

ding

Association states that "speech-language evaluation and treatment of infants, children, and disorders" (ASHA, 2002). SLPs are familiar with anatomy and physiology with respect to the oral cavity and it is appropriate for SLPs to play a role in

Speech-Sound Acquisition

Prelinguistic Speech Development

Oller's study (1980) is widely referenced when looking at the stages children go through in the acquisition of articulation and phonological skills. Though each stage has a designated time frame, there is overlap between stages. Each new stage features characteristics not observed in prior stages.

Milestones
• mouth during feeding • bottle • or both hands
• dently with one or both hands • foods • spoon is presented
• by an adult – some loss of liquid • en presented/bangs a spoon • sed
• outh (9 months) and bites through it
• spoon • id • action (emerging)
• ull hand • outh, turning spoon over en route • a straw • nds • consecutive swallows
• on and brings to mouth with spillage • imited spillage • e
• f food • ongue movement
• of food thicknesses • mouth, palm up, self-feeds with little spillage • o in one hand with little spillage
• ury jaw action

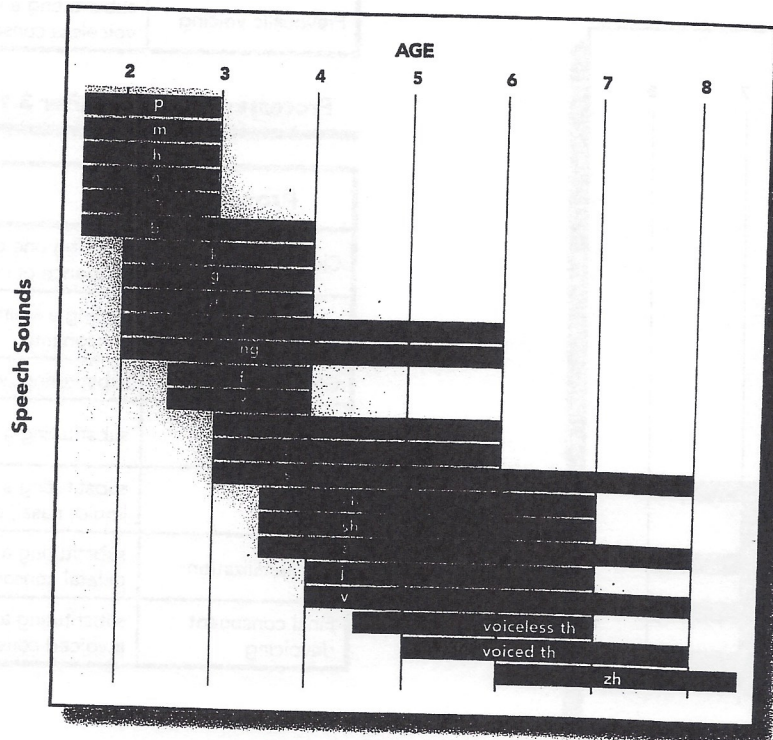
Stage	Age	Milestones
1—Phonation	Birth – 1 month	<ul style="list-style-type: none"> • Demonstrates reflexive vocalizations such as crying, burping, coughing, and sneezing • Demonstrates nonreflexive sounds that are similar to syllabic nasals
2—Cooing and Gooing	2 – 3 months	<ul style="list-style-type: none"> • Uses sounds that are acoustically similar to <ul style="list-style-type: none"> - back vowels - consonant-vowel (CV) and vowel-consonant (VC) productions containing back vowels (/u, ʊ, o, ɔ, a/) and back consonants (velars /k, g, ŋ/)
3—Exploration/Expansion	4 – 6 months	<ul style="list-style-type: none"> • Gains better control of laryngeal and articulatory mechanisms during this period by engaging in vocal play • Squeals, growls, yells, produces "raspberries" (bilabial /p, b, m/ and lingualabial trills) • Produces vocalizations that vary daily and weekly • Produces vowels with better oral resonance • Begins marginal babbling with CV and VC syllable sequences
4—Canonical Babbling	7 – 9 months	<ul style="list-style-type: none"> • Continues to use CV syllables that have more adult-like timing • Uses some reduplicated syllables such as /bɒbɒ/ and /mama/ • Consonant phonetic inventory may have stops, glides, nasals • Vowel phonetic inventory may have lax vowels /ɛ, ɪ, ʌ/ • Uses fewer velars (back sounds); increases use of alveolars and bilabials (front sounds)
5—Variegated Babbling	10 – 12 months	<ul style="list-style-type: none"> • Continues to use CV syllables • Begins variegated babbling; uses different CV syllables that result in verbalizations such as /bɑmɑgʌ/ and /tikati/ • Produces adult-like intonation and prosody, resulting in utterances that sound like a real question or exclamation • Most commonly used vowels at this time are /ɛ, ʌ, a, ʊ/ (Bauman-Wangler, 1994) • Most frequently used consonants at this time are /h, d, b, m, t, g, s, w, n, k, j, p/ (Locke, 1983)

1 which we obtained information for this
aring Association (www.asha.org/policy);
resheck (2006). For more information,
esources list on pages 22-24.

Phoneme Development

Researchers use two different methodologies to determine the age of speech-sound acquisition. In cross-sectional studies, children of different ages are tested on their abilities to produce speech sounds at a given point in time. Longitudinal studies involve testing the same children's productions over time. Comparing the results of the various studies can be difficult because researchers have used a variety of mastery levels and means of eliciting responses. In some studies, sounds produced correctly 100% of the time were considered mastered, but for others, the criterion was 75% of the time. Words were produced spontaneously in some studies but were imitated in others. Some researchers required the mastery level to be met in all word positions, whereas others were concerned only with the initial and final word positions (Flahive & Hodson, in press).

Despite the variability in criteria, some general agreement yields a few overall conclusions about the acquisition of individual sounds. Nasals "m, n, ng," stops "p, b, t, d, k, g," and glides "w, y" are acquired earliest, followed by fricatives "f, v, s, z, sh, zh," voiced and voiceless "th," affricates "ch, j," and then liquids "l, r" (Sander, 1972). Sander's analysis of previous studies also noted that voiced and voiceless "th" were generally the latest phonemes to be acquired.

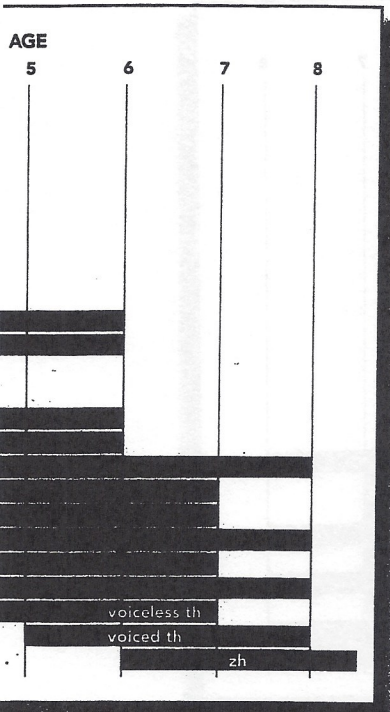


Data from Sander (1972)

Development

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Data from Sander (1972)

Phonological Patterns

Processes Disappearing by 3 Years

Process	Description	Example
Unstressed syllable deletion	omitting a weak syllable	banana → /nænə/
Final consonant deletion	omitting a singleton consonant at the end of a word	cat → /kæ/
Diminutization	adding /i/ at the end of nouns	dog → /dagi/
Velar fronting	substituting a front sound for a back sound	can → /tæn/
Consonant assimilation	changing a phoneme so it takes on a characteristic of another sound in the word	cat → /tæt/
Reduplication	repeating phonemes or syllables	bottle → /bɒbɒ/
Prevocalic voicing	substituting a voiced consonant for a voiceless consonant before a vowel	sun → /zʌn/

Processes Persisting After 3 Years

Process	Description	Example
Cluster reduction	omitting one or more consonants in a sequence of consonants	clean → /kin/
Epenthesis	adding a sound, typically /ʌ/, between two consonants	black → /bʌlæk/
Gliding	substituting /w/ or /j/ for another consonant	run → /wʌn/
Vocalization/Vowelization	substituting a vowel for a consonant	car → /kə/
Stopping	substituting a stop consonant for a fricative, liquid, nasal, or glide	sun → /dʌn/
Depalatalization	substituting a nonpalatal consonant for a palatal consonant	shy → /saɪ/
Final consonant devoicing	substituting a voiceless final consonant for a voiced consonant	bag → /bæk/

Data from Stoel-Gammon & Dunn (1985)

Phonological Patterns, continued

We reviewed several studies to determine the age by which at least 75% of children no longer use a given process.

Individual Process	Description	Example	Likely Age of Disappearance
Denasalization	changing a nasal consonant to a nonnasal	mat → /bæt/	2.6
Assimilation	changing a phoneme so it takes on a characteristic of another sound in the word	cat → /tæt/	3
Affrication	substituting an affricate for a nonaffricate	sheep → /tʃip/	3
Final consonant deletion	omitting a singleton consonant at the end of a word	cat → /kæ/	3
Fronting of initial velar singles	substituting a front sound for a back sound	can → /tæn/	4
Deaffrication	replacing an affricate with a continuant or stop	chip → /sip/	4
Cluster reduction (without /s/)	omitting one or more consonants in a sequence of consonants	grape → /gep/	4
Depalatalization of final singles	substituting a nonpalatal for a palatal sound at the end of a word	dish → /dɪt/	4.6
Depalatalization of initial singles	substituting a nonpalatal for a palatal sound at the beginning of a word	shy → /taɪ/	5
Alveolarization	substituting an alveolar for a nonalveolar sound	chew → /tu/	5
Final consonant devoicing	substituting a voiceless final consonant for a voiced consonant	bag → /bæk/	5
Cluster reduction (with /s/)	omitting /s/ in the initial position of a cluster	step → /tɛp/	5
Labialization	replacing a nonlabial sound with a labial sound	tan → /pæn/	6
Initial voicing	substituting a voiced consonant for a voiceless consonant before a vowel	sun → /zʌn/	6
Gliding of initial liquids	substituting a /w/ or /j/ for another consonant	run → /wʌn/	7
Epenthesis	adding a sound, typically /ʌ/, between two consonants	black → /bʌlæk/	8

Terms, continued

the age by which at least 75% of children

	Example	Likely Age of Disappearance
to	mat → /bæt/	2.6
kes	cat → /tæt/	3
	sheep → /tʃip/	3
int	cat → /kæ/	3
a	can → /tæn/	4
	chip → /ʃip/	4
	grape → /gep/	4
a	dish → /dɪt/	4.6
a ng	shy → /taɪ/	5
	chew → /tu/	5
	bag → /bæk/	5
	step → /tɛp/	5
	tan → /pæn/	6
ant fore	sun → /zʌn/	6
	run → /wʌn/	7
	black → /blæk/	8

Data from Peña-Brooks & Hegde (2007)

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Speech Intelligibility Expectations

Age	Intelligibility Level
19 – 24 months	25% – 50%
2 – 3 years	50% – 75%
4 – 5 years	75% – 90%
5+ years	90% – 100%

Data from Peña-Brooks & Hegde (2007)

We'd like to thank the following sources from which we obtained information for this chapter: Bauman-Wangler (1994), Bowen (www.speech-language-therapy.com/acquisition.html), Flahive & Hodson (in press), Locke (1983), Oller (1980), Peña-Brooks & Hegde (2007), and Sander (1972). For more information, please see the full References, Websites, & Resources list on pages 22-24.

Pronouns

There is no clear-cut progression for the acquisition of pronouns. However, most linguists agree that *I* and *it* are the first pronouns to emerge, followed by *you*. Research also indicates that children use most subjective and objective pronouns by three years of age and possessive pronouns by age five.

Approximate Age

Pronouns

12 – 26 months
27 – 30 months
31 – 34 months
35 – 40 months
41 – 46 months
47+ months

I, it (subjective and objective)
my, me, mine, you
your, she, he, yours, we
they, us, hers, his, them, her
its, our, him, myself, yourself, ours, their, theirs
herself, himself, itself, ourselves, yourselves, themselves

We'd like to thank Owens (1996) from whom we obtained information for this section. For more information, please see the full References, Websites, & Resources list on pages 22-24.