Module 40: Properties of speech

Average person understands that we acquire language over time, develop a vast range of vocabulary, and understanding of speech and language almost instinctively, in conjunction with being exposed to reading and writing patterns from an early age. While this is true, speech and language therapists are specially trained to understand a more in-depth perception of the intricacies of language. This module will introduce aspiring speech and language therapists, and speech enthusiasts with a broad understanding of the five areas associated with producing speech sounds: phonation, articulation, fluency, resonance, and voice/respiration. Upon completion, students will have a very broad understanding of the ways that the smallest units of acoustic speech sounds can be formed into words, sentences, and phrases, based upon how particular parts of our speech and language mechanisms in our bodies work together.

What you'll learn in this module:

40.1 Linguistics

40.2 Articulation

40.3 Other properties of speech and language

40.1 Linguistics

The term "linguistics" refers to the study of language and the structure of language. Linguistics is made up of several sub-sections that break down language components and guide the learning and speech, and language development process. These linguistic branches all build upon one another and

guide further, more sophisticated, lingual abilities and capabilities. Speech and language therapists will often find, during the evaluation stage of meeting with patients, that somewhere within the individual's linguistic development, a stage of development was skipped or is found to be missing significant building blocks that would have laid the ground work for the acquisition of language. Phonetics and phonology is the first of five stages in the linguistic hierarchy. Speech is a communicative signal used within a language.Beginning with the most basic units of sound as a foundation to speech, and working up to the more complex ways that sounds, when combined, create word.This is how words create meaning, and this is how a language is born.

The linguistic hierarchy is outlined as within the following disciplines, beginning with the most basic structures, and elevating to more complex theories and practice:

- phonetics and phonology
- morphology
- syntax
- semantics
- pragmatics

40.1.1 Phonetics and phonology

Phonology is the overarching scientific term used to describe how sounds are organized in natural languages. Whether a speaker is speaking in the English language, Spanish, Korean, German, or any other world-language, the concept of phonology is the same. Each language has a phonological system. In other words, this system works as the "rules" of what a sound is, the features of each unit of sound, and how sounds interact with one another to create that language.

In studying speech and language pathology, differentiating between the terms "phonetics" and "phonology" is as follows:

- **phonetics** – the basis for phonological analysis that analyzes the production of all human speech sounds, regardless of the language being spoken.
- **phonology** – analyzes speech patterns of a particular language by determining which phonetic units of sound are significant as well as identifying how native speakers of a language would interpret these particular sounds. Furthermore, phonology is the basis of what is a much larger framework in the linguistic system of morphology, syntax, semantics, pragmatics, discourse, and orthography design.
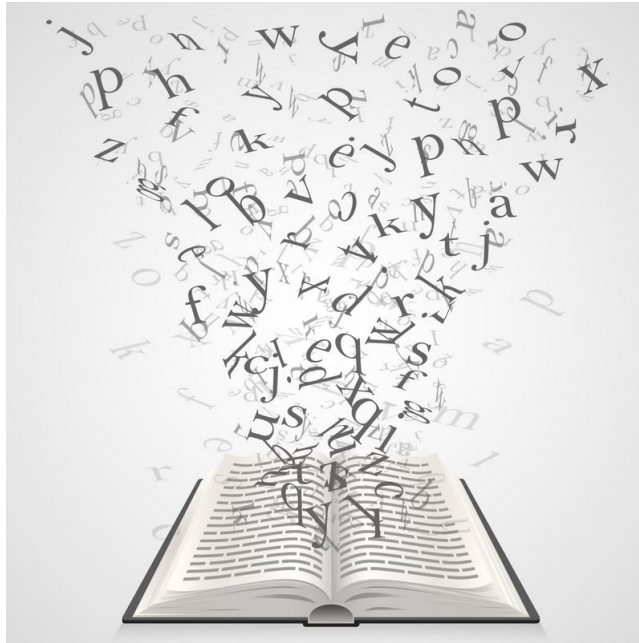
Speech and language therapists understand the nature of sound units and the distinct details and variations that make up those sound units in a given language. SLP's are able to identify, recognize, and evaluate a client's usage of the following units associated to acoustic measures of phonology:

- **phones** – speech sounds that are used within any given language.
- **phoneme** – distinct units of sound within a specified language that differentiates itself from other sound units within the language. For example, "p" versus "b" or "t" versus "d" and so on in words like "pad," "pat," "bat," "bad," etc.
- **syllable** – a word or part of a word that has one vowel sound. For example, the word "son" has one syllable (one vowel sound associated with the letter "o" is articulated) while the word "father" has two syllables (two vowel sounds associated with the vowels "a" and "e" are articulated). Furthermore, the word "one" has two vowels present, but only one sound is articulated (since there is a silent "e" at the end), thus, this word is only one syllable.

- **vowel** – a speech sound that is made when speaking, but your throat and mouth are not closed. The vowels in the English language are a, e, i, o, and u, however, there are many sounds that can be created with each vowel itself. For instance, the letter "a" in in the world "alligator" is articulated/pronounced differently than the vowel "a" in the word "anchor." Speech therapists study how a language pronounces vowel sounds and the ways in which clients articulate words and phrases may differ depending on their native language, culture, dialect, or other determining factors identified by the speech therapist.
- **consonant** – a speech sound that is produced by stopping either some or all of the air coming out of your mouth during pronunciation.
- diphthong – a combination of two vowel sounds articulated one after the other, like in the word "fail.
- **affricates** – a speech sound that identifies the "ch" sound in the word "church" or the "j" sound in the word "judge," for instance.
- **fricatives** –a speech sound produced by pushing air through your teeth, such as the sounds for f, th, and z.

There is an extensive vocabulary of terminology as it relates to phonetics and phonology, the study of language, and linguistic structures. It is important for speech and language therapists to explore not only the varied ways that tiny units of sound can be combined to form words, but also how each sound unit can create meaning.This equally applies to their assistants and all professionals who undergo continued and more in depth training in the art of speech and language sciences.

In addition, speech and language therapists continuously work to train the human vocal tract and organs to either adapt to language pronunciations, re-learn language structures that have been loss over time (as the result of a stroke or traumatic brain injury, for example) or to work with children who, due to some disorder or disability may be missing key learning, comprehension, or articulation components necessary to acquiring the ability to produce speech sounds.

Therapy goals should be tailored to the individual depending on age, prognosis, or disorder, among other determining factors.

40.1.2 Morphology

On the linguistic hierarchy chart, **morphology would be the next step on the ladder right above phonetics and phonology.** Dealing with the identification, analysis, and description of a structure of any given language's linguistic units, morphology deals with the smallest units of language that carry concrete meaning: morphemes.

- **word** – a minimal, free form unit of language that holds meaning.
- **Morphemes**: A morpheme is the smallest unit of grammar within a language that carries individual meaning. Morphemes can include words, suffixes, pre-fixes, and other affixes. If you look at a word and you can break it into smaller parts that retain meaning, it is not a morpheme.

Example:Cat – Cat is a morpheme because you cannot break it down into further meaningful parts. If you were to add 'S' to make 'cats', you would have two morphemes. "Cat" and "S". In this case, S is a morpheme because it adds additional meaning to the word, to create the idea of more than one cat.

- **Free Morphemes** - Words like Cat that can stand on their own as a full word are known as free morphemes. Free morphemes can stand on their own, rather than tying into another morpheme.
- **Bound Morphemes** – Words that rely on other parts of speech to produce meaning are known as bound morphemes. In the example above, S in Cats is a bound morpheme because it adds meaning to the first morpheme, without the ability to stand on its own as a word.

Similarly, **morphemes allow you to add multiple parts of speech with their own meaning together to create words with more meaning.** However, these are not necessarily words on their own, they only add meaning to other morphemes. Common examples include prefixes such as "Un" and suffixes such as "Ed". On their own, they mean very little, but with a word or other morpheme, they can mean a great deal. Let's take a look at an example: Unfolded – This word includes three morphemes. The prefix "Un", the root word fold "Fold", and the suffix "Ed". Together they create a

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word with the opposite meaning of the morpheme "fold". If you were to add or remove either "Un" or "Ed" from the word, the meaning would change dramatically. However, if you were to remove "Fold" your word would mean nothing. Unfolded, Folded, Unfold, Un-Ed: Essentially, morphemes are small parts of speech with their own meaning, but are not necessarily words, because they may have no complete meaning on their own. If you can break a word down into smaller parts with meaning, then it is a morpheme, even if it is not a word.

- **root word** – a freestanding unit that holds meaning. A "root" is the basis for other words to grow off of with the addition of prefixes or suffixes.
- **prefix** – when a morphological unit is added to the beginning of a word to affect the meaning. For instance, the root word "call" becomes the word "recall" when the prefix "re" is added, thus changing the meaning or affecting the meaning of the word.
- **suffix** – when a morphological unit is added to the end of a word to affect the meaning. For instance, the root word "place" becomes the word "placement" when the suffix "-ment" is added, thus changing the meaning of the word altogether.
- **affix** – an additional morphological element (either a prefix or suffix) placed at the beginning or the end of a root word to alter the meaning.
- **synonyms** – a word or phrase or morphological unit that holds the same meaning of another word or phrase in the same language. For instance, the words "pretty," "beautiful," and "attractive" are all synonyms for one another.
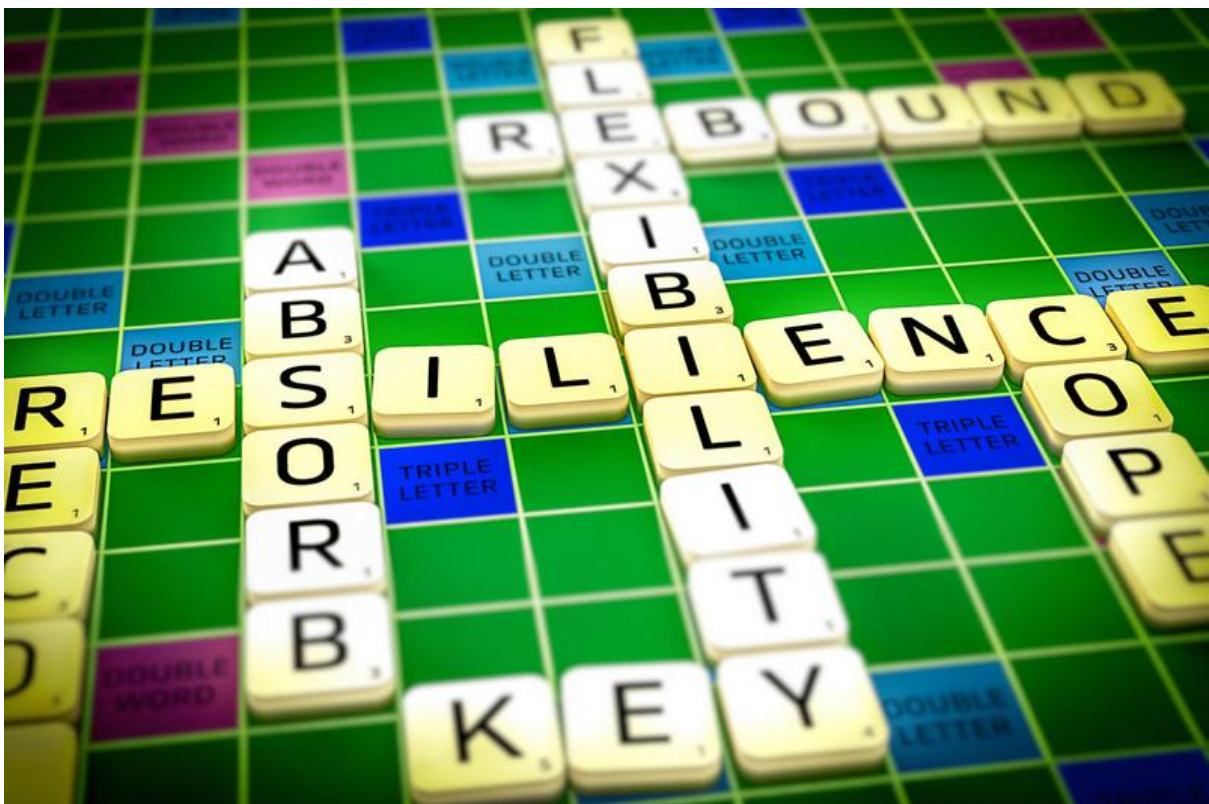
- **antonyms** – a word or phrase, or morphological unit that have an opposing meaning to a word in the same language. For instance, the words "intelligent" and "stupid" are opposites, and therefore antonyms of one another.
- **homonyms** – when two or more words have the same spelling and same pronunciation, but different meanings. For example in the following phrases, the word "play" has different meanings: "let's play soccer after school" and "let's go see the school play."
- **homophones** – when two or more words have the same pronunciation, but different spellings and different meanings. For example, "waste" and "waist."
- **homographs** – when two or more words have the same spelling, but different pronunciations and meanings. In the following examples, the word "present" is pronounced differently and carry different meanings, despite being spelled the same, "open your birthday present" versus "the children were all present."

40.1.3 Syntax

The part of grammar that deals with the ways in which linguistic elements (in other words: words) are put together in order to form meaning. **Syntax follows a distinct set of rules and processes that indicate how a particular language is put together.** For instance, in American style English, a standard subject-verb-object (SVO) syntactical structure is followed in order to be considered "grammatically correct." For example, in the sentence "Maria watched a movie" the subject (Maria) comes first, followed by the verb (watched), followed by the object (movie). 85% of languages place the subject before the verb and object, however, some languages place the object before the verb (SOV word order).

Word order is an important subject for professionals in speech and language fields because it affects persons from different cultures, dialects, and regions. In English, the most common word order is "Subject" "Verb" "Object" (SVO) where if you were saying, "Jennifer is preparing dinner", you would know that the words go in that order simply because you learned it that way, even if you weren't familiar with the grammatical rules behind the structure.

In previous modules, we discussed the topic of cultural awareness, and word order is extremely important for cultural awareness. It is important that you understand when a client's inability to speak using the SVO sentence structure is a result of a cultural or language difference rather than a disorder or disability.

Many languages use a different word order than our own. **An easy example is that about 45% of the world's 6,500 spoken languages use SOV (Subject-Object-Verb).** That would change our sentence about Jennifer to:"Jennifer dinner prepares". Another 9% of languages use Verb-Subject-Object. "Prepares Jennifer Dinner"

Re-learning word order is one of the most difficult parts of learning a new language. Keeping this in mind can provide speech and language therapists with a greater understanding of their client's abilities, needs, and problems. This makes it easier to recommend and encourage language development, therapy exercises, and practices, and to understand and distinguish between different types of barriers preventing the client from understanding the grammatical language structures necessary for enhanced speaking, writing, and communication.

Important terminology:

- **word order** – as discussed above, the grammatical structural blueprint associated with a particular language, such as SVO, or subject-verb-object, word order used in modern English.
- **diction** – the particular choice of a specific word used to create meaning in a sentence or clause.
- **tone** – the way in which a writer or speaker delivers his or her words, which creates inflection in the voice, thus affecting the meaning of the words being presented.

40.1.4 Semantics

The branch of linguistics that is most concerned with meaning and intent is the area of semantics. Semantics deals with what are called "signifiers," which are the words, phrases, symbols, and signs that carry a meaning. Choosing the appropriate words in order to create meaning and communicate thoughts is essential in human interactions. In language, misuse of words or misidentification of words can create confusion and alter the meaning originally intended, making it complicated and difficult to communicate.

Speech and language therapists who work with clients on expanding their personal lexicons are working to create a larger word bank for individuals to choose from in their communication fields, whether its in personal relationships, in the workplace, or just through day-to-day interactions with doctors, store clerks, or other individuals with whom a client might interact. Having a broad understanding of the semantic meaning of words and phrases related to a language helps equip individuals to communicate in the world. Ambiguous language is a concern to address in the study and representation of semantic language. When something is ambiguous, it carries more than one meaning. For clients who have trouble with language, speech, and communication, finding alternative methods to ambiguity and working in therapy on "concrete" language that doesn't have room for interpretation can help them with their day-to-day tasks and interactions that may have previously been causing difficulties due to miscommunication or misinterpretation.


40.1.5 Pragmatics

Also referred to as "**social language use**," pragmatics addresses the ways in which context will contribute to meaning. Where semantics studies the "meaning" of a structural form, pragmatics uncovers the context of an utterance as well as how the audience (be it listener or reader) interprets the language from the speaker (or writer). Having pragmatic competence means an individual is capable of understanding the intended meaning of a particular speaker. A lot of times people take this skill for granted; however, we have all been present to a situation where we have misinterpreted something and thus created confusion over the words that were spoken. In this way, language users overcome the apparent ambiguity and are able to decode the language in order to understand both meaning and intent. Being competent in pragmatics relies on an understanding of the manner, place and time of an utterance. This is the most advanced level in the hierarchy of linguistic study and analysis and is a highly advanced practice when working with clients in the services of speech and language therapies.

40.2 Articulation

The most basic understanding of the act of articulation is the ability to physically express thoughts, ideas, and meaning into words. On a much more complex level, articulation has intricate elements that relate back to biological abilities within the human body's vocal tract. Many individuals who suffer from speech and language disorders suffer **articulation disorders such as a lisp, which is one of the more commonly known speech sound disorders.** We will discuss speech and language disorders more thoroughly in future modules, but for the purpose of understanding this learning module, the definition of a lisp is that of a speech defect in the pronunciation of the speech sounds "s" and "z." For instance, the sound "s" is often pronounced as a "th" sound (like in the word "thick") and the sound "z" is often pronounced as a "th" sound (like in the word "this"). Having a lisp or other speech impediment disorders that deal with articulation can be embarrassing and make an individual become anxious and worrisome, particularly when meeting new people or giving oral presentations and speeches associated with work and school.
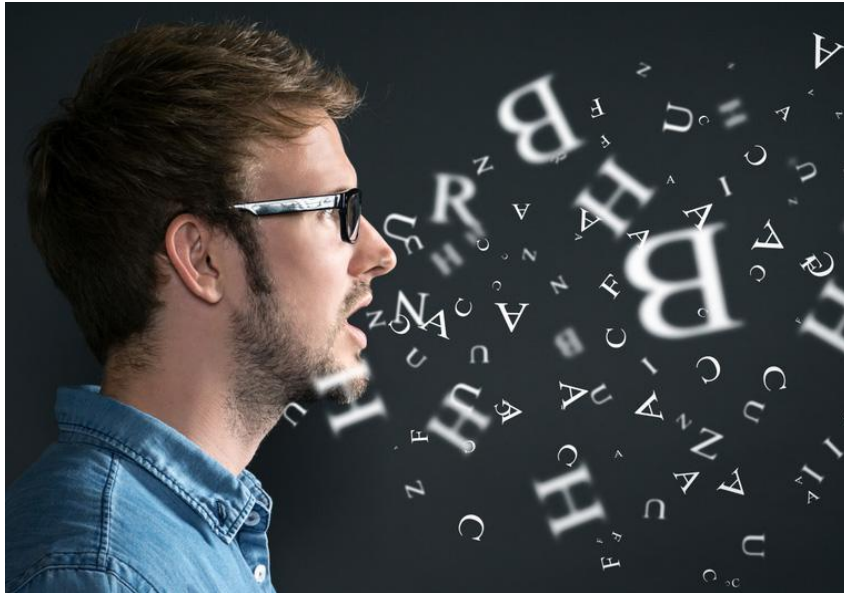
In order for speech therapists to engage these clients with articulation disorders like lisps, among other disorders, they must know the inner working of the vocal tract as well as the types of speech sounds and where they stem from, in order to cater their therapy practices to the specific needs of each client.

40.2.1 Place of articulation

Just as we covered the anatomical and physiological features in the mouth, throat, neck, face, and brain, we must understand where the point of origin is in reference to speech sounds. The places of articulation identify and define the spots within the human speech mechanisms where sound is produced. In other words, either a "constriction" or an "obstruction" of air occurs within these places, thus initiating the process of articulation related to specific units of sounds.

During speech and language therapy evaluations, assessments, and services, speech pathologists will engage clients to undergo a series of exercises that encourage them to engage the vocal tract and speech mechanisms to initiate articulation. While studying speech and language therapy, it is best to speak aloud in order to engage in practice that you can not only hear but also feel. By undergoing exercises where you speak aloud, you can actively learn through experience. You are encouraged to experience the way each articulator is accessed, engaged, manipulated, and ultimately produced the desired sounds.

- **bilabial consonants** – produced by engaging both lips together and airflow in and out of the mouth is blocked.
    - the "p" sound in "purse"

- ○ the "b" sound in "back"
- ○ the "m" sound in "calm"
- **labial-dental consonants** – articulated through the use of the lower lip and upper teeth, where air is constricted when your lip contacts the upper teeth to produce the sound.
  - ○ the "f" sound in "calf"
  - ○ the "v" sound in "vine"
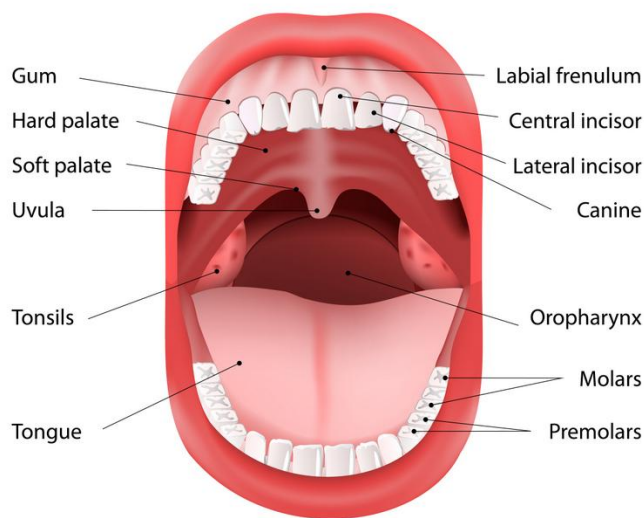
- ● **dental** – the tip of the tongue is up or against the upper front teeth, thus creating a restriction in air exiting or entering the oral cavity.
  - ○ the "th" sound in "bath"
  - ○ the "th" sound in "lather"
- ● **alveolar** – the tip of the tongue touches or is near the alveolar ridge that forms the borders of the upper and lower jaw along the teeth.
  - ○ The "n" sound in "no"
  - ○ The "t" sound in "rat"
  - ○ The "d" sound in "dip"
  - ○ The "s" sound in "bus"
  - ○ The "z" sound in "jazz"
  - ○ The "l" sound in "luck"
- ● post-alveolar – when the airflow is blocked due to the tongue causing a constriction beyond the alveolar ridge of the mouth with the tongue located behind the ridge itself.
  - ○ the "sh" sound in "shoot"
  - ○ the sound represented by an "s" in "measure" and "vision"
  - ○ the "ch" sound in "chick"
  - ○ the "j" and "dg" sounds in "jam" and "badge"

- **palatal** – raising the tongue up to the hard palate at the roof of one's mouth in order to restrict air flow.
  - the sound represented by a "y" in "yes" and "bayou"
- **velar** – when the tongue is raised to the soft palate, also called the velum, thus blocking air.
  - The "n" sound represented in the words "going" and "uncle"
  - The "k" sound in "bike"
  - The "g" sound in "good"
  - The "w" sound in "win"

- **glottal–articulation** stems from the glottis, which is the part of the larynx that consists of the vocal cords. If you hold your mouth open and inhale air into your lungs and hold it there you are holding your glottis closed, and by this you eliminate the chance for the air to flow out of your lungs. Once you release the held breath, your glottis expands and released the air.
 - The "h" sound in "Bahamas"

40.1.1 Manner of articulation

The configuration and interaction of the lips, tongue, and hard and soft palates when producing speech sounds is another way to describe the manner in which words are articulated or produced.

- **nasal** – air released through the nose as the soft palate is lowered for articulation.
  - The "m" sound in "mad"
  - The "n" sound in "no"
  - The "n" represented in the word "going"
- **stop** – when the vocal tract is completely closed and air is not released through the nasal passage.
  - the "p" sound in "rap"
  - the "b" sound in "cab"
  - the "t" sound in "tab"
  - the "d" sound in "bad"
  - the "k" sound in "back"
  - the "g" sound in "bug"

The Larynx

Midsagittal view   Endoscopic view
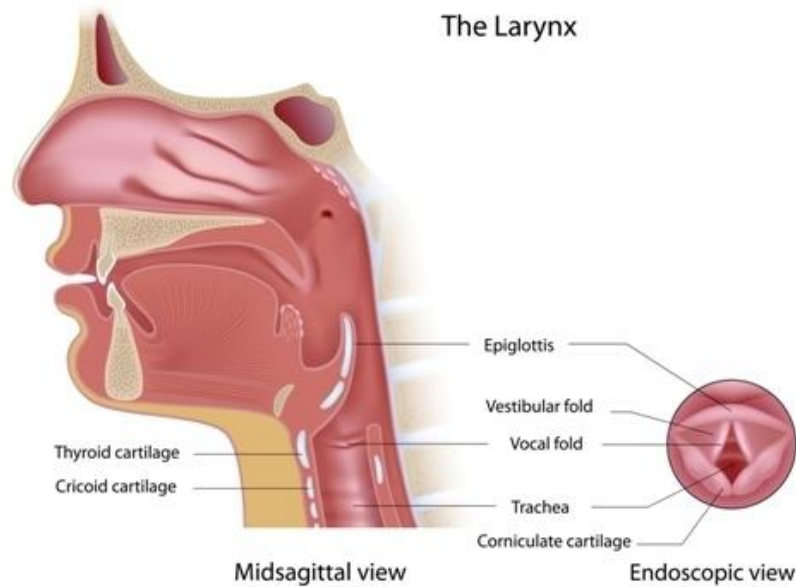
- **fricative** – nasal and stop consonants involve a restriction of the vocal tract and a breath is forced through the constricted passage.
  - the "f" sound in "from"
  - the "v" sound in "have"
  - the "th" sound in "thick"
  - the "th" sound in "the"
  - the "s" sound in "suit"
  - the "z" sound in "zoo"
  - the "sh" sound in "shot"
  - the "s" sound in "visor"
  - the "h" sound in "happy"

- **affricate** – the affricate consonant initiates a stop with air that builds up behind the articulator, and released as a fricative.
  - The "ch" sound represented in the word "match"
  - The "j" and "dg" sounds represented in the word "judge"
- **lateral** – when the tongue blocks the air flowing into the center of the mouth, therefore, the air travels around the sides of the tongue.
  - the "l" sound in "lady"

40.3 Other properties of speech and language

Throughout this module you should have gained a much deeper understanding and appreciation of the way that language functions, from producing the smallest units of sounds to tracing back to the distinct locations in which sounds are produced and the manner in which they are articulated. With the extreme complexities of language, speech and language therapists need to educate themselves on many approaches and origins related to topics in language and speech production. Other important areas of speech and language properties are outlined here, providing a great knowledge base for students pursuing a career path of interest in the speech, language, and hearing sciences.

- **fluency** – the ease and the pace to which speech units of sounds, syllables, and words are able to flow from the vocal tract. Cluttering (rapid rate speech) and stuttering (involuntary repetitions of speech) are disorders associated with fluency in speech production that will be further discussed in a future module in this course of study. The overarching term of fluency can in many ways relate to more than just speech. Here are the areas of language fluency:
  - reading – the ability to understand and comprehend texts written in one's native language.
  - writing – the ability to formulate written texts in one's native language.

- ○ speaking – the ability to produce speech and to be understood by others within one's native language.
- ○ listening comprehension – the ability to follow and to understand speech in one's native language.
- ○ reading comprehension – the level of understanding of texts and messages.

- ● **resonance** – the way in which air is able to flow in and out of the nasal and oral passages.
- ● **voice and respiration**– the process by which air is inhaled and exhaled to produce speech sounds.

EXAM LINK