

## INTD0112 Introduction to Linguistics

Lecture #16  
April 17<sup>th</sup>, 2007

### Announcements

- Research proposals have been approved, though I might have written you comments asking you to narrow down your topic, just so it is realistic for you to write the paper by May 10<sup>th</sup>.
- If you haven't chosen a topic or found a partner yet, please get in touch with me ASAP.
- Any questions on homework #5?

### First language acquisition

- In today's class we discuss how children acquire their native languages.
- In particular, we'll focus on two topics:
  - a. The stages through which children go until they acquire the "adult" grammar.
  - b. What linguists do to find out what children actually know about their language at a particular age (experiments).

### Children's phonological development

- Speech perception studies of children in their early months have shown that infants can distinguish between different sounds, e.g., a change in the child's sucking rate happens when they hear a series of [ba] syllables, followed by a [pa] syllable.

### Children's phonological development

- In another experiment, the mouths of two adult faces are shown to an infant, one saying [a], the other saying [i]. When a tape plays either one of these two sounds, infants typically prefer to look at the picture associated with that particular sound.

### Perception of human sounds

- Interestingly, even at this early stage, infants are able to distinguish between sounds in unfamiliar languages.
- In one experiment, 6 to 8 month-old children raised in an English-speaking community could hear contrasts among unfamiliar consonants in Hindi and Nthlakampx.
- It turns out, however, that this ability diminishes around the age of 12 months.

## No Phonemic distinctions

- In that early stage, however, children are unable to distinguish the phonemes of their language.
- In one experiment, children are presented with two toy animals named *bok* and *pok* and are asked to respond to sentences such as *Show me bok/pok*. Children under 18 months have little success with that.

## Babbling

- Around the age of six months, children begin to babble, producing sequences of vowels and consonants.
- There is evidence that children acquiring different languages exhibit similar babbling behavior. See table 11.1 in the textbook (p.365) for cross-linguistic similarities in babbling.

## Babbling

- While babbling is far from being language, it resembles adult language in a number of important respects.
- For one thing, babbled sequences are not linked to immediate biological needs like food or physical comfort.
- Syllables can be identified in a sequence like [gəŋgəŋg].
- In longer sequences, intonation patterns might be discerned.

## Babbling

- The fact that children all babble provides evidence for a biological maturation of language.
- In one study, Eric Lenneberg observed how children who did not babble due to physical limitations on their vocal tracts caused by inserted tubes, eventually produced babbling sounds typical of their age as soon as the tubing was removed.
- There is also evidence that deaf children babble as well, though in less varied ways than speaking children.

## Phonological Acquisition

- Despite a good deal of variation in the acquisition of the phonological system of their language, general tendencies seem to exist.
- As a group, vowels are generally acquired before consonants.
- Stops tend to be acquired before other consonants.
- In terms of place of articulation, labials are acquired first, followed by alveolars, velars, and alveopalatals. Interdentals are acquired last.

## Distinguishing phonemes

- When children start acquiring phonemic distinctions, these are typically more manifest in word-initial position than in word-final position, e.g., the contrast between [p] and [b] will be acquired first in pairs such as *pat* and *bat* before *lap* and *lab*.

## The "fis" phenomenon

- Interestingly, children's perception of phonemic contrasts develops well in advance of their production of these contrasts.
- This is sometimes referred to as the "fis" phenomenon for the story mentioned in your textbook.

## Syllable deletion

- Notice crucially that children's speech is guided by the same kind of phonetic processes that we find in human languages.
- One such process is deletion of unstressed syllables, e.g.,  
kan ga r<sup>oo</sup> → [wu]
- Word-final unstressed syllables tend to be retained, however, e.g.,  
po tá to → [tejdo]  
é le phant → [ɛlfən]

## Syllable simplification

- Another phonetic process in children's speech is *consonant cluster simplification*, e.g., onsets are simplified:  
stop → [təp]  
bring → [brɪŋ]  
sleep → [sɪp]
- Codas may also get deleted, e.g.,  
dog → [dɔ]  
boot → [bu]
- The result are CV and CVC syllables, the two most common syllables in human languages.

## Substitution

- Children often replace one sound by an alternative sound with easier articulation. There are several processes of substitution, e.g.,
- Stopping: sing → [tɪŋ]  
shoes → [tʊd]

## Substitution

- Fronting: ship → [sɪp]  
chalk → [tʃɑ:k]
- Gliding: laughing → [jæfɪŋ]  
story → [stɔwi]
- Denasalization: spoon → [bʊd]  
room → [wʊb]

## Assimilation

- Assimilation is also common in child language, e.g., in voicing:  
tell → [dɛl]  
soup → [zʊp]
- A form of assimilation is *consonant harmony*, where children tend to maintain the same place of articulation for all the consonants or vowels in a word, e.g.,  
doggy → [gagi] or [dadi]  
self → [fɛlf]  
baby → [bibi]

## Lexical acquisition

- By 18 months or so, the average child has a vocabulary of 50 words or more, most of which are nouns.
- Children vocabulary grows rapidly after that, sometimes by 10 or 12 words a day. By age 6, most children have mastered 13,000 words.

## The Whole Object Assumption

- Children also rely on certain strategies when they try to determine the meaning of a new word.
- One strategy, discussed in Part II of the Human Language Series movie, is the *Whole Object Assumption*, which states that a new word refers to a *whole* object.

## Gavagai

- The interviewer asks people in the street what she means when she points to a billboard with a big picture of a rabbit and says, "*Gavagai*"—most say "rabbit." Other concepts such as rabbit parts, rabbithood, ears, fur, etc., do not come to mind.

## The Type Assumption

- Another assumption is the *Type Assumption*, which states that a new word refers to a type of thing, not just to a particular thing.
- So, a child hearing the word "sheep" for the first time will conclude that the word refers to a type of animal, and not just the particular one they're looking at.

## The Basic Level Assumption

- A third assumption is the Basic Level Assumption, which states that a new word refers to types of objects that are alike in basic ways.
- So, when hearing "sheep" for the first time, the child will conclude that the word is not used for animals in general, but to those white, four-legged, woolly animals.

## Contextual clues

- Children also rely on contextual clues to understand the meaning of new words.
- 2-year-old children who are told that a doll is *a dax* will apply the new word to similar-looking dolls.
- But if they are told that the doll is *Dax*, they will use that term only to refer to this particular doll.

## Meaning errors: Overextension

- Children will sometimes overextend the meaning of a word to objects that are not referred to by that word in the adult language, e.g., *dog* is used to refer to horses, cows and other animals.
- Evidence suggests that perceptual similarities are typically the factor responsible for overextensions.
- There is also reason to believe that overextensions are a way to compensate for vocabulary limitations, since children stop using them once they learn the right words, and overextensions are much more frequent in production than in comprehension.

## Meaning errors: Underextension

- Children may sometimes underextend the meaning of a word and use it in a highly restrictive fashion, e.g., *kitty* would be used only to refer to the family pet.
- Underextensions are probably caused by the focus on the prototype of a certain category.

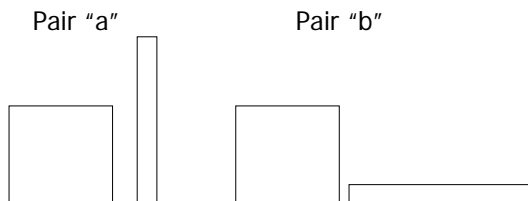
## Verb meanings

- Children also make errors with verb meanings. Some preschool children believe that *fill* means *pour*, producing utterances such as:  
*I filled the grain up.*  
*Can I fill some salt into the salt shaker?*

## Acquisition of dimensional terms

- Dimensional terms seem to be acquired in a relatively fixed order. First, general adjectives describing size (e.g., *big* and *small*), then single dimension adjectives (e.g., *high*, *tall*, *long*), then secondary dimension adjectives (e.g., *thick* and *deep*).

Choose the "big one" vs. Choose the "tall/long one"



## Morphological acquisition: Overgeneralization

- In their acquisition of the inflectional morphology of English, children go through what is called a U-shaped curve.
- First, they learn all forms on a case-by-case basis, therefore producing the irregular forms correctly.
- Then, they notice the generality of the rule relevant to the inflectional morpheme (e.g., plural *-s* or past tense *-ed*) and they overgeneralize the rule to irregular forms.
- Finally, they realize the exceptions to the rule and they start using irregular forms again.

## Experimental evidence

- Experiments can be used to show that children have actually mastered inflectional rules.

The Wug experiment

## Morphological acquisition: A Developmental sequence

- Studies of child English have shown that there is a developmental sequence for the acquisition of nonlexical morphemes:
  1. *-ing*
  2. plural *-s*
  3. possessive *-s*
  4. *the, a*
  5. past tense *-ed*
  6. 3<sup>rd</sup> person sing. *-s*
  7. auxiliary *be*

## Morphological acquisition: A Developmental sequence

- Similar observations have been noted with regard to the acquisition order of nonlexical morphemes in various languages.
- Several factors seem to be involved in determining this order.

## Morphological acquisition: A Developmental sequence

- Frequency in final position
- Syllabicity
- Absence of homophony
- Exceptions (or lack thereof)
- Allomorphy
- Semantic function

## Morphological acquisition: Word-formation Processes

- Children from an early age make use of word-formation processes such as derivation and compounding.

## Morphological acquisition: Derivation

- Derivational suffixes show up in children's speech, e.g., *walker, doggie, bigness*.
- In an experimental setting, they are able to create new words using derivational morphemes, e.g.,  
*"I've got a picture of someone who crushes things. What would you call someone who crushes things? Someone who crushes things is called a ..."*

## Morphological acquisition: Compounding

- Children also create words via compounding, though these words eventually disappear since English has words for their intended meanings, e.g.,  
*car-smoke* (for *exhaust*)  
*firetruck-man* (for *firefighter*)
- Interestingly, children obey the rules on compounding in English, as in the first noun in a compound having to be singular. In one study, when asked "What do you call someone who eats cookies?" children as young as 3 responded by saying *a cookie eater* rather than *\*a cookies eater*.

## Syntactic development: The one-word stage

- Between the ages of 12 and 18 months, children start to produce their first words. In this stage, known as the one-word stage, a single word is typically associated with the meaning of what would be an entire sentence in the adult language.  
*dada* for "I see Daddy"  
*up* for "I want up"  
*again* for "Do it again"

## The two-word stage

- A few months later, children begin to produce two-word utterances.
- Again, the two words are associated with sentential meaning, e.g.,  
*doggie bark* for "The dog is barking"  
*Ken water* for "Ken is drinking water"

## The two-word stage

- While children typically put the two words in the appropriate word order, it is not clear if they have actually learned the word order for the language at this stage yet.
- In one experiment, children aged 2 to 4 were taught made-up verbs (e.g., *tam*, *gap*, and *dack*) for novel actions by puppets.

## The two-word stage

- Example sentences in the experiment:  
*Elmo tammed the apple.* SVO  
*Elmo the apple gopped.* SOV  
*Dacked the apple Elmo.* VSO
- 2- and 3-year-olds were actually willing to produce word orders not found in English. By contrast, 4-year-olds typically used the SVO order. Head directionality is set by then.

## The multi-word stage or Telegraphic speech

- Children start to combine more than two words in their speech:  
*Daddy like book.*  
*What her name?*  
*Me wanna show Mommy.*
- Because at this stage children's utterances typically lack bound morphemes and nonlexical categories, it is referred to as **telegraphic speech**.

### The multi-word stage or Telegraphic speech

- Notice that at this stage children seem to have already learned phrase structure, forming phrases of a head and a complement.
- Language development from this point on is rapid. See Table 11.19 on p. 382 in your textbook for examples.

### Acquisition of questions

- Children typically start forming yes-no questions with rising intonation only, e.g.,  
*I ride train?*  
*Ball go?*  
*Sit chair?*
- Even after auxiliaries appear in their speech, their questions typically lack inversion (that is, no I-to-C movement yet).
- Interestingly, though, when inversions appear they produce utterances with multiple auxiliaries:  
*Can he can look?*  
*What shall we shall have?*

### Acquisition of questions

- Inversion is typically more common in yes-no questions than in wh-questions at first, e.g.,  
*Can't you fix it?*  
*Is Mommy talking to Robin's grandmother?*
- Compare:  
*What I did yesterday?*  
*Why kitty can't stand up?*  
*Why you are smiling?*

### Acquisition of negation

- In many cases, the child will negate a sentence at first by placing *no* or some other negation marker at the front of the sentence, e.g.,  
*no heavy*  
*no singing song*  
*no Fraser drink all tea*
- Later, the child will start to place the negative marker inside the sentence, e.g.,  
*He no bite you.*  
*I no taste them.*

### Acquisition of negation

- At another stage, the child will start using negative auxiliaries, e.g.,  
*I can't catch you.*
- Some children will also use double negatives, e.g.,  
*Fraser don't want no food.*
- And finally, the correct adult forms are acquired.

### Child language is rule-governed

- One hypothesis about child language is called the Continuity Hypothesis, which states that child language is different from adult language only in ways in which adults languages are different among themselves.
- Let's watch an example from English negation.



## Next class agenda

- Next time we'll look at more evidence of the complexity and abstractness of linguistic knowledge that children actually have at an early age.
- Do children know universal principles of grammar, e.g., Binding Principles?
- Theories of language acquisition.
- Natural sign languages. Chap 10.