

## Module 12: Speech Development

In modules 1 and 2 we looked at the areas of speech and language. We will now focus more specifically on students who present with Speech Sound Disorder. This module aims to develop your understanding of the nature and types Speech Sound Disorder and their implications for learning.

Approximately 3 to 10% of primary school students will have difficulties producing speech.

Speech Sound Disorders often occur with:

Language Disorder

Biomedical conditions, such as Autism Spectrum Disorder and Hearing Impairment

And other communication needs

There are a number of “risk factors” associated with speech sound disorders. These include a family history of speech and language difficulties and gender.

Studies indicate that students with significant Speech Sound Disorders may have challenges with:

Self esteem

Peer interactions

Academic Achievement

Employment

It is important to note that most students with Speech Sound Disorders will go on to be intelligible as adults. Although they may have life long difficulties with some speech sounds.

As discussed in Module 1, Speech development is a gradual process with children making predictable speech errors at similar ages. Some children may develop a speech sound or be able to combine certain sounds before the expected age, while others may be slightly slower than their peers, this is okay within reason. As a general rule:

2 year olds speech should be understood 50% of the time

4-5 year olds speech should be understood most of the time to strangers

6 year olds speech should be understood most of the time

To find out more about speech-sound development and typical milestones, please see our SALDA handout at the end of the module.

Before investigating the nature and types of Speech Sound Disorders let’s take a moment to consider how speech sounds are made. In English, there are 24 consonant sounds.

These speech sounds can be grouped according to three criteria:

Place

Manner

Voice

The Place these sounds are made moves from the front to the back of the mouth. Explore the parts of the mouth and consider how they help make each sound.

The Manner in which sounds are made describes the flow of air as it moved through the vocal tract. Continue to explore the parts of the mouth and consider how different sounds are made.

Finally, voice refers to whether or not the vocal cords vibrate when making the speech sound. Sounds can be either voiced with vibration or voiceless with no vibration.

Many consonant sounds come in pairs. The place and manner are the same but one sound is voiced and the other is voiceless.

For example /b/ and /p/ are both bilabial stops. They both are made using the lips to stop the flow of air. However /b/ is a voiced bilabial stop as the vocal cords vibrate whilst /p/ does not, so it is the voiceless bilabial stop.

Place your fingers gently on your throat. As you say /b/ feel your vocal cords vibrate. Then say /p/ and feel the difference in how these sounds are made. Take a few minutes to sort the sounds below into voiced and voiceless sounds..

In addition to the 24 consonant sounds, there are 20 vowel sounds in English. All these sounds are voiced and involve movement of the tongue, lips and jaw.

So far we have considered the how the brain plans and executes the movements to produce speech sounds.

However the neurological system of the brain is also involved in:

The knowledge of the rules that govern English. For instance you intrinsically know that 'zwischen' is not an English word as the combination of the sounds /z/ and /w/ is not used at the start of a word in English. However it is regularly used in German where zwischen means 'between'.

The brain is also involved in the recognition of speech vs non speech sounds. For instance the brain knows to tune-in to words but not other background sounds.

Let's take a moment to test your recall of the content covered so far.

QUIZ

Q1. Place refers to...

The areas of your mouth that create the sounds

The airflow required to create the sounds

Turning your vocal folds on or off

The number of consonant sounds

Q2. When considering 'place', how is the /b/ sound made?

Lips

Alveolar

Q.3. Manner refers to...

The areas of your mouth that create the sounds

The airflow required to create the sounds

Turning your vocal folds on or off

The number of consonant sounds

Q.4. When considering 'manner', how is the /n/ sound made?

a) Nasal

b) Oral

Q.5. Voice refers to...

The areas of your mouth that create the sounds

The airflow required to create the sounds

Turning your vocal folds on or off

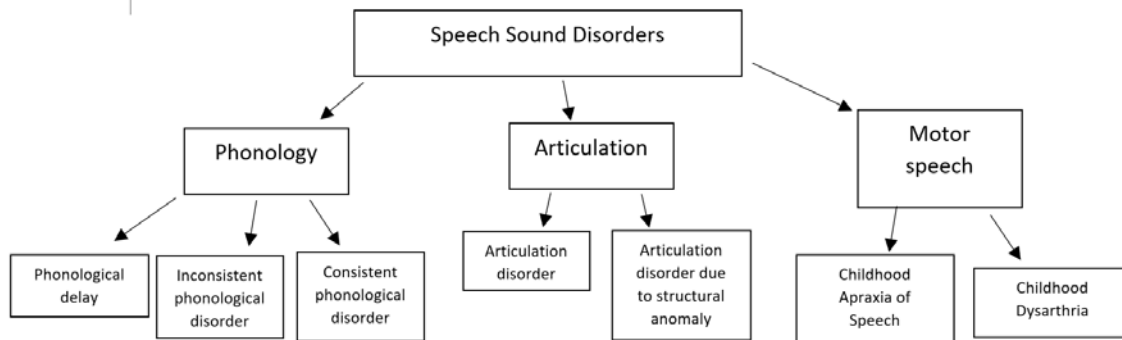
The number of consonant sounds

Q.6. When considering 'voice', how is the /m/ sound made?

Voiceless

Voiced

We have seen what typical speech development looks like. But what happens when speech sound development does not occur as expected? A speech sound disorder refers to any speech difficulty which impacts on speech production. The cause of these difficulties may be known or unknown.



Phonological errors occur when children do not use the right sounds in the right places. These errors have less to do with how the sounds are produced, but are instead related to a child's cognitive-linguistic development. Many children can produce targeted sounds in isolation, but fail to use those sounds correctly in words or sentences.

Most children will demonstrate patterns of phonological errors as part of typical development. For some children, these errors persist longer than expected and are described as having a phonological delay. For example a child saying "wabbit" for "rabbit" under 5 could be expected but not for a 7 year old. Some children may make speech sound errors not seen in typical development. These errors could be inconsistent or consistent.

Articulation disorders occur when a child has difficulty producing one or more specific speech sounds. They may make errors in place, manner or voicing to produce distorted sounds or substitutions. These speech errors occur regardless of whether the child says the targeted sound by itself, in a word, or in a sentence. Sometimes articulation errors are caused by a problem with the structure of the mouth, such as a cleft palate. However, often the cause is unknown. One of the most commonly known articulation errors is a lisp, where an /s/ or /z/ sound is produced with the tongue between the teeth.

Childhood apraxia of speech (CAS) is a rare neurological speech sound disorder caused by motor planning difficulties. This means a child knows what they would like to say, but their brain has difficulty coordinating the movements necessary to say those words. They may demonstrate 'groping' or 'trial and error' behaviours when trying to say a sound, and their speech may appear slow and effortful. They may say the same word in different ways, and have difficulty copying words and sounds. Children with Childhood Apraxia of Speech frequently present with highly unintelligible speech, and often make slow progress in intervention. Childhood Apraxia of Speech can be difficult to diagnose, and it may be hard to

differentiate from a severe phonological disorder.

Childhood dysarthria is another rare speech sound disorder caused by neurological damage that affects the muscles involved in speaking. Muscles may be paralysed, weak or poorly coordinated.

There are several types of dysarthria, all with distinct features. However, some common characteristics include: slow, effortful speech, imprecise or slurred articulation, and difficulties with pitch, volume and intonation.

**ACTIVITY** Now that you are familiar with the different speech sound disorders, can you match each of the following students with the speech sound disorder most consistent with their difficulties?

\* Child 1 sounds just like his peers in prep, saying “yion” for “lion” and “wabbit” for “rabbit”. But now he’s in grade two and is still making these errors.

\* When Child 2 says a /s/ sound, it seems “slushy”, like there is too much air escaping from the sides of her mouth. She is unable to produce a clear /s/ sound, even in isolation.

\* Child 3 frequently mispronounces words, but does not seem to show a pattern to her speech sound errors. She often stresses the wrong syllable in a word, and speaks very slowly. Sometimes when producing a word, her mouth appears to move around as she searches for the right sound.

If you found the previous activity tricky, don’t worry: the differential diagnosis of speech sound disorders is the role of a speech-language pathologist. However, being aware of the indicators of a speech sound disorder can help you determine if a child needs support.

Some indicators for a referral to a speech language pathologist include: using only a small number of sounds, dropping off the initial sound in words, using “back” sounds such as /k/ or /g/ to replace other consonants, dropping the final sound of words beyond 3 years of age, and making errors with vowel sounds.

#### Communication Partner Strategies Script

When talking with children with speech sound disorders, consider using the following strategies:

Use the current context of the conversation to assist understanding

Encourage the child to rephrase what they say rather than repeat themselves when they have been misunderstood

Provide prompts about how to produce specific sounds. For example, put your top teeth on your bottom lip and blow to say /f/.

Encourage the child to use a variety of communication such as gestures, pointing, drawing, pictures or writing their responses

Build a trusting relationship with the child

To find out more about helping children to say specific sounds, please see our SALDA handout at the end of the module.

Consider the content covered so far. Do you have a better understanding of how sounds are

made? Could you discuss the nature and types of different speech sound disorders? What strategies could you use to support speech sound development?

When you're ready to move on, click the next button.

We hope that you have a greater understanding of the nature and types of speech sound disorders and the implications for learning. For more information of the content covered in this module, please view the following handouts:

Typical speech development  
Helping students to say specific sounds  
Childhood Apraxia of Speech  
Speech Sound Disorders and literacy