Identification of Speech Delays in Young Children

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Incidences of speech disorders have been documented since the Middle Ages; still today parents routinely ask, “Is my child’s speech development normal?” and “What are the implications of delayed speech development?” This article will address these questions and provide guidelines for parents and practitioners in identifying normal and abnormal speech sound development.

There are two main methodologies used to analyze speech development. The first method is to inventory the sounds that a child has mastered and compare the data with known values for speech sound development. A speech or “articulation” delay is identified when an error is found outside of the developmental norms. The development of speech sound acquisition is broken down by age.

- Children between the ages of 10-12 months begin to use early developing consonant sounds such as /m/, /b/, /p/, /h/, /n/, and /w/.
- Children 24 months or younger are using /k/, /g/, /d/ sounds and sometimes /t/ and “ng” emerge.
- Children 3 years old have mastered most of the above sounds. Between 2 ½ and 4 years, many other phonemes develop in children including /n/, /l/, /s/, /l/, /r/, /l/, “y”, “sh”, “ch”, and “j.”
- Children age six have mastered the majority of all sounds but some, such as “th”, “zh”, and /r/, may not be mastered until age seven.

As a general rule of thumb, a child’s speech should be approximately 75% intelligible by three years-of-age, 90% intelligible by four years-of-age, and 100% intelligible by age five. For a speech development guideline for parents and providers see Is Your Child on Task.

The second method for measuring speech development is the analysis of phonological process patterns. Phonological processes are patterns of speech development systematic in nature. They begin as immature patterns that are gradually replaced by more adult-like speech patterns. These phonological processing errors disappear in a predictable sequence over time. The earliest patterns, such as final consonant deletion (ex. Ca for Cat), unstressed syllable deletion (ex. Nana for Banana), and reduplication (ex. Baba for Bottle), typically disappear by three years-of-age. Persistent patterns, such as cluster reductions (ex. Back for Black), velar fronting (ex. Tan for Can), deaffrication (ex. Sip for Chip) and stopping (ex. Dun for Sun) typically disappear by four years-of-age. One of the last phonological process to be eliminated is gliding (ex. Wok for Rock), which may persist until six years-of-age. It is important to remember that phonological acquisition is a gradual process. However, children who demonstrate multiple phonological processes beyond the expected age of disappearance require an evaluation by a Speech-Language Pathologist due to potential for delays in phonology and early reading skills.

Just as there are different methods for diagnosing speech delays, there are also different types of speech disorders. A majority of developmental speech delays can be categorized
into one of the following diagnoses: a phonemic disorder, a phonological disorder, an orofacial myofunctional disorder, or childhood apraxia of speech. A **phonemic disorder** is a delay in acquisition of one or more individual English phonemes. For example, the school-aged child who makes a substitution or omission error on the /r/ phoneme would be diagnosed as a phonemic (i.e. articulation) disorder. In contrast, a **phonological disorder**, as discussed above, is a deviation in a child’s speech production that simplifies an adult phonological pattern. An **orofacial myofunctional** disorder encompasses speech, swallowing, and oral motor dysfunction related to muscle tone or muscle movement. This type of disorder includes the tongue thrust swallow pattern, frontal lisp, drooling, or changes in the soft tissue of the dental arch related to oral habits (i.e. thumb sucking). These disorders are typically addressed by a Speech-Language Pathologist with advanced training in Orofacial Myology. The final major category of speech diagnoses is **Childhood Apraxia of Speech** (CAS). This disorder has many common names (e.g. Developmental Apraxia, Dyspraxia of Speech), and it’s characteristics are still debated by researchers. CAS is characterized by difficulty sequencing the fine motor movements of speech, which results in mild to severe limitation in speech production. Individuals with CAS may demonstrate inconsistent speech sound errors, difficulty sequencing sounds in multi-syllabic words, and possible changes in voicing, intonation, or vowel production. CAS can be a devastating speech disorder that will not readily improve without intervention from a Speech-Language Pathologist.

Childhood speech disorders can potentially impact a child’s self-esteem, behavior, socialization, and communication development. Researchers have found that oral motor development, phonological awareness, and phonemic memory are indicators of early language development and literacy skills. Research also indicates that speech perception, such as identification of voicing in a consonant, may be linked with slow temporal processing and the diagnosis of Specific Language Impairment (SLI). Early referral to a Speech-Language Pathologist can mitigate the negative impact of a speech delay.

According to data collected from the American Speech-Language and Hearing Association (ASHA), 70% of preschool-aged children who received phonological treatment exhibited improved intelligibility and communication functioning. The preschoolers who achieved intelligible speech (previously unintelligible) received twice as much treatment as those children whose speech remained unintelligible. Another study, conducted at Cincinnati Children’s Hospital Medical Center, used the National Outcomes Measurement System (NOMS) to demonstrate that children between the ages of three to six years improved at least one functional level after 20 hours of speech therapy. According to the data, after 17 hours of speech therapy only 16.4% of the children with a severe speech disorder, such as apraxia of speech, reached a level of functional communication. A third study, showed that majority of children with severe apraxia of speech need 81% more individual treatment sessions in order to achieve the same functional gains as a child with a severe phonological disorder. Given the amount of treatment time needed for functional improvement in speech for activities of daily living, **early referral and diagnosis of speech disorders is critical for young children**. A Speech-Language Pathologist can provide diagnostic information, a therapeutic plan of care, parent education and training for home program activities.
For more information regarding developmental speech disorders and speech development, please contact Providence Neurodevelopmental Center for Children (PNCC). Providers can use the PNCC tool, Is Your Child on Task, as a guide for discussing possible speech development issues with parents. For hardcopies of this guide, please call 503-215-2529.

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References


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