Using the SATPAC Program and Approach to Remediate Speech Sound Disorders—Part 1

An Introduction to the SATPAC Program and Approach and Remediating the /s/ Sound

RESOURCE HANDBOOK

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SATPAC Speech
Professional Workshop Series
www.satpac.com

Workshop Schedule

This workshop is offered for .3 ASHA CEUs.

(45 min.) SATPAC Program Specifics/ Other Essentials

(45 min.) Oral-Motor Principles

(15 min. break)

(75 min.) Multimodality Approach to /s/ Remediation

(15 min.) Questions and Comments, Posttest Quiz, Evaluation

SATPAC Speech

What is SATPAC?

- SATPAC (*Systematic Articulation Training Program Accessing Computers*) is an articulation software/online program which simulates normal conversation by incorporating coarticulation and natural prosody at a conversational rate. Best practices which include the use of facilitating contexts, nonwords and numerous repetitions of the target sound lead to quicker remediation of deficits.

- Target sounds are established, practiced and transferred. In the Establishment and Practice Phases, nonwords are used. In the Generalization/Transfer Phase, real phrases and sentences are used that move the student systematically to normal conversational competence

Important Elements of SATPAC

- Facilitating Contexts
- Coarticulation
- Normal Rate
- Natural Prosody
- Nonwords
- Therapy Response Rate

Important Elements of SATPAC

- Facilitating Contexts

beetseet as an example

Why beetseet? Because /b/ requires no tongue positioning, /ee/ gets the tongue wide and stabilized on the back molars and the tip in the lingua-alveolar area, /t/ gets the tongue tip up, and you get /s/ by lengthening the duration of the /t/ in /eet/ and it turns into an /s/ followed by the /ee/ and /t/ to keep the tongue in the same position. SATPAC has suggested facilitating context words for every error sound and phonological processes.

Important Elements of SATPAC

- Coarticulation

beetseet
(target sound will always be in position 3 or 4--in this case /t,s/)

Why is coarticulation important? Because in conversation we always coarticulate so it makes sense to practice coarticulating the target sound which will lead to quicker transfer to conversational speech.

Important Elements of SATPAC

- Normal Rate

In conversation we always use a normal rate so it makes sense to practice the target sound at a normal rate which will lead to quicker transfer to conversational speech.

Normal Rate

What is the metronome for? When I first developed the program, many students were not transferring into conversational speech. I discovered that I wasn't going fast enough. At 140 BPM (beats per minute), students will be speaking at a conversational rate as they go through the lists. If they cannot go that speed, they need to keep working on the lists until they can develop the motor skills they need for a conversational rate.

Important Elements of SATPAC

- Natural Prosody

Natural Prosody This contrastive stress list is powerful and seldom used in speech therapy where the student is practicing sentences taking the stress off the target sound (which would be more like normal conversation and again leads to quicker transfer into conversational speech.

Natural Prosody

Practice Phase

List #5

A boy bought a new beetseet (bitsit).
☐☐☐ **I** bought a new beetseet (bitsit)?
☐☐☐ A boy **sold** a new beetseet (bitsit)?
☐☐☐ A boy bought an **old** beetseet (bitsit)?
☐☐☐ A boy bought a new **jootseet** (ʤutsit)?

A wetseet (wɛtsit) hit a mean man.
☐☐☐ A wetseet (wɛtsit) **painted** a mean man?
☐☐☐ A wetseet (wɛtsit) hit a **crazy** man?
☐☐☐ A wetseet (wɛtsit) hit a mean **chicken**?
☐☐☐ A **beetsood** (bitsʊd) hit a mean man?

I met a beetsab (bitsæb) walking home.
☐☐☐ Did you **pass** a beetsab (bitsæb) walking home?
☐☐☐ Did you meet a beetsab (bitsæb) **flying** home?
☐☐☐ Did you meet a beetsab (bitsæb) walking **to the beach**?
☐☐☐ Did you meet a **beetsab** (bitsæb) walking home?

My leetseet (litsit) won a penny.
☐☐☐ Did your **friend's** leetseet (litsit) win a penny?
☐☐☐ Did your leetseet (litsit) **lose** a penny?

The way this is done is the following: The SLP models the first sentence and the student repeats. Then the SLP asks incorrect questions putting the stress on the word that was changed. The student responds with the correct sentence putting the stress on the word the SLP changed. For example, the SLP asks: **I** bought a new beetseet? And the student responds, No, A **boy** bought a new beetseet. Then the SLP asks, A boy **sold** a new beetseet and the student replies, No a boy **bought** a new beetseet, etc.

Again, this is very powerful because it takes the stress off the target like in natural conversation .

Important Elements of SATPAC

- Nonwords
  1) minimal changes from word to word
  2) no negative associations
  3) nonwords are more complex

3 Reasons to Use Nonwords

1)You have the ability to make minimal changes from word to word so that the student can develop a consistent motor pattern (beetseet, mitseet, weitseet, etc.)

2) The student has no associations with the nonwords. With real words (like "soap"), the student has a sensory memory for the way it sounds, feels, etc. and it is all incorrect.

3)Nonwords are more complex according to the Complexity Approach so that when the consistent motor pattern is established and practiced, it then becomes easier to use real words.

Important Elements of SATPAC

- Therapy Response Rate

Therapy Response Rate In order to change a habitual pattern (like saying a sound incorrectly maybe a million times), it's going to take a lot of repetitions to change that. Using the SATPAC lists and using the contrastive stress technique (see next page), you can get hundreds of correct productions in a very short time (200 in a 15-minute session).

Contrastive Stress Sentences

Prevocalic and Postvocalic Target Phones
/s, z/ sentences - List 1

1. Grace has a soft whisper.
2. Sam never cleans his cups.
3. The cough syrup spilled.
4. Gus passed the rib soup house.
5. The sick rooster sang at sunrise.
6. I have inside days and outside days.
7. The skater was face down.
8. The bus drove summer school.
9. It's too hot to skate in August.
10. You must accept peace.
11. The spoons game was nice.
12. A jigsaw piece was lost.
13. Chris will sell his gas shop.
14. The dish soap was messy.

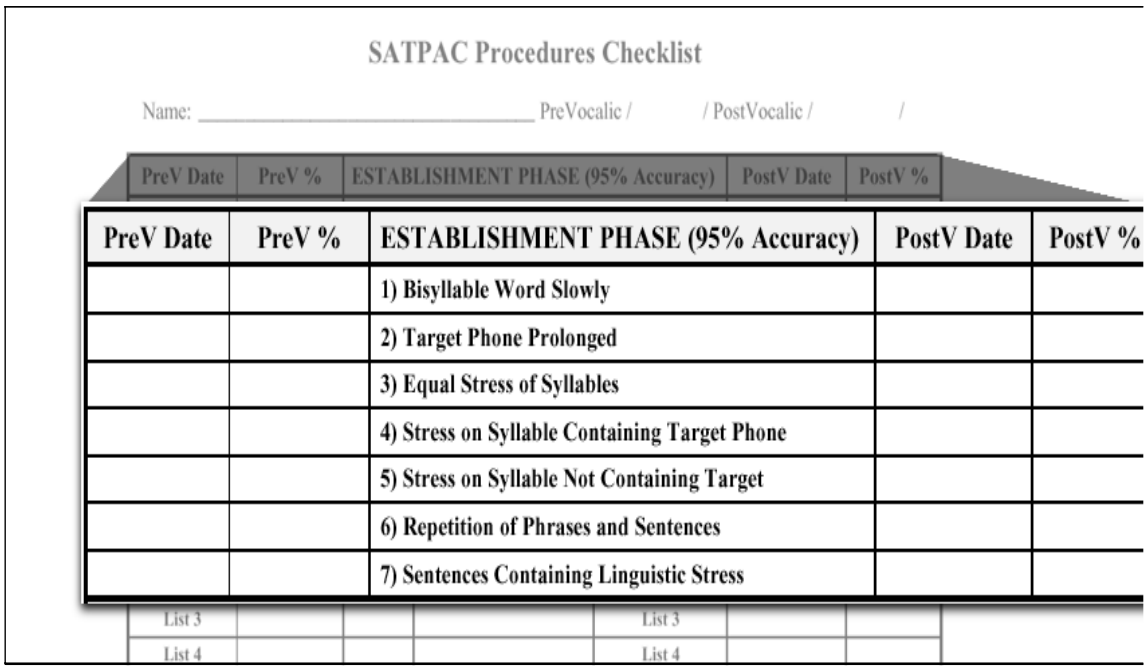
Like the natural prosody contrastive sentences in the Practic Phase, the SLP can do something similar here to get lots and lots of correct responses.

The SLP models the first sentence and the student repeats. Then the SLP changes a word: **Bill** has a soft whisper? The student responds, No **Grace** has a soft whisper, etc.

In my workshops I usually demonstrate the first two sentences with an SLP participant and time how long it takes. It is usually in the neighborhood of 15 seconds. In that 15 seconds,

3 Phases of the SATPAC Program

Systematic Articulation Training Program
Accessing Computers



SATPAC Procedures Checklist

Name: _____ PreVocalic / / PostVocalic / /

PreV Date	PreV %	ESTABLISHMENT PHASE (95% Accuracy)	PostV Date	PostV %
		1) Bisyllable Word Slowly		
		2) Target Phone Prolonged		
		3) Equal Stress of Syllables		
		4) Stress on Syllable Containing Target Phone		
		5) Stress on Syllable Not Containing Target		
		6) Repetition of Phrases and Sentences		
		7) Sentences Containing Linguistic Stress		

List 3 List 3

List 4 List 4

The Establishment Phase is optional as leading up to it, the student may make hundreds of practice contexts (i.e., EET, EETS, EETS-EE, EEETSEE, BEETSEE, BEETSEET) so this phase may not be necessary. Use your professional judgment. You are looking for 95% accuracy at any rate (19/20 correct responses). If the student misses two, do that same level again (do not go back to the beginning).

Establishment Phase

Step 6 Phrases

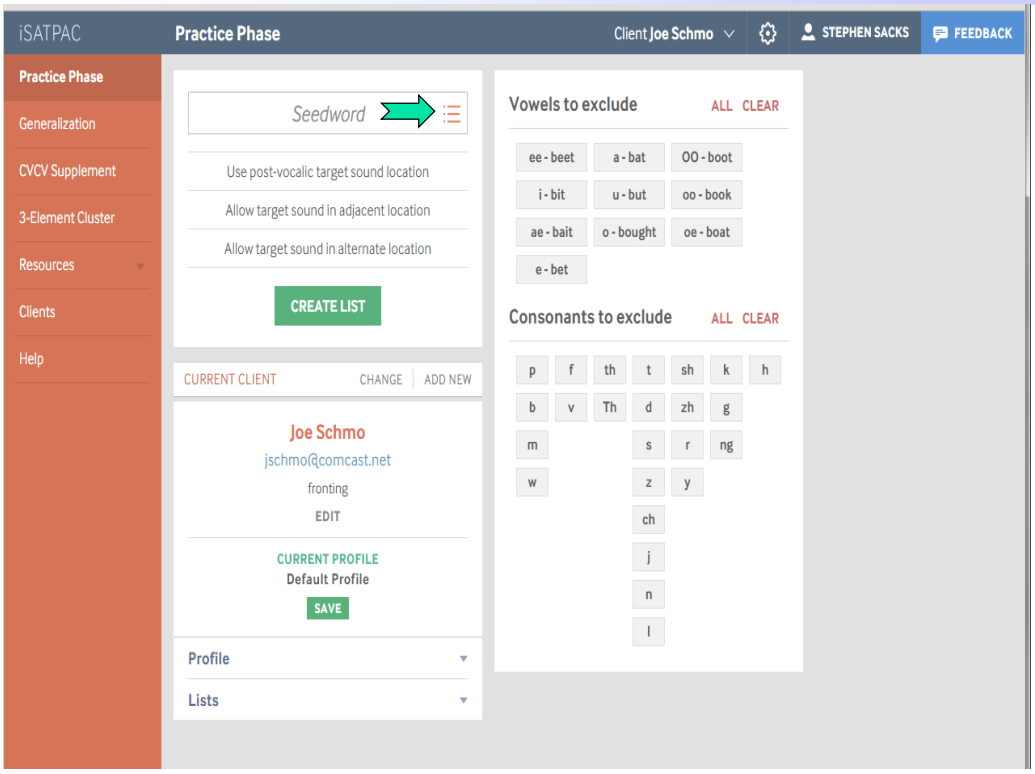
1. _____ NO. __ __ __ __ __
2. MY _____. __ __ __ __ __
3. ON A _____. __ __ __ __ __
4. A _____WON. __ __ __ __ __

Step 7 Sentences

1. A **boy** bought a new _____. __ __ __ __ __
2. A boy **bought** a new _____. __ __ __ __ __
3. A boy bought a **new** _____. __ __ __ __ __
4. A boy bought a new _____. __ __ __ __ __

Phrases and Sentences are said 5x/each with the emphasis off the target sound.

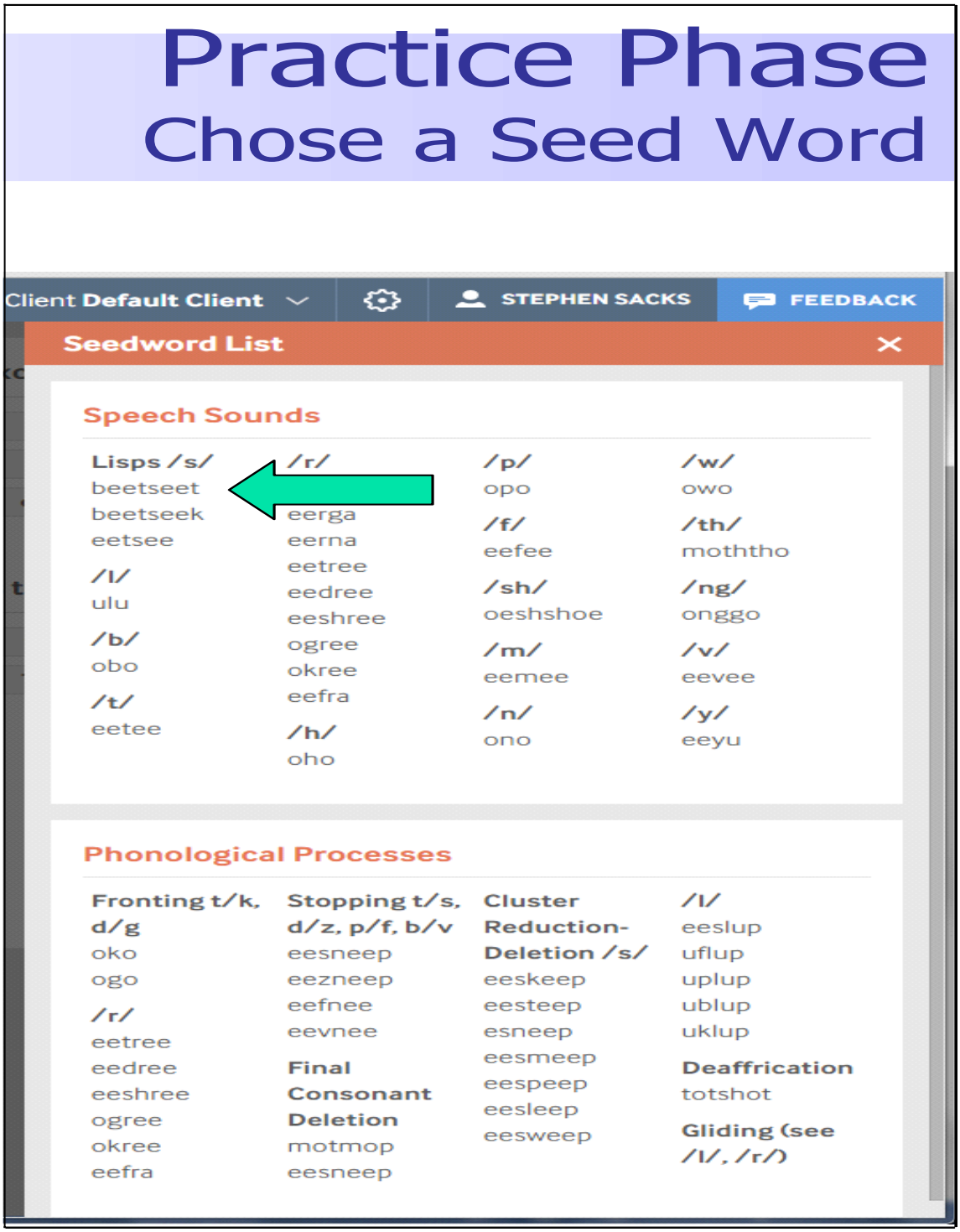
Practice Phase
Click on Bars to See Seed Words



The Practice Phase is the heart of the SATPAC Program. To choose a seedword, click on the 3 bars (green arrow at the top) and then a drop down list will appear (following page). When choosing a seedword (a facilitating context word), there is the chance that the word will not work or you have another word that does work. You can type in your own seedword but it must follow the coarticulation rule being 2 syllables with the target sound in the middle and following the form of CVCCVC, VCCV, CVCCV, VCCVC, etc. Often for the /r/ sound, you might want to put 2 /r/s together like EERRAT or ER-RAT. If that's the case, you need to check the box under the seedword that says "Use target sound in adjacent location". You also need to decide which /r/ you want to be the target sound (prevocalic or postvocalic). Either leave the box under the seedword unchecked (which says "Use post-vocalic target sound location" if you want the target to be prevocalic) or check it if you want the target to to be postvocalic.

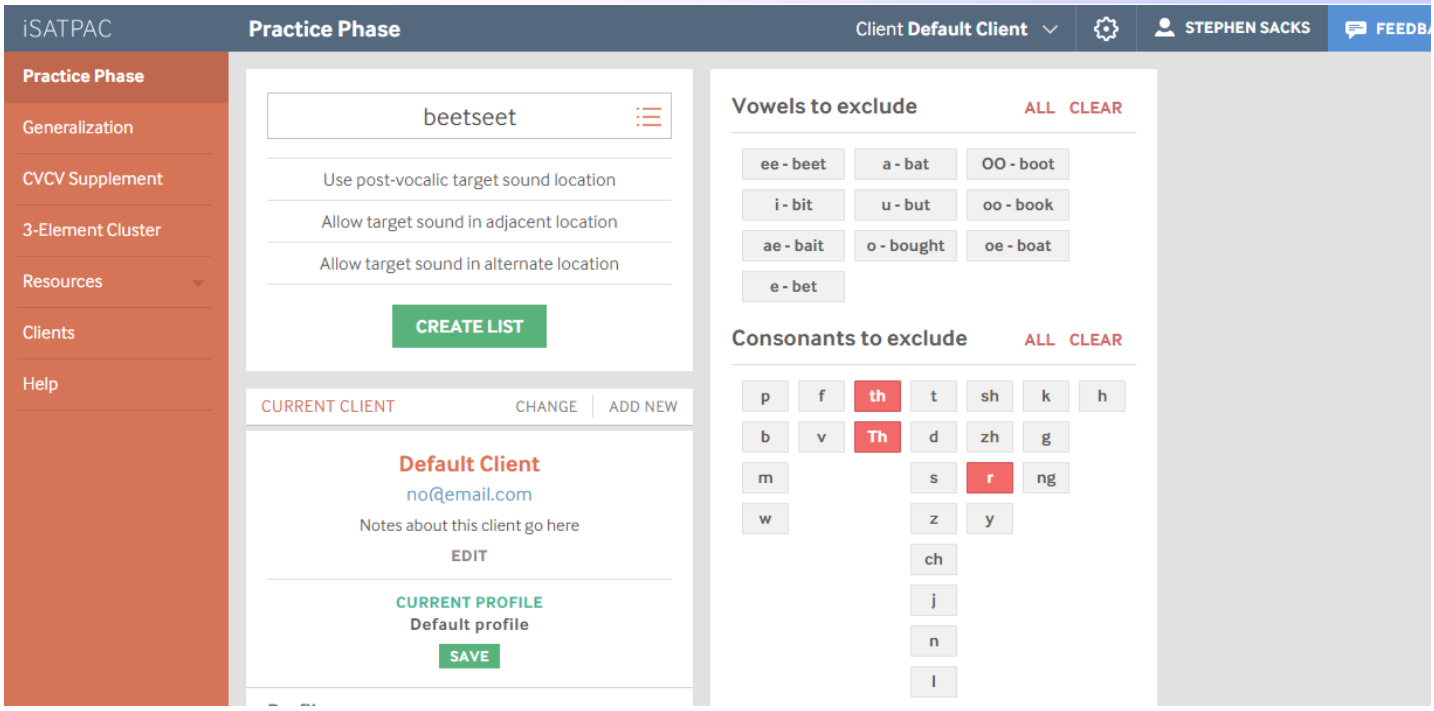
Normally the target sound will only appear once in the middle of the word either prevocalic or postvocalic. However, if the student is doing well and you would like more difficult practice, check the box that says "Allow target sound in alternate location". In that case, you may get words like BEETSEES or SATSEET.

Practice Phase
Chose a Seed Word



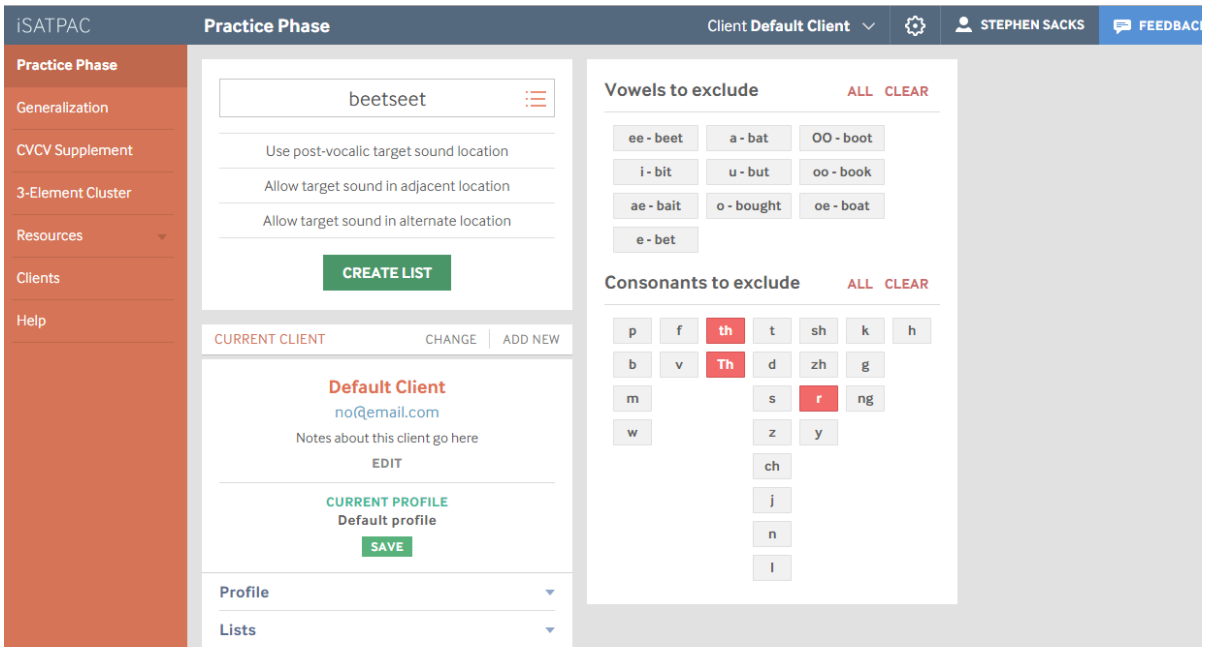
Here is the drop down list. You can see there are suggestions for the various error sounds and phonological processes. Click on whichever word you want and it will show up in the seedword box.

Practice Phase-Eliminate Sounds



You will want to eliminate sounds from your lists so the student can correctly say all the sounds in the lists. You should 1) eliminate the sounds that will interfere with the target sound (in this case TH sounds will interfere for a student with a frontal lisp and 2) the sounds that are not in the student's repertoire (in this case /r/.

Click on Create List Button

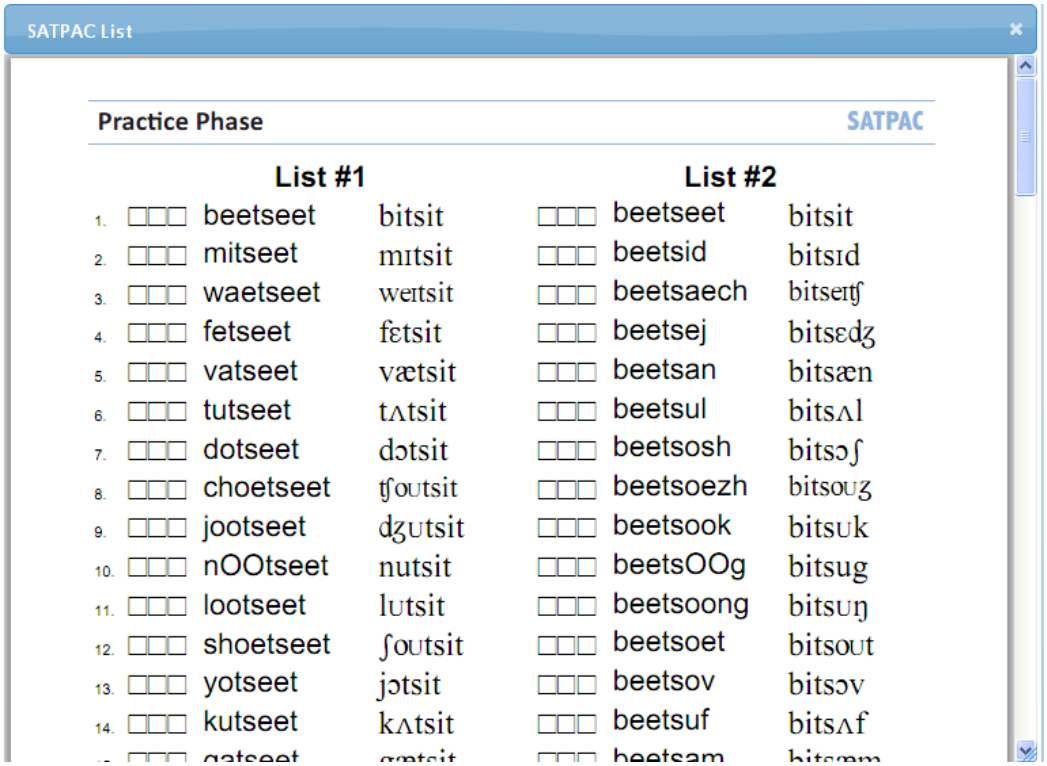


Practice Phase-Criteria for Completion

80%+ accuracy on the first 5 lists @ 140 BPM

80% accuracy on List 6 using a normal rate with no slowing down on the target sound.

Practice Phase-Lists 1 and 2


SATPAC List

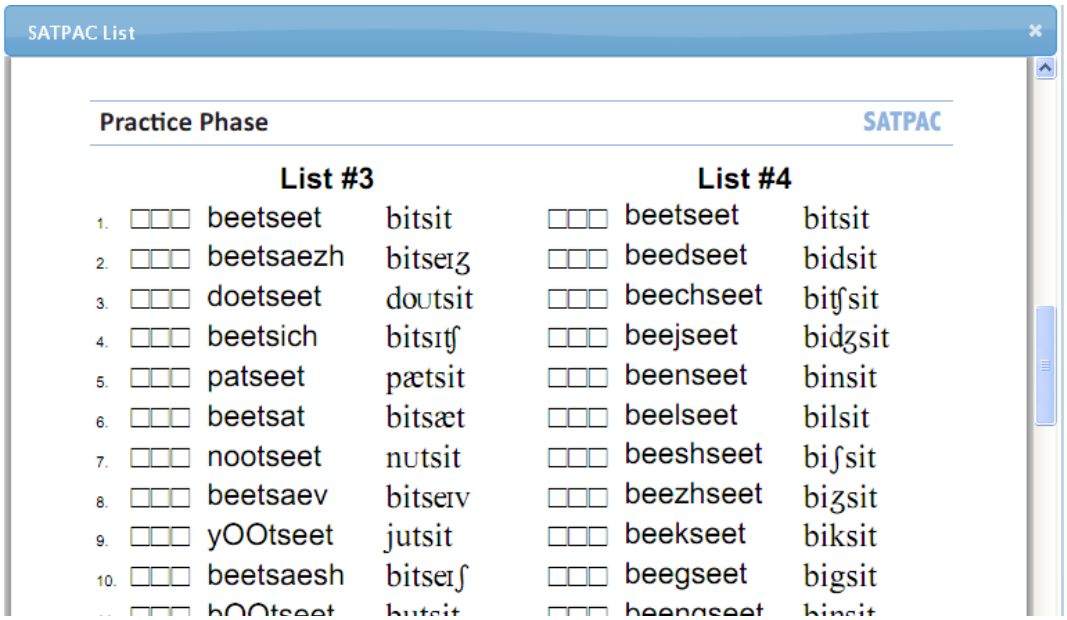
Practice Phase SATPAC

	List #1		List #2	
1.	□□□ beetseet	bitsit	□□□ beetseet	bitsit
2.	□□□ mitseet	mɪtsit	□□□ beetsid	bitsɪd
3.	□□□ waetseet	weɪtsit	□□□ beetsaech	bitseɪʧ
4.	□□□ fetseet	fɛtsit	□□□ beetsej	bitsɛdʒ
5.	□□□ vatseet	vætsit	□□□ beetsan	bitsæn
6.	□□□ tutseet	tʌtsit	□□□ beetsul	bitsʌl
7.	□□□ dotseet	dɔtsit	□□□ beetsosh	bitsɔʃ
8.	□□□ choetseet	ʧoʊtsit	□□□ beetsoezh	bitsoʊʒ
9.	□□□ jootseet	dʒʊtsit	□□□ beetsook	bitsʊk
10.	□□□ nOOtseet	nutsit	□□□ beetsOOg	bitsug
11.	□□□ lootseet	lʊtsit	□□□ beetsoong	bitsʊŋ
12.	□□□ shoetseet	ʃoʊtsit	□□□ beetsoet	bitsoʊt
13.	□□□ yotseet	jɔtsit	□□□ beetsov	bitsɔv
14.	□□□ kutseet	kʌtsit	□□□ beetsuf	bitsʌf

List 1 is systematic making minimal changes from word to word following the place/ manner chart for the consonants and the vowel circle for the vowels. Notice that the changes take place away from the target sound so every word has TSEET. The purpose of this is give the student lots of repetitions in the best possible context to develop a consistent motor pattern for /s/.

On List 2 the changes take place after the /s/ sound which is more difficult. Not that that would be the typical starting place for SLPs showing pictures of /s/ words.

Practice Phase-Lists 3 and 4

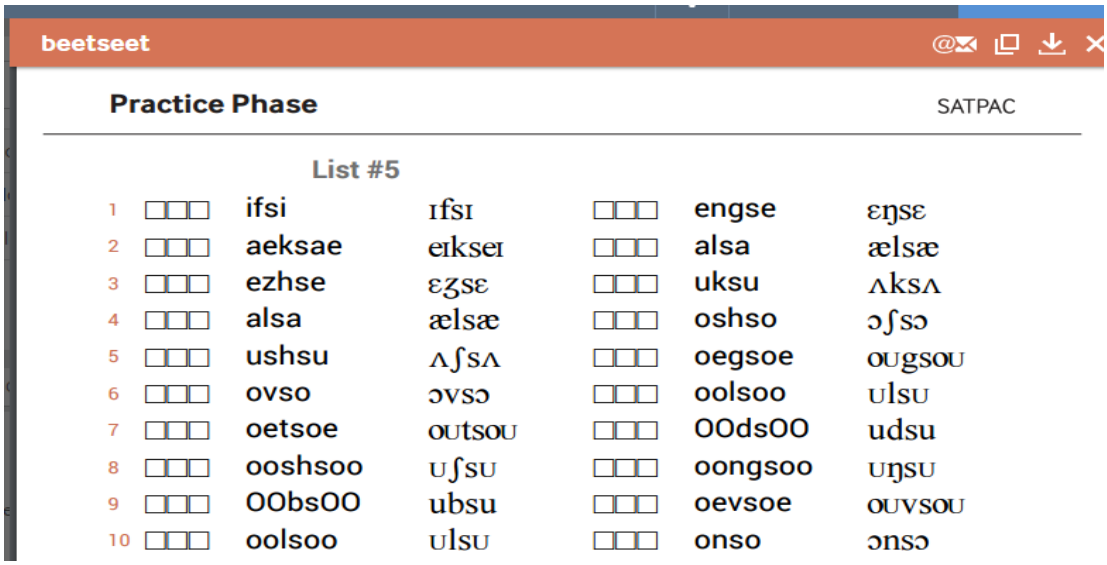


SATPAC List

Practice Phase SATPAC

	List #3		List #4	
1.	□□□ beetseet	bitsit	□□□ beetseet	bitsit
2.	□□□ beetsaezh	bitseɪʒ	□□□ beedseet	bidsit
3.	□□□ doetseet	doʊtsit	□□□ beechseet	bitʃsit
4.	□□□ beetsich	bitsɪtʃ	□□□ beejseet	bidʒsit
5.	□□□ patseet	pætsit	□□□ beenseet	binsit
6.	□□□ beetsat	bitsæt	□□□ beelseet	bilsit
7.	□□□ nootseet	nʊtsit	□□□ beeshseet	biʃsit
8.	□□□ beetsaev	bitseɪv	□□□ beezhseet	biʒsit
9.	□□□ yOOtseet	jutsit	□□□ beekseet	biksit
10.	□□□ beetsaesh	bitseɪʃ	□□□ beegseet	bigsit

List 3 is a combination of Lists 1 and 2 with every other word having *beets* and every other word having *tseet.*



beetseet

Practice Phase SATPAC

	List #5				
1	□□□	ifsi	ɪfsɪ	□□□ engse	ɛŋsɛ
2	□□□	aeksae	eɪkseɪ	□□□ alsa	ælsæ
3	□□□	ezhse	ɛʒsɛ	□□□ uksu	ʌksʌ
4	□□□	alsa	ælsæ	□□□ oshso	ɔʃsɔ
5	□□□	ushsu	ʌʃsʌ	□□□ oegsoe	oʊgsoʊ
6	□□□	ovso	ɔvsɔ	□□□ oolsoo	ʊlsʊ
7	□□□	oetsoe	oʊtsoʊ	□□□ OOdsOO	udsu
8	□□□	ooshsoo	ʊʃsʊ	□□□ oongsoo	ʊŋsʊ
9	□□□	OObsOO	ubsu	□□□ oevsoe	oʊvsoʊ
10	□□□	oolsoo	ʊlsʊ	□□□ onso	ɔnsɔ

List 5 has systematic vowels and a random consonant abutting the /s/ sound.

Practice Phase-List 6

A boy bought a new beetseet (bitsit).
□□□ **I** bought a new beetseet (bitsit)?
□□□ A boy **sold** a new beetseet (bitsit)?
□□□ A boy bought an **old** beetseet (bitsit)?
□□□ A boy bought a new **koetseet** (koʊtsit)?

A beetsud (bitsʌd) hit a mean man.
□□□ A beetsud (bitsʌd) **painted** a mean man?
□□□ A beetsud (bitsʌd) hit a **crazy** man?
□□□ A beetsud (bitsʌd) hit a mean **chicken**?
□□□ A **tOOtseet** (tutsit) hit a mean man?

I met a naetseet (neɪtsit) walking home.
□□□ Did you **pass** a naetseet (neɪtsit) walking home?
□□□ Did you meet a naetseet (neɪtsit) **flying** home?
□□□ Did you meet a naetseet (neɪtsit) walking **to the beach**?
□□□ Did you meet a **beetsoep** (bitsoʊp) walking home?

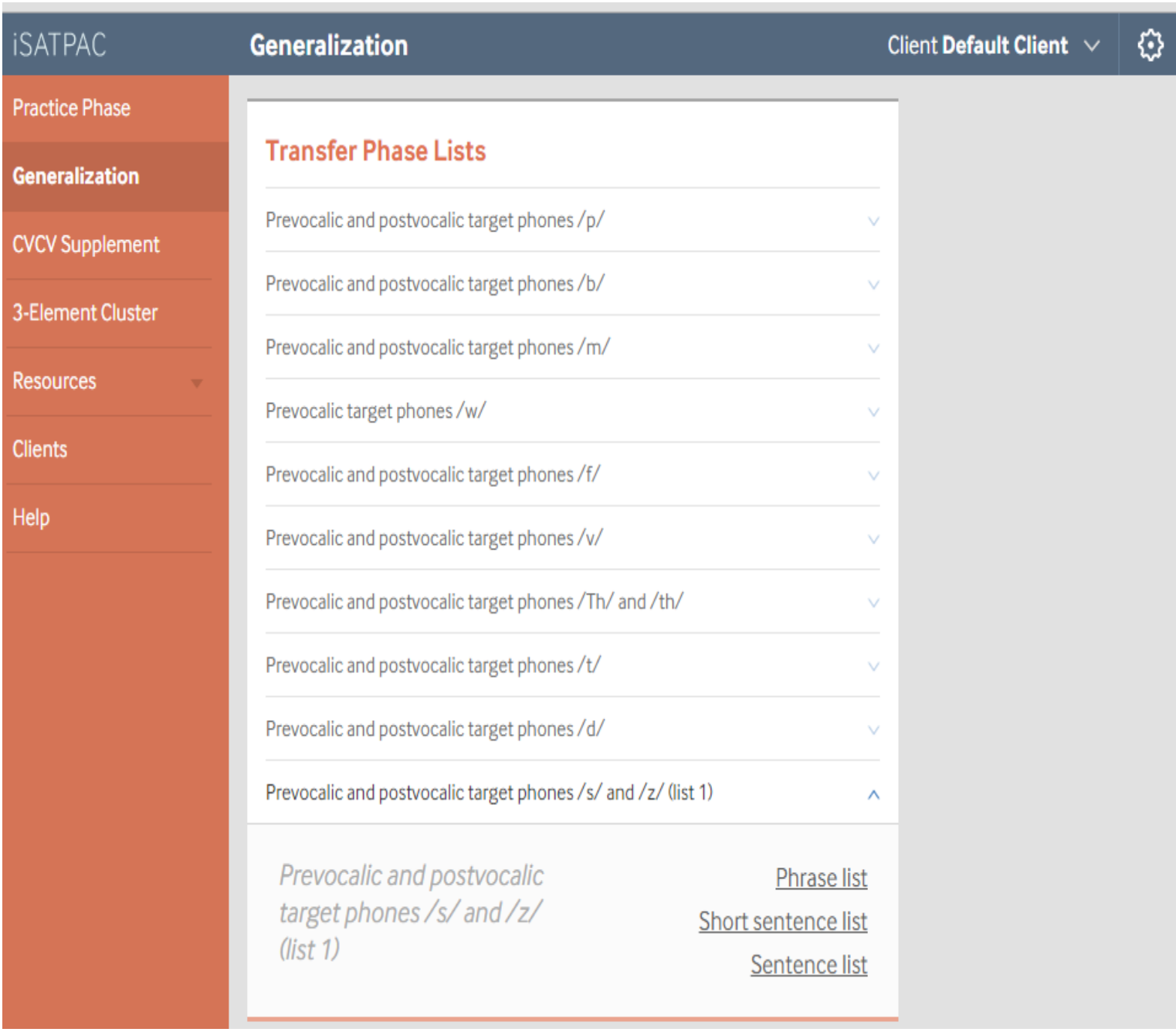
My beetsav (bitsæv) won a penny.
□□□ Did your **friend's** beetsav (bitsæv) win a penny?
□□□ Did your beetsav (bitsæv) **lose** a penny?
□□□ Did your beetsav (bitsæv) win a **nickel**?
□□□ Did your beetsOOb (bitsub) win a penny?

I want a big betseet (betsit).
□□□ Do **I** want a big betseet (betsit)?
□□□ Do you **have** a big betseet (betsit)?
□□□ Do you want a **small** betseet (betsit)?
□□□ Do you want a big **netseet** (netsit)?

The SLP models the top sentence then it is repeated with no particular emphasis. The SLP asks the following sentences putting stress on the word in bold (which is incorrect). The student replies "No" and corrects the sentence. For example, the SLP asks "**I** bought a new beetseet?" And the student replies, "No, a **boy** bought a new beetseet." The SLP asks "A boy **sold** a new beetseet?" and the student replies, "No a boy **bought** a new beetseet." etc.

This is a very powerful exercise because the target sound is said naturally without putting stress on it. In most practice the student would say, "A boy bought a new beet**S**eet putting stress on the target sound and this exercise takes the stress off the target sound.

Generalization/Transfer Phase



In the Generalization/Transfer Phase, phrase and sentence lists can be selected. In this case, we have chosen the /s/ /z/ target phones for phrases, short sentences and longer sentences. Click on whatever you want. Each phrase has a prevocalic and a postvocalic target sound abutting all the various consonants. The Short sentences have a prevocalic and posvocalic target sound in each sentence and the Sentence List has 3 or more target sounds in each sentence.

TALLY COUNTER

For this phase, I have my students use a tally counter pressing when they say their target sound. Interestingly, after hundreds and hundreds of target sound productions they have made going through the Establishment and Practice Phases, students are not always aware when they are saying their target sound. When beginning to use the tally counter, they frequently slow down anticipating when they will say their target but over time, they speed up. This has proven to be a really valuable tool particularly when the student gets to conversational speech or when reading.

I will send a tally counter home with the student to practice at home. Half the time I don't get them back but the quicker improvement they make makes it worth it.

Generalization/Transfer Phase Phrases

Prevocalic and Postvocalic Target Phones /s/ phrases

1. soft whisper
2. knapsack mess
3. single houseboy
4. rib soup house
5. sick rooster
6. outside moose
7. seen face down
8. roadside bus
9. summer ice skate
10. accept peace
11. soft toss game
12. jigsaw piece
26. watch some geese
27. say yes Jim
28. large sun mass
29. sick bossman
30. himself yes
31. sorry guess not
32. pencil toss
33. surf this way
34. going soon Joyce
35. sound asleep
36. also Bess
37. so kiss you

As mentioned previously, each phrase has a prevocalic and a postvocalic target sound abutting all the various consonants 1 and 2 (p), 3 and 4 (b), etc.

Generalization/Transfer Phase Short Sentences

Prevocalic and Postvocalic Target Phones
Short /s, z/ Sentences - List 1

1. She had a soft whisper.
2. Sam never cleans up.
3. Grace bought cough syrup.
4. We went to the soup house.
5. The sick rooster died.
6. I like inside days.
7. The skater was pretty.
8. The bus drove to school.
9. I swam in August.
10. You must accept it.

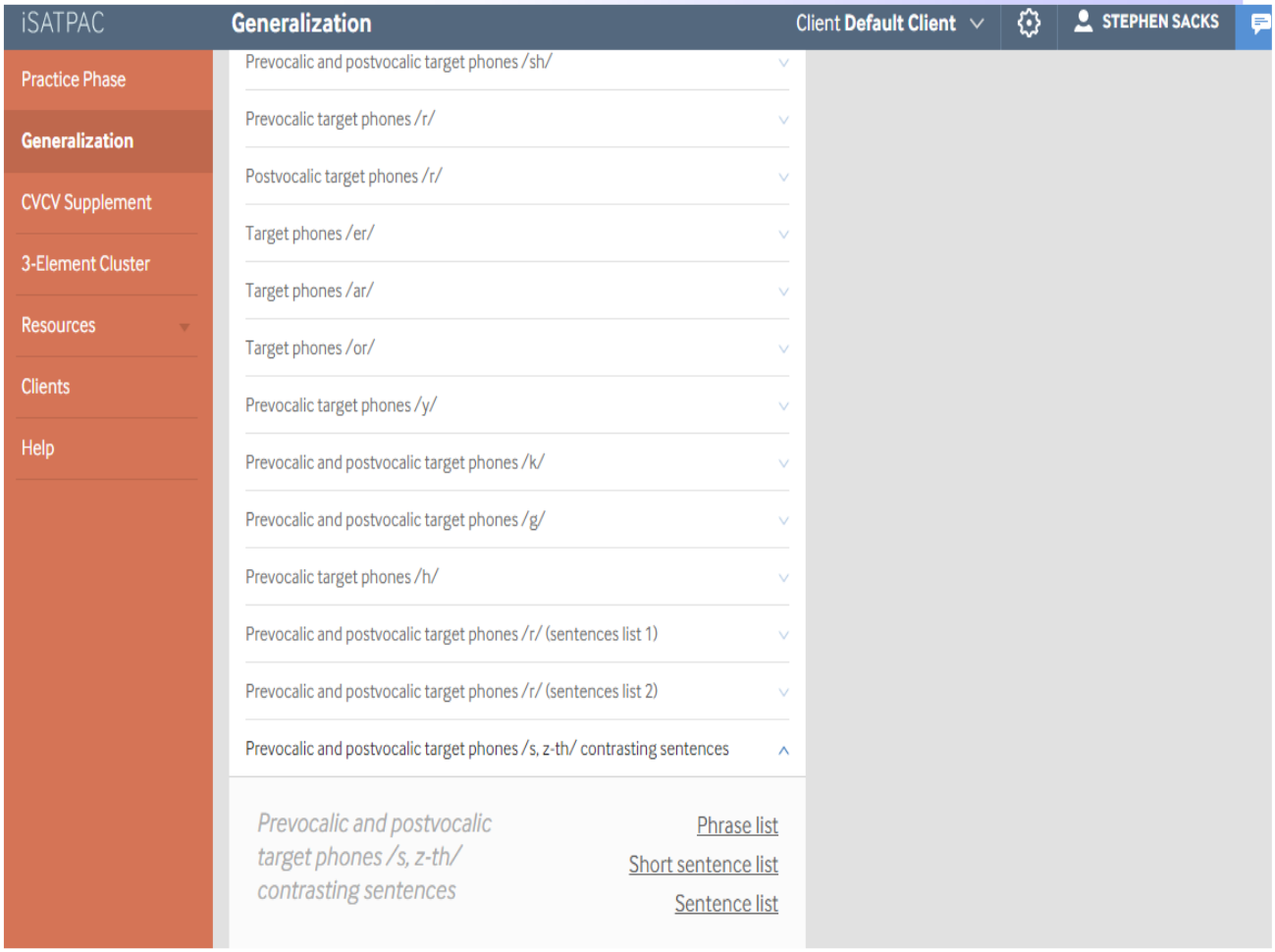
Generalization/Transfer Phase Sentences

Prevocalic and Postvocalic Target Phones
/s, z/ sentences - List 1

1. Grace has a soft whisper.
2. Sam never cleans his cups.
3. The cough syrup spilled.
4. Gus passed the rib soup house.
5. The sick rooster sang at sunrise.
6. I have inside days and outside days.
7. The skater was face down.
8. The bus drove summer school.
9. It's too hot to skate in August.
10. You must accept peace.
11. The spoons game was nice.
12. A jigsaw piece was lost.

As mentioned previously, The Short sentences have a prevocalic and posvocalic target sound in each sentence and the Sentence List has 3 or more target sounds in each sentence. These sentences are also excellent to use a contrastive stress technique to get lots of target sounds to be said naturally without stress on most of them. For example, you model "Grace has a soft whisper" and it's repeated. You then ask "**Bill** has a soft whisper?" and the student replies, "No **Grace** has a soft whisper."

Generalization/Transfer Phase Contrasting /s,z,th/

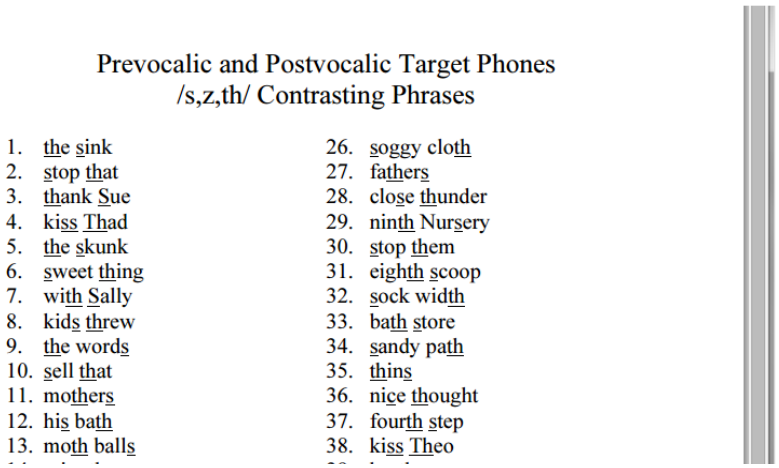


After having practiced the target sound and having it generalized into some structured conversational activities like using contrastive stress sentences, it is time to bring back the sound(s) that interfered with the target sound when we began. So now the TH sounds are brought back and at this point, the student is able to say both the TH and /s,z/ sounds correctly. It might be slow at first, but after some practice, the sentences should be said at a normal conversational rate.

There are phrases, short sentences (on the following page) and longer sentences where the TH sounds are contrasted with the /s,z/ sounds.

You might have noticed that I'm talking about the /s,z/ sounds yet the only thing we have practiced appear to be the /s/ sounds. However, you will also notice that many /s/ sounds when they follow a voice sound are pronounced /z/. Some examples would be these*, Tuesday, hose, goes, limes,* etc.

Generalization/Transfer Phase Contrasting Phrases



Prevocalic and Postvocalic Target Phones
/s,z,th/ Contrasting Phrases

1. the sink
2. stop that
3. thank Sue
4. kiss Thad
5. the skunk
6. sweet thing
7. with Sally
8. kids threw
9. the words
10. sell that
11. mothers
12. his bath
13. moth balls
26. soggy cloth
27. fathers
28. close thunder
29. ninth Nursery
30. stop them
31. eighth scoop
32. sock width
33. bath store
34. sandy path
35. thins
36. nice thought
37. fourth step
38. kiss Theo

Generalization/Transfer Phase Short Contrasts

Prevocalic and Postvocalic Target Phones
/s,z,Th,th/ Contrasting Sentences

1. We saw the man.
2. He licked the sucker.
3. My kids thought about it.
4. I love those deer.
5. Both Sue and Mary left.
6. She kissed Thad.
7. The skunk ran.
8. We went with Sally.
9. The kids played.
10. Bob thinks hard.
11. She saw the tree.
12. Mothers work hard.

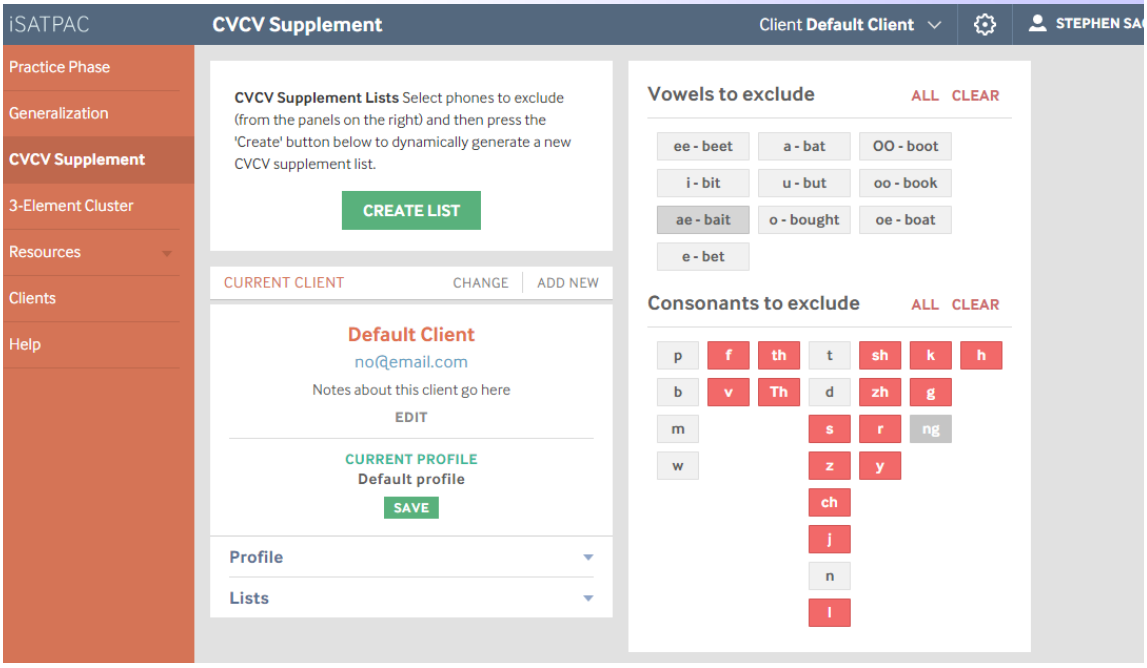
Prevocalic and Postvocalic Target Phones
/s,z,Th,th/ contrasting sentences

1. The singer sang both songs.
2. My tooth sank into the sucker.
3. My kids thought nice thoughts.
4. I miss thinking about the Red Sox.
5. Both Sue and Beth spoke well.
6. Sue wanted to kiss Thad.
7. The skunks threw a fit.
8. With Sally, both sounded good.
9. The kids threw up on Sunday.
10. Chris thinks the test was hard.
11. Beth saw the accident.

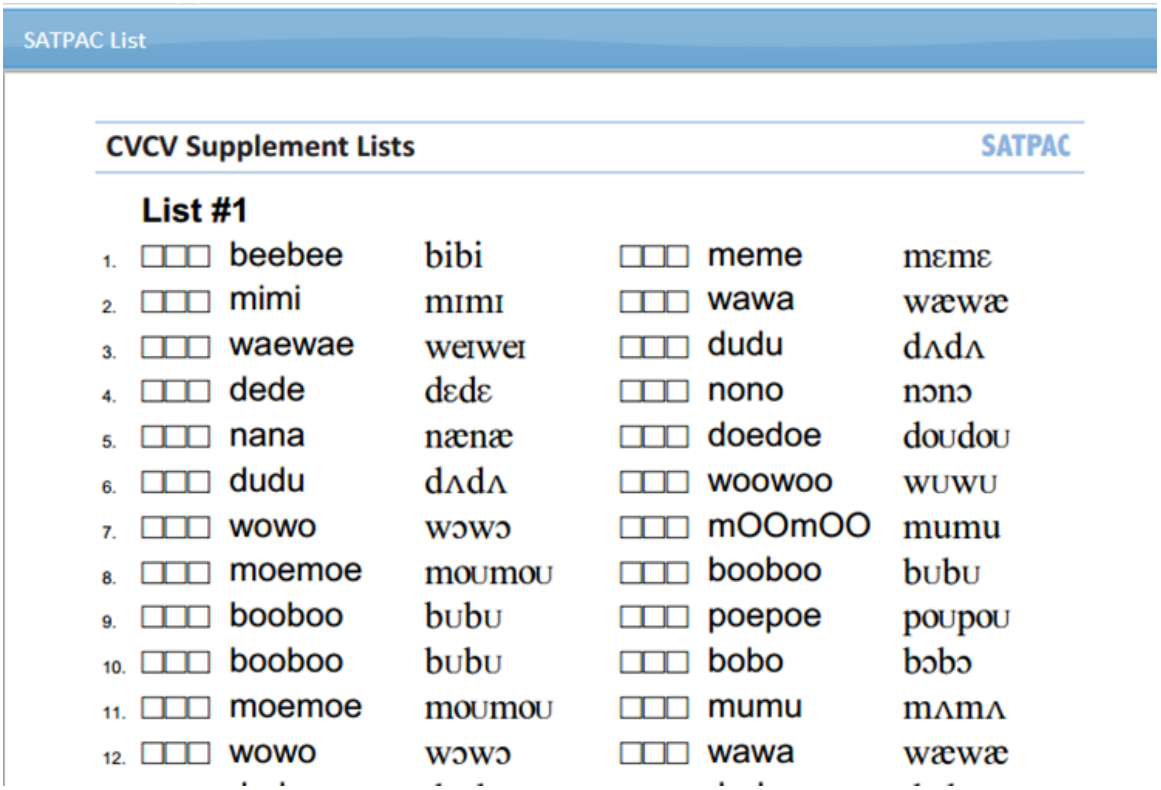
If the student can do these sentences at a normal conversational rate, they are pretty much remediated. If not, I will have them come in and bring their reading book and talk about their classroom stories using the tally counter to monitor the /s,z/ sounds and have them practice reading/conversation at home using the tally counter.

To be remediated, I use a 50 target sound conversational sample. If they are at 75% or better, I will typically dismiss but continue to monitor them to make sure they don't slip back. Usually, they will continue to improve on their own.

CVCV List for Childhood Apraxia of Speech



The CVCV lists have been used successfully with children who have developmental apraxia (DAS). All sounds they cannot say are eliminated from the lists. Here they can only say the /p,b,m,w,t,d,n/ sounds as well as the vowel sounds.



SATPAC List

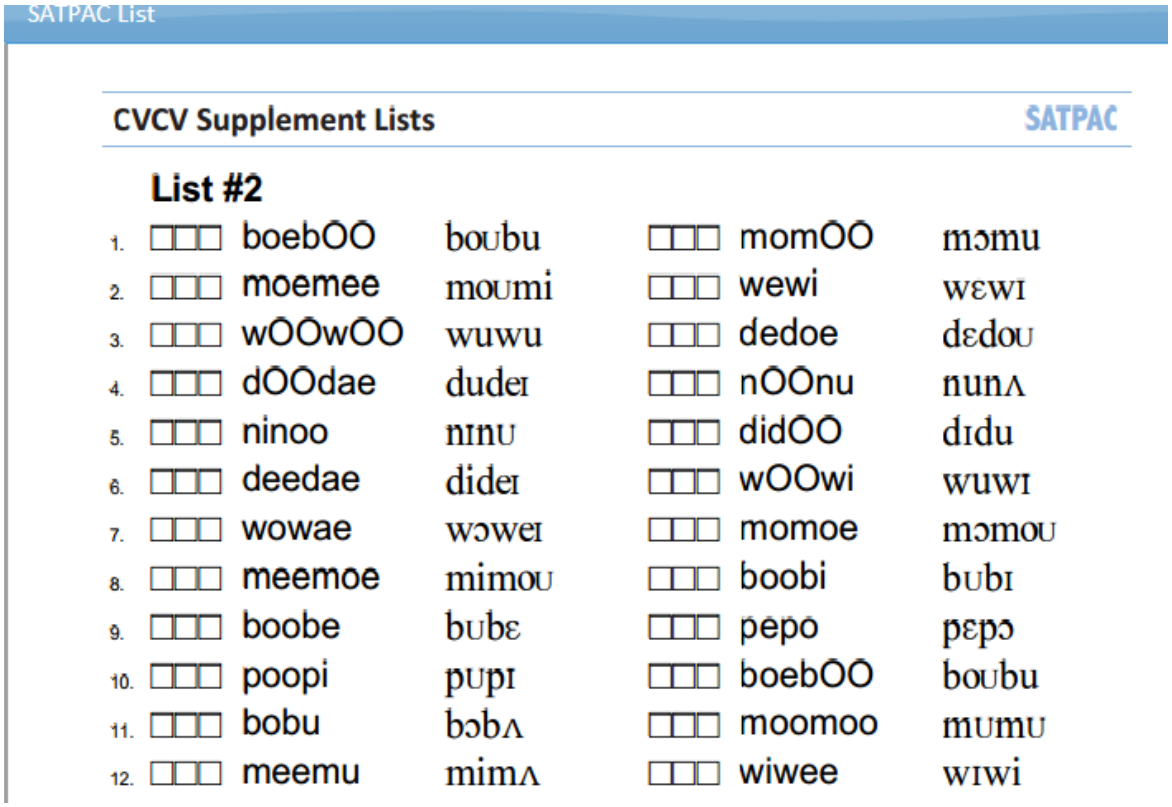
CVCV Supplement Lists SATPAC

List #1

1.	□□□ beebee	bibi	□□□ meme	mɛmɛ
2.	□□□ mimi	mɪmɪ	□□□ wawa	wæwæ
3.	□□□ waewae	weɪweɪ	□□□ dudu	dʌdʌ
4.	□□□ dede	dɛdɛ	□□□ nono	nɔnɔ
5.	□□□ nana	nænæ	□□□ doedoe	doʊdoʊ
6.	□□□ dudu	dʌdʌ	□□□ woowoo	wʊwʊ
7.	□□□ wowo	wɔwɔ	□□□ mOOmOO	mumu
8.	□□□ moemoe	moʊmoʊ	□□□ booboo	bʊbʊ
9.	□□□ booboo	bʊbʊ	□□□ poepoe	poʊpoʊ
10.	□□□ booboo	bʊbʊ	□□□ bobo	bɔbɔ
11.	□□□ moemoe	moʊmoʊ	□□□ mumu	mʌmʌ
12.	□□□ wowo	wɔwɔ	□□□ wawa	wæwæ

List 1 is reduplication. That is typically what these kids can do (like *mama*, but they have trouble with *mommy*). After doing this list, these kids are usually motivated as they have trouble being understood almost all the time and now they just completed something perfectly.

List 2 is where they break down as it has random vowel sounds. But I have found that with practice, they usually pick this up pretty fast because the consonants stay duplicated.



SATPAC List

CVCV Supplement Lists SATPAC

List #2

1.	□□□ boebŌŌ	boʊbu	□□□ momŌŌ	mɔmu
2.	□□□ moemee	moʊmi	□□□ wewi	wɛwɪ
3.	□□□ wŌŌwŌŌ	wuwu	□□□ dedoe	dɛdoʊ
4.	□□□ dŌŌdae	dudeɪ	□□□ nŌŌnu	nunʌ
5.	□□□ ninoo	nɪnʊ	□□□ didŌŌ	dɪdu
6.	□□□ deedae	dideɪ	□□□ wOOwi	wuwɪ
7.	□□□ wowae	wɔweɪ	□□□ momoe	mɔmoʊ
8.	□□□ meemoe	mimoʊ	□□□ boobi	bʊbɪ
9.	□□□ boobe	bʊbɛ	□□□ pepo	pɛpɔ
10.	□□□ poopi	pupɪ	□□□ boebŌŌ	boʊbu
11.	□□□ bobu	bɔbʌ	□□□ moomoo	mʊmʊ
12.	□□□ meemu	mimʌ	□□□ wiwee	wɪwi

List #3

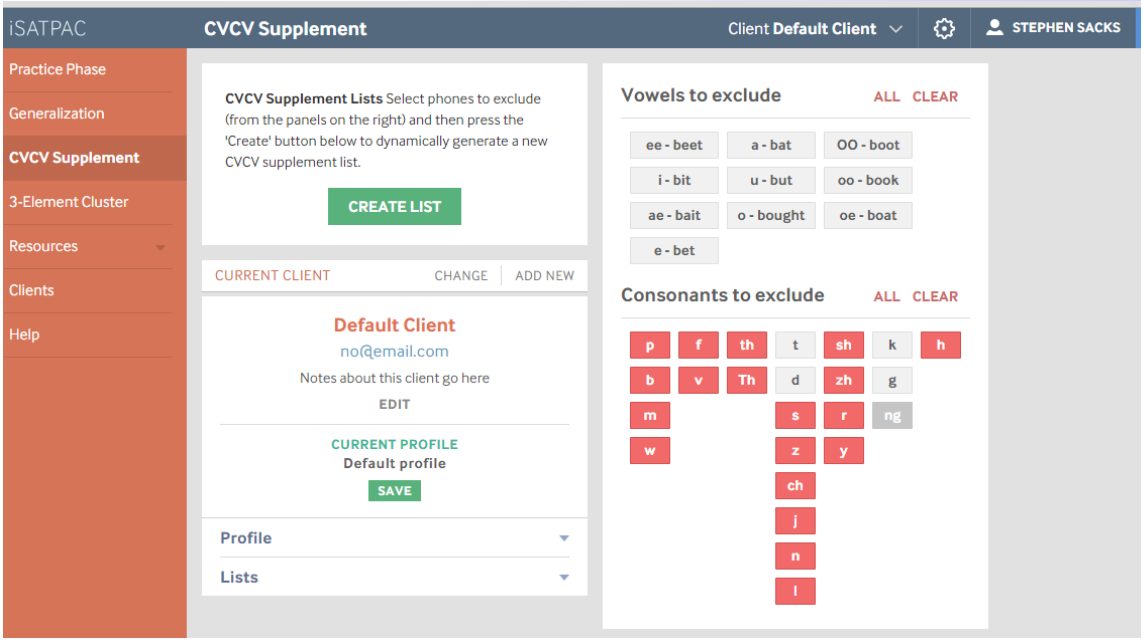
1.	□□□ weepee	wipi	□□□ maewae	meɪweɪ
2.	□□□ biwi	bɪwɪ	□□□ beme	bɛmɛ
3.	□□□ daenae	deɪneɪ	□□□ wupu	wʌpʌ
4.	□□□ nede	nɛdɛ	□□□ dowo	dɔwɔ
5.	□□□ waba	wæbæ	□□□ woewoe	woʊwoʊ
6.	□□□ wuwu	wʌwʌ	□□□ moomoo	mʊmʊ
7.	□□□ bopo	bɔpɔ	□□□ dOOwOO	duwu
8.	□□□ woenoe	woʊnoʊ	□□□ woonoo	wʊnʊ
9.	□□□ woodoo	wʊdʊ	□□□ poedoe	poʊdoʊ
10.	□□□ pOOwOO	puwu	□□□ nomo	nɔmɔ
11.	□□□ poonoo	pʊnʊ	□□□ wumu	wʌmʌ
12.	□□□ doewoe	doʊwoʊ	□□□ pada	pædæ
13.	□□□ domo	dɔmɔ	□□□ bede	bɛdɛ

List #4

1.	□□□ bOOmoe	bumoʊ	□□□ waewo	weɪwɔ
2.	□□□ nidOO	nɪdu	□□□ deemoo	dimʊ
3.	□□□ denu	dɛnʌ	□□□ mawOO	mæwu
4.	□□□ dedOO	dɛdu	□□□ nini	nɪnɪ
5.	□□□ nume	nʌmɛ	□□□ widoo	wɪdʊ
6.	□□□ poepa	poʊpæ	□□□ moedi	moʊdɪ
7.	□□□ poone	pʊnɛ	□□□ pube	pʌbɛ
8.	□□□ niwoe	nɪwoʊ	□□□ woebe	woʊbɛ
9.	□□□ boopOO	bʊpu	□□□ bonae	bɔneɪ
10.	□□□ mapu	mæpʌ	□□□ puwOO	pʌwu
11.	□□□ poopu	pʊpʌ	□□□ dowi	dɔwɪ
12.	□□□ weme	wɛmɛ	□□□ bapee	bæpi

List 3 goes back to systematic vowels and has random consonants. After this list, I've found that these kids start talking a lot and being understood much better. If they are able to use CVCVs and use the correct vowel sounds, they can be much better understood. The example I use where the kid is watching his mom feed a strawberry to his baby sister and says, "Woo, mommy, baby ee tawbe" can be understood in context and you start to get the normal parent/child interactions that have been missing because the child either didn't talk (since no one understands him) or when he did talk, he wasn't understood. This increase in talking often leads to other sound development which can then be added into the lists and practiced. With List 4, everything is random.

CVCV /t,d,k,g/ Contrasts



The CVCV lists are also useful for contrasting phonological processes. For example, in this case the student fronts. All sounds are eliminated except for the /t,d,k,g/. When you get to List 3 (on the next page), you start getting front to back and back to front contrasts (like *kee-dee, kede, kata, gutu*, etc.).

When contrasting the front to back sounds, I really exaggerate the mouth opening with the stable jaw for the back /k,g/ sounds and the mouth closing for the /t,d/ sounds. I will also use some visual cues touching my larynx for the back sounds with my mouth open and touching my top lip for the front sounds with the mouth pretty much closed.

CVCV Preschool Supplement Lists **SATPAC**

List #1

1.	□□□ teetee	titi	□□□ kaekae	keɪkeɪ
2.	□□□ didi	dɪdɪ	□□□ gege	gɛgɛ
3.	□□□ kaekae	keɪkeɪ	□□□ kaka	kækæ
4.	□□□ gege	gɛgɛ	□□□ dudu	dʌdʌ
5.	□□□ kaka	kækæ	□□□ toto	tɔtɔ
6.	□□□ dudu	dʌdʌ	□□□ doedoe	doʊdoʊ
7.	□□□ toto	tɔtɔ	□□□ kookoo	kʊkʊ
8.	□□□ doedoe	doʊdoʊ	□□□ gOOgOO	gugu
9.	□□□ kookoo	kʊkʊ	□□□ kookoo	kʊkʊ
10.	□□□ gOOgOO	gugu	□□□ doedoe	doʊdoʊ
11.	□□□ kookoo	kʊkʊ	□□□ toto	tɔtɔ
12.	□□□ doedoe	doʊdoʊ	□□□ dudu	dʌdʌ

CVCV Preschool Supplement Lists — SATPAC

List #2

1.	□□□	tooto	tʊtɔ	□□□	goegae	goʊgeɪ
2.	□□□	dadae	dædeɪ	□□□	kooki	kʊkɪ
3.	□□□	keeke	kikɛ	□□□	didoe	dɪdoʊ
4.	□□□	gigoo	gɪgʊ	□□□	tOOtOO	tutu
5.	□□□	kaeki	keɪkɪ	□□□	dude	dʌdɛ
6.	□□□	doedae	doʊdeɪ	□□□	keekOO	kiku
7.	□□□	teto	tɛtɔ	□□□	gage	gægɛ
8.	□□□	deedi	didɪ	□□□	kOOka	kukæ
9.	□□□	kika	kɪkæ	□□□	dada	dædæ
10.	□□□	gugae	gʌgeɪ	□□□	tetu	tɛtʌ
11.	□□□	kookoe	kʊkoʊ	□□□	dedOO	dɛdu
12.	□□□	dadoe	dædoʊ	□□□	keekae	kikeɪ
13.	□□□	didee	dɪdi	□□□	gega	gɛgæ
14.	□□□	kikOO	kɪku	□□□	kookoo	kʊkʊ
15.	□□□	geegOO	gigu	□□□	didoo	dɪdu

CVCV Preschool Supplement Lists — SATPAC

List #3

1.	□□□	keedee	kidi	□□□	daegae	deɪgeɪ
2.	□□□	kiki	kɪkɪ	□□□	teke	tɛkɛ
3.	□□□	gaekae	geɪkeɪ	□□□	gaga	gægæ
4.	□□□	kede	kɛdɛ	□□□	tuku	tʌkʌ
5.	□□□	kata	kætæ	□□□	koto	kɔtɔ
6.	□□□	gutu	gʌtʌ	□□□	goekoe	goʊkoʊ
7.	□□□	dogo	dɔgɔ	□□□	kookoo	kʊkʊ
8.	□□□	koedoe	koʊdoʊ	□□□	dOOgOO	dugu
9.	□□□	kookoo	kʊkʊ	□□□	gookoo	gʊkʊ
10.	□□□	kOOdOO	kudu	□□□	toekoe	toʊkoʊ
11.	□□□	tookoo	tʊkʊ	□□□	dogo	dɔgɔ
12.	□□□	koekoe	koʊkoʊ	□□□	gudu	gʌdʌ
13.	□□□	gogo	gɔgɔ	□□□	data	dætæ
14.	□□□	gudu	gʌdʌ	□□□	dege	dɛgɛ
15.	□□□	gaka	gækæ	□□□	taekae	teɪkeɪ

CVCV Preschool Supplement Lists **SATPAC**

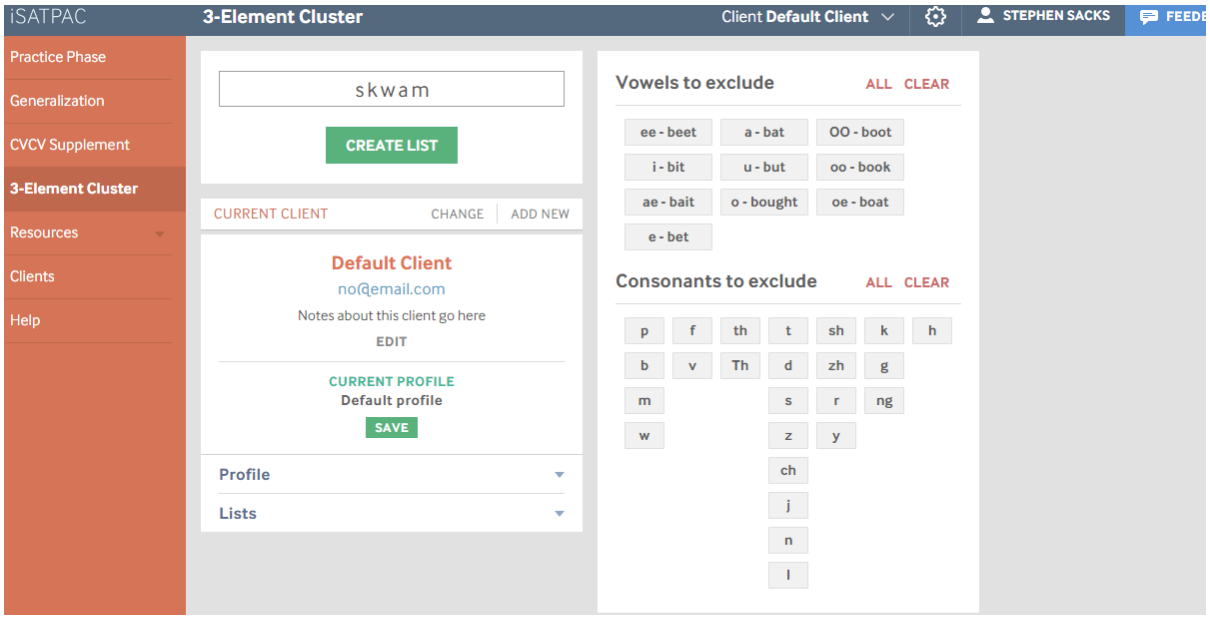
List #4

1.	□□□ dOOge	dugɛ	□□□ dOOgoe	dugoʊ
2.	□□□ tigoe	tɪgoʊ	□□□ dookee	dʊki
3.	□□□ keeti	kitɪ	□□□ doetoo	doʊtʊ
4.	□□□ gekOO	gɛku	□□□ dotoo	dətʊ
5.	□□□ gaeku	geɪkʌ	□□□ dugae	dʌgeɪ
6.	□□□ gada	gædæ	□□□ tugoe	tʌgoʊ
7.	□□□ goeda	goʊdæ	□□□ koti	kɔtɪ
8.	□□□ togi	tɔgɪ	□□□ dooko	dʊkɔ
9.	□□□ kOOtOO	kutu	□□□ giti	gɪtɪ
10.	□□□ taedoe	teɪdoʊ	□□□ kigee	kɪgi
11.	□□□ deeto	ditɔ	□□□ koogoo	kʊgʊ
12.	□□□ goedoe	goʊdoʊ	□□□ doodOO	dʊdu
13.	□□□ teekee	tiki	□□□ keegae	kigeɪ
14.	□□□ dutOO	dʌtu	□□□ tugoe	tʌgoʊ
15.	□□□ giga	gɪgə	□□□ daeto	deɪtə

List 4 all the vowels and consonants are random.

There is also a supplement with 3-element cluster lists from the Complexity Approach which posits that if you practice 3-element clusters, then you will get 2-element clusters without needing to practice them. Here are the two lists that are produced (on the next page).

3-Element Clusters



	List #1		List #2	
1.	□□□ skwam	skwæm	□□□ skwam	skwæm
2.	□□□ skwuf	skwʌf	□□□ skwaz	skwæz
3.	□□□ skwov	skwɔv	□□□ skwuj	skwʌdʒ
4.	□□□ skwoet	skwoʊt	□□□ skwOOm	skwum
5.	□□□ skwood	skwʊd	□□□ skwich	skwɪtʃ
6.	□□□ skwOOs	skwus	□□□ skwooj	skwʊdʒ
7.	□□□ skwooz	skwʊz	□□□ skwej	skwɛdʒ
8.	□□□ skwoech	skwoʊtʃ	□□□ skwuf	skwʌf
9.	□□□ skwoj	skwɔdʒ	□□□ skweez	skwiz
10.	□□□ skwun	skwʌn	□□□ skwes	skwɛs
11.	□□□ skwal	skwæl	□□□ skwiv	skwɪv
12.	□□□ skwek	skwɛk	□□□ skwaem	skweɪm

Here are some other items which I think are essential for therapy. I put in this picture because when I was working, there were days when I just felt like sleeping and not getting up. But I always did because it is essential that we be there for our students. They won't improve unless we work with them.

Other Essentials

Other Essentials

- A Solid Foundation
- Practice
- Homework
- Systematic Therapy
- Hierarchy
- Change Takes Time

A Solid Foundation

Before I took oral-motor classes, I had no concept of this. So, for kids who had a frontal lisp, I asked them to keep their teeth closed so they wouldn't stick their tongue out. When it got to conversation, it all fell apart because I did not help them establish the correct foundation. It wasn't until I took O-M classes that I learned about stabilizing of the articulators and in the case of a frontal lisp, the lateral margins of the tongue are stabilized on the back molars and the tongue tip is differentiated from the stable back of the tongue by lifting up.

Practice

2 Types of Feedback

- Knowledge of results – e.g. "correct"
- Knowledge of performance – "you kept your tongue wide and on your top teeth"
- This relates to Metacognition where the student has to be able to articulate Knowledge of performance.

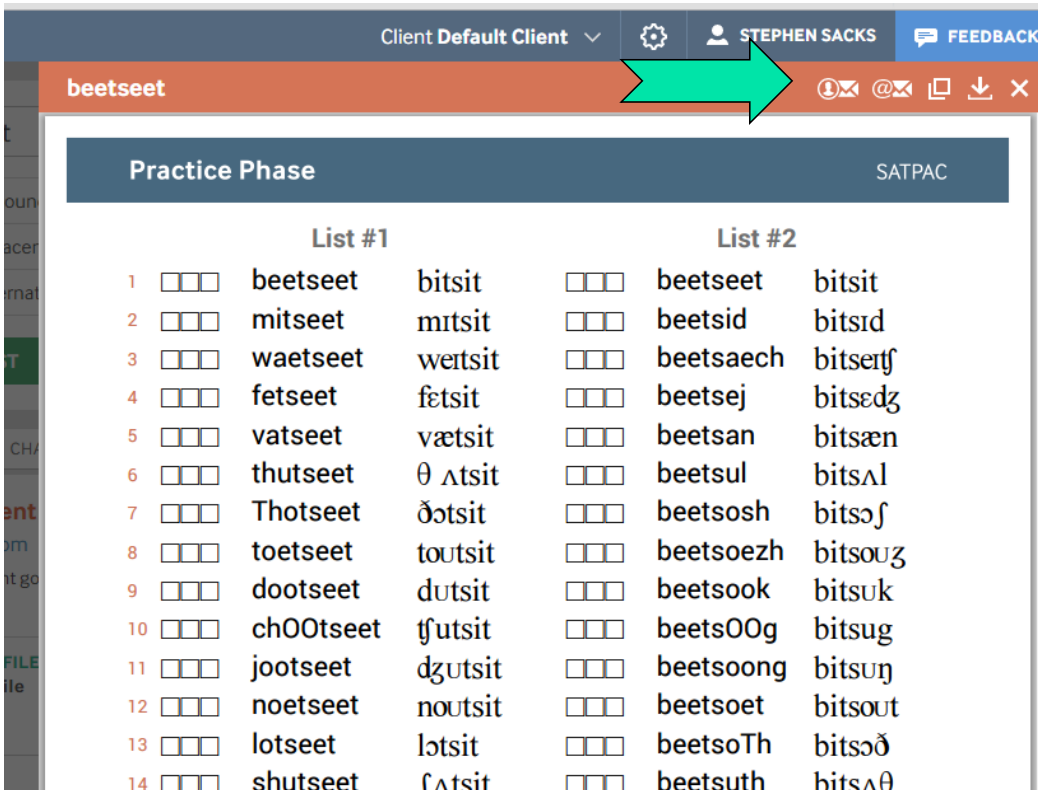
In the video, it shows how the SLP is giving either no feedback or sporadic feedback. I have found that when an error occurs, it is important to give feedback. I typically say, "I heard EE-A-SHA" (supposed to be EERSHA). The student has the opportunity to self-correct and if she can't, I can then give instruction.

Mandatory Homework

I give HW sheets weekly but I don't require that they be returned. So how do I know if they are doing their HW? I gauge it by their progress. If they are progressing that's all I care about. For my students who are not progressing, I will call home after a month or 2 and talk to a parent. I have typically found that the parents are not getting the HW papers I send home. I explain to them about the SATPAC Program and the crazy nonsense words and tell them not to worry about how you pronounce the words but to pay attention to the target sound. I also will email the HW if they have an email address.

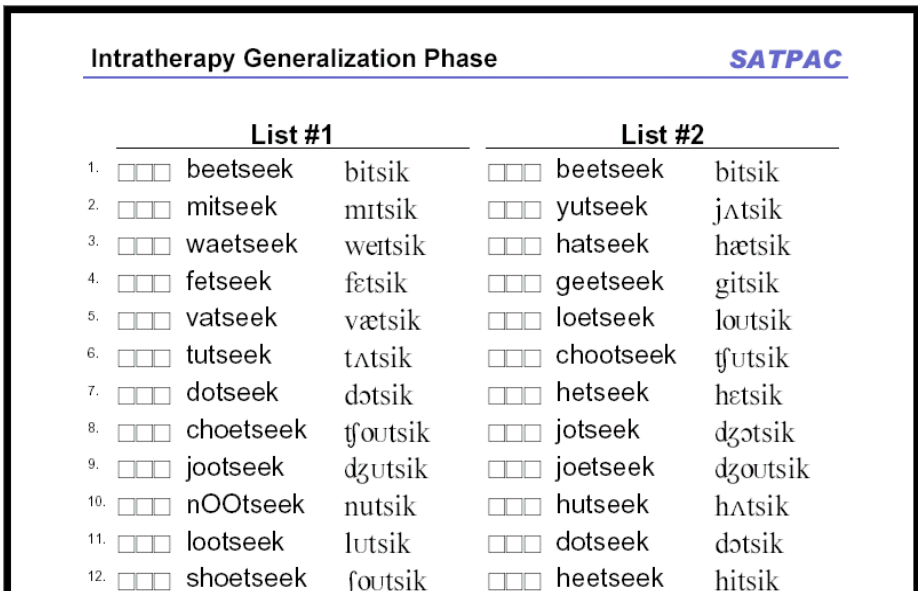
Mandatory Homework

- Student is in a group for 30 min./wk
- Without any homework, he spends one half of 1% of his waking time working on his speech. The odds are that the other 99.5% when he isn't practicing, he is making incorrect productions.
- Just 5-10 min. a day can move the student more quickly into transfer and lead to ultimate success

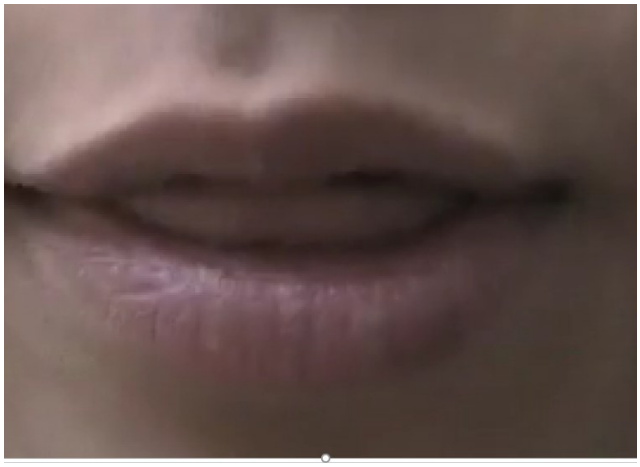


SATPAC allows you to attach the sheets and automatically email them by clicking on the mail icon.

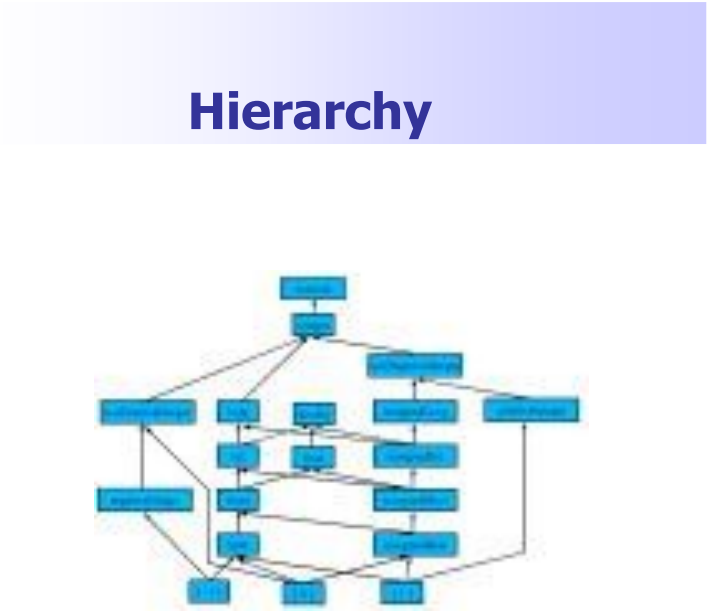
Systematic Therapy

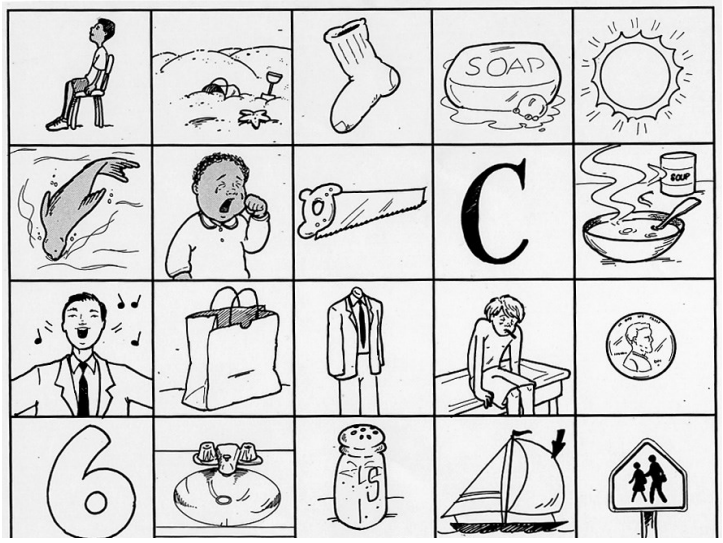


Pulling out an artic. deck with your target sound and then presenting the photos with no rhyme or reason to the presentation is not systematic therapy. The emphasis when you are establishing a sound is to develop a consistent motor pattern through lots and lots of correct repetitions. In SATPAC, List 1, all the sounds end in TSEET taking advantage of using a facilitating context, coarticulation with the target sound in the middle of the word, etc. Note that in List 2, the change takes place after the /s/ sound which is more difficult but this is the typical starting place for most therapy.



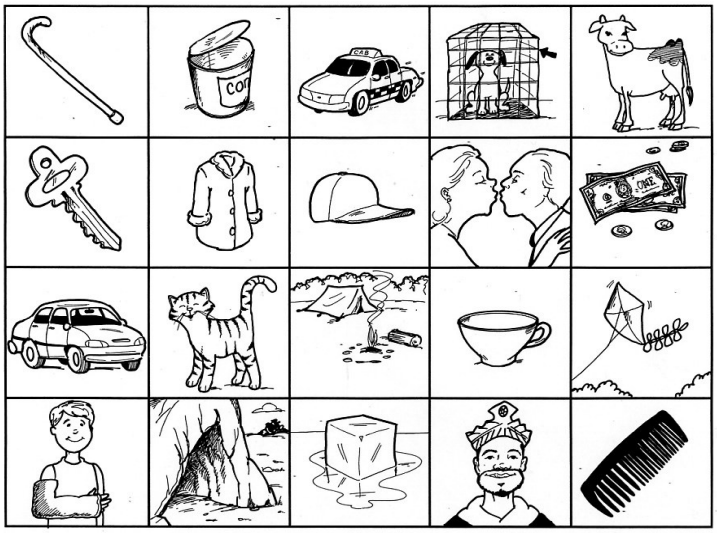
This is a student who has just begun practicing the /s/ sound at the 2 syllable level in BEETSEET. You can notice how slow we are going as he repeats the word and for that reason, we are not using a metronome. Shortly thereafter, I asked him to repeat sentences that followed this form: It's a s___. You will notice that he always gets the first /s/ correct and always lisps on the second /s/. The reason for that is he is using the abutting /t/ sound in *It's* to facilitate the correct production but for the second /s/, there is no abutting /t/ sound so he goes back to his established pattern of the lisp.





Following a hierarchy for /s/ might be something like this: 1) start with the SATPAC BEET-SEET lists 1 and 2. 2) If they can do List 2 easily, you might try something like the SPARC-R pictures and say BEETSIT, BEETSAND, BEETSOCK, etc. 3) Then without the abutting /t/ like A SIT, A SAND, etc. 4) Then sentences with one /s/ I LIKE A SIT. I LIKE A SAND, etc. 5) Then 2 /s/ sounds with an easy one IT'S and a more difficult one: IT'S A SIT, IT'S A SAND, etc. 6) Then two prevocalic /s/ sounds I SEE A SIT, I SEE A SAND, etc. 7) Then mixed sentences THE BOY LIKES TO SIT.HE PLAYS IN THE SAND,etc.

From there, you might then go to the SATPAC Generalization/Transfer phase. The point here is that you want to use your professional judgment and probe to see how fast they can go, how much of SATPAC they can skip (if any) as the goal is remediation as quickly as possible and not to go through the SATPAC Program in its entirety.



/k/ Hierarchy

1) OK + /k/ word
2) /k/ word
3) A /k/ word
4) I see a /k/ word
5) Random sentences with 1 /k/ word.
6) I like a /k/ word.
7) I can see a /k/ word.
8) (next slide)

Generalization/Transfer Phrases

Prevocalic and Postvocalic Target Phones /k/ phrases

1. cold duckpond
2. popcorn snack
3. cozy sick bay
4. labcoat rack
5. Kay packed too
6. outcome bleak
7. Ken make do
8. bad case, Bick
9. Cal's oak garden
10. big canvass sack
11. Kim's bike chain
26. with Captain Hook
27. Ken's rock show
28. trashcan leak
29. cool Walkman
30. some keep back
31. camp sickness
32. tin can pick
33. long cap rack
34. car bike race
35. water color duck
36. keep sick leave

For /k/, you would again follow a hierarchy going from simpler to more complex as seen on the previous page. Again, you could go to real words like with the SPARC-R and then come back to SATPAC for the Generalization/Transfer Phase beginning with phrases and then short sentences.

Generalization/Transfer Short Sentences

Prevocalic and Postvocalic Target Phones
Short /k/ Sentences

1. Carol saw the duck.
2. Please come back.
3. The baby can walk.
4. Carl has a bike.
5. Please come for a week.
6. She can bake.
7. Cathy likes me.
8. The kayak was new.
9. Carla was sick.
10. Mack has a cap

Generalization/Transfer Long Sentences

Prevocalic and Postvocalic Target Phones
/k/ sentences

1. Carol called Doctor Carter.
2. Can you see the camel's back?
3. The kids came to Camp Mohawk.
4. Carl caught the stomach flu.
5. The weak hiker could not walk.
6. Carmen makes cartoons.
7. Cathy likes black licorice
8. The water rocked the kayak.
9. Carla got cabin sickness.
10. Mack ate breakfast in Kentucky.

Then continue with longer sentences if appropriate—some of these are probably too difficult for younger students— then the difficult /t,d/ sounds are brought back in contrasting sentences and the student has to say them all correctly in shorter sentences.

Generalization/Transfer Contrasting Short Sentences

Prevocalic and Postvocalic Fronting/Backing
Contrasting Short Sentences

1. Carol goes to the doctor.
2. Don't go back.
3. The kid won't talk.
4. Gail had the stomach flu.
5. Did you go for a week?
6. Gabe ate steak.
7. Tony liked it.
8. The kayak tipped.
9. Gus had a sickness.
10. Mack did not drink.

Prevocalic and Postvocalic Target Phones
Fronting/Backing contrasting sentences

1. The cook got burned.
2. The kid took a big bite.
3. Mike got kissed.
4. Matt called time out.
5. A tiger killed two ducks.
6. Look to the right.
7. A fat kid kicked me.
8. Rick talked to eight girls.
9. Fruit comes to town on Tuesday.
10. I dug tunnels.
11. Vic painted two portraits.
12. The dog took different paths.

And finally, longer contrasting sentences are presented if appropriate.

Change takes place over time. Seeing a student once a week can be extremely effective if the student is diligently doing their homework. I have had numerous students who have thrived with just receiving therapy for 15 minutes a week individually and homework during the week. Having a week in between therapy sessions allows the student to develop the new consistent motor patterns that are necessary for change.

Oral-Motor Principles

1. Definition of Oral-Motor Skills-process of facilitating oral (jaw, lip, tongue) movements

Must have a purpose-doing oral exercises without a specific purpose will not benefit the student

2. General Goals

Increase awareness of the oral mechanism and its parts

To normalize oral –tactile sensitivity

To inhibit abnormal and to facilitate normal oral movement patterns

To increase separation and stabilization of oral movements

To achieve successful speech sound production

3. We learn through our senses

In terms of speech, we process sensory information (auditory, tactile/ kinesthetic to a lesser extent visual) which results in speech production

4. Movement Patterns Become Auto-Organizational

When the movements have been learned (typically through repeated trials), movement patterns no longer require sensory input

5. What Boshart calls Oral Sensory-Motor Therapy Emphasizes the Tactile Sense

a. touch stimulates movement

b. touch provides important and specific feedback about movement

6. Oral-Motor therapy develops physiological capacity

a. definition- Nurtures the development of sensory reception, modifies muscle substance (strength, tone, and endurance) and facilitates and shapes oral stabilization and separation skills (all critical for normal speech).

b. extent of therapeutic success is dependent on the client's fundamental cognitive, respiratory and sensory-motor capacities.

7. Oral-motor sensory therapy requires repetitive practice of the movements

   a. Repetition of movements increases awareness, voluntary control, strength, skill and fluency of movement

   b. We ask clients to repeat desired movements and we avoid having them repeat undesired movements

8. Therapy must be continuous (on-going), sequential and cumulative (simpler to more advanced levels of skill) with development taking time

9. Strength, Tone and Endurance

   a. strength is necessary but how much is open to debate

   b. tone-flaccid tongue—articulator contacts may be imprecise (mushy speech with / t/ using the blade and not the tip

   c. goal is not only dexterity but endurance-which occurs through improved muscle tone through repetitive practice

10. Oral Stabilization

   a. to achieve refined, small muscle-movements, one must stabilize a non-moving part near the moving part (stability leads to mobility)

   lingual stabilization-the sides of the tongue contact and anchor against the insides of the top, back teeth during production of most front tongue (t,d,n,s,sh,ch,etc.) and back tongue (k,g,ng,r) speech sounds. All tongue sounds use this stabilized tongue except for L and TH.

   Physiological Economy-articulators are within close range of the
   corresponding articulator contacts (e.g., “Candy eats a green snake”).

      a. uneconomical speech examples are a lisp and retroflex /r/

11. Oral Separation

   a. The oral mechanism first functions as a single unit. Over time, the jaw, lips and tongue dissociate their movements one from another and become independent moving parts. Independent use of each part is necessary for production of mature speech.

   b. jaw stabilization-biting on a craft stick allowing for separation of the tongue from the jaw-/k,r/

   c. tongue stabilization-sides of tongue anchor on top, back teeth allowing for separation between the front and back of the tongue (EET, EEK)

   d. lips remain basically inactive while the tongue produces speech sounds (lip-tongue separation NEE-o/near); lips are rounding and jaw and tongue both drop. In this case, only the lips should move for /r/ and the jaw and tongue are stabilized.

Multimodality Approach to /s/ Remediation

Speech Normalization Boundary

Shriberg, Gruber & Kwiatkowski (1994) dubbed the approximate age of 8;5 the "speech normalization boundary." This means that sound differences persisting past 8;5 years are not likely to spontaneously correct. They theorized that a child's speech normalizes during this critical age range meaning that it is difficult (though not impossible) to remediate sounds after this age.

Taps (2008) suggests that there is a "window of opportunity" for treating mild articulation disorders. The ideal treatment time falls between the ages of 7;0 and 8;5. This ensures that a child has had adequate time to develop, but sufficient time remains to intervene before the speech normalization boundary sets in. (Note: She is talking about sounds like /s/).

Multimodality Approach to /s/ Remediation

Step	Feedback Modality
1. Modeling correct/incorrect "EET"	**Auditory/Visual w/mirror/observation**

The first step is differentiating the movement of the front of the tongue from the back. With the tongue anchored to the back molars in the EE position using a mirror and a flashlight for visual feedback, I have the student say EE, then point the tongue tip to the alveolar ridge. Typically, they will drop the tongue from the sides of the teeth, narrow the tongue and move their whole tongue forward. They may not be able to adequately point the tip of the tongue. Using a visual model, I demonstrate to them the difference of keeping the sides of the tongue still and pointing the tip versus what they do moving the whole tongue.

Step	Feedback Modality
2. EE-point	**Visual w/flashlight and mirror** **Tactile w/applicator stick**

When they are in the EE position, I place an applicator stick on one side of the tongue near the back. I talk about how the tongue is wide and to keep that part of the tongue still against my stick. Using a mirror and flashlight, they can see and feel if the tongue remains in the proper position when they point the tip.

Step	**Feedback Modality**
3. Tongue tip-pointing	***Tactile/kinesthetic/proprioceptive***

If they cannot successfully do the EE-point after a couple of attempts, I make sure they have the ability to point the tip adequately. Some can't and use the blade instead of the tongue tip. Using a lollipop or candy cane which I move around the periphery outside of their mouth, I have them touch it with the tip of their tongue again receiving tactile feedback. They need to extend their tongue far enough so that the tip points. If they move their head instead of their tongue, I hold the top of their head with my hand. Usually in a short time, they are pointing their tongue tip adequately. I use a mirror so they can see what a correct pointed tongue looks like.

Step	Feedback Modality
4. EE-Pop	**Visual/Tactile/kinesthetic**

If they continue to struggle with this EE-pointing step, I have them say EE then pop their tongue. With visual feedback from a mirror, they can see that they are placing the tongue tip correctly in the lingua-alveolar area and are keeping the sides of the tongue wide against the back molars. I might have them practice this step for a week in homework of 50-100 repetitions a day. Although it's not shown in the photo, I have them bite 3 sticks with the side teeth to keep their jaw stable.

Step	**Feedback Modality**
5. EE-point (tongue back/front differentiation)	***Visual/ Tactile-kinesthetic***

When they are doing this exercise easily and consistently, I have them say EE and tell them to pretend they are going to pop. I tell them that we are going to play Freeze Tag with the tongue. When I say freeze, you freeze. I go EE-POP, EE-POP, EE Freeze and the tongue looks like the picture (right). At that point I reinforce them really enthusiastically and show them how they are keeping the sides of the tongue wide and still against the back molars and moving the tip independently. Once they get the hang of this, I just ask them to say EE and then point over and over. Using a mirror and flashlight, they go EE-*point* paying attention to just moving the tip of the tongue.

This is what was missing at the beginning when I asked them to say EET. If you recall, they narrowed the tongue and dropped it off the back molars.

Now they have the correct motor pattern to say a successful / s/ sound (or like a house, they now have a solid foundation).

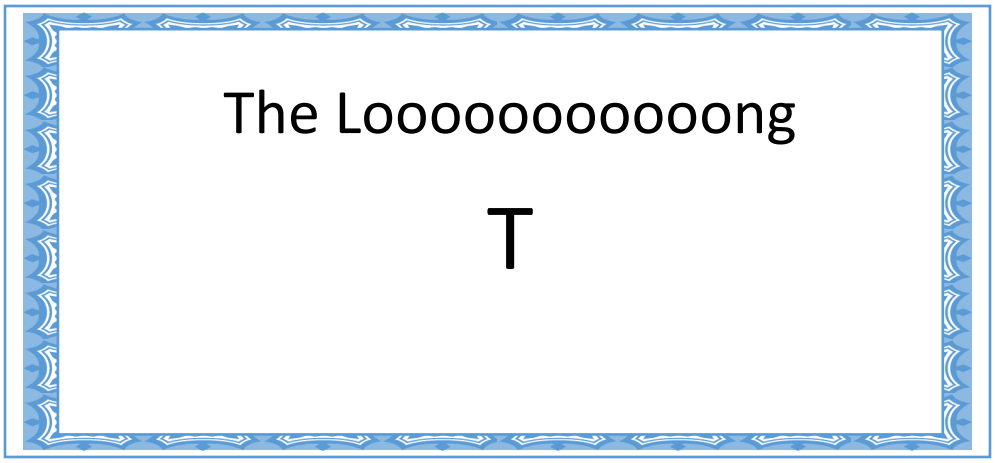
Step	**Feedback Modality**
6. Tongue/jaw/lips separation	***Visual/Tactile-kinesthetic/proprioceptive***

As stated previously, I now use 3 sticks as using 1 stick like in this picture sometimes leads to a cruched broken stick. Eventually the sticks are removed and the mirror is taken away. The student closes his eyes and makes the same movement receiving only tactile-kinesthetic feedback. I may say things like, "Feel how the sides of your tongue stay still against your teeth and only your tongue tip moves." A normal EET is typically made with the mouth more closed than with the 3 sticks. The 3 sticks allow for visualization for the student and therapist to make sure that productions are correct. When the sticks are removed, it is OK for the mouth to close more.

Step	**Feedback Modality**
7. EE-T	***Tactile/kinesthetic/auditory***

Continuing in this vein, the student now says EE-T saying the /t/ very gently. Visual feedback using a mirror may be helpful but probably isn't necessary. The student should have complete separation of the tongue tip with no associated lip or jaw movements.

Step	**Feedback Modality**
8. EETS	***Auditory/Tactile/kinesthetic***



The student is asked to say EETS by lengthening the duration of the /t/ sound which I demonstrate. EETS is the perfect facilitating context for the /s/ sound based upon the positioning of the articulators for the EE and T sounds. Because many students have an incorrect notion of what the /s/ sound feels like and sounds like, instead of talking about the /s/ sound, we talk about the Long /t/. That is, "we are learning a new sound and it's called the Long /t/." With no preconceived notion of the Long /t/, the student will make the correct /s/ sound. At that point, you don't comment on what a perfect /s/ they are making as their concept of /s/ is incorrect. You can say, "Great Long T, that's perfect!"

When they are making EETS consistently, the next step is EETS-EE. Note that there is a slight pause before saying the final EE. This is because the student often will think that they are saying SEE if they were asked to EETSEE ("Oh, you want me to thay EETTHEE"). When that happens, they are back to their habitually incorrect /s/ sound. The secret of getting this correct prevocalic /s/ is to have the student say EETS-EE faster and faster until there is no space between the EETS and EE. I even tell the student that they are saying EETS-EE quickly even though it sounds like EETSEE. Saying this VCCV combination quickly transitions to a CVCCVC nonsense word which takes the student into the SATPAC program for remediation. I usually use the word BEETSEET due to the facilitating context nature of this word. That is the B requires no tongue positioning, the EE moves the tongue back and wide into the lingua alveolar position which is the correct position to make the T. When the T is lengthened in duration, the S is said correctly again followed by the EE keeping everything in position. This is followed again by the T which keeps the tongue in the correct lingua-alveolar area.

From here, we move into reading and conversation. When the student is near 75% accurate in conversation for a couple of weeks, I will dismiss from formal therapy but will do stability checks after a month to make sure that there is no regression. I will also ask my students to use the tally counter and do 100 good /r/s a day with reading and/or conversation. Typically, I will see improvement when I recheck. However, if they have significantly regressed, they are put back into therapy.

If they are maintaining their progress after a month, I will then check in 3 months and if they have still maintained their progress, they are formally dismissed.

(CONTACT ME AT steve@satpac.com)

with questions or comment. I will get back to you in most cases within a day.

Bibliography

Baker, E., & McLoud, S., (2011). Evidence-Based Practice for Children With Speech Sound Disorders: Part 1 Narrative Review, LSHSS Vol. 42

Bernthal, J.E., Bankson, N.W., & Flipsen, P., Jr. (2009). Articulation and phonological disorders: Speech sound disorders in children (6th ed.). Boston, MA: Pearson

Bleile, K. (2006). The late eight. San Diego, CA: Plural Publishing

Boshart, C. et. al., (2000). Oral Sensory-Motor Tool-Toys & Techniques, Speech Dynamics

Boyce, SE (2015). The Articulatory Phonetics of /r/ for Residual Speech Errors. Seminars in Speech and Language 2015; 36(04): 257-270

Compton, A.J., (1970) Generative Studies in Children's Phonological Disorders, Journal of Speech and Hearing Disorders

Coyle, D., (2009) The Talent Code, Bantam Dell, New York, NY

Farquharson, K. (2019) It Might Not Be "Just Artic.": The Case for the Single Sound Error. Perspectives, Vol. 4, Issue 1, 76-84.

Flipsen, P, Sacks, S., (2015) Remediation of residual /r/ errors: A case study using the SATPAC approach. Perspectives on School-Based Issues, Vol. 16, No. 3, 64-78

Fogel, B (2005) Exercising the Rhotacism in Absence of Pathology, ADVANCE Magazine

Gick, B., Allen, B., Roewer-Després, F., Stavness, I. (2017) Speaking tongues are actively braced. Journal of Speech, Language and Hearing Research. Vol. 60, Issue 3, 494-506.

Gierut, J., (2001) Complexity in phonological treatment: Clinical factors. Language, Speech, and Hearing Services in Schools, Vol. 32, 229-241

Gierut, J., (2005) Phonological intervention: The how or the what? In A.Kamhi & K. Pollock (Eds.), Phonological disorders in children: Clinical decision making in assessment and intervention (pp. 201-210). Baltimore: Brookes.

Gierut, J. A., Morrisette, M. L., & Ziemer, S., M. (2010). Nonwords and generalization in children with phonological disorders. American Journal of Speech Language Pathology. 19, 167-177.

Hodson, B., Paden, E., (1983) Targeting Intelligible Speech, College-Hill Press, San Diego, CA

Kamhi, A.G., (2006) Treatment Decisions for Children with Speech-Sound Disorders, Language, Speech, and Hearing Services in Schools, Vol. 37, No. 4

Koegel, L. K., Koegel, R. L.,& Ingham, J. C. (1986). Programming rapid generalization of correct articulation through self-monitoring procedures. Journal of Speech and Hearing Disorders, 51, 024-032.

Koegel, L. K., Koegel, R. L., Voy, K. V., & Ingham, J. C. (1988). Within-clinic versus outside-of-clinic self-monitoring of articulation to promote generalization. Journal of Speech and Hearing Disorders, 53, 392 -399.

Lof, G.L., (2002) Special Forum on Phonology-Two Comments on This Assessment Series, American Journal of Speech-Language Pathology

Lowe, R. (1995) *ALPHA: Assessment Link between Phonology and Articulation.* Mifflinville, PA: ALPHA Speech & Language Resources.

Marshalla, P. (2000) *Oral-Motor Techniques in Articulation & Phonological Therapy,,* Marshalla Speech and Language, Kirkland, WA

Marshalla, P. (2004) *Successful R Therapy,* Marshalla Speech and Language, Kirkland, WA

Marshalla, P. (2007). *Frontal lisp, lateral lisp*. Mill Creek, WA: Marshalla Speech and Language.

McDonald, E.T., (1964) *Articulation Testing and Treatment A Sensory-Motor Approach*, Stanwix House, Pittsburgh, PA

Mielke J, Baker A, Archangeli D. *Covert /ɹ/ allophony in English: variation in a socially uninhibited sound pattern*. In: Fougeron C, Kuehnert B, Imperio M et al eds, Laboratory Phonology 10: Variation, Detail, & Representation. Berlin: Mouton de Gruyter; 2010: 792

Nicolosi, L. et. al., (1983) *Terminology of Communication Disorders*, Williams & Wilkins, Baltimore, MD

Oller, D.K., (1973) *Regularities in Abnormal Child Phonology,* Journal of Speech and Hearing Disorders

Plass, B. (2002) *SPARC R and S,* LinguiSystems, Inc., East Moline, IL

Rosenfeld-Johnson, S., (1999), *Straws As Therapy Tools*, ADVANCE Magazine

Rosenfeld-Johnson, S., (1999) *Horns As Therapy Tools*, ADVANCE Magazine

Sacks, S., Flipsen, P., (2013). *Efficacy of the SATPAC Approach for remediating persistent /s/ errors..* Presented at the Annual Convention of the American Speech-Language-hearing Association, Chicago

Sacks, S., Flipsen, P., & Neils-Strunjas, J., (2013) *Effectiveness of Systematic Articulation Training Program Accessing Computers (SATPAC) approach to remediate dentalized and interdental /s,z/: A preliminary study.* Perceptual and Motor Skills: Volume 117, pp. 559-577

Sacks, S., (2005) *New Approach to Containing Caseload Size,* ADVANCE Magazine

Sacks, S., (2004) *Multimodality Approach to Remediating /s/ Sound*, ADVANCE Magazine

Sacks, S., Shine, R., (2004, 2000) *SATPAC (Systematic Articulation Training Program Accessing Computers)*, SATPAC Speech, LLC, Fresno, CA

Sacks, S., (2002) *Computerized Program for Articulation Therapy*. ADVANCE Magazine

Sacks, S., SATPAC: (2003) *A Tool in Remediating Articulation/Phonological Deficits*, ADVANCE Magazine

Sacks, S., (2003) *Multimodality Approach to Articulation*, ADVANCE Magazine

Secord, W., Shine, R., (1997) *S-CAT*, Red Rock Publications, Inc. Sedona, AZ

Secord, W., Shine, R., (1997) *Intervention-Based Assessment of Articulation and Phonology: When Enough is Enough!* Presented for Fresno Unified School District

Secord, W. A., Boyce, S. E., Donohue, J. S., Fox, R. A., & Shine, R. E. (2007). *Eliciting sounds: Techniques and strategies for clinicians* (2nd ed.). Clifton Park, NY: Thomson Delmar Learning.

Shriberg, L.D., Gruber, F.A. & Kwiatkowski, J. (1994) *Developmental phonological disorders. III: Long-term speech-sound normalization.* J Speech Hear Res. 1994 Oct;37(5):1151-77.

Smit, A. (1993a). *Phonologic error distributions in the Iowa-Nebraska articulation norms project: consonant singletons*. Journal of Speech and Hearing Research, 36 (5), 533-547.

Smit, A. (1993b). *Phonologic error distributions in the Iowa-Nebraska articulation norms project: word-initial consonant clusters*. Journal of Speech and Hearing Research, 36 (5), 931 - 947.

Taps, J. (2008, October). *RtI Services for Children with Mild Articulation Needs: Four Years of Data*. Perspectives on School-Based Issues, 9 (3), 104-110.

Thomsen, Susan (1994) *SPARC-R*, LinguiSystems, East Moline, IL

Weston, A., (2004, November). *Synthesis of research in treatment of childhood speech-sound disorders.* Poster session presented at the Annual Convention of the American Speech-Language-hearing Association, Philadelphia

Weston, A., & Bain, B., (2003, November). *Current v. evidenced-based practice in phonological intervention: A dilemma.* Poster session presented at the Annual Convention of the American Speech-Language-hearing Association, Chicago.

Ylvisaker, M., (2004, November) *Evidence-based practice and rational clinical decision making.* Paper presented at the Evidence-Based Practice in Child Language Disorders Working Group, Austin, TX

Addendum 1:

SATPAC Sample IEP Goal and Objectives:

Goal: X will use the /s,z/ sounds with 80% accuracy in conversational speech (2/3 trials).

Objective: X will use the /s,z/ sounds in nonwords in speech therapy with 80% accuracy (2/3 trials).

Objective: X will use the /s,z/ sounds in phrases/sentences in speech therapy with 80% accuracy (2/3 trials).

Objective: X will use the /s,z/ sounds with 80% accuracy in conversational speech in speech therapy (2/3 trials).