

## Phonological Development: Production

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### Introduction:

- Children aged 1.6-4.0 years: 50 word vocabulary
- Important Stage: “The phonology of simple morphemes”

Example- Jespersen (1922): children in different linguistic communities show a tendency to replace velar stops with alveolar ones.

- The child who says [tæt] for *cat* will also say [do] for *go*.

*Phonological Processes*: sound law

- universal set of hierarchically ordered procedures used by children to simplify speech
- Stamp sees phonological development as a gradual loss of these simplifying processes until the child’s words finally match their adult models

Substitutions: comparing adult words to those the children use

- **Place difference**: [bɔt] for book... b and ɔ same sounds, but “t” replaces “k”
- **Stopping**: Fricatives, and occasionally other sounds, are replaced with a stop consonant.  
Ex: English- (2.9) *sea* [ti]; *sing* [tiŋ]; *say* [Thei]  
French- (1.9) *fleur* ‘flower’ [pØ]; *chaud* ‘hot’ [tə];
- *Fricatives are the most commonly affected group of sounds.*
- *Stopping is common, but actual application of its application by individual children is not*
- **Fronting**: Velar and palatal consonants tend to be replaced with alveolar ones  
Ex: English- (2.0) *shoe* [zu’]; *shop* [za’p]; *call* [ta’]; *coat* [dut]  
Polish- (1.11) *dz’ekuje* ‘thank you’ [dz’ekuje];  
*tfasu* ‘time’ [ts’as’u]
- *Fronting: Two kinds including fronting of palatals and fronting of velars*  
*-Children may show one and not the other*  
*-Process interacts with stopping, so child may replace [ʃ] with [t]*
- **Gliding**: A glide [w] or [j] is substituted for a liquid sound, i.e. [l] or [r]  
Ex: English- (2.1) *lap* [jæp]; *leg* [jek]; *ready* [wedi]  
Estonian- (1.9) *raha* ‘money’ [jaha’]; *Rosbi* ‘Robert’ [jo’bi]  
\*French- *lampe* ‘lamp’ [āp]; *la* ‘the’ [a]; *lire* ‘read’ [i];

*lune* 'moon' [um]

- *Substitutions used in phonological processes may be highly influenced by the child's phonological system, not just by universal tendencies.*
- **Vocalization:** A vowel replaces a syllabic consonant, a process esp. in English  
Ex: English- (1.9) *apple* [apo]; *bottle* [babu]; *bottom* [bada];  
*button* [bʌtʌ]; *dinner* [dindʌ]; *hammer* [mænu]
- **Vowel Neutralization:** Nasal vowels tend to be changed into oral vowels and vowels in general are often centralized, i.e. [a] or [ʌ].  
Ex: English- (2.0) *back* [bat]; *hat* [hat]; *yard* [za:d]; *hug* [had]
- *Vowel Neutralization usually occurs earlier and doesn't affect this part of development.*

Assimilatory Processes: assimilate one segment in a word to another

- **Voicing:** Consonants tend to be voiced when preceding a vowel, and devoiced at the end of a syllable.  
Ex: English: \*\*\**paper* (2.3) [be:bə]; (2.7) [beibə];  
(2.7) [pe:pə]; (2.8) [p<sup>h</sup>eipə]  
\*\*(1.5) *pig* [bik]; *paper* [bepi]; *toes* [dos]
  - **Consonant Harmony:** In C<sub>1</sub>VC<sub>2</sub> (X) contexts, consonants tend to assimilate to each other in certain predictable ways. The three patterns that occur are:
    - (i) Velar Assimilation: Apical consonants tend to assimilate to a neighboring velar consonant.  
Ex: (1.7) *duck* [gʌk]; *sock* [gʌk]  
(2.2) *tickle* [gigu]; *taxi* [gɛg:]
    - (ii) Labial Assimilation: Apical consonants tend to assimilate to a neighboring labial consonant.  
Ex.: *tub* [bʌb]; *table* [bʌbu]; *steps* [bɛps]; *tape* [bejp]
    - (iii) Denasalization: A nasal consonant will denasalize in the neighborhood of a non-nasal consonant.  
Ex: (2.1) *mouton* 'sheep' [potə]; (2.2) *monsieur* [pofo]
  - **Progressive Vowel Assimilation :** An unstressed vowel will assimilate to a preceding (or following) stressed vowel.  
Ex: English- (2.0) *bacon* [bū:du]; *flower* [fā :wa]  
French- (1.7) *oiseau* 'bird' [pog<sup>y</sup>o]
  - **Voicing** has two separate, but related processes:
    - Devoicing of final consonants
    - Voicing of prevocalic consonants
      - o Voicing of prevocalic consonants: voiced consonants are actually voiceless unaspirated ones.
- Studies: \*Smith (1973): Showed a gradual shift from a voiced substitution to a voiceless unaspirated to the correct voiceless aspirated.

\*Bloch (1913): French-learned daughter voiced prevocalic consonants at the beginning of her phonological development (French [p] is voiceless unaspirated).

\*Gilbert (1977): Voice onset time for voiceless stops is less stable and takes longer to develop than for voiced ones.

*Some children do appear to assimilate more than others. Also, the various possibilities for assimilation are quite numerous...*

\*Menn (1975): proposed that there is a strength hierarchy that determines the direction of assimilation, in which weaker consonants become to stronger ones.

- From strongest position to weakest, is velar, labial, dental.

A sample from Menn's son is as follows:

- |            |   |
|------------|---|
| 1. b-d, t  | e.g. <i>bed</i> [bɛd]; <i>boots</i> [butʃ]  |
| 2. k-p, d  | e.g. <i>cup</i> [kʌp]; <i>cuddle</i> [kʌdu] |
| 3. t-b→b-b | e.g. <i>tub</i> [bʌb]; <i>table</i> [bʌbu]  |
| 4. b-g→g-g | e.g. <i>big</i> [gɪg]; <i>back</i> [gæk]    |

\*The example above is based on the rule that C<sub>1</sub> assimilates to C<sub>2</sub> if C<sub>1</sub> is weaker than C<sub>2</sub> on the strength hierarchy.

- Since vowels develop rapidly, progressive vowel assimilation is a process that is usually lost early.

Syllable Structure Processes: There are specific phonological processes which are directly motivated by the tendency of young children to simplify syllable structure, i.e. a basic CV syllable.

-Fricatives are easier to produce postvocally than prevocally

- **Cluster Reduction:** A consonant cluster is reduced to a single consonant.  
Ex: English- (1.11) *clown* [kaʊn]; *play* [pe]; *train* [ten]; *dress* [des]  
German- (2.2) *fliegen* 'fly' [fi:kən]; *grosse* 'big' [gosa]

- **Deletion of Final Consonants:** A CVC syllable is reduced to CV by deleting the final consonant.

Ex: English- (1.5) *bib* [bi]; *bike* [bai]; *more* [mʌ]; *out* [aʊ]

French- (2.0) *air* [ɛ]; *allumette* 'match' [me]; *assiette* 'plate' [asɛ]

\*Direction of the deletion is also predictable

- **Deletion of Unstressed Syllables:** An unstressed syllable is deleted, especially if it precedes a stressed syllable.

Ex: English- (1.9) *banana* [nænʌ]; (2.3) *granola* [ɔwʌ]

Romanian- (2.0) *masina* 'the car' [ʃina]; *papusa* 'doll' [puʃa]

\*The deletion both of final consonants and unstressed syllables is also frequent, although the latter seems to persist longer than the former.

- **Reduplication:** In a multi-syllabic word, the initial CV syllable is repeated.  
Ex. English- (1.9) *cookie* [gege]; *TV* [didi]; *water* [wawa]  
French- (1.11) *asseoir* 'sit' [sisi]; *bavette* 'bib' [vɛv:ɛ]  
\*Reduplication occurs quite early in children's speech and is often lost by the time the stage under discussion begins. Children vary greatly in their tendencies to reduplicate.

### Other Aspects of Phonological Development

Dynamic Considerations: System being observed through the children is not static, but dynamic.

- *Phonetic Variability:* children show in their pronunciation of words.  
-Child 1.6 said these different words for *blanket* on the same day:  
[bwati], [bati], baki], [batit]
- Bloch (1913): During the months preceding 1.9, vocabulary is limited to around 40 words, and pronunciation is more fixed.
- Phonological processes are lost not suddenly, but gradually
- Children will usually have *frozen forms* in their speech:  
pronunciations that occur early in development and persist during a time when the child should show better pronunciation
- Children will produce occasional *advanced forms*:  
productions that are better than what would be expected, given the child's phonological abilities.
- The importance of words leads to a significant claim about the structure of a child's phonological system...this description is inadequate  
adult form + phonological processes = child's form
- Children actively operate on adult forms to establish their own phonological representations of these words.  
-That is, there is 1) the adult form; 2) the child's representation of the word; 3) the child's spoken form.
- The child has not yet established a representation in the advanced form, so that the form has not yet conformed to the child's system
- First few months of phonological development are also characterized by relatively extensive homonymy Ex: ([bat] (1.10) *bad, bark, bent, bite*)
- Priestley (1980): Problem with homonyms: child perceives the adult words as the same or adult perceives the child's productions as the same
- *Homonymy:* \*Longitudinal data indicates that the rate of homonymy decreases consistently over time and \*the extent of occurrence becomes minimal for most children by age 2

Non-isomorphic processes: Phonological processes have been assumed to be isomorphic in relating the adult form to the child's production: i.e. a one-to-one correspondence between each element in the adult form and each one in the child's.

\*Priestly (1997)- son around 1.10-1.11 showed these words:

- |                               |                               |
|-------------------------------|-------------------------------|
| a) <i>banana</i> [bajan] 1.10 | c) <i>carrot</i> [kajat] 1.11 |
| <i>chocolate</i> [kajak] 1.10 | <i>peanut</i> [pijat] 1.10    |
| b) <i>Brenda</i> [bejan] 1.10 | d) <i>streamer</i> [mijat]    |
| <i>panda</i> [pajan] 1.10     |                               |

\*Group A was by far the most predominant pattern. The processes are as follows:

- 1) Change all multisyllabic words into the structure C1VjVC2
- 2) After cluster reduction, place the initial consonant of the adult word into the C<sub>1</sub> position
- 3) If the second consonant of the adult word is an obstruent, place it into the C<sub>2</sub> position (Group a)
- 4) If the second consonant of the adult word is a sonorant, drop it and place the next consonant into the C<sub>2</sub> position (Group c)
- 5) If the second consonant is a sonorant, but there is not a third consonant, place the sonorant into C<sub>2</sub> (Group b)

Phonological Preferences: preferences by a child for specific articulatory pattern.

- Example: Young boy with preference for nasal consonants- uses many words with nasals and shows a tendency to assimilate non-nasal consonants to nasal ones:  
*Cream* [mim] and [mij] 1.9 and *Sandwich* [nanu] 1.7 and [nænu] 1.9

There are three basic positions: initial, medial, and final.

-Not only do children over-use certain preferred sounds, they also may avoid words that contain sounds that they cannot currently produce.

Summary: Ages 1.6-4.0:

- The child's language is dynamic in nature, so analysis needs to observe both old and new developments as well as the gradualness of phonological change.
- The phonological preferences individual children have will also contribute to marked differences.