Child Language II
LIGN 170, Lecture 13
Theories of language acquisition

• Nativist Theories
  • Language is entirely innate

• Learning Theories
  • Language is entirely learned

• Cognitive Theories
  • Language development is related to other cognitive development

• Social Interactionist Theory
  • Language is acquired through communicative interaction
Nativism

• Language capacity is hardwired from birth
• Acquired through a genetic program
• Distinct from other cognitive processes
• Language Acquisition Device (LAD)
• Does not require explicit teaching or experience to acquire language
• But has a specific time period of function
• Universal Grammar

• Children come preprogrammed with a kind of default language which can be altered with exposure to a specific language

• Key assumption:

• Infants develop language even when other cognitive skills are low
Evidence in favor of a predetermined biological language system

1. Other primates don’t learn language simply by being treated like human infants

- Gua (common chimp, 1933)
  - Raised by Winthrop and Luella Kellogg alongside their 9 1/2-month-old son Donald for 9 months
  - Never spoke, but learned to comprehend spoken requests
### Chimps and language...

- Requests all frequent, action-oriented
- No selective response of a single object from among a group of objects
- Many requests uttered in a particular context

<table>
<thead>
<tr>
<th>Age (months)</th>
<th>Comprehended requests</th>
</tr>
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<tbody>
<tr>
<td>Gua 9½</td>
<td>7</td>
</tr>
<tr>
<td>Donald 12½</td>
<td>2</td>
</tr>
<tr>
<td>Gua 12½</td>
<td>21</td>
</tr>
<tr>
<td>Donald 14½</td>
<td>20</td>
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<tr>
<td>Gua 13½</td>
<td>28</td>
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<td>Donald 15½</td>
<td>32</td>
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<tr>
<td>Gua 16½</td>
<td>58</td>
</tr>
<tr>
<td>Donald 18½</td>
<td>68</td>
</tr>
</tbody>
</table>
Chimps and language...

• **Viki** (common chimp, 1951)
  • raised alone by Keith and Catherine Hayes from 3 days to 7 years old
  • capable of picture recognition, sorting of pictures and objects into conceptual categories
Chimps and language...

- Viki (common chimp, 1951)
- Understood large number of words & phrases
- But, comprehension contextually determined
- Out-of-context requests and response selection failed:
  - “show me your nose/eyes/ears” were failures
Chimps and language...

- Washoe (common chimp, 1971)
- Trained by Allen and Beatrice Gardner
- Modified sign, no spoken language
- Learned signs via molding of hands
- By 3 years, produced 85 signs appropriately
- Combinations mostly with “hurry”, “more”, “please”, “gimme” + NOUN
Evidence in favor of a predetermined biological language system

2. Children with other cognitive deficits still learn language
   - Language skills can persist even in cases of profound mental retardation
   - *We will return to this next time*
Evidence in favor of a predetermined biological language system

3. Poverty of the stimulus

- Language input to children is ill-formed and incomplete
- Negative evidence
  - Children don’t receive explicit rules about what not to do
  - They don’t get it even if you do tell them
Evidence in favor of a predetermined biological language system

4. Creoles

- Pidgins develop in language contact situations (mostly colonial)
- Creoles develop from children exposed primarily to pidgins
- Children are, in essence, filling in the gaps of pidgins to make them full languages.
Similarities across creoles

- Regardless of contact languages, creoles have a number of structural similarities
  - Double negation
  - SVO word order
  - No copular *be*
Similarities across creoles

- Creoles and their similarities argue in favor of a universal grammar
- Pre-specified defaults
- When language fails to supply evidence that contradicts default, then default prevails
Evidence in favor of a predetermined biological language system

5. Evidence for critical period of language acquisition
Bird Song

- Some birds (like sparrows) have courtship songs
- Songs have dialectal variation
  - Individual song is a version of other songs it hears during “critical period” of first 100 days of life
  - Bird learns song by trail and error (babbling)
- When deprived of song input early in life, they fail to produce a normal song
Bird Song

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What about people?

- Number of cases of language deprived children
  - Genie
    - Discovered in 1970, age 13
    - Severe neglect, no language input
    - Never attained complex speech (developmentally short of 3-4 years old)
Summarizing Nativism

- Language capacity is hardwired from birth
- Language Acquisition Device (LAD)
- Evidence from
  - Impoverished language input
  - Failed animal language attempts
Learning Theories

- Language acquisition occurs through three processes:
Learning Theories

• Classical Conditioning

Unconditioned Stimulus = Unconditioned Response

Unconditioned Stimulus

Unconditioned Response

Bulldog
Learning Theories

- Classical Conditioning

Unconditioned Stimulus + Conditioned Stimulus = Conditioned Response
Learning Theories

- Classical Conditioning

Conditioned Stimulus = Conditioned Response
Learning Theories

- Classical Conditioning

Unconditioned Stimulus = Unconditioned Response

[Image of a baby with a bottle]
Learning Theories

- Classical Conditioning

Unconditioned Stimulus + Conditioned Stimulus = Conditioned Response

"bottle"
Learning Theories

- Classical Conditioning

\[
\text{Conditioned Stimulus} = \text{Conditioned Response}
\]

“bottle”
Learning Theories

- Operant Conditioning
  - Reinforcement/rewards
  - Children are rewarded for early attempts at language
  - Selective reinforcement shapes children’s language as the requirement for a reward becomes more specific
Learning Theories

- Social Learning

- Observation and imitation of others, especially those who are powerful, nurturing and similar to the child
Learning Theories

- Not enough to explain the complexities of language by itself
- Especially syntax and phonology
- Social Learning may be at play for later language development, particularly acquiring social aspects of language use like politeness
Cognitive Theories

• Language is unique to humans
• But, not a modular, pre-programmed ability
• General disposition for learning that allows language
  • Pattern recognition
  • Imitation
Other kinds of development

- Language development is related to other forms of development
- Must have other aspects of cognition in place to be able to communicate them
  - Must have object permanence to be able to talk about “all gone”
- Children have experiences with objects that gives them semantic concepts that can then map onto language
Cognitive theories

• For these kinds of theories to be true
  • Infants must have general skills that clearly contribute to language
Cognition and Language

- Cognitive skills that are not language specific but none-the-less contribute to language
  - Newborns prefer face-like to non-facelike stimuli
  - Quickly learn to recognize their mother’s face
  - Young infants focus on the eye region more than other facial regions
  - More inclined to look at a pleasantly moving face than a still one
Cognitive theories

- For these kinds of theories to be true
  - Infants must have greater cognitive skills than previously believed
    - Nativism’s LAD proposed because:
      - Infants learn language despite not being able to do much else
  - This also appears to be true
    - Provides lessons about methodology
Object permanence

- Object Permanence
- Objects exist in time and space, even when out of sight
- It has traditionally been believed that infants had no notion of object permanence until 9 months of age.
Object permanence

- Evidence
Object permanence

- Around 6-8 months, they begin “pre-object permanence” behaviors like grasping at the object again after being interrupted.
- At 9 months, they will search for object.
Problem with evidence?
Problem with evidence

- Observations depend on ability of infant to interact physically—reaching for an object
- This involves additional sets of complex skills
- Infants may know much more than they can demonstrate physically.
- Bigger point for science reporting
  Always ask: are they really testing what they think they are?
Magic shows as science

- Violation-of-expectation method
- Infants are presented with a possible and an impossible test event.
  - Possible event: Consistent with the knowledge being examined
  - Impossible event: Violates this knowledge
- If they have the knowledge, infants will look longer at the impossible event relative to the possible event
Can 2.5 month-olds realize that objects exist continuously in time and move along continuous, unobstructed paths?
Infants looked longer at the ball when it "magically" went through solid object.
Interpretation

- Infants understood ball continued to exist and move after it went behind the screen.
- Ball could not go through 2nd solid box.
- So, they expected the ball to stop at it.
- Meaning: Even at 2.5 months, infants already conceive of objects as permanent entities that exist and move continuously in time and space.
Not always perfect...
At 2.5 months:
Surprised when ball does not appear in gap
Not surprised when there’s a thin connecting strip at top

At 2.5 months:
At 3 months: Surprised when there’s a thin connecting strip at top
At 3 months:

But not surprised when there’s a thin connecting strip at bottom
At 3.5 months:

*Height* of connecting strip now counts

Not surprised when strip is taller than moving object
At 3.5 months:

*Height* of connecting strip now counts

Surprised when strip is shorter than moving object
Why is this relevant?

- Infants as young as 2.5 months appear to have a basic understanding of how physical objects behave
  - 6.5 months sooner than initially thought
- So, infants come into the language learning environment with a much more sophisticated view of the world than has been previously thought.
- LAD device not necessarily needed!
Social Interactionist Theory

- Infant benefits from child directed speech.
- Children acquire language in part through their interaction with others - *not* merely “exposure”.
- Children are social beings who acquire language in order to communicate.
Social Interactionist Theory

- Evidence against Nativist “Poverty of Stimulus” argument
- Parents *do* respond to ill-formed language
  - Act confused; rephrase correctly
- Joint child-adult attention important
- Increased vocabulary size is associated with mothers who talk about things the child’s attention is on
Summary/Take-home

- Language is clearly genetically specified
- It appears that only humans develop a full version of it.
  - And humans can’t acquire the honey bee dance...
- But, not yet established to what extent language is directly specified and to what extent its development is tied up with other aspects of cognitive and social development
Acquiring additional languages

• Over half of the world’s population speaks more than one language

• Yet, bilingualism is often politically controversial

• Official languages

• Recognized languages

• Language in education
One debate

- As a parent, do you promote an environment in which children acquire more than one language?
- Depends on answers to questions about
  - Effects on other cognitive skills
  - Problems with language acquisition
  - Final language competence
    (among others!)
Problems for research

• What is the yardstick?

• If multilingualism is the norm world-wide, is it fair to judge bilingual language development against monolingual?

• Assumes that monolingual language acquisition is “correct” and deviations from it are problematic
Problems for research

- How much difference do seemingly minute differences in exposure make?
- Precise age of exposure to each language
- Percentage of input in each language
- Practical & social context of each language
- Languages involved
- Lots of factors that are difficult to control and/or quantify
Problems for research

• Definition of bilingual

• Possible to be highly, natively proficient in more than one language

• Languages within a speaker are rarely used equally in all domains at all times
  • Different languages may be dominant in different situations, at different times, for different purposes

• Back to yardstick problem: must bilinguals be as “good” as monolinguals at all times in order to be considered equally proficient?
Answering concerns

• Given the option, do you promote an environment in which children acquire more than one language?

• Depends on answers to questions about
  • Effects on other cognitive skills
  • Problems with language acquisition
  • Final language competence
    (among others!)
Effects on other cognitive skills

- Currently no conclusive evidence that acquiring multiple languages affects other cognitive skills one way or the other
  
- Meta-linguistics skills (i.e. knowledge about language) appear to be better in multilingual children
  
- Early evidence suggesting lower IQ for bilinguals thoroughly debunked
  
- Some evidence that spatial skills may be higher in bilinguals
Answering concerns

• Given the option, do you promote an environment in which children acquire more than one language?

• Depends on answers to questions about
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    (among others!)
Problems with acquisition

- Some research reports bilingual children tend to start speaking late (after 2nd birthday)
- But, considerable amount of variation in both monolingual and multilingual children
- Late talking bilingual children still fall within “normal” range
Separating languages

- Do children have trouble distinguishing between languages initially?
- Does this lead to problems with final acquisition of the languages involved?
- Concerns about distinguishing languages stem in part from misunderstandings about language mixing
Language mixing

• Common feature of communication among adult bilinguals

• Also talked about as code switching

• When speakers switch back and forth between languages during speech, including in the middle of sentences or phrases
**Language mixing**

- Children also mix languages

- Questions:
  - Does this represent appropriate language use in a bilingual context?
  - Does this reflect underlying competence in the languages involved?

- Concern: Children are getting their languages “mixed up”
Language mixing

- By age 2, children appear to choose their language according to the hearer & have their first meta-linguistic utterances about bilingualism
- Early mixes almost always single word
  - Child knows word in both languages
- As early as middle to end of the 2nd year, when children do code-switch, they appear to largely obey structural constraints
- Mixing does not necessarily decrease over time (individual variation!)
Language mixing

- Mixing during language acquisition is probably not due to language confusion on the part of the child.

- Other evidence against idea that exposure to multiple languages causes language confusion...
Knowing syntax

- As soon as multiword utterances appear, children appear to appreciate syntactic differences between languages.
  - V2 Languages: place finite verb in 2nd second structural position of sentence.
  - Subject Verb Object; Object Verb Subject.
  - Children acquiring V2 language (e.g. German) and non-V2 language (e.g. French) will respect V2 constraint for German, but not apply it to French.
Answering concerns

• Given the option, do you promote an environment in which children acquire more than one language?

• Depends on answers to questions about
  • Effects on other cognitive skills
  • Problems with language acquisition
  • Final language competence
    (among others!)
Final acquisition

- Simultaneous, sequential language input and critical period
- Does it matter if a 2nd language is introduced at birth, at 3 years, at 7 years, at 12 years?
- Simultaneous language exposure seems assured of resulting in native proficiency
Return to critical period

- More complicated than sparrows...
- Child language acquisition (L1) vs. adult language learning (L2)
- Exposure by age 4: L1 pattern
- Exposure between 5 & 10: preliminary evidence for resemblance to L2 pattern rather than bilingual L1 development
- Offset of critical period: child L2 development
Answering concerns

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• Depends on answers to questions about
  • Effects on other cognitive skills
  • Problems with language acquisition
  • Final language competence

(among others!)