Today’s topics:
• Child language acquisition: Phonology

Background reading
• CL Ch 9, §1, “The study of language acquisition”
• CL Ch 9, §2, “Phonological development”
• CL Ch 9, §6, “What makes lg acq possible?”
0. Course information

• HW #10 is due
  - Please put it in the pile on the table in the front labeled with TA’s name and recitation number
    Tristan  (10:10) — 601
    Victoria  (11:15) — 602
    Brian  (11:15) — 603

• Final-exam conflict?
  - Move Common Hour exams first
  - Be sure you have documentation
  - Please **contact me** (JS) this week
1. Main ideas: Child language acquisition

- Adults can speak and understand their native language(s) because they have a **lexicon** and **mental grammar** of that language:
  - lexicon
  - mental grammar
1. Main ideas: Child language acquisition

- **Adults** can speak and understand their native language(s) because they have a **lexicon** and **mental grammar** of that language:
  - **lexicon** = where sounds, meaning, and other unpredictable information are stored for each morpheme
  - **mental grammar** = rules and principles that handle systematic patterns, including phonology, morphology, and syntax

- How does a child acquiring a native language (first language; L1) get to this **target** adult state?
1. Main ideas: Child language acquisition

- **Adults** can speak and understand their native language(s) because they have a **lexicon** and **mental grammar** of that language.

- How does a child acquiring a native language get to this **target** adult state?
  - **lexicon**: morpheme sound and meaning information must be learned and stored.
  - **mental grammar**: How does this develop?

- Any (normally developing) infant has the potential to develop the mental grammar of any language.
1. Main ideas: Child language acquisition

• Proposal:
  - Infants all start out with their mental grammar at the same (universal) original/default settings: “Universal Grammar”
  - When infants are exposed to language data, they will begin to develop the mental grammar needed to produce and comprehend a particular adult language (the target language)

We can analyze each stage of a child’s developing mental grammar with the same tools we use for adult languages
2. L1 acquisition and mental grammar

- A child who is in the process of acquiring his/her target (adult) language goes through different stages of development
  - These stages reflect intermediate mental grammars on the way to the adult grammar

- A child often shows variable behavior
  - A rule may be applied only some of the time
  - Multiple versions of a rule may be in use

- But we can still find a great deal of systematicity in children’s language behavior
2. L1 acquisition and mental grammar

• “Learning” a native language is not the same as learning to do math or ride a bike
  - This is why the term acquisition, not “learning,” is typically used for this process

• Children do not acquire language because their parents “teach” it to them

• Children acquire language through contact between the language data in the environment and the (universal) acquisition mechanism of the mental grammar
2. L1 acquisition and mental grammar

- Studying the process of language acquisition can give us important insight into:
  - the nature of the mental grammar for a particular language
  - the range of the characteristics of possible human mental grammars: Are there ‘mistakes’ that children never make?
3. Phonological development

- **Distinguishing** different speech sounds
  - 6-8 months: Infants can distinguish among almost all of the sound categories used in the world’s languages
  - 10-12 months: Infants have difficulty distinguishing sound categories that are **not contrastive** in their target language

[video (start at 2:00)]

- What does this change suggest about the child’s mental grammar?
3. Phonological development

• 10-12 months: Infants have difficulty distinguishing sound categories that are **not contrastive** in their target language

• This developmental change is evidence for the beginning of a **language-specific phonological grammar**
3. Phonological development

- **Babbling** — approximately 6 to 12 months
  - The most frequent consonants used in babbling are very consistent even for babies acquiring different target languages

Table 9.1 from *CL*, p 353  |  **What generalizations can we make?**

**Cross-linguistic similarities in babbling**

<table>
<thead>
<tr>
<th>Frequently found</th>
<th>Infrequently found</th>
</tr>
</thead>
<tbody>
<tr>
<td>p, b, m</td>
<td>f, v, θ, ð</td>
</tr>
<tr>
<td>t, d, n</td>
<td>ñ, ʒ, θ</td>
</tr>
<tr>
<td>k, g</td>
<td>l, r, ŋ</td>
</tr>
<tr>
<td>s, h, w, j</td>
<td></td>
</tr>
</tbody>
</table>
3. Phonological development

- **Babbling** — approximately 6 to 12 months
  - The most frequent consonants used in babbling are very consistent even for babies acquiring different target languages
  - The most frequent consonants used are also frequent sounds in the adult languages of the world

- What does this tell us about UG? (Hint: The answer is not obvious, and this question is controversial!)
3. Phonological development

- **Babbling** — approximately 6 to 12 months
  - The most frequent consonants used in babbling are very consistent
  - The most frequent consonants used are also frequent sounds in the adult languages of the world

- **What does this tell us about UG?** (Controversial!)
  - Are these consonants typically early and common because **UG prefers them**?
  - Or are they typically early and common for reasons of **articulation and perception**?
3. Phonological development

- Individual children develop differently, but some general patterns can be observed:
  - Vowels develop before consonants
  - Stops are usually the earliest consonants
  - Labial is usually the first place of articulation (note: sighted children only!)
  - New phoneme categories are distinguished in word-initial position before other positions

- What factors might lead to these patterns?
3. Phonological development

- Children are able to **distinguish between phonemes they hear** even before they can produce them
  - How do we know this?
3. Phonological development

- Children are able to **distinguish between phonemes they hear** even before they can produce them.

  - How do we know this?

- Suppose a child pronounces both *mouse* and *mouth* as [maws], but can point to the correct pictures in a comprehension experiment.

  - How is each of these morphemes represented in the child’s mental lexicon?

  - How is the child’s **phonological rule system** different from that of an adult?
3. Phonological development

- If a child has an adult-like phonemic form stored in the lexicon, but produces a non-adult-like phonetic form, than the child must have a child-specific phonological rule.

- Writing child-specific phonological rules:
  - We use the same format (A → B / X __ Y), sound properties as for adult rules.
  - One difference: A child-specific rule may have no environment (rule is only “A → B”) if a certain natural class changes into something else everywhere.
3. Phonological development

- Examples from A, age 1;11
  
  - cup       [ tʌp ]
  - okay      [ otej ]
  - fork      [ fɔːt ]
  - goat      [ dowt ]
  - Grampa    [ dæmpə ]
  - digger    [ dɪdɹ ]
  - dog       [ dɔt ]
  - egg       [ ejt ]

- What systematic patterns can we see here?
  (Hint: Think about ** phonetic properties ** and ** natural classes **)
4. Methods in acquisition research

- **Naturalistic** approach
  - Observe and record child language
  - Online data repository: CHILDES

- Advantages of the naturalistic approach

- Disadvantages
4. Methods in acquisition research

• Naturalistic approach
  - Observe and record child language
  - Online data repository: CHILDES

• Advantages of the naturalistic approach
  - Data comparatively easy to collect
  - Shows language as it is used in context

• Disadvantages
  - Rare structures may not be collected
  - How can we tell what a child’s mental grammar will accept as grammatical?
4. Methods in acquisition research

• **Experimental** approach
  - Explicitly test children’s ability to produce, comprehend, or imitate language

• Advantages of this approach

• Disadvantages
4. Methods in acquisition research

• **Experimental** approach
  - Explicitly test children’s ability to produce, comprehend, or imitate language

• Advantages of this approach
  - Can study comprehension
  - Can investigate specific linguistic structures

• Disadvantages
  - Can be difficult to design successful experiments for children
  - The relatively artificial context may affect aspects of children’s language behavior
4. Methods in acquisition research

Examples of experimental methods used in child language research

• **BabyLab** — U Potsdam

• **Acquisition Lab** — U Maryland Linguistics

• **Penn Infant Language Center** — U Pennsylvania