Phonological Acquisition: The First Words

What is Phonological Acquisition?
Phonology: the sounds of a language, how they are organized to form words
The child’s learning how to pronounce the words of the native language

What Does the Child Need to Learn?
Speech sounds (consonants & vowels) ‘fish’; ‘butter’; ‘elephant’
How speech sounds combine to form words (phonotactics), ‘splash’; ‘psash’; ‘esplash’
Vocabulary. How many words are there in English?
Mental representations. How is each word supposed to be pronounced? E.g. rich vs. lean
“cat” [tat]

Summary
Phonological acquisition has two parts:
Learning to articulate consonants, vowels, syllables, words
Learning to represent words

Stages of Acquisition: Babbling
Babbling: birth to one-year

First Words
Age 1;0: first words appear
Age 1;0 to 1;6: child slowly acquires 50 words or so
Age 1;6: first word combinations

Some Characteristics of the Child’s First Words
Words have simple syllables, e.g. CV, CVC, reduplication (‘mama’)
Sounds are limited: m, n, b, d, w, y, f, s
Words show variable pronunciations

Transition Between Words and Babbling
Reduplicated Babbling vs. Word Babbling

Transition Phenomena
Word shifts: change from one word to another
Proto-Words: child created words
Variegated Babbling Vs. Jargon Vs. Holistic Sentences
Presyntactic Forms: brief, unstressed phonetic material around lexical words

The Word Spurt
Age 1;6: child shows rapid increase in word acquisition
Rate increases to 6 words or so a day
The child’s phonology needs to keep up with new sounds, syllables
Patterns of Emergence
1. Lexical, 2. Gradual, 3. Sudden

Salience & Avoidance
Preferred sounds & templates (similar syllables and shared sounds) vs. Avoided sounds,
e.g. Wateson preferred templatee; T avoided [p], Ian avoided fricatives, using “lemon”

Aspects of the First 50 Words
Whole Word Complexity; Syllable Structure; Phonetic Inventories; Phonological Processes

Whole Word Complexity
First words are phonologically simple, e.g. dog, cat, fish, mama, dada
Complexity increases due to:
1. More syllables, e.g. banana, elephant
2. Consonant clusters, e.g. splash, branch

Early Syllable Shapes
Stoel-Gammon results on 33 2-yr-olds
CV, V (all samples); CVC (97%)
CVCV (79%), CVCVC (65%)
Some instances of clusters

Phonetic Inventories
Word Initial Position
\[
\begin{array}{cccc}
\text{m-} & \text{n-} \\
\text{b-} & \text{d-} & \text{g-} \\
\text{p-} & \text{t-} & \text{k-} \\
\text{f-} & \text{s-} & \text{h-} \\
\text{w-} & \text{j-} \\
\end{array}
\]

Word Final Position (Usually fewer than word initially)
\[
\begin{array}{c}
\text{p} \\
\text{t} & \text{k} \\
\text{s} \\
\end{array}
\]

Phonological Processes
Efforts by the child to simplify words until they are learned correctly
Characterize acquisition from first words to age 6 or so

Processes to Simplify Syllables
Final Consonant Deletion:
omit word final consonants to preserve CV; e.g. ‘back’ spoken as ‘baa’
Unstressed Syllable Deletion: delete a syllable that carries weak stress
e.g. ‘banana’ spoken as ‘nana’
**Cluster Reduction:**
delete consonant combinations, e.g. ‘play’ spoken as ‘pay’

**Consonant Simplifications**
Use a simpler consonant for a more difficult one

**Fronting:** consonants produced at the forward part of the mouth are easier than those produced further back, e.g. ‘d’ & ‘t’ are easier than ‘g’ or ‘k’, e.g. ‘cow’ spoken as ‘dow’

**Stopping:** sound that stop airflow are easier than ones that impede it
‘t’, ‘d’ are easier than ‘s’, ‘z’, ‘sh’; ‘p’, ‘b’ are easier than ‘f’, ‘v’, e.g. ‘foot’ as ‘put’

**Gliding:** replace ‘r’ and ‘l’ with ‘w’; e.g. ‘rock’ spoken as ‘wo(ck)’

**Assimilation**
Make one sound the same as, or similar to, another in the word
e.g. ‘dark’ pronounced as ‘guck’

**Other Phonological Processes**
These are just a sample of phonological processes; Advanced study reveals many others o

**Changes in Voicing**
Prevocalic Voicing, e.g. ‘top’ [dap]; Postvocalic Devoicing, e.g. ’pig’ [bik]

**Summary of Phonological Processes**
Syllable Processes: Final Consonant Deletion; Unstressed Syllable Deletion;
Cluster Reduction
Consonant Simplifications: Fronting, Stopping, Gliding
Assimilations
Other, e.g. Voicing

**Individual Variation**
Child 1 (MS)

\[
\begin{align*}
\text{m-} & \quad \text{n-} \\
\text{b-} & \quad \text{d-} \quad \text{g-} \\
\text{t-} & \quad \text{k-} \\
\text{h-} & \\
\text{w-} & \\
\end{align*}
\]

Child 2 (JJ)

\[
\begin{align*}
\text{m-} & \quad \text{n-} \\
\text{b-} & \quad \text{d-} \quad \text{g-} \\
\text{f-} & \quad \text{k-} \\
\text{l-}, \text{r-} & \\
\end{align*}
\]
Theoretical Interpretation
NeoJakobson Approach (Jakobson)
1. Syllable structure: Start with CV or reduplicated CV, e.g. ma, mama, pa, papa
   Expand to CVC, CVCV
2. Acquire features that distinguish:
   a. a place distinction, e.g. b vs. d
   b. differences between classes, e.g. stops vs nasals, e.g. m vs. b; stops vs. fricatives, e.g. t vs. s; stops vs. glides, e.g. b vs. w

Joan Velten’s First Words
Syllable Summary: CV, VC, CVC; CV=CV; CVCV

Joan’s Consonant Inventories

<table>
<thead>
<tr>
<th>Initial Consonants</th>
<th>Final Consonants</th>
</tr>
</thead>
<tbody>
<tr>
<td>m-</td>
<td>-m</td>
</tr>
<tr>
<td>b-</td>
<td>-p</td>
</tr>
<tr>
<td>d-</td>
<td>-t</td>
</tr>
<tr>
<td>f-</td>
<td>-f</td>
</tr>
<tr>
<td>s-</td>
<td>-s</td>
</tr>
<tr>
<td>w-</td>
<td></td>
</tr>
</tbody>
</table>

Vowels: [u], [a]

Joan’s Phonological Processes
Syllable Deletion, e.g. bottle [ba], banana [na:’na]
Final Consonant Deletion, e.g. ban [ba]
Voicing e.g. push [bus]
Fronting, e.g. duck [dat], push [bus]

Cross Linguistic Issues
Languages differ in:
1. Phonological inventories;
2. Phonotactics;
3. Functional load: number of contrasts for a particular phoneme, e.g. dental fricatives in English and Greek.
Order of acquisition is influenced by the number of words that a phoneme occurs in, e.g. Italian [v]

Summary
Children acquire phonology over several years
First year: babbling; Second year: first words
Subsequent years: learn to pronounce an extensive vocabulary
Sounds and syllables increase in number and complexity
Phonological processes capture error patterns