Language Development

Before the first word
- speech perception
- speech production

Single word utterances
- first words
- characteristics
- lexical development
Speech perception- Categorical perception

Lasky et al.
1- and 4-month old Guatemalan infants born into Spanish-speaking homes

Found that:
Babies can perceive two distinctions between the phonemes that are not part of their language but not the one that is in their language.

Speech perception system is tuned into the native language.
Speech production

1. Babbling
   reduplicated- “dadadada”
   variegated- “bidadu bidadu”
   practice of muscles control
   influence of the target language

2. Idiomorphs
   e.g., *caca* → milk
   creative
   consistent
Average age of consonant production
### Phonological errors in early speech production

**Bloom & Lahey (1978)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction</td>
<td>tore for store</td>
</tr>
<tr>
<td>Coalescence</td>
<td>paf for pacifier</td>
</tr>
<tr>
<td>Assimilation</td>
<td>nance for dance</td>
</tr>
<tr>
<td>Reduplication</td>
<td>titty for kitty</td>
</tr>
</tbody>
</table>
Single word utterances
First 10 words - 12 months
context-bounded vs. referential

<table>
<thead>
<tr>
<th>Word type</th>
<th>James</th>
<th>Jacqui</th>
<th>Jenny</th>
<th>Madeleine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context-bound</td>
<td>mummy</td>
<td>wee</td>
<td>choo-choo</td>
<td>there</td>
</tr>
<tr>
<td></td>
<td>go</td>
<td>hello</td>
<td>bye-bye</td>
<td>hello</td>
</tr>
<tr>
<td></td>
<td>quack</td>
<td>mummy</td>
<td>there</td>
<td>here</td>
</tr>
<tr>
<td></td>
<td>there</td>
<td>here</td>
<td>there</td>
<td>bye-bye</td>
</tr>
<tr>
<td></td>
<td>buzz</td>
<td>no</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>moo</td>
<td>down</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>boo</td>
<td>more</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>go</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal</td>
<td>teddy</td>
<td>Jacqui</td>
<td>teddy</td>
<td>teddy</td>
</tr>
<tr>
<td></td>
<td>ball</td>
<td>bee</td>
<td>doggy</td>
<td>shoes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>moo</td>
<td>brum</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>shoe</td>
<td>woof</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonnominal</td>
<td>more</td>
<td></td>
<td>mummy</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
First 50 words- 18 months

Noun bias?
- N vs. V
- linguistic difference
- cultural difference
Individual difference
Sources of the difference

- Environment: input from the mother
- Birth order: referential children are more likely to be the first-born
- Children’s temperament/hypothesis

Consequences of the difference

- Referential children have more rapid language development?
Overextensions

  e.g., Use “dog” to refer to all four-leg animals

Underextensions

  e.g., Use “dog” to refer to a specific dog Lucky
Is overextensions a reflection of underlying semantic system?

Probably not, because:

1) not that often
2) not consistently used
3) not consistent with comprehension
4) decline when vocabulary increases
How are new words learned?

What is a “word”?  
the segmentation problem

Saffran et al. suggested that babies can learn  
the sequence of phonemes

Jusczyk et al. suggested that babies can learn  
the prosodic pattern

What does the word mean?  
the mapping problem
Fast mapping-
20-month olds can do this at one exposure

From 18 months to 6 years:
Children learn an average of 9 new words a day

Can I have the ball?
Can I have the zib?

But how?
What does the word RABBIT mean?
1. Internal constrains

   whole-object assumption

   taxonomic assumption

   mutual exclusivity assumption

   No word: Find another one that is the same as this.
   Word: This is a sud. Find another sud that is the same as this sud.
2. Input and sociopragmatic cues

Motherese

here and now

unambiguous utterances

Nonlinguistic context

the focus of gaze

cross-situational information

others’ behaviors and responses

E.g., “Let’s go twang it!” + accidental/intentional movement

24-month olds thought twang only refers to the intentional action
3. General learning processes

   E.g., an orange is called a ball because of the shape

   - common nouns refer to similarly-shaped things
   - can account for overextensions
   - after acquire a certain amount of vocabularies

However, children make inference about categorical membership, even it is in conflict with perceptual similarity.
Gelman & Markman (1986) tested 4 year-olds

This bird’s legs get cold at night.

This bat’s legs stay warm at night.

See this bird [bat]?
Do its legs get cold at night like this bird or stay warm like this bat?
Children preferred to use the category information significantly better:

<table>
<thead>
<tr>
<th>Percentage of category choices</th>
<th>Experimental condition</th>
<th>No conflict control</th>
<th>Attributes control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>68</td>
<td>88</td>
<td>54</td>
</tr>
</tbody>
</table>

- This pattern is true even when synonyms (e.g., rock and stone) rather than identical labels are used
- When the attributes are more perceptually based (e.g., size), children did not rely more on the category information
4. Syntax

  e.g., Gelman and Markman (1985) tested 4-year olds

  Find the fep one. → (b)

  Find the fep. → (c)

Syntactic bootstrapping hypothesis