Clemens, Moti Lieberman, David Pesetsky, Rebecca Starr

The problem of language acquisition

The puzzle

- Children in every culture acquire the language of the community that they are exposed to.
 - Including *tacit* knowledge that we aren't taught and usually aren't even aware of.
 - Going through similar developmental stages
 - Making (and not making) similar types of errors.
 - From noisy, unstructured, and incomplete data.

The Innateness Hypothesis

- Children are able to learn a language from this impoverished input quickly, and at an age before they can learn much of anything else, because they do not start from scratch.
- ➡ **The innateness hypothesis:** Certain aspects of human language are innate.

Principles and parameters

Principles and parameters

- One way to make sense of children's capacity for language is distinguish between *innate* **principles** and *observed* **parameters**.
- **Principles** are shared by all languages, presumably because they are hardwired into the human brain in the form of **Universal Grammar**.
- **Parameters** are ways in which languages can vary.
- Parameters are like switches that can be turned on or off.
For example, every language has *wh*-questions, but their form differs:
 - English has the “move *wh*-word” setting turned on.
 - Chinese has the “no movement” setting turned on.
 - French allows both the “move *wh*-word” and the “no movement” settings.

Error patterns

Comprehension before production

- Children's comprehension of language is generally ahead of their production abilities.
- This means that they can hear when something is incorrect, even when they can't produce it themselves.

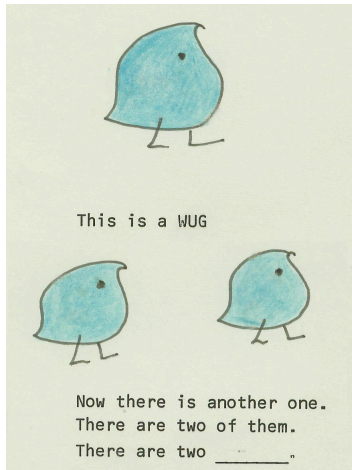
Error patterns

- If we study the errors that children make, we find some interesting things.
- One peculiar thing that children do is **over-regularization**.
- For example: over-application of the “-ed” suffix to irregular verbal forms.

The Wug test

- Testing morphological knowledge in an experimental setting
 - Jean Berko Gleason, 1958
 - Tests children on nonsense items
 - If they know the rules, then they will be able to apply them to “nonce” words
 - If they just memorize forms then they will not be able to generalize

The Wug test



The Wug test

- Historical footage of the Wug test
<https://www.youtube.com/watch?v=MgB2iMuEZAA>
- More of Jean Berko Gleason
<https://www.youtube.com/watch?v=7y7Vn9TEnM4>
- (there are endlessly many videos of parents giving their children the Wug test on YouTube, just search for “Wug test”!)

The Wug test

Wug test results: Age difference on inflectional items

	% correct pre-school answers	% correct first-grade answers	significance level of difference
glasses	75	99	.01
wugs	76	97	.02
luns	68	92	.05
tors	73	90	—
heafs	79	80	—
eras	58	80	.05
tasses	28	39	—
gutches	28	38	—
kazhes	25	36	—
nizzes	14	33	—

Stages of language acquisition

Basic milestones

- Children pass through a number of stages of syntactic development.
- Stages are surprisingly consistent across children of same age groups and across languages.
- “Errors” are systematic.

Stages of language acquisition

Newborns

- Newborns are tuned into the linguistic signal.
- ▶▶ They are sensitive to contrasts that adults are not sensitive to.
- **Non-nutritive sucking**
 - Newborns increase their sucking rate when stimuli presented to them are varied, and decrease the sucking rate when stimuli are repeated.
 - More interested in linguistically relevant information in the auditory signal.
 - Uninterested in nonlinguistic information in the auditory signal.

Stages of language acquisition

Newborns

- They do not pay attention to nonlinguistic information:
 - *Male*: pa
 - *Female*: pa
 - *Male*: pa
 - *Female*: pa
- This gets treated as
 - pa pa pa pa

Stages of language acquisition

Newborns

- They do pay attention to linguistic information:
 - *Speaker*: pa
 - *Speaker*: pa
 - *Speaker*: pa
 - *Speaker*: pa
- Baby gets bored, then:
 - *Speaker*: ba
 - *Speaker*: ba
- Sucking burst!

Stages of language acquisition

6 months

- Before the age of 6 months, babies are able to discriminate between any two sounds of any natural language, regardless of whether it's used in their target language.
 - E.g. a Japanese baby is interested in: la la la la . . . ra ra ra ra.
- Around 6 months babies begin to lose the ability to discriminate between sounds that are not *phonemic* in their own language.
 - Japanese babies are no longer interested in la la la la . . . ra ra ra ra.
 - Babies focus on the sounds of their language!
- Around this time babies start to *babble*, but it is not a response to external stimulation.
 - At this age even deaf babies babble.

Stages of language acquisition

Babbling

- 6-10 months:
 - Babies all over the world babble with the 12 most common consonants of the world's languages
 - [p b t d k g m n s h w j]
 - (Infrequently found consonants: [f v θ ð ʒ ʒ tʃ dʒ l r ɲ])
- 10 months:
 - Babbling only includes sounds and sound combinations that occur in the target language.
 - The intonational contours of babbling come to resemble those of the adults in the speech community.
 - Babies exposed to sign language babble with their with hands.
 - Deaf babies stop babbling vocally.

Stages of language acquisition

Babbling

- English babbling without prosody
<https://www.youtube.com/watch?v=3UCK4XCrvoc>
- English babbling with prosody
https://www.youtube.com/watch?v=_JmA2C1UvUY
- French babbling with prosody
<https://www.youtube.com/watch?v=IyHrjv9V9Kw>
- American Sign Language (ASL) babble
https://www.youtube.com/watch?v=s3gqI_1CXQ0

Stages of language acquisition

First words

- A child uses their first words for naming, generally sometime around 9 months.
- At this stage, the baby is still babbling too.
- First words are often combined with gestures.
- Some of a friend's daughter's first words were...
 - *ada* for “daddy”
 - *mamam* for “mommy”
 - *ninin* for “binky”
 - *ki* for “kitty”

Stages of language acquisition

Holophrastic stage

- The holophrastic stage is a more advanced one-word stage.
 - Around one year, children express more complex messages with only one word.
 - Reaches and says “uh” for “pick me up”
 - Says “anyan” for “all done”
- Eventually the holophrastic stage displays “displacement,” which is to say that the child will talk about something (with one word) not pertaining to their immediate environment.

Stages of language acquisition

Two-word stage

- At about 1.5 years, children start putting together two successive single words...
 - Mommy...cookie
- They aren't quite sentences
 - Same intonation as to single words
 - Pause between the words

Stages of language acquisition

Telegraphic stage

- At around 2 year old, children starts producing two-word “sentences”
 - Both words are included in one intonation group
 - No pauses
- They express requests, questions, and descriptions.
- They include content words.
 - nouns, verbs, adjectives, and locational words
- Very few function words.
 - non-locational prepositions, auxiliaries, etc.

Stages of language acquisition

Telegraphic stage

Noun + Noun

mommy sock

Variety of meanings

subject + object

Mommy is putting on a sock.

Possessive relation:

That's mommy's sock.

sock chair

subject-locative relation:

The sock is on the chair.

All gone sock

Attribution

The sock is gone.

Stages of language acquisition

These stages are universal

- Zweiwortsätze

<https://www.youtube.com/watch?v=uGiub-4cRRw>

Stages of language acquisition

Early sentences

- Starting with the telegraphic stage, it makes more sense to talk about stages than ages.
 - Stages are invariant
 - Children start to differ with respect to how long they spend in different stages
- **Mean Length of Utterance (MLU):**
 - Approximate stage of language development
 - Probably more to do with attention and processing not grammatical competence

Stages of language acquisition

Stage I (~2 years)

- 400 words; MLU of 1.75
- Many single word utterances
 - naming objects
 - one-word propositions
- Some two- and three-word “sentences”
 - “Ball all gone”
 - “Daddy sit chair”
- They do word order well
- Not many function words (e.g., “is” or “the”)

Stages of language acquisition

Stage II (~2.5-3 years)

- 900 words; MLU of 2.25
 - “Cat sitting there”
 - “He goed in the house”
- Acquisition of function words and morphology
 - determiners (the, a, etc.)
 - pronouns
 - past
 - progressive
 - locative prepositions

Stages of language acquisition

Stage III (~3-3.5 years)

- 1,200 words; MLU of 2.75
- Acquisition of function words and morphology
 - auxiliaries
 - prepositions
- Syntax
 - yes/no questions
 - *wh*-questions

Stages of language acquisition

Stage IV (~3.5-4 years)

- 1,500 words; MLU of 3.5
- Morphology
 - Most functional morphology in place
 - Still overgeneralize
- Syntax
 - multi-clause sentences (~more than one verb)
 - relative clauses (“the girl that came”)
 - complement clauses (“know that she came”)
 - conjoined clauses (“Kai came and Jen left”)

Stages of language acquisition

Stage V (~4-5 years)

- 1,900 words; MLU of 4
- Syntax
 - temporal adverbs
- Metalinguistic awareness
 - Explain what words mean
 - Tell you what is ungrammatical about a sentence

Stages of language acquisition

After stage V (5 years)

- Vocabulary grows throughout a lifetime
 - Average US high-school senior knows about 45,000* words
- The ability to use language stylistically increases
- After puberty
 - No change in syntax
 - No change in pronunciation
 - Ability to *acquire* a language greatly diminishes (“critical period”).

Adult question formation

Yes/No Questions

- (1) a. Tyler **will** read the book.
b. **Will** Tyler read the book?
- (2) a. Kai **can** ride a unicycle.
b. **Can** Kai ride a unicycle?
- (3) a. The tallest kid **should** sit in the back.
b. **Should** the tallest kid sit in the back?

An approximation:

To form a yes/no question, take the auxiliary verb and move it to the front of the sentence:

- (4) **Can** [_S Kai **can** [_{VP} ride a unicycle]]?

Adult question formation

An approximation:

To form a yes/no question, take the auxiliary verb and move it to the front of the sentence:

(5) **Can** [_S Kai ___ [_{VP} ride a unicycle]]?

Good questions that we won't answer in this class:

- Where is *can* moving to?
- And what happens to the spot it moved from?

Adult question formation

One question we do know the answer to:

What happens when there's no auxiliary?

- (6) a. Anya **will** dance ballet.
b. **Will** Anya dance ballet?
- (7) a. Anya danced **ed** ballet.
b. **Did** Anya dance ballet?
- (8) a. Anya dances **s** ballet.
b. **Does** Anya dance ballet?

Do-insertion rule:

- Insert interrogative *do* into an empty auxiliary position.

Adult question formation

Wh-questions:

- (9) a. Mary will give a book to Ian.
b. What will Mary give to Ian?
c. Who will Mary give a book to?

An approximation:

To form a *wh*-question, take the auxiliary verb and move it to the front of the sentence. In addition, move a *wh*-phrase that corresponds to the information that you are after in front of the auxiliary.

- (10) What can [_S Kai can [_{VP} ride a unicycle]]?

Acquisition of questions

Yes/No questions

Initially:

- no auxiliaries present
- no Aux-movement
- intonation only

See hole?

I ride train?

Ball go?

Sit chair?

Acquisition of questions

Wh-questions

- Emerge between ages two and four.
- As *wh*-words emerge, *wh*-movement is acquired
 - there is no *wh*-in-situ stage
- No auxiliaries → no Aux-movement

Where that?

What me think?

Why you smiling?

Acquisition of questions

Interrogatives

- Once auxiliaries emerge, Aux-movement is attested.
- For some children, Aux-movement lags in questions.

➡ produced at the same time:

Yes-No questions:

Aux-movement present

Did Mommy pinch her finger?

Can't you fix it?

Will you help me?

Wh-questions:

no Aux-movement

What I did yesterday?

Why Kitty can't stand up?

Where I should put it?

Why you are smiling?

Acquisition of negation

One-word stage

Single negative word:

No

allgone

Acquisition of negation

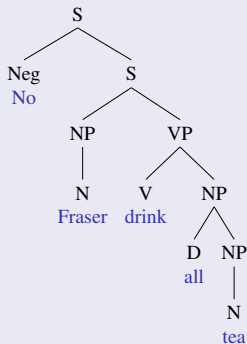
Early sentences:

Negative word added to beginning of sentence.

Rule: merge Neg with S.

No want food.

No Fraser drink all tea.



Acquisition of negation

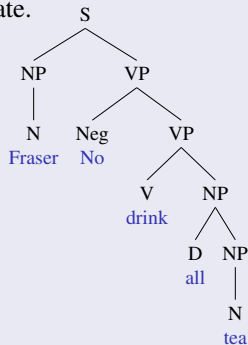
Later sentences:

Negative word inserted between subject and predicate.

Rule: merge Neg with VP.

Fraser no want some.

He no bite you.



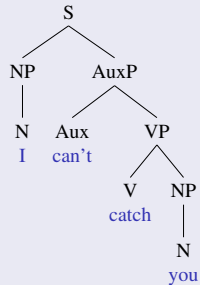
Acquisition of negation

Later sentences:

Negative auxiliaries *don't/can't* appear
(around age ~3-3.5)

Rule: AuxP headed by negative auxiliary.

I can't catch you.



Acquisition of negation

Later sentences:

- Negation spread and negative concord:
 - Aux contains a negated auxiliary
 - *some* becomes *no*

Fraser don't want no food.

- Negative Polarity Items emerge: *no* → *any*
I don't want any food.

Summary

- Children are biased learners.
- Much of linguistic knowledge is *innate*.
 - children don't need to learn it.
 - Many possible errors will not be made.
 - Time-course of acquisition is similar across languages and cultures.
- What has to be “learned”:
Parameters are set, e.g.:
 - Pro-drop.
 - Aux-movement
 - *Wh*-movement
- **Vocabulary items** must be learned!
- **Exceptions** must be learned.

For next time...

- **Assignment 6 has been posted, due March 30**