Lexical Development

319_5_7FEB08
Topics for This Week

- First words
- Rate of lexical development from 0;8-2;6
- Composition of early vocabularies: semantic and syntactic categories
- Individual differences in lexical acquisition

Hoff Chapter 4: pp 140-161
Not responsible for: pp 171-179
First Words
Precursors to “First Words”

• Mandel et al (1995): 5 mos infants prefer their own name vs. nonsense word with same prosodic structure.
• Jusczyk & Aslin (1995): 7 1/2 mos infants prefer passages with familiar words (PLP)
• Keep in mind: Recognition ≠ comprehension
• Proto-words in production:
First words

• First words/phrases in comprehension = 10-11 mos
• First words in production = 10-15 months (mean = 12 mos)
• First 50 words in production = 18-20 months
• Vocabulary spurt = 18-20 months or after 50 words
Rate of Lexical Development

Ages: 0;8-2;6
Some psychometric terms

• normal curve
• mean, median, and standard deviations
• percentiles
FIGURE 7.5
Normal curve showing values of $z$ which include a proportion which is .95 of the total area.

<table>
<thead>
<tr>
<th>AGE</th>
<th>Bottom 10%</th>
<th>Top 10%/90th percentile on test</th>
</tr>
</thead>
<tbody>
<tr>
<td>0;10</td>
<td>11</td>
<td>154</td>
</tr>
<tr>
<td>1;4</td>
<td>92</td>
<td>321</td>
</tr>
</tbody>
</table>
Production 0;8 - 1;4

<table>
<thead>
<tr>
<th>AGE</th>
<th>Median</th>
<th>Bottom 10%</th>
<th>Top 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0;8-0;11</td>
<td>-</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>1;0</td>
<td>6</td>
<td>0</td>
<td>52</td>
</tr>
<tr>
<td>1;4</td>
<td>40</td>
<td>8</td>
<td>179</td>
</tr>
</tbody>
</table>
Fenson et al (1994): MacArthur CDI Production 1;4-2;6

<table>
<thead>
<tr>
<th>AGE</th>
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<th>Bottom 10%</th>
<th>Top 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1;8</td>
<td>170</td>
<td>3</td>
<td>200</td>
</tr>
<tr>
<td>2;0</td>
<td>311</td>
<td>57 or &lt;</td>
<td>534 or &gt;</td>
</tr>
<tr>
<td>2;6</td>
<td>547</td>
<td>208</td>
<td>675</td>
</tr>
</tbody>
</table>
The vocabulary spurt

• Sharp increase in vocab accumulation after 50 word mark
• Goldfield & Reznick (1990): Rate of vocab growth in 18 children from 14 mos until 75th word (next slide)
• Do all children have a vocabulary spurt?
  – Individual differences vs. gradual learning curve for most?
Figure 4.2  Patterns of lexical growth shown by four different children

Composition of Early Vocabularies:

Semantic and Syntactic Categories
Semantic Categories for First 50 Words (Nelson 1973)

- Specific nominals: proper names
- General nominals: inanimate & animate objects (common nouns); pronouns
- Action words: words that elicit action or accompanied by action, e.g., give me, don’t touch, peek-a-boo, up (= pick me up)
- Modifiers: properties/states/qualities: all-gone, hot, there, up (the x is up there), mine
- Other (Personal-social: yes/no, want, hi/bye-bye, night-night), (Function: what, is, for)
Figure 4.1  Lexical growth from 10 to 50 words, by word type

Syntactic Categories 1;4-2;6 (Bates et al, 1994)

• CDI data (Fenson et al, 1994)
• Categories:
  – Nouns
  – Predicates (adjectives, verbs)
  – Closed-class words (BE, articles, prepositions…)
• Waves of organization in the lexicon:
  REFERENCE ➔ PREDICATION ➔ GRAMMAR
VARIATION IN EARLY VOCABULARY

3.1. Vocabulary composition from 1;4 to 2;6: proportion of common nouns, predicates and closed-class words at each vocabulary level. (Flat horizontal lines represent the percentage that each vocabulary type occupies within the checklist as a whole.) ●, common nouns; ○, predicates; □, closed class.
‘Noun Bias’ in early lexicon?

- Gentner (1982): noun meanings are more accessible than verb meanings
- CDI data in both English and Italian show noun predominance
- In experimental conditions, young children learn new words for nouns more easily than for verbs
‘Noun Bias’ in early lexicon?

• Fernald & Morikawa (1993): Japanese vs. English fewer object labels 12-19 mos
• de León (2001): Tzotzil 1;0-2;0 - verbs > nouns in first 10 words, and 50 words
Properties of the Input

- Japanese & Korean: SOV / English: SVO
  
  Japanese:  
  watakushi-ga okashi-o tabeta
  I -nom cake -acc ate

- Null argument languages: Japanese, Korean, Tzotzil

  Japanese:  
  watakushi-ga okashi-o tabeta
  watakushi-ga tabeta
  okashi-o tabeta
  tabeta

Examples from Japanese
Properties of Interactions with Children

• White, middle class North America: object labeling with infants

• Tzotzil CDS:
  – Majority utterances = directives, requests, warnings (=verbs only)
  – Focus children’s attention on events, rather than object labeling
So, is there a ‘noun bias’?

• Tardif, Gelman & Xu (1999): spontaneous and parental interview with Chinese children:
  • Interaction effect between conceptual development, linguistic structure of input, and cultural-context
Contextual Restrictiveness/ Underextension

• What is extension?
• Underextension: child’s meaning of the word is a subset of the adult meaning
  – Adam (1;0) ‘duck’ = banging toy duck on bath
  – ‘doggie’ = one particular toy dog
• Harris et al (1988): Diary study of first 10 words’ context of use for 4 children
  – 22/40 words = contextually restricted
  – 14/40 words = contextually-flexible
• Why are so many first words underextended?
Decontextualization and Overextensions

- From underextension to contextually-flexible = decontextualization
- **Overextension**: When the child extends the meaning of a word to entities not normally referred to by that word

  ‘ball’
  
  1;0 = particular picture of a ball in a book
  1;1 = balls; round objects (oranges, doorbell); request for servings of juice in a cup
Individual Differences

Internal & External Factors
Stylistic variation: holistic vs. analytic

• Expressive vs. referential: expressive = social-interactive function of language; referential = labeling function of language
• Nelson (1973): expressive = half as many nominals as other children in group (18)
• Bates et al (1994): 10-20 word vocab
  – Bottom 10th% = 10% or < nouns
  – Top 10th% = 56% or > nouns
Gender Differences

• Fenson et al (1994): gender effects small, but girls more advanced in onset & rate

  – Girls > boys from 14-20 mos, but not at 24 mos
  – Parents **did not** address more speech to girls
Phonological Memory

• *Phonological memory*: ability to hear and repeat back a list of nonsense words or digit series (telephone numbers)
• Gathercole & Baddeley (1989): better phonological memory = larger vocabulary (100 children)
• Phonological memory part of Language Aptitude? (Skehan, 1991)
Birth Order

• Fenson et al (1994): birth order effects small, but first-born advantage
• Pine (1995): 9 first born & siblings: First borns reached 50 words early; no difference at 100 words
Socio-Economic Status

• What is SES and how is it measured?
• Fenson et al (1994): small effects at first, but grows over time. SES = parents’ education. Less educated mothers = smaller vocab
• Arriaga et al (1998): compared vocab of very low SES toddlers with CDI data: 30% smaller.
• Hart & Risley (1992): longitudinal, in-depth study. (N=42). SES strong effects on vocab growth
Figure 2. The widening gap we saw in the vocabulary growth of children from professional, working-class, and welfare families across their first 3 years of life. (See Appendix B for a detailed explanation of this figure.)
Parental Input

• Pine (1995): proportion of nouns related to frequency of input with nouns

• Huttenlocher et al (1991): Overall amount of parental speech related to vocab size & frequency of individual words related to order of acquisition
What factors affect parental input?

• Birth order - first borns vs. later-borns
• Quantity and quality of parental input related to SES (Hart & Risley, 1992; Hoff, 2003)
  – Higher education influences parents’/mother’s interactive style
  – Style of high SES = language enhancement
• SES effects also evident in L2 acquisition
From Hart & Risley, 1992

Language Diversity

Parent to child: Different nouns and modifiers per hour

Welfare Working-class Professional

Family socioeconomic index
From Golberg, Paradis & Crago (2008)