

Articulation and Phonological Development in Young Children

Articulation-the process of producing, or making, speech sounds

There have been many evidence-based studies conducted over the past 75 years in regard to speech sound acquisition. All of these studies had slightly different results, indicating that there is a fairly wide range of “typical” or “normal” in regard to when a child is expected to master the production of different sounds. These studies also indicate, however, that there are typical expectations, or ranges of expectations, by which all speech sounds should be accurately articulated.

Below are the age ranges during which the speech sounds in the English language are expected to develop:

1-2 YEARS	3 YEARS	4 YEARS	5 YEARS	6 YEARS	7 YEARS	8 YEARS
p						
m						
h						
w						
n						
	b					
	k					
	g					
	t					
	d					
	ng					
	f					
	r					
	l					
	s					
	ch					
	sh					
	z					
	j					
	v					
	th (umb)					
	th (at)					
	zh					

*Adapted from Sander (1972), When are Speech Sounds Learned?, *Journal of Speech and Hearing Disorders*.

Phonology - the study of how speech sounds, which are also called phonemes, are organized and used in a language.

This includes the study of the individual sounds of a language (the phonemes), their patterns, how they are learned (which is called phonological development) and how they work together. All the sounds in the English language are organized and classified into different classes based on their place, voice, and manner.

Place refers to the location in the oral cavity where the sound is actually produced.

Voice refers to whether the sound requires voice, as in /b/ or /g/, or is voiceless, as in /p/ or /k/.

Manner indicates the way in which the air is pushed through the vocal tract and the degree or type of closure of the vocal tract when a sound is produced.

Phonological processes - the typical patterns that a child uses to simplify his speech as he learns to speak.

A child is not born able to produce all of the sound patterns in our language. As a child is learning to speak English, he or she will simplify sounds and sound patterns. For example, a young child will simplify the word "bottle" to sound more like "baba." A toddler might say "goggie" for "doggie" and "nail" for "snail." We might hear a 2 year old cut off the final consonants of words as they work through new vocabulary; "please" might become "pee" and "ball" might be produced as "baw". Just as with articulation, every child will develop their phonological skills differently. Just as typically developing children will develop their articulation skills within expected age ranges, there are ages when children are also expected to stop using different phonological processes.

PHONOLOGICAL PROCESS	EXAMPLE	AGE BY WHICH CHILDREN NO LONGER PRESENT WITH ERRORS
Context sensitive voicing	pig = big	3 years
Word-final de-voicing	pig = pick	3 years
Stopping of /f/	fish = tish	3 years
Stopping of /s/	soap = dope	3 years
Final consonant deletion	comb = coe	3.3 years
Fronting	car = tar	3.6 years
Stopping of /v/	very = berry	3.6 years
Stopping of /z/	zoo = doo	3.6 years
Consonant harmony	mine = mime	3.9 years
Weak syllable deletion	elephant = efant	4 years
Cluster reduction	spoon = poon	4 years
Stopping of 'sh'	shop = dop	4.6 years
Stopping of /j/	jump = dump	4.6 years
Stopping of 'ch'	chair = tare	4.6 years
Gliding of liquids	run = won	5 years
Stopping of voiceless 'th'	thing = ting	5 years
Stopping of voiced 'th'	them = dem	5 years

*Adapted from Bowen, C. (1998), *Developmental phonological disorders. A practical guide for families and teachers*. Melbourne: ACER Press; Grunwell, P. (1997). Natural phonology. In M. Ball & R. Kent (Eds.), *The new phonologies: Developments in clinical linguistics*. San Deigo, CA: Singular Publishing Group, Inc.

Intelligibility -speech clarity or the percentage of a speaker’s output that a listener can readily understand.

In typical development, as children learn to talk, their intelligibility—how clear their speech is—steadily increases. In young children, there is often a marked difference between the intelligibility of single word productions and conversational speech, as well as in the intelligibility by their close family members/caregivers and those who are unfamiliar listeners. There also might be a difference in intelligibility when a child is talking about or in a known context versus in regard to unknown or novel topics. Within families, siblings are often more adept than parents or other caregivers at understanding or comprehending what their younger brothers or sisters are saying!

There are some basic evidence-based expectations for children at different ages in regard to their intelligibility, as presented in the table below:

AGE	PERCENTAGE OF EXPECTED INTELLIGIBILITY
19 – 24 months	25% – 50%
2 – 3 years	50% – 75%
4 – 5 years	75% – 90%
5+ years	90% – 100%

*Adapted from Peña-Brooks, A., & Hegde, M.N. (2007). *Assessment and treatment of articulation and phonological disorders in children*. Austin, TX: PRO-ED.



A note about articulation delay/disorders:

Based on the developmental milestones for articulation/speech sound acquisition, therefore, a two or three year old is not expected to be able to accurately produce the /r/ sound. Usually, children will substitute or distort sounds while they are learning to accurately produce them. For example, a young child will produce the /w/ for the /r/ as in ‘wabbit’ for ‘rabbit’ or ‘gween’ for green when they are toddlers and preschoolers. It is, in fact, quite rare for children to develop speech without producing lots of errors throughout the process. These types of age appropriate errors are referred to as developmental errors. This just means that they are typical, age appropriate errors. Therefore, an infant or toddler who is presenting with these errors is not in need of speech therapy or specific intervention to address them.



A note about phonological processing delay/disorders:

A phonological delay or disorder refers to when a child continues to simplify his or her speech by using these phonological processes well beyond the typical ages expected. Some children, who are ultimately diagnosed with a severe phonological disorder, may even simplify their speech to the point where they are only producing a FEW different sounds when they should be producing a variety of sounds in combinations. Children with true phonological disorders tend to be extremely hard to understand, above and beyond typical expectations. All of the processes that we monitor are still expected to be in a child’s repertoire up until the age of three.



There are a few red flags that a young child, under the age of three, might have a future phonological disorder. The deletion of initial sounds in words—for example, “ig” for “pig” or “ed” for “bed”—is one of those flags. Another major concern at an early age is the distortion of consistent difficulty with vowels. It is not, however, typical to diagnose a child with a phonological disorder before the age of three.