Frontal LISP

Lateral LISP

MARSHALLA
SPEECH & LANGUAGE

Frontal Lisp, Lateral Lisp

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Illustrations
All illustrations were created in Microsoft PowerPoint by Pam Marshalla.

Disclaimer
This text describes invasive oral-motor stimulation techniques intended for use by the professional speech and language pathologist. The book has been written with the knowledge that some readers are new to the area of oral-motor therapy while others are well-versed in it. Professionals who utilize these techniques must have thorough knowledge of the oral mechanism, including its structure, sensitivities, reflexes and movements. Professional judgment and common sense must rule the application of these techniques with specific clients. As such, the reader is solely responsible for discretionary use of the oral-motor techniques contained herein.

Dedication

This book is dedicated to Dr. Charles Van Riper, a pioneer in the field of speech-language treatment and an original thinker who set forth the basics of traditional articulation therapy.

Dr. Van Riper was interested in the process and the procedures of speech-language therapy. In the early 1980's he worried that we were beginning to lose sight of these practical things as our research began to focus increasingly on the minutia of speech and language. I never met Dr. Van Riper in person, but he wrote to me about his concern. "It is as if we are spending all our time counting the number of angels dancing on the head of a pin." He said that we needed people who could keep us focused on the big picture and the nuts and bolts of therapy. He liked the speech and language therapy newsletter I was writing at the time, and strongly urged me to continue writing therapy-based material.

I was a very young speech-language pathologist at the time I received Dr. Van Riper's letter. The idea for this book was just an idea back then. But thirty years of clinical experience later I think I finally have enough insight and experience to write it. My hope is that it will serve Dr. Van Riper's honorable goal of keeping us focused on the process of speech and language treatment no matter how many angels we count on the head of that pin.

Please Note

- Male pronouns (*he, him, his*) are used to represent clients. Female pronouns (*she, her, hers*) are used to denote speech-language pathologists and other adults. This method has been adopted for simplicity.
- The official title of "speech-language pathologist" is understood as the title of those professionals for whom this book is written. However, other terms such as "speech teacher," "speech therapist," "communication specialist," "trainer" and "facilitator" are employed to add color to the text. The shorthand version, SLP, also is used.
- It is understood that "speech-language therapy" is the proper phrase for describing the work of the speech-language pathologist. Nevertheless, other terms such as "speech therapy," "speech correction," "therapy," "speech exercises," "work," "facilitation" and "treatment" have been used to add color to the text.
- The term "normal" is used in the classic sense, that is, as a description of speech which exists without impairment. For example, "A midline air stream is employed in *normal* production of all the sibilants."
- Terms used to designate the parts of the tongue are based on the "Zones of the Tongue" system proposed in *Oral-Motor Techniques in Articulation and Phonological Therapy* by Pam Marshalla.
- It is understood that the terms *prevocalic* and *postvocalic* are the correct terms used to describe a consonant's position within a syllable. However, the terms *initial, medial* and *final* have been adopted for use in this text. These older terms adequately describe the position of a consonant within a whole word for our purposes here. The choice to use these out-of-favor terms has been the author's.
- Definitions for phonetic terms have been taken from two sources: (1) Carrell, James and William Tiffany, (1960). *Phonetics: Theory and Application to Speech Improvement*. McGraw-Hill Book Company: New York, New York, and (2) Nicolosi, Lucille, Elizabeth Harryman and Janet Kresheck, (1983). *Terminology of Communication Disorders.* Williams and Wilkins: Baltimore, Maryland.

Contents

Introduction

The frontal lisp and the lateral lisp are two common articulation errors that receive very little attention today. Speech-language pathology students who emerge from university training programs overwhelmingly report that they have spent little if any time discussing these error patterns in classes, and literally no time practicing diagnostic and therapeutic approaches to these problems in their internal and external practice therapy assignments. This has not always been the case. Historically, speech-language pathologists were known by the titles of "elocutionists," "speech correctionists" and "speech teachers." Remediation of the lisps used to be one of the primary concerns of our professional pioneers.

Today however it seems that everything else we learn – from literacy in the classroom to swallowing evaluations – takes precedence over the simple process of articulation therapy. Correcting speech sound error has been put on the back burner. Yet the frontal and lateral lisps are two of the most common error patterns we see in all types of speech and language disordered people. The remediation of articulation errors in general, and the lisps in particular, is one area the professional speech-language pathologist is uniquely suited to address. If we do not help clients correct these errors, nobody will.

Our lack of focus on so-called "mild" articulation errors has reared its ugly head in the public forum. Broad observation of speakers of all dialects of North American English reveals that both the frontal and lateral lisp have slowly crept back into the discourse of the educated class. We find these errors – especially the lateral lisp – in doctors, lawyers, teachers, preachers, scientists and writers. We even find lisps in politicians, radio talk show hosts, television journalists, actors and news broadcasters. These are people for whom public speaking is a way of life! I find it troublesome to discover lisps in professionals. Their errors usually are controlled, but they are not corrected. In other words, they have learned to speak as clearly as possible with the error they have. In my view this is a symptom of a society that is losing focus on the details of proper pronunciation.

In school, children with frontal or lateral lisps often suffer silently with these problems, and their parents worry that their kids will be held back socially or educationally. The elementary student with a lisp often is viewed as baby-like, and the middle school student as different, stupid or weird. High school students sometimes receive low grades on oral reports because their spoken language is hard to understand when they have either of these lisps.

It is this author's opinion that we have let go of correct pronunciation as a sign of intelligence and of education. It is also my opinion that this is largely the fault of my own profession. Some may feel that the presence of a lisp is no big deal. But I can tell you that our clients and their parents think it IS a big deal. They want help to eliminate this error.

These children are our future leaders. They deserve, no, they NEED to have excellent communication skills.

I have spent the better part of thirty years diagnosing, treating and thinking about frontal and lateral lisps. Although generally viewed as "mild" articulation errors, the lisps can be difficult to correct. While most clients fix up these problems in no time, some spend years in therapy and are dismissed with limited or no success. Children who fail in this therapy often quit speech sessions sometime during the middle school years when it becomes less embarrassing to retain the misarticulation than it is to be pulled out of class for therapy. Even clients who receive private speech and language therapy can have a very difficult time getting rid of these errors, especially the lateral lisp.

The information presented in this book is based on the author's clinical experiences and information obtained from other speech-language pathologists who have participated in continuing education workshops throughout the United States and Canada. My own therapy has been shaped through trial and error by combining strategies from articulation, phonological, oral-motor and feeding therapy. I have not tried to prove my insights and techniques in this volume: I have only tried to explain them. This book is not a textbook or a lab research summary. This book only contains the insights, advice and experiences of one therapist gained through thirty years of direct clinical experience.

My immediate goal in writing this book is to aid speech-language pathologists in their own work with clients who lisp. My bigger goal is that millions of English-speaking clients will be able to move on to better speech by using the methods contained herein. And my ultimate goal is that eventually every new class of speech-language pathology students will receive instruction on these techniques before they face these clients on the job.

Chapter 1

The Phonemes

The frontal lisp and the lateral lisp represent two different problems imposed on the same set of phonemes. The phonemes that are affected are these six sounds: /s/, /z/, /ʃ/, /ʒ/, /tʃ/ and /dʒ/. The phonemes of concern to us comprise six distinct sounds, however each is represented by several spelling patterns. Table 1 presents a list of each phoneme and their spelling options.

Sibilants, Stridents, Fricatives and Affricates

The individual phonemes in our set have been called *sibilants, stridents, fricatives* and *affricates*. The following definitions contain quoted elements from Nicolosi, Harryman and Kresheck.

1. *Sibilant:* A sibilant is a phoneme "whose production is accompanied by a hissing noise." This set includes /s/, /z/, /ʃ/, /ʒ/, /tʃ/ and /dʒ/. The term comes from the phonetics literature.
2. *Strident:* A strident phoneme is one that is "characterized by noisiness resulting from a fast rate of air flow directed against the hard surfaces of the teeth." This set includes /f/, /v/, /s/, /z/, /ʃ/, /ʒ/, /tʃ/ and /dʒ/. The term comes from the phonology literature.
3. *Fricative:* A fricative phoneme is one that is formed "by directing the breath stream with adequate pressure against one or more surfaces, principally the hard palate,

Table 1

Phoneme	Spelling	Sample Word
/s/	s	soup
	c	city
	sc	scene
	ss	boss
/z/	z	zoo
	zz	buzz
	s	his
/ʃ/	sh	shoe
	ss	passion
	t	nation
	sch	schilling
	c	appreciate
	ch	Chicago
	s	sugar
/ʒ/	s	television
	g	beige
	z	azure
/tʃ/	ch	chew
	tch	watch
	t	question
	c	cello
/dʒ/	j	jump
	g	gem
	dg	edge
	dj	adjust
	gg	exaggerate
	ld	soldier

alveolar ridge behind the upper teeth, and lips." This set includes /f/, /v/, /s/, /z/, /ʃ/, /ʒ/, /θ/ and /ð/. The term comes from the phonetics literature.

4. *Affricate:* An affricate phoneme is one that begins as a stop and ends as a fricative. This set includes /tʃ/ and /dʒ/. The term comes from the phonetics literature.

The term "sibilant" is the only one of these descriptors that encompasses all six of our target phonemes and no other, therefore it is the term we shall use the most often throughout this text. All four of these terms refer to the "hissing" quality of air turbulence that occurs when the sounds are made correctly. Learning Exercise 1 is designed to help the reader become aware of this hissing element in our target phonemes. It is one of the most critical factors in understanding the frontal and lateral lisp misarticulations.

LEARNING EXERCISE 1*

Discover the Hissing Element

In a quiet location, produce each of the six phonemes individually: /s/, /z/, /ʃ/, /ʒ/, /tʃ/, /dʒ/. Prolong each so you have time to attend to its features. Listen to the hissing quality or sharp edge of each. Also notice how each phoneme sounds distinct from the rest.

* The exercises contained throughout this text assume that the reader can and does produce the sibilant phonemes within the acceptable range.

The Cognate Pairs

Our six subject phonemes occur in three pairs. Each pair contains one voiceless and one voiced phoneme. These are known as *cognate pairs.* The voiceless and voiced cognate pairs are:

1. /s/ and /z/
2. /ʃ/ and /ʒ/
3. /tʃ/ and /dʒ/

The two phonemes within each pair are nearly identical in terms of oral position but different in terms of voicing and tension. Thus, /s/ and /z/ are made with essentially identical oral positions, however /z/ is made with voice while /s/ is not. Likewise, /ʃ/ and /ʒ/ are made with identical oral position but different voicing. And, /tʃ/ and /dʒ/ are made with nearly identical oral position but different voicing. Thus while diagnosis and therapy must address all six individual phonemes, our therapeutic efforts can be toward only three individual oral movement patterns: one for /s/ and /z/, one for /ʃ/ and /ʒ/ and one for /tʃ/ and /dʒ/. Learning Exercise 2 will help readers attune themselves to the cognate pairs.

Application to Therapy

The reader will have noticed through the exercises in this first chapter that all six of our subject phonemes are quite similar. That is why they are classified together. They are very

LEARNING EXERCISE 2

Attune to the Cognate Pairs

Prolong /s/ and then add voice to produce /z/. Make these two sounds back-and-forth in a continuous sequence. Notice that /s/ is produced without voice whereas /z/ is produced with voice. Also notice that oral position is virtually the same for both. Repeat for the pairs /ʃ/ and /ʒ/, and then again with /tʃ/ and /dʒ/.

similar in the way they *sound* and the way they are *made*. A client who is to achieve correct articulation of these phonemes must possess excellent skills in these two areas. He must be able to hear the differences between the phonemes, and he must have the ability to perceive his own oral movements well enough to position his mouth differentially in these ways. These skills are known respectively as *auditory discrimination* and *kinesthetic awareness*. A client must have excellent auditory discrimination skill as well as a well-developed sense of kinesthetic awareness to produce these six phonemes differentially and correctly. Therapy to facilitate these sounds includes techniques to enhance these underlying processes. Therapy encourages clients to listen carefully and to control oral movement.

Chapter 1 Summary

The Phonemes

- The frontal lisp and the lateral lisp represent two different problems imposed on the same set of phonemes: /s/, /z/, /ʃ/, /ʒ/, /tʃ/ and /dʒ/.
- These phonemes are classified together phonetically and phonologically because of their "hissing" quality.
- Diagnosis and therapy must address all six individual phonemes, however, therapeutic efforts can be directed toward only three individual oral movement patterns.
- Clients must have excellent auditory discrimination skill and a well-developed sense of oral kinesthetic awareness to produce these six phonemes differentially and correctly.
- Therapy encourages clients to listen carefully and to control oral movement.

Chapter 2

Oral Position for Sibilant Production

The oral mechanism must be positioned in precise ways in order to achieve the hissing element necessary for correct production of each of our six target phonemes. We shall discuss this idea generally for all six of the phonemes, and then specifically for the characteristics that differentiate one pair from another.

Midline Stridency

Midline stridency is the most important element of sibilant production. Stridency is created upon exhalation through the mouth. As we exhale, we direct our voiced or voiceless air stream through the oral cavity along a mid line channel from back to front. The basic groove shape is created by elevating the sides of the tongue and by keeping its midline low (figures 01 and 02). This fundamental grooved tongue pattern is essential for correct production of all six phonemes because it ensures that the exhaled air stream will strike against the lingual surfaces of the incisors in such as way as to create air turbulence right at midline. Turbulence is created as the air stream (1) tumbles around between the tongue and the incisors, (2) cuts between the upper and lower teeth, and (3) exits the mouth between the lips.

Figure 01

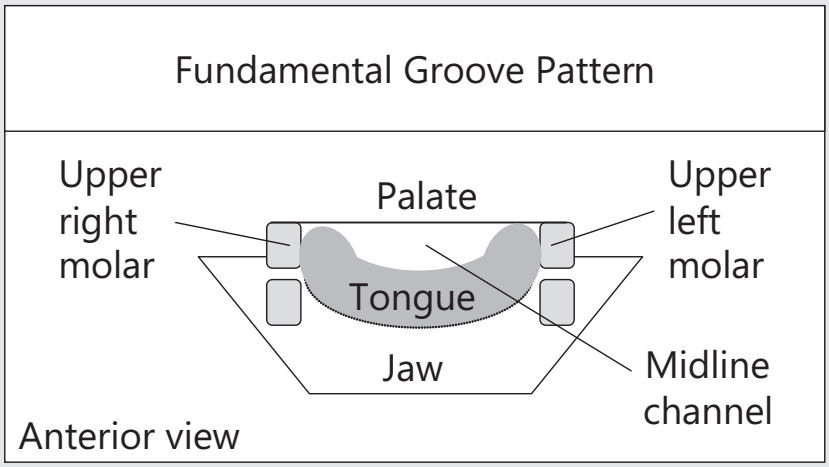


Figure 02

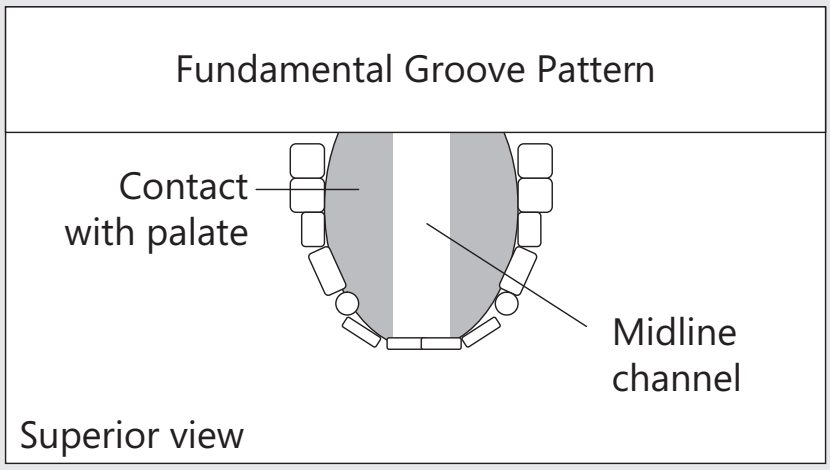
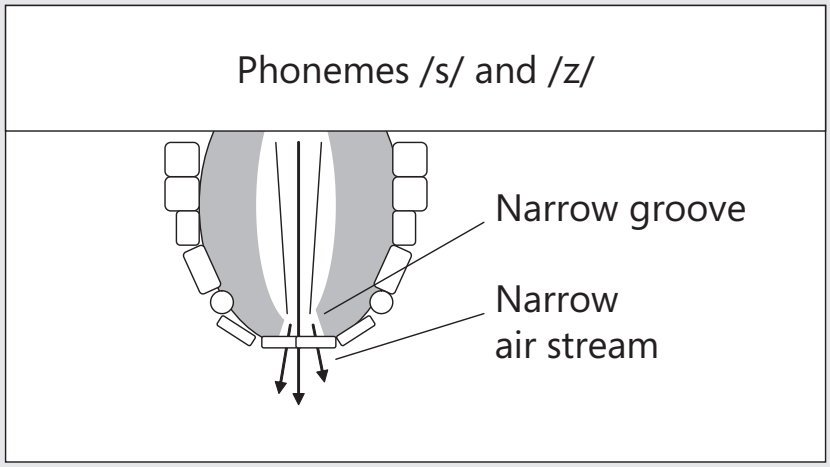


Figure 03



First Pair: /s/ and /z/

In the traditional phonetics literature, phonemes /s/ and /z/ were classified as "lingua-alveolar fricatives." That is because it was thought that the principle action necessary for production of these sounds occurred between the tongue-tip (lingua) and the alveolar ridge. As we shall see, this is partly correct. However, the tongue-tip is not the only part of the mouth that creates this ombissure (mouth position). The rest of the tongue, as well as the jaw and lips must be taken into consideration.

From an oral-motor perspective, phonemes /s/ and /z/ are produced with a specific modification of the essential tongue groove pattern introduced above. This tongue position is identical for both /s/ and /z/ (figure 03). Dark areas indicate where the tongue makes contact with the palate, and light areas mark where it does not (Zemlin, 1968).

In analyzing this drawing, first notice that the entire tongue is positioned behind the front teeth. No part of the tongue is positioned anterior to the front teeth. Next, notice that

the tongue makes contact with the palate from back-to-front along both lateral margins. Positioning the sides of the tongue against the palate on both sides prevents air from escaping laterally. Also notice that articulation in the back and middle of the palate forms a wide channel of air while the position of the tongue at the alveolar ridge creates a very narrow channel at the blade of the tongue. Narrowness at the blade is caused by elevating the lateral portions of the blade while keeping its middle away from the palate.

The thin channel formed at the blade narrows the air stream, thus increasing its speed and strength. The distinct stridency of /s/ and /z/ is made as this forceful, swift and narrow channel of air strikes the back of the central incisors, rebounds, and then escapes from between the teeth. Narrowness at the blade is a critical factor for correct /s/ and /z/ production.

Tongue-tip placement is also a factor in production of /s/ and /z/, however, there is more than one position which can be used. The tongue-tip can be (1) elevated toward but not touching the alveolus, (2) lowered toward the floor of the oral cavity, or (3) kept in a middle position between the two extremes. The tongue-tip cannot be placed against the alveolar ridge at any time, however.

The lips also play a part in production of /s/ and /z/. The lips generally are slightly retracted (pulled away from midline into a slight smile) so that they stay out of the way of the escaping air stream. Having the lips retracted and pulled back away from mid line contributes to the acoustic quality of /s/ and /z/.

The jaw, as mentioned earlier, is a background figure to production of /s/ and /z/. It should be in a stabile and graduated position: low enough to allow air and sound to escape but high enough to support tongue-to-palate articulation.

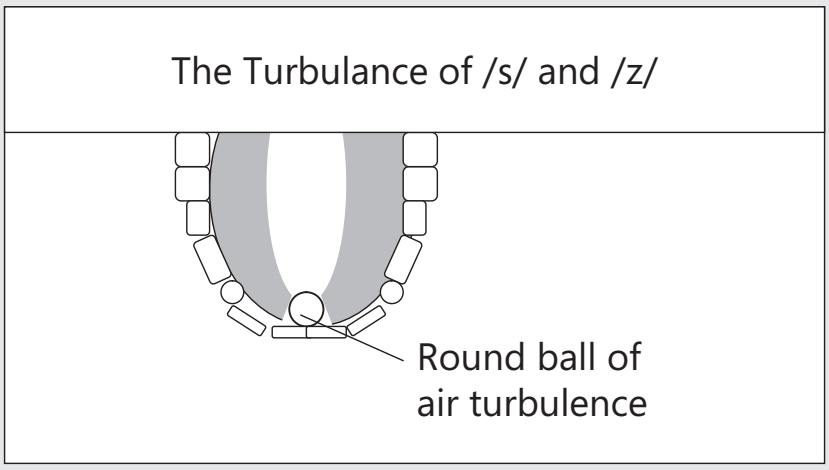
The ultimate strident sound of /s/ and /z/ is created by air turbulence. The small, narrow and forceful air stream of /s/ and /z/ strikes the incisors and tumbles around between the incisors and the blade of the tongue where the channel is the most narrow. The sound is further enhanced as the air stream cuts between the upper and lower incisors, and as it passes between the lips. The area of air turbulence rather resembles a tiny ball of swirling air behind the teeth (figure 04 on next page). Learning Exercise 3 (on next page) will help the reader become aware of this phenomenon.

Second Pair: /ʃ/ and /ʒ/

In the traditional phonetics literature, phonemes /ʃ/ and /ʒ/ were classified as "lingua-palatal fricatives." That designation was chosen because of the important contact of the body of the tongue to the palate. But this description presents us with another limited view of tongue position for these sibilants. Again, one must consider the relationship between the entire tongue and palate, as well as jaw and lip position.

From an oral-motor perspective, /ʃ/ and /ʒ/ are produced with a second specific modification of the essential tongue groove pattern. This tongue configuration is essentially identical for both /ʃ/ and /ʒ/ (figure 05 on next page). In analyzing this drawing, first notice that /ʃ/ and /ʒ/ also are produced with the entire tongue positioned behind the front teeth. Next, notice that the tongue makes contact with the palate from back-to-front along both lateral margins. In this instance the central groove is wide throughout its length. This wide groove allows the air stream to remain broad as it strikes the teeth. As a result, the air stream is slower and less

Figure 04



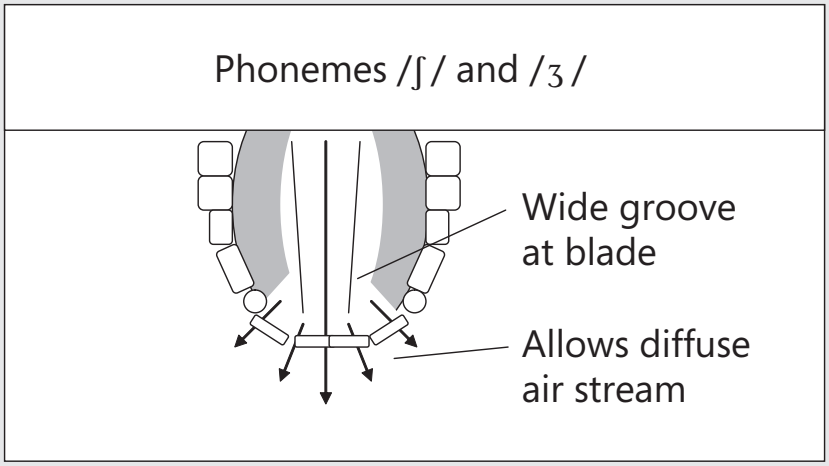
LEARNING EXERCISE 3

The Ball of Air Turbulence

Sitting quietly, produce and prolong /s/ in isolation. Notice that your tongue maintains articulation with the palate along its lateral margins, thus preventing lateral air escape. Also notice that the entire tongue is positioned behind the front teeth. Notice that the tongue groove narrows at the blade, forcing the air stream into a very narrow channel there. Also notice the force with which the air stream strikes the anterior teeth. Observe that a small ball of air turbulence forms between the front of the tongue and the central incisors, and that, as it exits, this air can be felt with the skin of the lips, face or chin.

Repeat this activity for /z/. Notice the addition of voicing and the resultant pressure differences in the process.

Figure 05



powerful than that for /s/ and /z/. The unique sibilant quality of /ʃ/ and /ʒ/ is created when this wide and slow-moving air stream strikes broadly across all the anterior teeth.

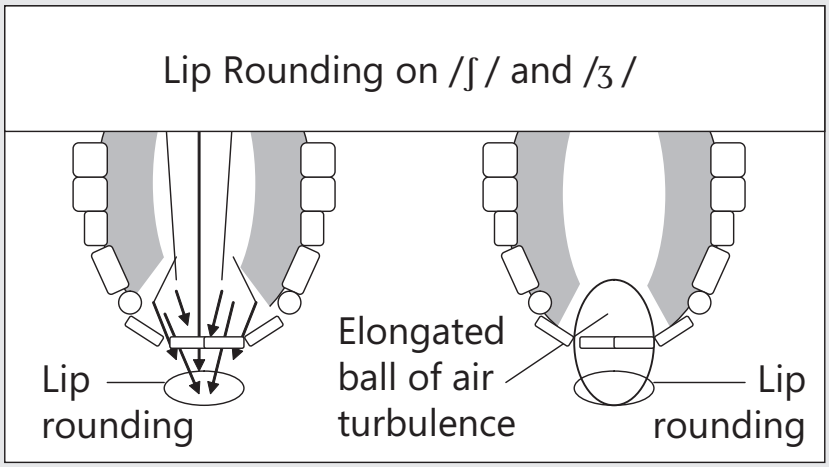
Tongue-tip placement also plays a part in production of /ʃ/ and /ʒ/. In essence, the tongue-tip needs to stay out of the way of the broad air stream. The tongue-tip can be held slightly higher or lower, but it can never be placed against the alveolar ridge. Such a move would force a lateral production of sound.

The strident sound of /ʃ/ and /ʒ/ is created by broad air turbulence as it (1) strikes the lingua surfaces of the incisors, (2) rushes around in the space created between the teeth and the tongue, and (3) escapes the mouth out between the upper and lower teeth.

The lips play an important role in the acoustic quality of /ʃ/ and /ʒ/. The lips are somewhat rounded or puckered, which causes a lengthening of the oral cavity and an anterior extension of the ball of air turbulence. The resultant shape of air turbulence is rather like football. It stretches from about the middle of the tongue groove to the most anterior point of the puckered lips before escaping from between them (figure 06). Learning Exercise 4 will help the reader experience and understand this phenomenon.

The jaw again is a background figure to production of /ʃ/ and /ʒ/. It should be in a graduated position: low enough to allow air and sound to escape but high enough to support tongue-to-palate articulation.

Figure 06



LEARNING EXERCISE 4

Lip Protrusion and the Ball of Air Turbulence

Produce and prolong /ʃ/ while sitting quietly. Notice that your tongue maintains articulation with the palate at its lateral margins, thus preventing air escape laterally. Also notice that the entire tongue is positioned behind the front teeth. Notice that the tongue groove remains wide

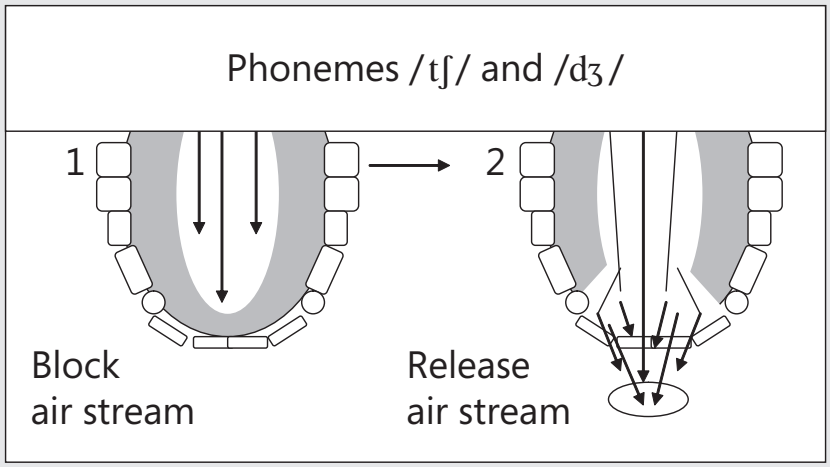
throughout its length, allowing the air stream to remain wide throughout. Also notice that the air stream's force is reduced when compared to /s/. Observe that a longer football-shape of air turbulence is created. It stretches between the middle of the tongue toward the back to the lips that are slightly rounded in the front.

Alternate rounding and retracting the lips (pucker and smile) while prolonging /ʃ/ and listen to the acoustic changes that result. The phoneme should sound correct when the lips are somewhat rounded, and it should sound distorted when the lips are retracted. It also should be distorted if the lips are puckered so much that a very small lip opening is created.

Also, produce /ʃ/ and alternate it in sequence with /s/. Feel the slight difference in the tongue groove configuration in these two phonemes. Also notice the differences in lip rounding and retracting. Notice how slight these differences are.

Repeat all aspects of this exercise for /ʒ/, and compare it with /z/. Notice the addition of voicing throughout.

Figure 07



Third Pair: /tʃ/ and /dʒ/

In the traditional phonetics literature, phonemes /tʃ/ and /dʒ/ were classified as "linguapalatal affricates." Affricates are made in two phases. During the first phase, the air stream is completely occluded or held from being released – like a stop consonant. In the second phase, the air stream is swiftly released, and it is during this second phase that we hear frication or stridency. Learning Exercise 5 helps us perceive these phases. Let's analyze the oral movements and positions of these two phases for both /tʃ/ and /dʒ/ (figure 07).

- *First Phase:* During the stop phase the exhaled air stream is prevented from escaping the oral cavity by positioning the tongue as it does for /t/ and /d/. Blocking occurs because the tongue articulates with the palate in a horseshoe shape around its perimeter from the back lateral margin on the left to the back lateral margin on the right. This position is held just long enough for air pressure to build slightly behind the horseshoe.

- *Second Phase:* The second phase of the two affricates is comprised of a swift lowering of the tongue tip while the sides of the tongue remain articulated with the palate. As a result of tip lowering, the tongue assumes the same shape as that used for /ʃ/ and /ʒ/. Lowering the tip allows the air stream to escape medially and for stridency to be created. Tongue position and lip puckering create the same football-shaped air turbulence chamber as that created for /ʃ/ and /ʒ/.

Again, the jaw is a background figure to production of /tʃ/ and /dʒ/. It should be in a graduated position: low enough to allow air and sound to escape but high enough to support tongue-to-palate articulation.

The Jaw's Role in Sibilant Production

On the stage of sibilant production, the jaw plays a primary yet silent role. We hardly notice the jaw at all during correct articulation in mature speech. That is perhaps why most discussions of articulation and sibilant production ignore jaw function completely. But terrible things can happen to the acoustic quality of these sounds when jaw movement and position are incorrect.

Mature speech is produced with relative jaw stability. When the jaw is stabile, it moves up, down, left, right, forward, back and in rotation during speech, but it does so in a very tiny range. This is the *restricted range of movement* that defines stability. The jaw is not immobile or stiff. It is movable but restricted in its movement and thus stabile. This position also has been called a *slightly graded open position*.

Jaw stability allows for maximum articulation proficiency. Jaw stability keeps the jaw relatively high during speech. This allows for efficient articulation of the tongue to the teeth and palate, and the upper and lower lips to one another. As such, jaw stability supports rapid and precise speech movements that can be sequenced flawlessly in rapid conversational speech.

Jaw position is especially important in production of the sibilants. The jaw is positioned in such a way that it allows air to flow against the teeth for creation of stridency. Since the

LEARNING EXERCISE 5

Discover The Phases of Affricate Production

Produce /tʃ/ slowly in isolation in a quiet environment. Notice that the tongue first articulates in a horseshoe pattern against the palate to completely block the air stream. And notice that air pressure is allowed to build slightly as the tongue maintains this position. Next, release /tʃ/ slowly, and notice that the tongue-tip alone lowers away from the palate. The sides of the tongue remain elevated against the palate to continue the midline movement of air.

Further, say /ʃ/ and /tʃ/ in alternating sequence. Notice that the oral position for the second phase of /tʃ/ is the same as that for /ʃ/.

Now, compare /tʃ/ and /s/ in this way. Many differences will be noted in tongue and lip position.

Repeat this exercise for /dʒ/. Compare it to /ʒ/ and then to /z/.

LEARNING EXERCISE 6

The Jaw's Role in Sibilant Production

Produce and prolong /s/ and attend to your jaw position. Watch yourself in a mirror so you can see its position and attend to the internal proprioceptive sensations. Also, place your hand on your chin to feel its position that way. Notice how your jaw position supports correct production of /s/. Also notice that it is positioned so that your central incisors are very close to one.

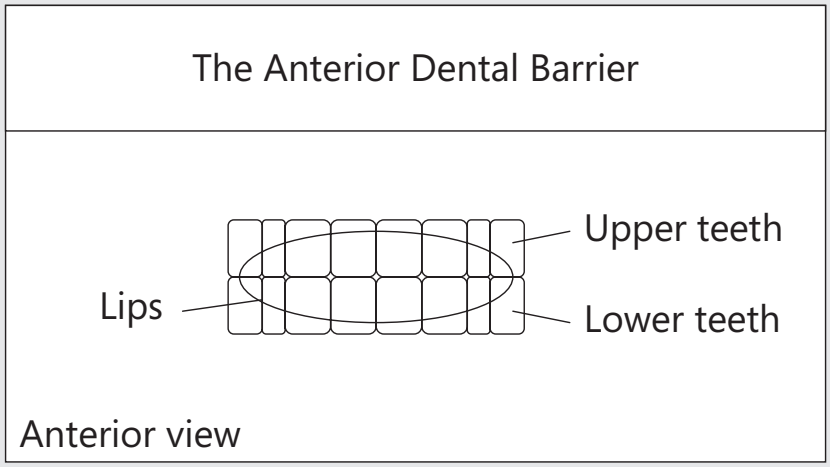
Now, continue to prolong /s/ as you slowly lower your jaw several millimeters. Do you notice that the stridency you need for correct production of /s/ vanishes? Alternate production of correct /s/ with the jaw held high and then incorrect production of /s/ with the jaw lowered too far. Listen to the acoustic changes that occur as the jaw moves in to and out of position. Make sure not to alter tongue position relative to the jaw. You want to hear the effects of jaw alteration only.

Now continue to prolong /s/ but this time shift your jaw to the left and to the right. Notice the acoustic variations that occur. Phoneme /s/ should become at least slightly distorted as the jaw lateralizes too far to the left or right.

Next continue to prolong /s/ but this time shift your jaw too far forward (protrusion) and too far back (retraction). Notice the acoustic variations that occur. Phoneme /s/ should become at least slightly distorted as the jaw lateralizes too far forward and back.

Repeat all the steps of this jaw exercise with the other sibilants – /z/, /ʃ/, /ʒ/ /tʃ/ and /dʒ/.

Figure 08



front teeth must nearly approximate during production of all the sibilants, the jaw must move into this position.

The movement pattern assumed by the jaw is dependant upon the position from which it begins its movement. It may lower, elevate or protrude depending on its starting point. Suffice it to say the jaw should lower, elevate or protrude just enough to allow the upper and lower central incisors to position themselves only a few millimeters apart. Too much shifting of the jaw to the right, left, forward or back causes phoneme distortion. Too much

lowering or elevating also causes distortion. Learning Exercise 6 brings clarity to the concept of the jaw's role in sibilant production.

The Dental Barrier and Sibilant Production

As we have seen, the production of stridency is dependent upon a barrier created by loose articulation of the upper and lower incisors (figure 08). Problems in sibilant production occur when this barrier cannot be formed correctly. Malocclusion as well as missing, malformed or improperly positioned anterior teeth can cause the dental barrier to be too porous for good sibilant production. Distortion will be the result. The nature of the distortion will depend on the specific gaps caused by missing and misplaced teeth.

Adequate progress in articulation therapy for both the frontal and lateral lisp is destroyed when the anterior dental barrier cannot be formed. Therapy plans usually are postponed until the dental barrier is correct and stabile. This usually means postponing therapy until the permanent incisors have stabilized in position. It also can mean postponing treatment until certain stages of orthodontic treatment are complete. Compensatory techniques must be employed when the dental barrier cannot or will not be corrected.

Chapter 2 Summary

Oral Position for Sibilant Production

- The oral mechanism must be positioned in precise ways in order to achieve the hissing element necessary for correct production of each of our six target phonemes.
- Midline stridency is the most important element of sibilant production.
- The air stream of sibilant production is directed through the oral cavity along a mid line channel from back to front.
- The basic groove shape is created by elevating the sides of the tongue and by keeping its midline low.
- The fundamental grooved tongue pattern is essential for correct production of all six target phonemes because it ensures that the exhaled air stream will strike against the lingual surfaces of the incisors in such a way as to create air turbulence right at midline.
- Each of the sibilant phonemes is produced with a specific modification of the essential tongue groove pattern.
- All three sets of sibilant phonemes are produced with the tongue behind the anterior teeth.
- The sibilants are produced with relative jaw stability.
- Problems in sibilant production occur when the barrier formed by the anterior teeth cannot be formed.

Chapter 3

Deep Analysis of the Frontal Lisp

The frontal lisp is an oral-motor pattern seen in typically developing young children and in those with developmental impairment. The term applies when excessive interdental tongue placement is employed during production of one or more of the hissing sounds (figures 09 and 10). The client with a frontal lisp incorrectly slips the tip of the tongue between the upper and lower incisors while saying /s/, /z/, /ʃ/, /ʒ/, /tʃ/ or /dʒ/. The tongue tip may extend slightly to the left or right, but it generally stays at mid line. It is this mid line protrusion that characterizes the frontal lisp error pattern. The tongue may protrude all the way through the blade, but this more extensive protrusion occurs less frequently than simple tip protrusion. The jaw lowers enough to allow this protrusion. The jaw also may protrude somewhat as will be discussed below. A sloppy sound with limited true stridency results when our target phonemes are produced in this way. Sometimes the error results in a true /θ/ or /ð/ substitution for the sibilants.

The frontal lisp is an adorable fact of early childhood. But it usually becomes an affront to the eye and ear once a child is expected to outgrow it. The age at which a child crosses that line is blurry, however. For decades it has been widely accepted that children should outgrow this error by eight years of age, the time at which the average child leaves early

Figure 09

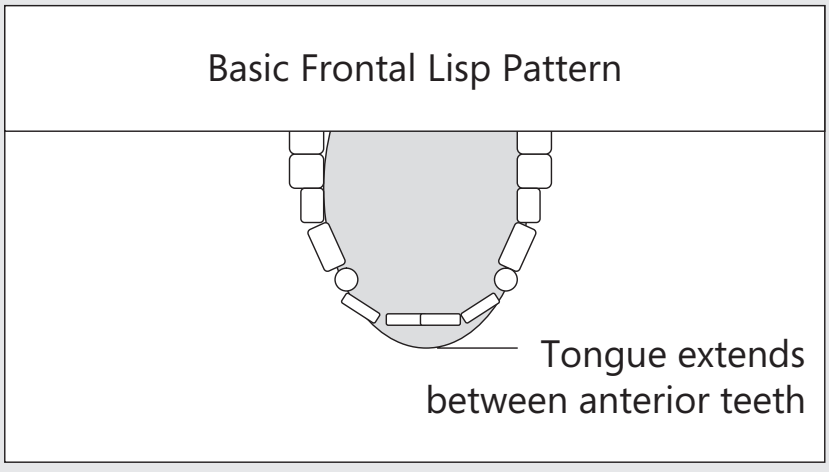
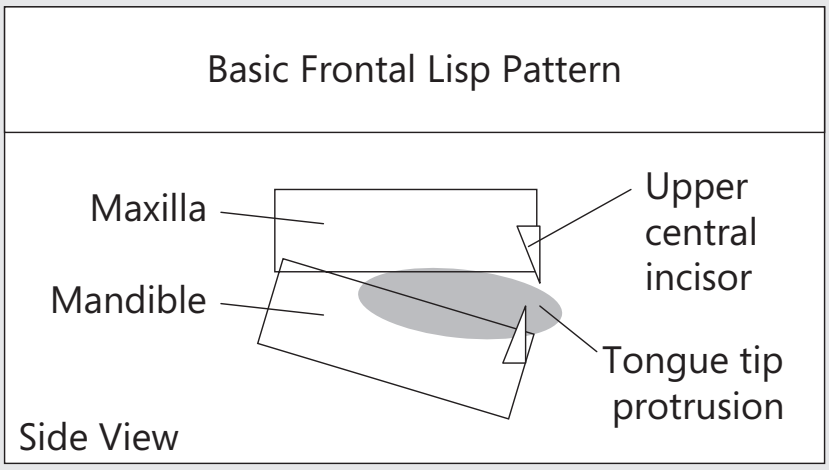


Figure 10



childhood. As a result, most speech-language pathologists in the United States withhold treatment of the isolated frontal lisp until a client is eight or nine years of age.

Some parents request that the frontal lisp be treated when their children are below eight years of age. Parents seeking early treatment are informed that correction of a frontal lisp below age eight years is possible. They also are informed that the therapy may be unnecessary because children often outgrow the frontal lisp. Sometimes a decision is made to give the child another six-to-twelve months of natural growth and development before deciding to begin therapy. Therapy may commence if the lisp does not go away during that time. And it may be addressed earlier if the client is uncomfortable with or distressed by the distortion. Lee Edward Travis' original criteria for enrolling a client in treatment is still a good decision-making process in this situation. Clients are enrolled if the error is troubling to the client, therapist, parents or other significant party.

The question of early enrollment must be viewed in light of the many factors that will be discussed throughout the rest of this chapter.

The Frontal Lisp and the Public School

In the United States today, the frontal lisp is regarded as having no impact on the educational development of children. Therefore, the error, when it occurs alone, sometimes is not treated in the public schools. However, hundreds of therapists across the US have reported to me over the past fifteen years that they try whatever means at their disposal to enroll these children in school therapy. For example, students who receive low grades on oral reports because the frontal lisp makes them difficult to understand can be enrolled in school therapy because the problem is one of both sibilant production and intelligibility. Also, when the lisp interferes with all six sibilants enrollment is sometimes possible because this can be categorized as a multiple misarticulation. Speech-language pathologists have told me that sometimes they see children with a frontal lisp at school "off IEP." This

means that the child is not officially enrolled in therapy but is seen periodically to check his progress. These periodic visits to therapists' offices are not actually assessment sessions: they are mini-treatment sessions. Such is the heart of the speech-language pathologist. It is very hard to turn clients away even when school policy dictates something different. Of course, a frontal lisp that occurs along with other articulation errors or with other specific language or communication problems, can be addressed within the child's overall school speech and language program.

Limited school-based treatment of the frontal lisp has had certain results. First, the frontal lisp seems to be increasing in frequency of occurrence among educated adults. Second, the number of children receiving this service privately seems to have increased. These two general observations should be studied formally to determine if this apparent trend bears out statistically.

Distribution Patterns

The frontal lisp generally is viewed as a simple *delay* in the development of correct sibilant production. However the frontal lisp pattern is noted in a wide variety of clients including those with specific speech and language *delay* as well as those with *disorder*. The following patterns of occurrence are noted:

1. A frontal lisp can occur on one or more of our target phonemes, but the problem usually includes both members of the cognate pairs. In other words, (a) if the lisp occurs on /s/ it also occurs on /z/, (b) if the lisp occurs on /ʃ/ it also occurs on /ʒ/, and (c) if the frontal lisp occurs on /tʃ/ it also occurs on /dʒ/. There may be exceptions to this observation, of course, but I have not seen one in thirty years of direct clinical work.
2. A frontal lisp almost never occurs on the palatal sibilants (/ʃ/, /ʒ/, /tʃ/, /dʒ/) without also occurring on the alveolar sibilants (/s/ and /z/). The opposite does occur however.
3. A frontal lisp can occur along with interdental tongue placement on the other lingua-alveolars – /t/, /d/, /n/ and /l/. This combination of errors is a significant factor in therapy because it suggests a wider oral movement problem and a more urgent need for remediation.
4. A frontal lisp on certain phonemes can occur alongside a lateral lisp on other phonemes.
5. A frontal lisp can occur in clients with phonological impairment. Usually the phonological patterns are addressed earlier in the course of treatment, although the phonological patterns and the frontal lisp can be treated simultaneously. The frontal lisp is not viewed as a major factor in low intelligibility, however. Therefore it is considered of less importance than the phonological error patterns.
6. A frontal lisp can occur in clients with severe apraxia or dysarthria. In these cases the frontal lisp pattern is only one small result of the speech movement disorder.
7. The frontal lisp is common when typical children are gaining their first words and phrases during the toddler years. Thus the frontal lisp is considered a *developmental error* when it occurs during early childhood and the early elementary years.

Auditory and Visual Discrimination and the Frontal Lisp

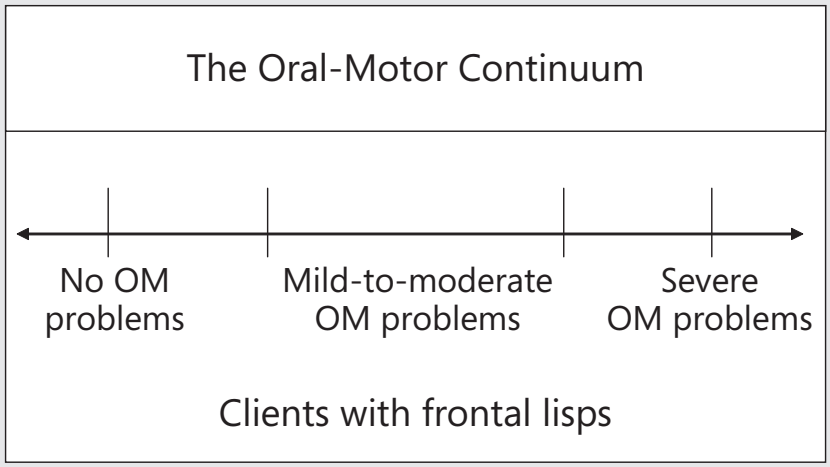
The ability to discriminate one speech sound production from another is at the heart of all articulation development and treatment. Without the ability to hear and see the difference between speech sounds, one has no reason to produce different speech sounds. In the case of the frontal lisp, clients are ignoring the difference between the way they are saying sounds and the way most of the rest of us are. They are accepting allophones that shouldn't be. They are treating sibilants made with the tongue protruded as if they were the same as sibilants produced with the tongue kept behind the teeth. Their range of acceptable productions of the sibilants is too large. It contains too many examples because important visual and acoustic characteristics are being ignored. Therapy for the frontal lisp is designed to help clients begin to discriminate between correct and incorrect production of the sibilant phonemes. This training is done through visual and auditory discrimination training.

The Oral-Motor Continuum and the Frontal Lisp

The study of oral movement patterns in children with articulation and phonological disorders has been one of my major areas of clinical investigation throughout thirty years of clinical work. The information I present on the oral motor problems related to the frontal lisp comes exclusively from my own observations. All the patterns I shall describe need to undergo rigorous study in the research lab to satisfy the profession at large.

Oral-motor problems occur on a continuum in all clients with articulation and phonological delay and disorder, and that includes clients with the frontal lisp pattern. Some clients with frontal lisp display oral-motor problems and other do not. Let's look more carefully at this idea (figure 11).

Figure 11



No Oral Motor Problems

Some clients with the frontal lisp pattern demonstrate no oral motor problems whatsoever. They are represented on the left-hand side of our continuum. These are clients whose articulation is excellent in all other ways except for the habitual interdental pattern they have retained for production of the sibilants. The frontal lisp error can be considered a habit. These clients fly through treatment and benefit quite well from traditional articulation therapy methods and procedures.

Severe Oral Motor Problems

Some clients demonstrate a frontal lisp pattern with severe oral-motor dysfunction. They are represented on the right-hand side of our continuum. These clients have a frontal lisp pattern that occurs amid a wide variety of phonological and phoneme errors including other interdental tongue placement problems. They have major phonological pattern errors, including significant sound and syllable omissions, and they have prosodic errors as well. These clients do not fly through treatment. This problem is much more than habit. The frontal lisp error pattern may be one part of a pervasive neuromuscular problem or an apraxia. These are clients for whom a combination of traditional articulation therapy, phonological therapy and oral-motor therapy including feeding therapy is most appropriate. They also are clients for whom the frontal lisp takes a back seat in the over all process of treatment.

In the Middle

Between these extremes are those clients who have a mild-to-moderate degree of oral-motor dysfunction along with their frontal lisp. These are clients who demonstrate interdental tongue placement on all the sibilants as well as the four lingua-alveolar sounds /t/, /d/, /n/ and /l/. These clients also may have other high-level substitution errors such as f/θ/, v/ð, w/l, w/r and so forth. These clients experience a certain degree of success in traditional articulation therapy. They can benefit from "show–and-tell" therapy: show them what to do, tell them about it and model correct sounds. But these are the kids who tend to stay in therapy for a long time. They need help with auditory, visual, tactile and proprioceptive awareness and discrimination.

Jaw Instability and the Frontal Lisp

As discussed above, the jaw must function in a finely graded open position to support the articulatory positions necessary for mature production of the sibilants. However jaw instability is a primary characteristic of the frontal lisp. This is true even when no oral-motor dysfunction is present and the frontal lisp pattern is simply a habit left over from early childhood.

The jaw destabilizes in one of two ways when the frontal lisp results: by lowering down too far or by protruding too far forward. Each has a different effect on the lisping pattern. I have labeled these the *classic frontal lisp* and the *jaw protrusion lisp*. Learning Exercise 7 (on next page) helps the reader understand the role of jaw function in sibilant production.

LEARNING EXERCISE 7

Experiment with the Classic Frontal and Jaw Protrusion Lisp

At a mirror, produce /s/ correctly and then with the tongue-tip protruding between the upper and lower central incisors. Repeat for /z/, /ʃ/, /ʒ/, /tʃ/ and /dʒ/. This is the classic frontal lisp. Notice that the tip protrudes and the jaw lowers.

Now produce /s/ while jutting the jaw forward so that the lower incisors are positioned anterior to the upper incisors. Then repeat for /z/, /ʃ/, /ʒ/, /tʃ/ and /dʒ/. This is the jaw protrusion lisp. Notice that the jaw protrudes but the tongue does not: the tongue is carried with the jaw. Pay careful attention to the acoustic and visual differences between the classic frontal lisp and the jaw protrusion lisp so you can differentiate them easily.

Figure 12

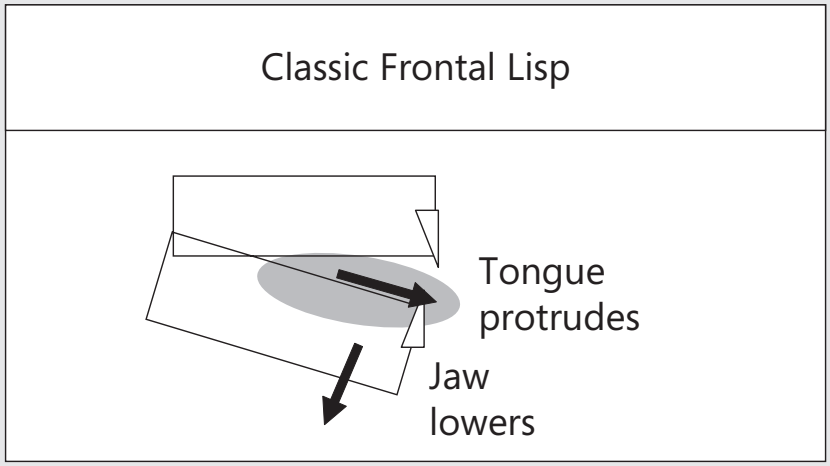
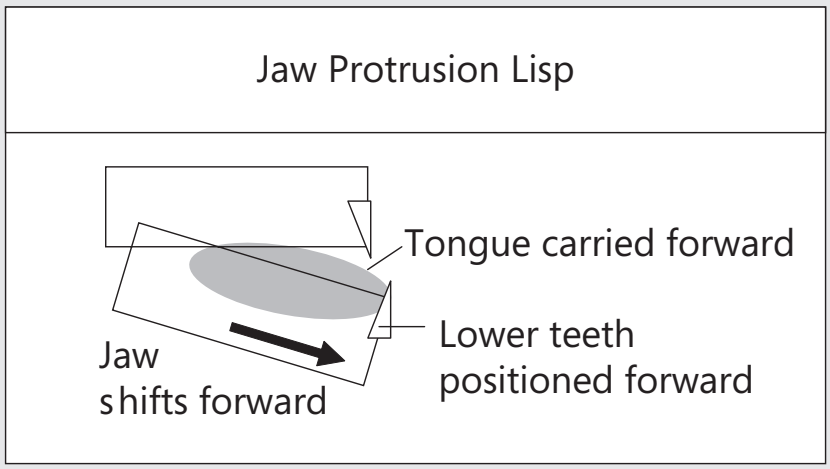


Figure 13



Classic Frontal Lisp

The classic frontal lisp pattern occurs when the jaw moves down too far and the tongue-tip is allowed to protrude between the upper and lower incisors (figure 12). This is the frontal lisp pattern expected in early childhood. Excessive downward movement is the way the jaw first learns to move. It is a form of gross and immature oral-motor control. Over time, these wide excursions of the jaw become more refined and a restricted range of movement appropriate to mature speech is developed. As the jaw begins to move with maturity in this more restricted range, the tongue begins to keep its movements inside the mouth. Mature sibilant production with the tongue-tip well placed behind the central incisors is one result of maturing jaw stability. Correct tongue-tip placement at the alveolar ridge for production of /t/, /d/, /n/ and /l/ is another.

Jaw Protrusion Lisp

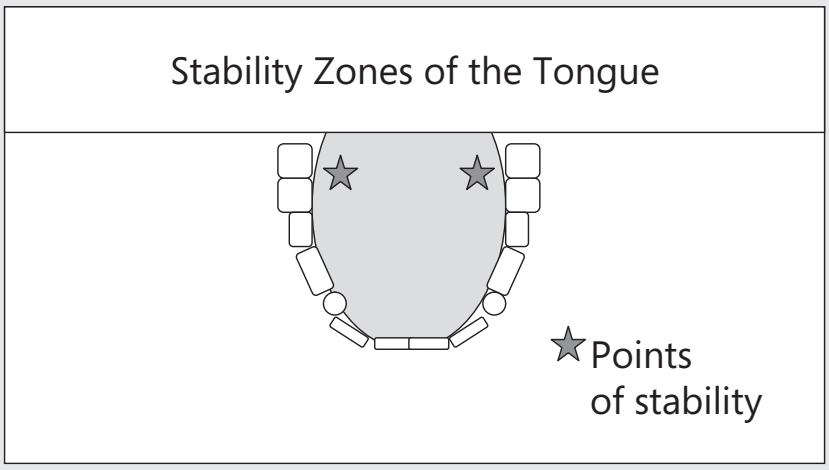
The jaw protrusion lisp results when the jaw moves too far forward (it protrudes) during speech (figure 13). The result is that the lower incisors become positioned anterior to the upper incisors. The position assumed by the front teeth resembles an under bite. But this is not that kind of structural deficit. This is an oral-motor pattern of excessive jaw protrusion during speech. It is a problem of *function* rather than one of *structure*. As the jaw protrudes, it carries the tongue forward with it. Sibilant phonemes made under this condition are distorted as the tongue tip is carried forward and positioned under the upper incisors. The important aspect of this error is that the tongue itself is not protruding. The tongue remains positioned inside the mandibular arch, behind the lower incisors. The jaw protrusion lisp is a jaw movement problem and not a tongue movement problem *per se*. Treatment is directed toward jaw position.

The jaw protrusion lisp is NOT a typical pattern of early childhood because excessive jaw protrusion is not part of oral-motor development in the same way that excessive jaw lowering is. Jaw protrusion can be considered an aberrant oral-motor behavior. Therefore the jaw protrusion lisp should not be considered a developmental error. It does not occur on the normal developmental path of phoneme learning. Also, the jaw protrusion lisp should not be confused with a true structural (occlusion) problem. Referral to the dentist and/or orthodontist will need to be made in order to make a definitive diagnosis of this error in most cases. Input from the orthodontist will help you decide if this is an error of less-than-optimal jaw structure or one of inappropriate jaw movement.

Tongue Stability and the Frontal Lisp

Tongue mobility is dependent upon stabilizing factors. The first tongue stabilizer is the jaw, as we have discussed above. The second stabilizing factor occurs in the tongue itself. Tongue stability is accomplished by maintaining close approximation of the tongue's back lateral margins to the molars and palate (figure 14 on next page). I have called these the *stability zones* or *shoulders* of the tongue. The tongue's stability zones remain in relative contact with the palate and molars located directly above them during almost all aspects of speech production. These are the points of tongue stability. All movements of the tongue are based

Figure 14



LEARNING EXERCISE 8

Discover the Tongue's Stability Zones

Recite the alphabet aloud rapidly as if you were speaking in a quiet conversational style. Think about the back lateral margins of your tongue as you do so. Where are they? You should notice that the tongue's back lateral margins stay in relative contact with the molars and/or the palate near the molars during your recitation. Repeat several times until you can feel this contact. Notice that these places of articulation are consistent during this speech task. Repeat this process as you read this paragraph aloud. The shoulders of the tongue are the places from which all tongue movements are made.

LEARNING EXERCISE 9

Discover Tongue Stability in the Frontal Lisp

Count aloud from 60 to 80 in rapid conversational speech style. This will allow you to produce many /s/ sounds in sequence. Notice the relative stability of the tongue at the back lateral margins.

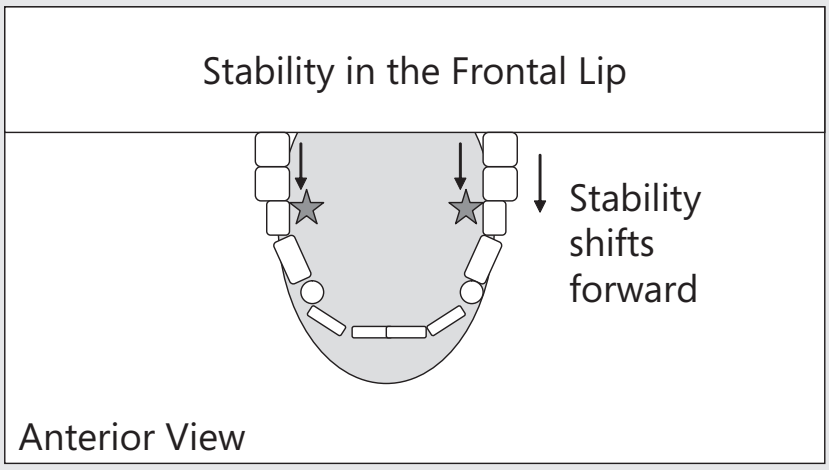
Now repeat this numerical sequence with a classic frontal lisp pattern. Pay careful attention to the stability zones. What happens? You should notice that tongue stability at the back lateral margins is lost as you produce a frontal lisp.

Now, say *sixty* several times in a row, alternating between correct production and production with a frontal lisp. Do you feel the shifting back lateral stability?

on these points of stability. Learning Exercise 8 helps the reader understand the tongue's stability zones.

The sibilants are produced by moving the lateral margins of the tongue toward and away from the palate while maintaining back lateral stability at the stabilizing zones. The tongue's points of stability at the back lateral margins remain intact when one pronounces the sibilants correctly. But stability is lost during the frontal lisp production as the tongue's lateral points of stability shift forward (Learning Exercise 9). When the back lateral mar-

Figure 15



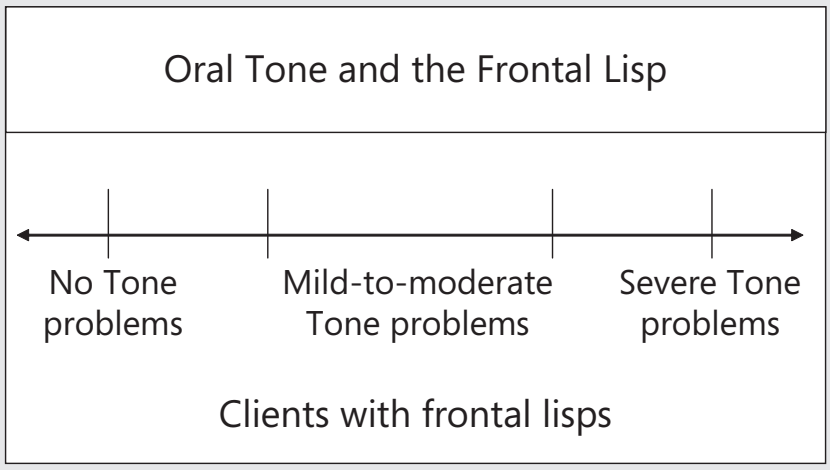
gins of the tongue shift forward, so does the entire tongue (figure 15). In other words, from an oral-motor perspective, excessive anterior movement of the tongue-tip occurs because the tongue has lost its proximal stability in the rear. Loss of proximal stability causes incorrect distal mobility.

An oral-motor perspective reveals that the frontal lisp is the result of both jaw and tongue instability. Speech therapy that ignores this fact and attends only to the phonemes and/or the tongue tip may take a long time and may be met with limited success in the carryover phases. This does not occur when the frontal lisp is the result of simple habit. But it does when the client has an oral movement disorder related to the frontal lisp. Treatment for the frontal lisp is enhanced in these clients when activities designed to facilitate jaw and tongue stability are included. The development of appropriate tongue stability allows a client to speak in rapid conversational speech without shifting the tongue forward. It helps him produce his sibilants correctly during all levels of therapy.

Oral Tone and the Frontal Lisp

The jaw and tongue instability characteristic of the frontal lisp often can be attributed to low oral tone. *Tone* refers to a muscle's strength and speed of reactivity. Muscles that are low in tone tend to react slowly and in a weak manner. Low tone makes body parts lax and droopy, as if the muscles, skin and other soft tissues were hanging from the bones underneath them. When tone is low in the oral and facial muscles, the jaw and tongue tend to be carried lower and more forward. The mouth hangs open, the lower lip droops and is not very active, and the tongue slips forward out the mouth. Low tone in the muscles of the jaw, lips and tongue can have a negative effect on the production of all phonemes. The sibilants are especially affected since they require that the jaw be held high and that the tongue stay inside the mouth. The frontal lisp often is the result of low oral tone.

Figure 16



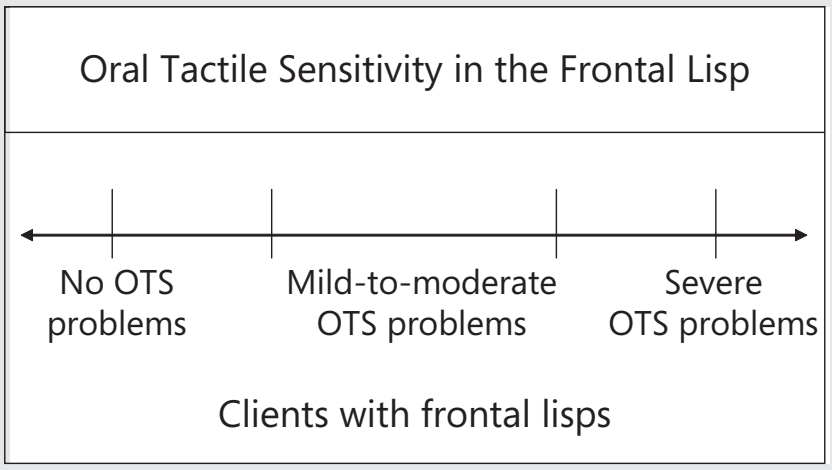
Readers should keep in mind that low oral tone is not always a characteristic of the frontal lisp. Remember, oral movements span a continuum from non-existent to severe in the frontal lisp. Thus, some clients have oral tone problems and others do not, and their problems also occur on a continuum (figure 16). A complete assessment of the frontal lisp includes an examination of oral and facial tone. Sometimes further assessment of whole body tone is obtained from occupation or physical therapy. This information helps formulate a thorough analysis of muscle tone and its relation to the frontal lisp pattern. An understanding of oral tone helps shape the treatment program. Clients with normal oral tone are likely to outgrow the developmental frontal lisp pattern. Clients with low oral tone are not.

Oral-Tactile Sensitivity and the Frontal Lisp

It is the author's experience that the frontal lisp can be associated with low oral-tactile sensitivity, or *hyposensitivity.* Oral sensitivity refers to the ability to perceive and discriminate tactile stimulation to the lips, gums, tongue, palate and oropharynx. When a client is hyposensitive in the oral mechanism, he under-reacts to tactile input given there. As a result, all the basic reflexive movement patterns of the mouth are under-rehearsed, under-experienced and under-developed. Clients with oral-tactile hyposensitivity know less about the physical structure of their mouths because they have not experienced responses to touch input in the same way as others. The "feel" in the mouth is different. These clients tend to move the mouth clumsily, and they are much less precise in their articulation. Their ability to discriminate place of articulation is impaired as a result. The sibilants require a high level of oral-tactile sophistication and position discrimination. The client with oral-tactile hyposensitivity almost always resorts to more primitive oral movement patterns, and the frontal lisp often is the result.

Like oral tone problems, oral-tactile sensitivity problems are not always present in the frontal lisp. Oral sensitivity also spans a continuum from non-existent to severe in the fron-

Figure 17



tal lisp (figure 17). Some clients have oral sensitivity problems and others do not. When a client has a frontal lisp with low oral sensitivity, movement patterns for other phonemes usually are similarly affected. Injury to the nerves of the tongue also can result in a frontal lisp pattern if the insult has resulted in reduced tactile sensation.

A differential diagnosis of the frontal lisp includes procedures for assessment of oral-tactile sensitivity. Results impact the treatment plan. Clients with normal oral tactile sensitivity are more likely to outgrow the developmental frontal lisp pattern. Those with oral tactile hyposensitivity are less likely to outgrow the problem and are more likely to need therapy for their lisp.

A Word About the Whole Body

Certain clients have poor oral control because they have development problems in motor control of the whole body. Jaw, lip and tongue movements are an outgrowth of and integral to head, neck, shoulder and hip movements. An occupational therapist (OT) or physical therapist (PT) can help the speech-language pathologist analyze the relationship between the client's neuromuscular control and his oral control. Treatment of jaw, lip and tongue position can be integrated together with treatment techniques for the rest of the body. Treatment procedures are designed by the motor specialist. Therapy incorporates methods to normalize tone, balance, sensitivity and the like. These methods are incorporated into speech therapy in order to maximize oral-motor learning. This process is absolutely necessary when designing an effective program for a frontal lisp in clients with significant sensorimotor or neuromuscular disorder.

Having said that, however, the average client with an isolated frontal lisp will need little of this work. He will not need a full evaluation by the OT or PT. The SLP who knows basic information about hip-trunk-shoulder alignment and its relationship to head and oral control can be mindful of small matters as they relate to the frontal lisp. An old-fashioned

Figure 18

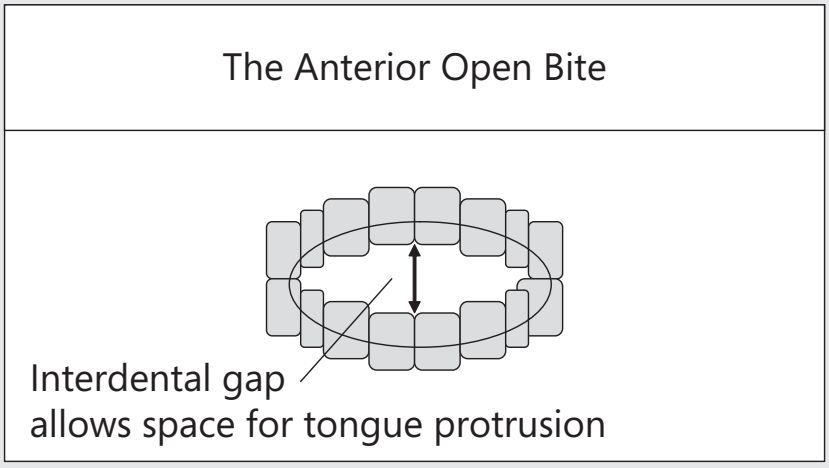


Figure 19

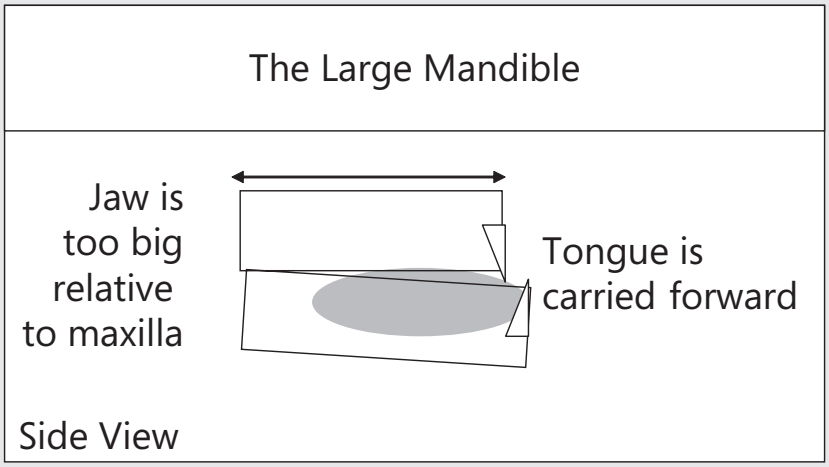
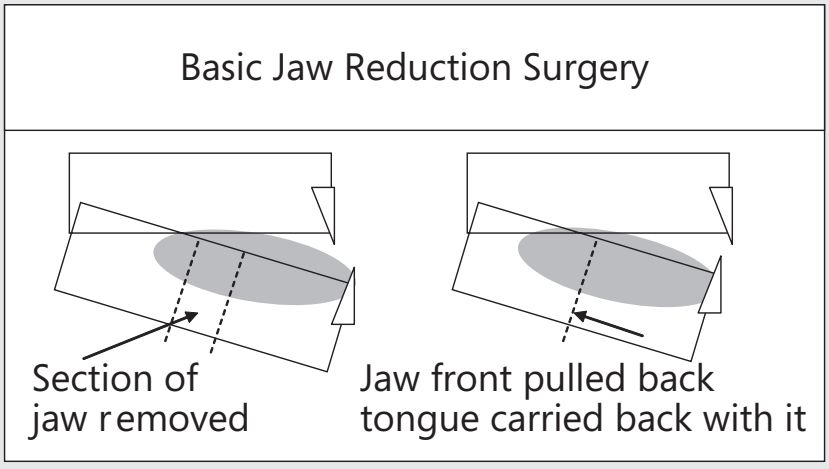


Figure 20



direction to "Sit up straight," "Get your body ready" or "Show me good sitting" will be enough for these clients to get their head into a good position for control of the jaw, lips and tongue.

Oral Structure and the Frontal Lisp

A complete evaluation of the frontal lisp always includes a thorough assessment of oral structure. Oral structure has a direct impact on the pronunciation of all phonemes since the shape of the oral cavity literally comprises the walls of acoustic resonation during sound production. Several structural alterations in the oral cavity cause specific distortion to the sibilants that cause a frontal lisp. Other structural alterations force a client to use a frontal lisp pattern in order to compensate for the structural difference.

Structural differences related to the frontal lisp are described below. In the ideal situation, problems in oral structure are eliminated before or during treatment of the frontal lisp. In many cases, we must compensate for these problems and adjust our treatment plans accordingly.

Anterior Open Bite

An anterior open bite is characterized by a gap between the upper and lower incisors (figure 18). That gap can be narrow or quite wide depending upon many factors. The gap allows the tip of the tongue to slip out between the teeth.

There continues to be much controversy regarding the cause and effect relationship between the anterior open bite and the frontal lisp pattern. Does the frontal lisp pattern cause the anterior open bite, or does the anterior open bite cause the frontal lisp? Regardless of the view, the fact remains that an anterior open bite allows the tongue to slip forward and both problems need to be addressed. The refined stridency needed for production of the sibilants cannot be achieved when there exists such a gap.

Large Mandible

A mandible that is too large relative to the maxilla will cause the lower teeth and the tongue to be positioned anterior to the upper teeth (figure 19). The client may appear to be speaking with a frontal lisp because too much of the tongue is showing during speech. But this is not a classic frontal lisp or a jaw protrusion lisp. This is a distorted speech pattern related to a structural deviation of the mouth. We can train a client to pull the tongue alone back in behind the upper teeth as he speaks, but this is difficult work that requires near adult maturity. It also means learning to habituate a retracted tongue position which is an uncomfortable position for most people. Holding the tongue in retraction while speaking can cause aching in the jaw and tongue as well as tension headaches. Only a change to the actual structure of the jaw via oral surgery will change this pattern completely (figure 20). Without surgery the client must learn to keep the tongue back further or settle for the lisping pattern that results.

Missing Teeth

Missing central and lateral incisors can be a problem for sibilant production because stridency is reduced. A missing tooth allows a tremendous amount of air to escape through the front, thus eliminating the appropriate dental barrier necessary for production of the

Figure 21

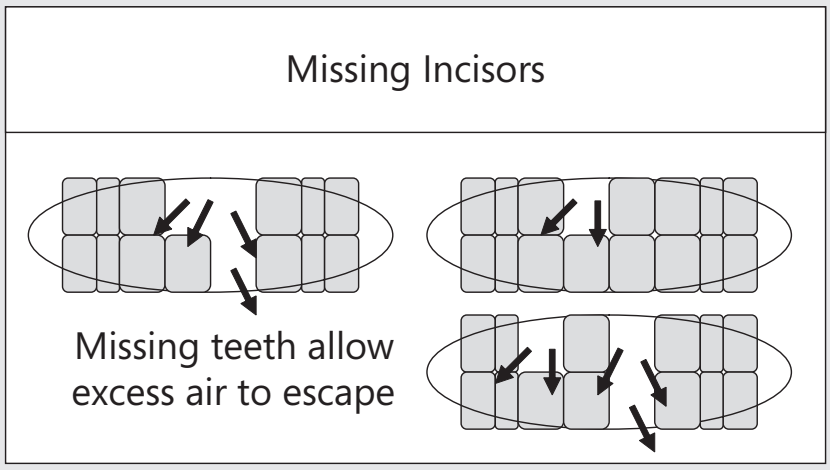
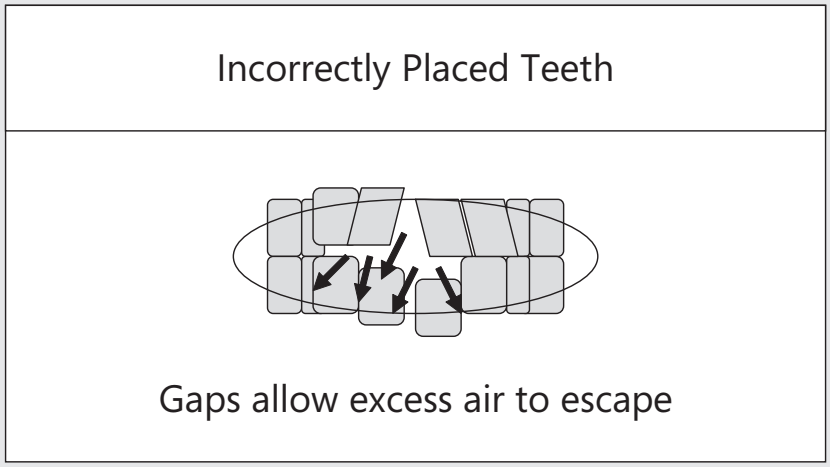


Figure 22



hissing quality (figure 21). Children who experience the comings and goings of their teeth during the childhood years tend to shift the position of the tongue groove in order to create the stridency they desire against the teeth that remain. Thus, the central groove of sibilant production tends to shift as baby teeth go missing and as permanent teeth erupt. Too many teeth missing in the front of the mouth at one time can result in the same problem as the anterior open bite: there are no teeth against which to create stridency.

If a frontal lisp did not exist before a child's anterior teeth fell out, and if the frontal lisp truly was created as a result of missing teeth, the lisp should be viewed as temporary. The lisp usually disappears as the new adult teeth emerge. This process takes place naturally and without speech therapy, but it can take a year or more depending upon the length of time it takes for the permanent teeth to settle. It is precisely for this reason that treatment of the frontal lisp often can and should wait until the permanent teeth are firmly in place. This is especially true if the frontal lisp exists in isolation. If, however, the client has missing

anterior teeth, a frontal lisp, and other phoneme errors, therapy can and should commence with an early focus on the other phonemes that can be produced correctly even though the teeth are missing.

Tooth Position Problems

Teeth that are positioned incorrectly cause the same problems as teeth that are missing. This is because incorrectly positioned teeth create gaps in the dental barrier and appropriate stridency cannot be created once again (figure 22). Clients with cleft lip and palate are especially prone to problems in tooth position, and the extent and location of these short fallings depends upon their surgical and/or orthodontic management. Tooth position problems are treated with braces, spacers, oral surgery and other methods. A letter explaining the relationship between the tooth position problems and speech may be requested of the speech-language pathologist (appendix 9).

Supernumerary Teeth

Extra teeth sometimes cause a client to position the tongue in an anterior direction and a frontal lisp can result. For example, extra teeth behind the upper incisors can prevent correct stridency from being shaped. A forward shifting of the tongue can make the phoneme sound better in some of these cases. Removal of the supernumerary teeth may be used to stimulate correct tongue movement and position. A letter of support explaining the relationship between the extra teeth and the client's speech may be requested of the speech-language pathologist (appendix 10).

Large Tongue

A tongue that is too large for the oral cavity will protrude from between the teeth (figure 23 below and 24 on next page). A large tongue should not be confused with a tongue that is low in tone and thus protruding. Input from occupation or physical therapy and/or

Figure 23

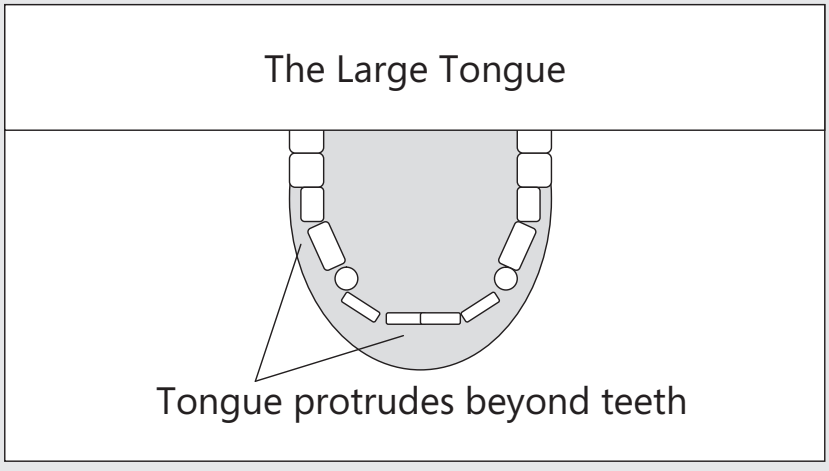
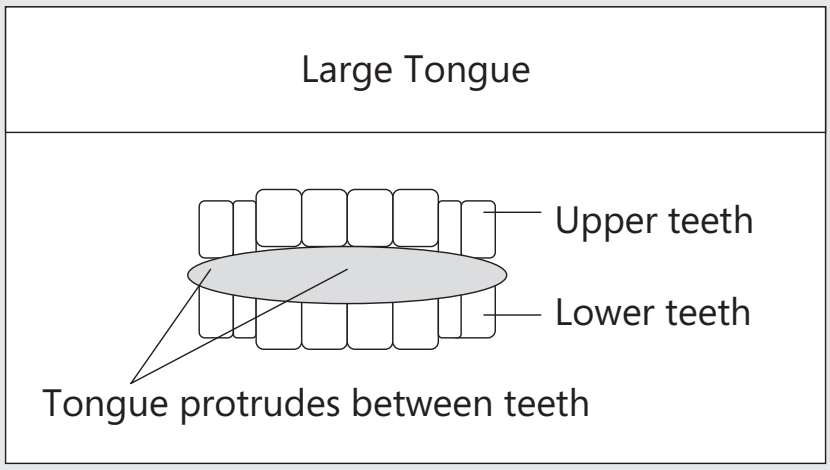


Figure 24



neurology will assist in the diagnosis of low oral tone. Evaluation by an otolaryngologist or oral surgeon may need to be made in order to determine if the tongue actually is too large.

Some clients with large tongues undergo surgery to reduce its size (figure 25 and 26). Tongue reduction surgery is an enormous decision made between the family and their physicians. The decision to undergo this procedure is discussed in relation to breathing, eating, speech and cosmetics. Safety is also a primary concern because a young child can fall and bite off the tongue tip. Speech-language pathologists will be asked to supply a letter or report (appendix 7) explaining the relationship between the client's tongue and his speech. Tongue reduction surgery allows the remaining tongue tissue to function inside the mouth and behind the teeth.

Tongue reduction surgery is not a cure for speech problems. The tongue that is now reduced in size creates an environment in which speech therapy can be most effective. Tongue reduction surgery is an area that constantly undergoes change. SLP's involved with clients who may be candidates for this surgery are compelled to investigate this area thoroughly before making recommendations for such an approach. ASHA's 1990 report entitled "Tongue Reduction Surgery, Efficacy and Relevance to the Profession" summarizes our concern.

Narrow Palate

A palate that is too narrow does not allow a tongue of normal proportion to fit up inside the maxillary arch for production of lingual phonemes unless the tongue narrows itself by squeezing medially (figure 27). Sometimes a client will allow the tongue to hang forward because he has not figured out how to do this. A frontal lisp pattern can result. Narrow palates can be widened with orthodontic appliances in most cases. Successful orthodontia can eliminate the need for speech therapy in some cases. Most clients require a combination of orthodontic management and speech therapy.

Figure 25

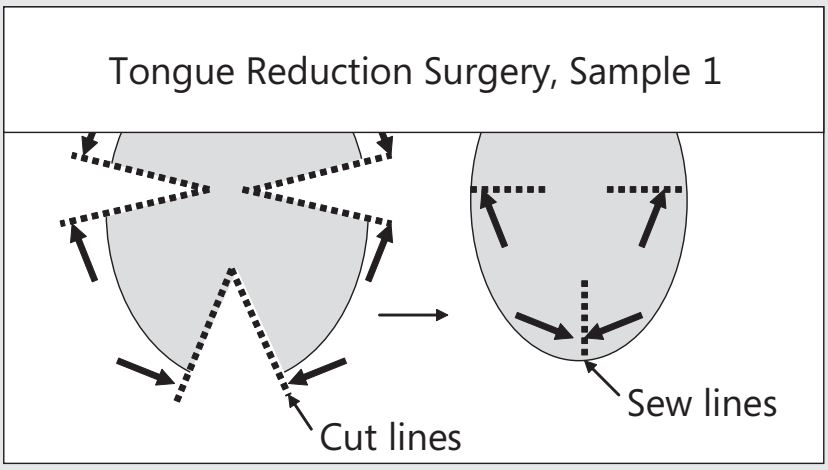


Figure 26

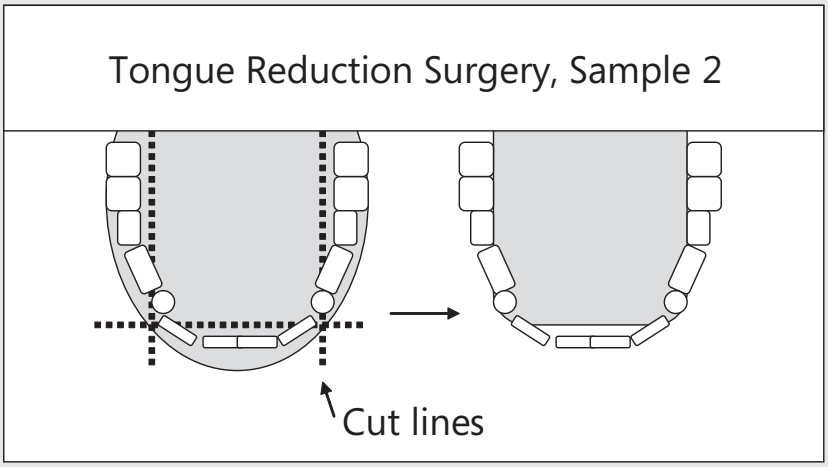


Figure 27