

Language development

PSY 200
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Lecture 30

When should you learn a foreign language?



Language

- Instinctive
 - ♦ your brain is wired to work with grammars, words, phrases
- Learning
 - ♦ you *do* have to learn some specifics for your native tongue
 - ♦ rules
 - ♦ words



Learning

- What is learned?
- How does a child learn?
- How much about language does a child know?
- When have you mastered language?
- How do you learn a second language?
- What do babies do?



Babies and phonemes

- Infants have linguistic skills as soon as they are born
 - ♦ babies are interested in new things
 - ♦ attach a tape player to a pacifier
 - ♦ each suck causes the player to play a sound
- Repetition of the same sound leads to boredom and fewer sucks
 - ♦ ba, ba, ba, ba, ba, ba, ba, ba, ba,



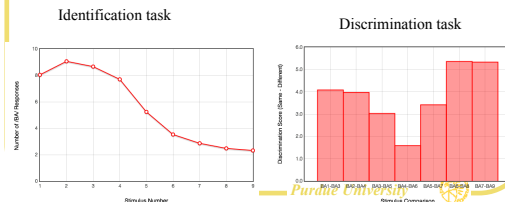
Babies and phonemes

- When the syllable changes
 - ♦ babies suck more often
 - ♦ ba, ba, ..., pa, pa, pa, pa, pa,...



Babies and phonemes

- Moreover, the way they hear things is similar to adults
 - ♦ you can change the pronunciation (voice onset timing) of /ba/ and still hear it as /ba/ (CogLab data)
 - ♦ But too big a change in VOT turns it into /pa/
 - ♦ babies hear it the same way
- CogLab data:



Babies

- Babies hear *all* phonemes, even ones their parents cannot distinguish
- Babies, even newborns, *do* show a preference for what will become their native tongue
 - occurs because they hear mother's voice while in the womb
- Mostly prefer the melody, stress, timing
 - French infants like French and Italian equally well
 - playing language backwards keeps many consonants but distorts melody (babies are not interested)



Language development

- Between 5-7 months, babies start making sounds
 - clicks, hums, hisses, smacks,...
- Between 7-8 months babies start babbling in syllables
 - ba-ba-ba-ba-ba
 - neh-neh-neh
 - da-da-da-da-da



Babbling

- Babbling sounds are the same in all languages
 - patterns are common across languages
- By the end of the first year babies combine syllables to sound like words
 - neh-nee
 - da-dee
 - meh-neh
- Babbling is important
 - children who do not babble often show slower speech development
 - deaf children babble with hands, if parents use sign language



Babbling

- Babbling teaches child how sequences of muscle combinations lead to different sounds
 - necessary to produce speech
- By about 10 months babies learn the sounds of their native tongue
 - they can no longer distinguish phonemes that are not part of the language
 - Part of learning is forgetting!

Language stages

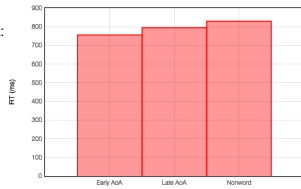
- Nearly all children learn language in stages
 - 1) Cooing (first several months)
 - 2) Babbling (~6 months)
 - 3) One word utterances (~1 year)
 - 4) Two-word utterances and telegraphic speech (1-3 years)
 - 5) Basic adult sequences with grammar (~4 years)
- The rate of learning varies substantially

Learning words

- Children learn words with ridiculous ease
- An average 6 year old knows 13,000 words
 - learned one new word every two waking hours
 - this is without knowing how to read!
- The average high school graduate knows about 60,000 different words (not counting compound words and such)
 - means that in 17 years of life (not counting the first one), they learned an average of 10 new words each day (one word every 90 waking minutes)

Age of Acquisition

- Word learning is an integral part of human knowledge, with lasting effects
- CogLab experiment used a Lexical decision task to measure reaction time to words that were
 - Learned relatively early in life (Early AoA: age 6 or sooner)
 - Learned relatively late (Late AoA: age 7 or later)



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Around 18 months

- Children learn simple rules of syntax
 - All dry. All messy. All wet.
 - I sit. I shut. No bed.
 - No pee. See baby. See pretty.
- Content is similar for all languages
 - objects appear, disappear, move,...
 - people do things, see things,...
 - ask questions, who, what, where,...

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All hell breaks loose

- After mastering 2-word strings, toddlers go crazy on language
- Consider changes in language (year;month)
 - (2;3) Play checkers. Big drum. I got horn.
 - (2;5) Now put boots on. Where wrench go? What that paper clip doing?
 - (2;7) Ursula has a boot on. Shadow has hat like that.
 - (2;9) Where Mommy keep her pocket book? Show you something funny.
 - (2;11) Why you mixing baby chocolate? I finishing drinking all up down my throat.
 - (3;1) You went to Boston University? Doggies like to climb up.

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Errors

- Three year olds make lots of grammatical errors
 - that is because there are lots of opportunities for errors
 - but pick any particular grammatical rule and you find most three year olds obey it most of the time
 - this is amazing because there lots of cases that you would expect would be difficult to learn

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Expected errors

- Consider a child hearing adults talk and how they might incorrectly apply what they learn
- Out of 66,000 sentences, children never made these errors

He seems happy. -->
Does he seem happy?

He is smiling. -->
Does he be smiling?

He did eat. -->
He didn' t eat.

He did a few things. -->
He didn' t a few things.

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Errors

- Children *do* make errors, but the errors are consistent with rules of language
- Children often over generalize a rule
 - -s to pluralize a noun
 - » Mouses, leafs
 - -ed to make the past tense of a verb
 - » My teacher holded the baby rabbits and we patted them.
 - » Hey, Horton heared a Who.
 - » I finded Renee.
 - » Once upon a time a alligator was eating a dinosaur and the dinosaur was eating the alligator and the dinosaur was eaten by the alligator and the alligator goed kerplunk.

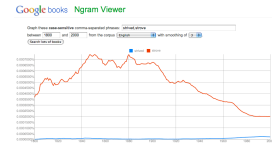
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Overgeneralization

- These past tense forms sound wrong because English has around 180 irregular verbs
 - inherited from other languages
 - These past-tense forms are not derived from rules
- Irregular forms have to be memorized, word by word
- If a child cannot remember (in its lexicon)
 - s/he defaults to the rule
- These errors are for the most difficult parts of a language to learn
 - Because they don't follow the normal rules

Overgeneralizations

- We know this is the most difficult part of language because adults make the same *kind* of mistakes
 - tread - trod strive - strove
 - dwell - dwelt slay - slew
 - rend - rent smite - smote
- Sound weird because we do not often hear them
 - many adults "regularize" the words
 - treaded, strived, dwelled, slayed, rended, smited
 - thus language changes...!



Syntax errors

- Children make similar mistakes in applying grammatical rules
- In English there is a causative rule that applies to some verbs and not others
 - takes a verb meaning "to do something" and converts it to a verb meaning "to cause to do something"
- Thus you can say
 - The butter *melted*. --> Sally *melted* the butter.
 - The ball *bounced*. --> Hiram *bounced* the ball.
- But you can't say the second of each pair
 - I *like* sausage. --> I am *liked* of sausage.
 - I *giggled*. --> Sally *giggled* me.

Syntax errors

- Children over generalize application of the causative rule to inappropriate verbs
 - I *go* to the bathroom. --> Go me to the bathroom.
 - Aunt Jane *died*. --> The tiger will come and eat David and then he will be *died* and I won't have a little brother anymore.
 - I *drink* with a cup. --> Yawny Baby - you can push her mouth open to *drink* her.
- Many of these errors would be fine in other languages!
- The situation is similar to the special past tense verbs
 - This rule must be memorized as applying to some verbs and not others

Syntax errors

- Adults also misapply the causative rule
 - *Sparkle* your table with Cape Cod classic glass-ware.
 - Well, that *decided* me.
 - This new golf ball could *obsolete* many golf courses.
 - If she *subscribes* us up, she'll get a bonus.
 - *Boiler* up!
- Children's errors tend to track the more difficult aspects of a language, relative to other languages
 - Adults make the same kinds of mistakes for still more difficult to remember cases

Second language

- It is difficult (and rare) for an adult to become fluent in a second language
 - children do it easily
- What accounts for the difference?
 - most likely it is age
 - there seems to be a critical period during which language can be learned
 - beyond age six (or so) it becomes more difficult to learn a language (first or second)

Second language

- High school and college (or later) is just about the worst time to try to learn a second language
- It should be in kindergarten or preschool
- Immigrants who arrive after age 6 may never *fully* learn a second language
- Children who fail to learn any language by age 6 never do
 - they might create a pidgin of some sort

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Conclusions

- Language development
- Stages of learning
- Errors
- Second language

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Next time

- Language & brain
- Broca's aphasia
- Wernicke's aphasia
- Anomia
- Language ability of chimps

- *What's the big deal about Nim Chimpsky?*

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