



# PHONOLOGICAL PROCESSES

**Phonological processes** are patterns of sound errors that typically developing children use to simplify speech as they are learning to talk. A **phonological disorder** occurs when phonological processes persist beyond the age when most typically developing children have stopped using them or when the processes used are much different than what would be expected.

| SUBSTITUTION            | Definition   | Example                                     | Approx. age of elimination   |
|-------------------------|--|---|--|
| <b>Backing</b>          | When alveolar sounds, like /t/ and /d/, are substituted with velar sounds like /k/ and /g/                       | "gog" for "dog"                             | Usually seen in more severe phonological delays.                   |
| <b>Fronting</b>         | When velar or palatal sounds, like /k/, /g/, and sh, are substituted with alveolar sounds like /t/, /d/, and /s/ | "tootie" for "cookie"                       | 3.5 yrs.   |
| <b>Gliding</b>          | When /r/ becomes a /w/, and /l/ becomes a /w/ or y sound   | "wabbit" for "rabbit" or "yeyo" for "yello" | 6 yrs.   |
| <b>Stopping</b>         | When a fricative (like /f/ or /s/) or affricate (ch,j) is substituted with a stop consonant like /p/ or /d/      | "pan" for "fan" or "dump" for "jump"        | /f/, /s/ by 3; /v/, /z/ by 3 1/2; sh, ch, j by 4 1/2; th gone by 5 |
| <b>Vowelization</b>     | When the /l/ or er sounds are replaced with a vowel  | "appo" for "apple" or "papuh" for "paper"   | —  |
| <b>Affrication</b>      | When a nonaffricate is replaced with an affricate (ch or j)  | "joor" for "door"                           | 3 yrs.   |
| <b>Deaffrication</b>    | When an affricate, like ch or j, is replaced with a fricative or stop like sh or /d/                             | "ships" for "chips"                         | 4 yrs.   |
| <b>Alveolarization</b>  | When a nonalveolar sound is substituted with an alveolar sound   | "tu" for "shoe"                             | 5 yrs.   |
| <b>Depalatalization</b> | When a palatal sound is substituted with a nonpalatal sound  | "fit" for "fish"                            | 5 yrs.   |
| <b>Labialization</b>    | When a nonlabial sound is replaced with a labial sound   | "pie" for "tie"                             | 6 yrs.   |

| ASSIMILATION                     | Definition   | Example             | Approx. age of elimination |
|----------------------------------|--|---------------------|----------------------------|
| <b>Assimilation</b>              | When a consonant sound starts to sound like another sound in the word  | "bub" for "bus"     | 3 yrs.                     |
| <b>Denasalization</b>            | When a nasal consonant like /m/ or /n/ changes to a nonnasal consonant like /b/ or /d/                                       | "doze" for "nose"   | 2.5 yrs.                   |
| <b>Final Consonant Devoicing</b> | When a voiced consonant at the end of a word like /b/ or /d/ is substituted with a voiceless consonant like /p/ or /t/       | "pick" for "pig"    | 3 yrs.                     |
| <b>Prevocalic Voicing</b>        | When a voiceless consonant in the beginning of a word like /k/ or /f/ is substituted with a voiced consonant like /g/ or /v/ | "gomb" for "comb"   | 6 yrs.                     |
| <b>Coalescence</b>               | When two phonemes are substituted with a different phoneme that still has similar features                                   | "foon" for "spoon"  | —                          |
| <b>Reduplication</b>             | When a complete or incomplete syllable is repeated   | "baba" for "bottle" | 3 yrs.                     |

| SYLLABLE STRUCTURE                | Definition   | Example             | Approx. age of elimination                          |
|-----------------------------------|--|---------------------|---|
| <b>Cluster Reduction</b>          | When a consonant cluster is reduced to a single consonant            | "pane" for "plane"  | Gone by 4 yrs. without /s/, gone by 5 yrs. with /s/ |
| <b>Final Consonant Deletion</b>   | When the final consonant in a word is left off                       | "toe" for "toad"    | 3 yrs.  |
| <b>Initial Consonant Deletion</b> | When the initial consonant in a word is left off                     | "unny" for "bunny"  | Usually seen in more severe phonological delays.    |
| <b>Weak Syllable Deletion</b>     | When the weak syllable in a word is deleted                          | "nana" for "banana" | 4 yrs.  |
| <b>Epenthesis</b>                 | When a sound is added between two consonants, typically the uh sound | "bu-lue" for "blue" | 8 yrs.  |

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# Speech & Articulation Development Chart

In the chart below, each solid bar indicates when children generally MASTER the specified sounds. This chart depicts a range of development and should only be used as a general guide.

**What sounds should my child be saying? \***

Girls
Boys

| birth | 1 year | 2 years                   | 3 years | 4 years | 5 years | 6 years | 7 years | 8 years |
|-------|--------|---------------------------|---------|---------|---------|---------|---------|---------|
|       |        | p, m, h, w, b             |         |         |         |         |         |         |
|       |        | p, m, h, w, b             |         |         |         |         |         |         |
|       |        | n                         |         |         |         |         |         |         |
|       |        | n                         |         |         |         |         |         |         |
|       |        | k                         |         |         |         |         |         |         |
|       |        | k                         |         |         |         |         |         |         |
|       |        | g                         |         |         |         |         |         |         |
|       |        | g                         |         |         |         |         |         |         |
|       |        | d                         |         |         |         |         |         |         |
|       |        | d                         |         |         |         |         |         |         |
|       |        | t                         |         |         |         |         |         |         |
|       |        | t                         |         |         |         |         |         |         |
|       |        | ing                       |         |         |         |         |         |         |
|       |        | ing                       |         |         |         |         |         |         |
|       |        | f                         |         |         |         |         |         |         |
|       |        | f                         |         |         |         |         |         |         |
|       |        | y                         |         |         |         |         |         |         |
|       |        | y                         |         |         |         |         |         |         |
|       |        | r                         |         |         |         |         |         |         |
|       |        | r                         |         |         |         |         |         |         |
|       |        | l                         |         |         |         |         |         |         |
|       |        | l                         |         |         |         |         |         |         |
|       |        | blends (st, pl, gr, etc.) |         |         |         |         |         |         |
|       |        | blends (st, pl, gr, etc.) |         |         |         |         |         |         |
|       |        | s                         |         |         |         |         |         |         |
|       |        | s                         |         |         |         |         |         |         |
|       |        | sh, ch                    |         |         |         |         |         |         |
|       |        | sh, ch                    |         |         |         |         |         |         |
|       |        | z                         |         |         |         |         |         |         |
|       |        | z                         |         |         |         |         |         |         |
|       |        | j                         |         |         |         |         |         |         |
|       |        | j                         |         |         |         |         |         |         |
|       |        | v                         |         |         |         |         |         |         |
|       |        | v                         |         |         |         |         |         |         |
|       |        | th (thumb)                |         |         |         |         |         |         |
|       |        | th (thumb)                |         |         |         |         |         |         |
|       |        | th (that)                 |         |         |         |         |         |         |
|       |        | th (that)                 |         |         |         |         |         |         |
|       |        | zh (measure)              |         |         |         |         |         |         |
|       |        | zh (measure)              |         |         |         |         |         |         |

\*Adapted from Sander JSHD 1972; Smit, et al JSHD 1990 and the Nebraska-Iowa Articulation Norms Project

\* It is important to note that this information depicts a general range of development, and should only be used as a guide. If you have any concerns regarding your child's speech development, we recommend that you contact a pediatrician or speech-language pathologist.

This information was obtained from the following:  
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| Age                             | 3   | 4                                     | 5  | 6            | 7                                   | 8        |
|---------------------------------|---|---------------------------------------|--|--------------|-------------------------------------|----------|
| <b>Speech Sound Development</b> | p, m, h, n, w, b<br>Final Consonant Deletion<br>Syllable Deletion | t, k, g, d, y<br>Fronting<br>Stopping | v, f, ng<br>Cluster Reduction<br>Gliding | sh, ch, j, l | s, z, r, th<br>s-blends<br>l-blends | r-blends |

American Speech-Language Hearing Association

**Age Columns** = Age of expected mastery

**Final Consonant Deletion** = When the final consonant of a word is left off

**Syllable Deletion** = When a syllable in a word is left out (often the weak syllable); also known as Weak Syllable Deletion

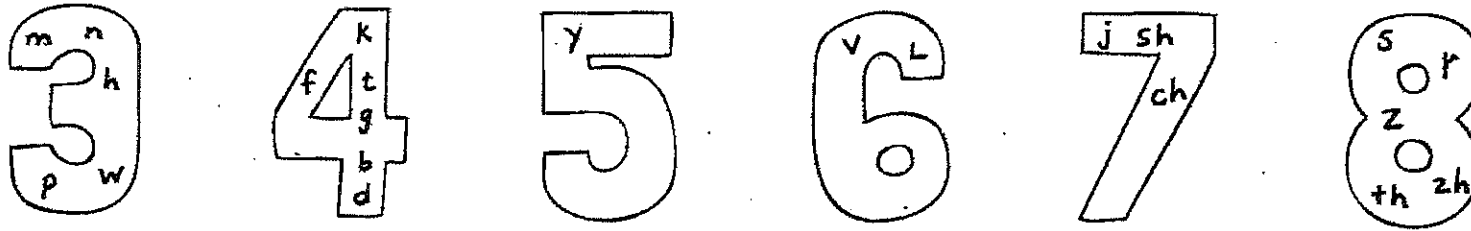
**Fronting** = When back (velar or palatal) sounds – K, G, SH are substituted with front (alveolar) sounds – T, D, S

**Stopping** = When a long sound (fricative, affricate) – F, V, S, Z, SH, CH, J is substituted with a short (stop) sound – T, D, P, B, K, G

**Cluster Reduction** = When a consonant cluster is reduced to a single consonant

**Gliding** = When R, L sounds are substituted for W or Y sounds.

# Speech Sound Development By Age



## Phonological Processes

| Phonological Process        | Gone By (in years)            |
|-----------------------------|-------------------------------|
| Context Sensitive Devoicing | 3 years                       |
| Word Final Devoicing        | 3 years                       |
| Final Consonant Deletion    | 3 years, 3 months             |
| Fronting                    | 3 years, 6 months             |
| Consonant Harmony           | 3 years, 9 months             |
| Weak Syllable Deletion      | 4 years                       |
| Cluster Reduction           | 4 years                       |
| Gliding                     | 5 years                       |
| Stopping                    | 3 to 5 years (sound specific) |