Using the SATPAC Program and Approach to Remediate Speech Sound Disorders

Part 3

Carryover, Peer-Reviewed Studies, Navigating the Program,

and Case Studies

RESOURCE HANDBOOK

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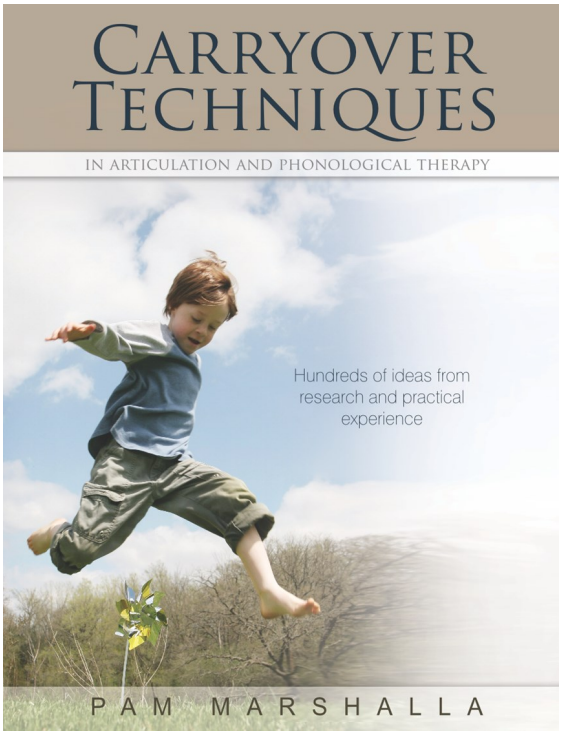
SATPAC Speech

Professional Workshop Series



Most of the information in this part of the presentation comes from Pam Marshalla's book, *Carryover Techniques.*

Some general thoughts about Carryover is that it is **part of therapy process**. You need to begin by going from **controlled** (scripted) material to ultimately **conversational speech**. **Reading out loud** is a good practice technique but it is not the same as conversational speech. Stability **checks** are a good idea going through the generalization process to make sure that your students are maintaining their gains using their target sounds in conversational speech.

Research and Evidence-Based Practice

- Evidence-Based Practice (3 Sources)
- Formal Research
- SLPs Prior Clinical Experience
- Effectiveness with the Client

Evidence-based practice (EBP) is more than just looking at research. There are 3 sources. First, is **formal research.** However, as a school-based SLP, my experience is that research doesn't always show success in the real world that we work in in the schools. Second, EBP includes the **SLP's prior clinical experience**. That is, I have used certain Oral-Motor techniques that have been highly successful. So despite our profession saying that these techniques have no value, my clinical experience says otherwise. And finally, and probably the most important — **is the technique effective** with the particular student sitting in front of you.

Ranking Carryover Methods

- Polson (1980) in a survey with 125 SLPs

- Self-Monitoring
- Practice/Drill Until it Becomes Automatic
- Structured Behavior Mod. System
- Practice w/People Outside of Therapy

Note: Most of the sources that Pam used in her book are not current. On the other hand, I don't think there has been much change in thinking about carryover and I feel pretty confident based on my clinical experience that the reported research and ideas are valid.

My experience in carryover was that once I learned the importance of **self-monitoring**, it speeded up the process immensely. Self-monitoring paired with a tally counter has been very successful for me with my students.

Drill/practice and practicing with awareness and intent makes a big difference as opposed to just going through the motions. Pairing self-monitoring and drill has really helped some of my students. One of my students who used a tally counter while reading, would often do 2000+ repetitions of her target /r/ sound and made rapid progress in carryover.

A Structured Behavior Modification System refers to trying to change behavior through some type of reward system.

Wing & Heimgartner (1973) 5 Levels of Treatment

1) Oral Reading

2) Oral Reading and Discussion

3) Structured Conversation

4) Unstructured Conversation w/a Short Time Span

5) Unstructured Conversation w/a Longer Time Span

You can see that each level gets more demanding. In **reading,** the student can put all their concentration (assuming there are no reading issues) on identifying the target sound and saying it correctly. **Reading with discussion** is more difficult as the student needs to formulate ideas and think about content while still self-monitoring. **Structured conversation**, which typically will be built around a specific target sound, is still more difficult but with the structure, it helps the student deal with easier content that just conversation. **Unstructured conversation** in the most difficult but one begins doing it in **short increments** and eventually builds up to **longer conversational speech.**

Research on Practice

- Bankston & Byrne (1972) showed that a motor-based approach can facilitate generalization of phonemes to conversation
- Showed that a target sound carried over to conversational speech after rapid word list training
- Kamhi (2000) found that practice and functional communication work together. "…practice should be viewed as an effective way to facilitate productive use of speech and language forms in meaningful communicative situations."

Bankston and Byrne found that a **motor-based approach** makes carryover to conversation easier. It should be noted that SATPAC is a motor-based approach. And that after **rapid word list training** (does this sound like SATPAC?), carryover happened. And Kamhi found that practicing **in meaningful communication situations** was valuable. Going back to the Wing and Heimgartner study, this would be their highest level of treatment-unstructured conversation.

Research on Self-Monitoring

- Shriberg and Kwiatkowski (1990) indicated that awareness of speech sounds is best trained by working on the sounds themselves in production activities.

Research on Non-Words

- Gierut, Morrisette and Ziemer (2010) demonstrated that nonwords induced greater, more rapid system-wide generalization as a function of treatment than did real words.

Research on Prosody

My

Wolfe, Blocker, and Prater (1988) suggested that generalization may be more effective when inflection is added to targets.

My experience has been that production is the best way to get the student to say the words correctly as opposed to auditory bombardment. The nonwords and prosody comments are self-explanatory.

Managing the Carryover Process

Follow a Hierarchy for /s/

- Simple Phrase (cats eat)
- Simple Phrase w/2 Targets (cats eat and rats eat)
- Simple Sentence (My cats eat food.)
- Longer Sentence w/2 targets (The cats and rats ate their lunch.)

Managing the Carryover Process

More Complex Sentences (The cats ate their lunch while the rats were looking for food.)

Paragraph (My brother Lenny got mitts and hats on Friday afternoon. I went with him. It's the truth. Hats and mitts. He got both. He got green mitts and brown hats. I think he got two bats too! What's up with that? It's not fair. I thought he only could get the mitts but mom let him bet the mitts and the hats and the bats! I wanted new hats and mitts and bats too. That's only fair, right?)

Structured Conversation (take one word from the paragraph-ignore other /s/ sounds)

I found this very interesting the first time I saw this. Pam knew nothing about SATPAC and I didn't know how she did her remediation. What she does here is very similar to what the SATPAC Program does using coarticulation for the target sound (CATS EAT) and going from simpler to more complex. CATS EAT is a facilitating context and very similar to BEETSEET which is often the facilitating context word in SATPAC.

This process is very systematic in that it takes a certain pattern and uses it over and over again to get a consistent motor pattern. That is exactly what SATPAC does!

And notice how she moves from the very structured hierarchy into structured conversation. And although it is not mentioned here, I know that she would then go into unstructured conversation.

Self-monitoring in Carryover

- Using a tally counter
- Demonstration (like a video)
- Key Words/Hardest Words/Personal
- School Related Words
- Nucleus Situations
- Preparatory Mindset
- Self-cues

I've found that using a **tally counter** has been the most successful tool for self-monitoring. Because in order to be successful, you have to scan ahead and think about the sounds you are going to say so you know when to push the button. Frequently, the student will slow way down at first but over time, a normal rate will occur. I had a student **role play (video demonstration)** that she was a weather person and she had a script with lots of her target /r/ sounds in it. After it was recorded, she watched it (and it had several errors) and told me, "I want to do that again." Working on **key words/difficult words/personal words/school related words** can be motivating as there are certain words that come up frequently and difficult and hurt the student's self-image when repeatedly said incorrectly. I recall I had a new student and asked him what grade he was in and he scrunched up his face like he was in pain and said, Foth gwade. Van Riper talked about **nucleus situations** meaning that the student's speech will only be worked on in a certain place at a certain time (e.g., at the kitchen table after eating a snack after school). I know that some kids find it really frustrating when parents are constantly asking them to repeat words said incorrectly when they are trying to communicate an idea. **Preparatory mindset** involves thinking about a future situation and deciding that will be the situation to work on speech. For instance, if a student is working on /r/ and their teacher is Miss Robinson, that would be the time to use the correct /r/ when saying her name. **Self-cues** might be a note card on the student's desk, stickers with a message, etc. to remind the student to use their target sound correctly. The point here is that it is impossible and would be really frustrating and exhausting to try to use perfect target sounds while making the difficult step of taking what they have learned in speech and using it correctly all of the time in the real world. This is a process that takes time and patience for all involved—the student, parents, teacher, et. al.

Speech Production in Carryover

- Error Stories (3 Little Bears)
- Story Maps
- Story Starters
- True/False Story
- Tongue Twisters

Being creative is helpful in speech production for carryover in terms of motivation and having to think about content instead of putting all of one's focus on saying the target sound correctly. In **Error Stories**, the student creates a familiar story but with variation. So instead of talking about porridge, maybe Goldilocks saw 3 video games. The first was too hard, etc. **Story Maps** are created using something the student is interested in. The key word always has the target sound like "soccer" having the /r/ sound. A list is made with all words that relate to soccer and then the student makes sentences, paragraphs or a story using those words. **Story Starters** are something like, "It was a dark and stormy night" said by the SLP and then the student has to continue the story. It can go back and forth or the student can make up a whole story. **True/False Stories** may be something personal or just any story. After the retelling, the SLP has to decide whether it is a true story or not. I'm not a fan of **Tongue Twisters** as they typically have many more target sounds than would ever be said in real life and they tend to put too much of a load on the student. All these ideas can be modified if you are working with a group of students. I suggest using a tally counter at all times so the student can self-monitor.

Rehearsal/Practice/Drill

In building any skill or change in behavior, rehearsal, practice and drill are absolutely necessary. Is it possible to develop excellence in sports, music, cooking or modifying speech without rehearsal, practice and drill?

Pam asks a good question here and I believe the answer in a resounding NO. Speech (like other activities involving skill) requires many consistently correct repetitions with the student paying close attention to what they are doing.

Rehearsal/Practice/Drill

- Deep Practice-Daniel Coyle-The Talent Code
- Practice Skills in Chunks
- Lots of Repetitions
- Learn to Feel Mistakes

Wayne Secord passed by me one day at a convention and said, "Steve, read the Talent Code." While the book was mostly about the Brazilian Soccer Team, it was also about SATPAC (although not stated in the book). The features of practicing skills in small chunks (like EE-EE-EERGA using sticks, making lots of repetitions and using the metacognitive to feel and correct mistakes are all part of this.

Behavior Modification in Carryover

- Positive and Negative Feedback-It is important to give consistent, correct feedback. I pair this feedback with a metacognitive approach ("OK, I heard __. What did you do? What should you have done?").

- Immediate Feedback-a dog's "tale"

Obviously, you can't do this all the time for every error the student makes. You have to pick and choose. But the idea is that the student needs to be thinking, listening, seeing (when appropriate) and feeling what happens when they say the sound correctly vs. when it is said incorrectly.

Feedback needs to be given immediately for it to be effective. I recall when I came home from work one day and my dog had chewed up a pillow. I got very mad and scolded her. We talked to a doggie psychologist who pointed out that the dog thinks that someone who loves her and who she loves in upset but doesn't have a clue why. It's because the pillow incident happened hours ago!

Behavior Modification in Carryover

Punishment-I prefer rewards for doing stuff rather than punishment for not doing stuff.

- Framing is important-"You can play your game when you get 50 correct /r/s."

- Instead of - "You can't play your game because you didn't do your speech."

- Plotting Progress

I believe using a positive model is more powerful that a punishment model (see Framing above). Also, it is important to show the student that they are improving as it is easy not to be aware of one's own progress without a comparison to the past or feedback from the SLP. Using the SATPAC Procedures Checklist is one way to do that. The student or SLP can mark each step completed so the student can see how much progress they have made. Since I've lately been doing teletherapy, I will share with my families videos of where their child was 3 months ago and usually both the parents and the students are surprised by how much progress has been made.

Conversational Speech in Carryover

- Do
  - Pause to signify it's the student's turn
  - Paraphrase to show you are listening
  - Use metacognitive approach-"Why are we doing this?"
  - Use a tally counter
  - Block the message
- Don't
  - Hog the conversation
  - Ask too many questions

Here are some **Dos and Don'ts** for conversation. One of the problems I frequently saw when observing other SLPs is that they tended to talk too much and the student didn't talk enough. **Blocking the message** means that even though you understand what the student is saying in context, you might repeat the incorrect untterance. When the student says, Last summa/ summer, you can say "Summa, what's that?" It is disingenuous but it might be effective.

Attitude in Carryover

- Encouragement-(we must be skilled—cheerleading w/o skill doesn't cut it)
- Sometimes we need to take a long view

It's important to encourage our students but we must have the skill to back it up. I've seen therapy sessions where the SLP was really enthusiastic about what the student was doing but the reality was the productions were incorrect and the SLP wasn't giving feedback for making corrections Taking a long view means not trying to rush the student, realizing with some students, it might take more than a year. I've had students pick up on my impatience and that is not productive for good therapy. Then they might be absent on therapy days and they end up hating speech.

Personality in Carryover

- Van Riper-"A certain amount of psychotherapy is employed by every speech correctionist with every case."
- Important to develop rapport
- Dignity and respect-Therapists use humor, a caring attitude, positive reinforcement, a genuine interest in the client, and many other factors to build rapport.

Personality in Carryover

- Different personalities thrive in different situations

  Outgoing-tailor more public types of therapy

  Shy-more private types of therapy

- Important to check in with the student to see if the exercise is acceptable.

Personality in Carryover

- Reverse Psychology

Good activity with younger students ("I know there is no way that you can use your /s/ sound correctly for the next two minutes").

- Passions and Pursuits

Find out what the student is excited about and have them talk about it.

Can you tell Van Riper wrote this a long time ago (speech correctionist)? Anyway, relationship with our students is critical. If your students like you, acting out usually becomes a non-issue and they will usually work hard because they like you!

It is important to keep in mind whether the student is an extrovert or an introvert and always check in with the student if they are comfortable with your suggestions which involve others.

Reverse psychology works with young kids—not advisable for older students. Finding a student's passion can make all the difference from boring therapy into something they are really interested in.

Games and Activities in Carryover

- My Philosophy About Games

Games are fun and students like them. Do they promote or interfere with the relevant key elements of the SATPAC approach?

Games and Activities in Carryover

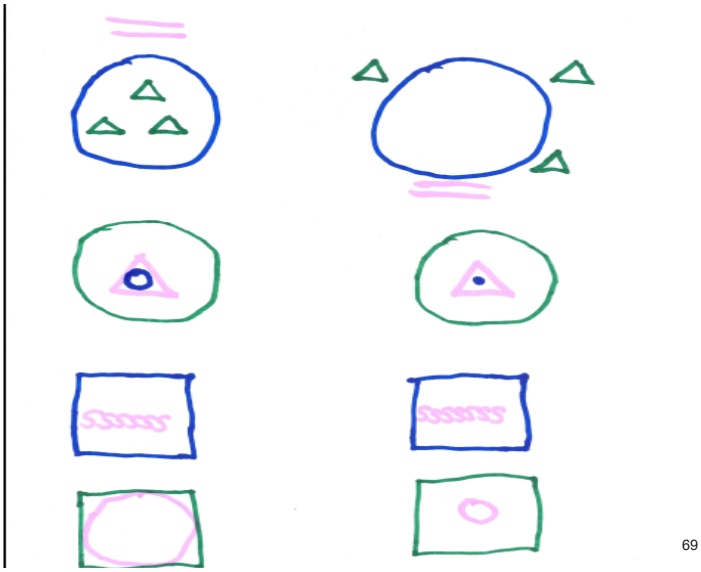
5 of My Favorite

- Barrier Games
- Tally Counter Contest
- Board Games w/Preschoolers
- Home Activities with Pictures
- Story Creation

I'm only OK with games if they are promoting the student's speech. If not, we are wasting your time and their time.

My 5 favorite:(all using a tally counter)

Barrier Games-these can be purchased commercially or you can make your own. Students sitting on opposite sides with a barrier in the middle have identical pictures (See the next page for more details). **Tally Counter Contest-**SLP and the student each have a tally counter-the first to get up to 50 wins during a conversation where you each push for every target sound. Board **Games w/ Preschoolers-**You play a simple board game with one die. After the student completes their turn then you roll and then back to repeating the stimuli (no tally counter). **Home Activities with Photos-**for example, the student leads you through a tour of their kitchen and uses the tally counter on their target sound as they are telling you about it. **Story Creation**-One SLP workshop participant of mine wrote to me a few months after the workshop and said, "We have created a whole universe based on BEET-SEET." The kids named planets, space vehicles, villians and heroes with CVCCVC names and then made a story and acted out a play!



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Barrier Games-The goal is to cover all the pictures as fast they can with tokens (I time them and say you have 3 minutes to complete this). The first student describes a picture top left in this case (both students have the /s/ target): "There are three triangle**s** in**s**ide a blue **c**ircle with 2 pink line**s** over it. The other student says "I got it" and each covers their picture with a token. If the student makes a mistake and says "thircle", I say "You said thircle" . The student loses his turn and it goes to the other student to describe a picture. Because this is a timed game, the students don't want to lose their turn and consequently, while speaking quickly, pay attention to their target sounds.

Games and Activities in Carryover

5 of My Most Unfavorite

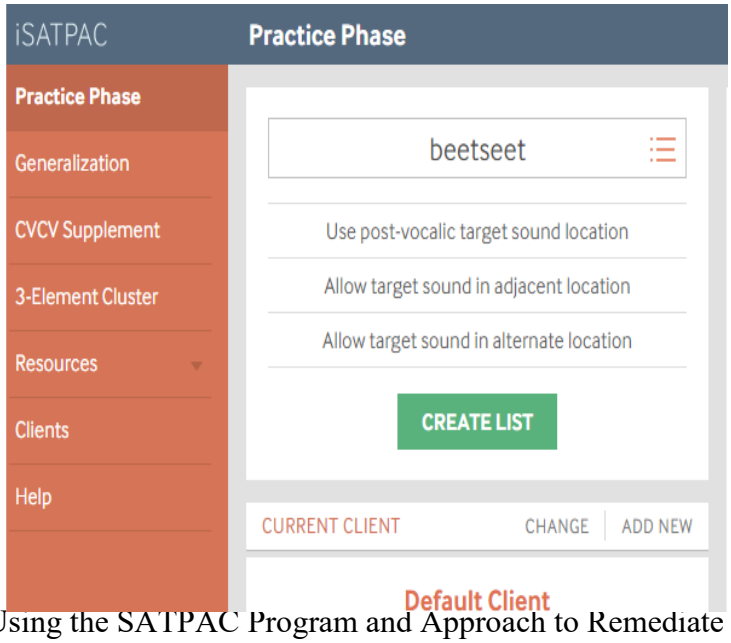
- Fishing Games
- Picture Cards w/Phoneme-loaded Sentences
- Board Games
- Making Stuff-Pictures/Crafts, etc.
- Puzzles

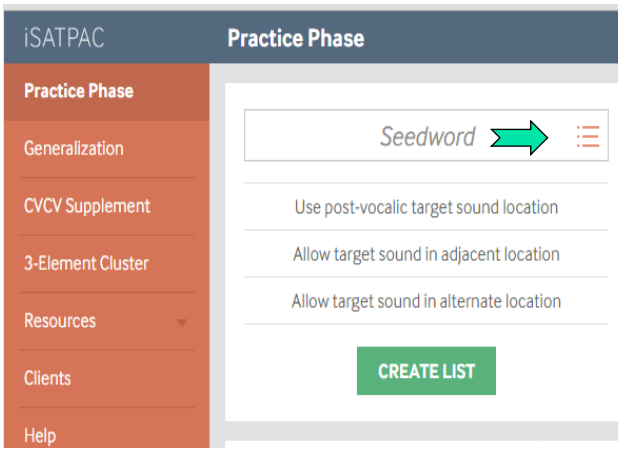
My most unfavorite: **Fishing** for the target sound. A stick with a rope and a magnet on the end pick up pictures on the ground and the student says the name of the picture. I once saw a session with under 10 productions of the preschooler's target sound. **Phoneme-Loaded Picture Cards**-like tongue twisters, these are too difficult. **Board Games**-typically get too few correct responses because the focus is on the game. **Crafts**-again, not enough responses.

NAVIGATING THROUGH THE SATPAC PROGRAM

Getting around the SATPAC Software Program is easy once you learn the basics.

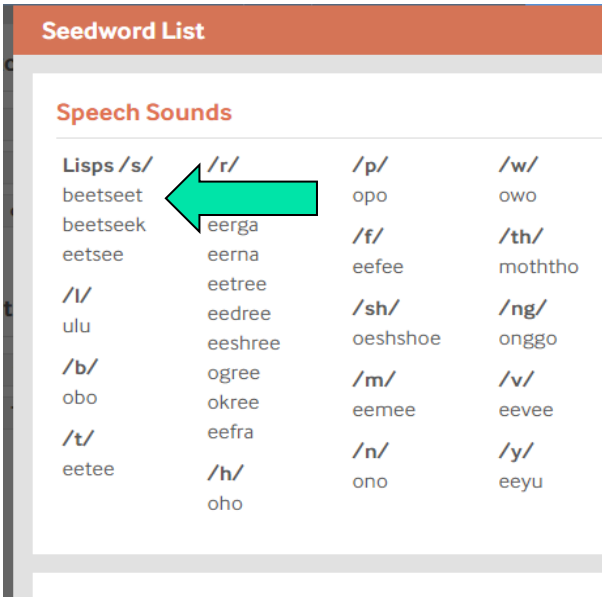
There are 4 screens in the program. Whichever screen you are on, it becomes highlighted compared to the other screens. You can see here, that we are on the Practice Phase which is the default screen.



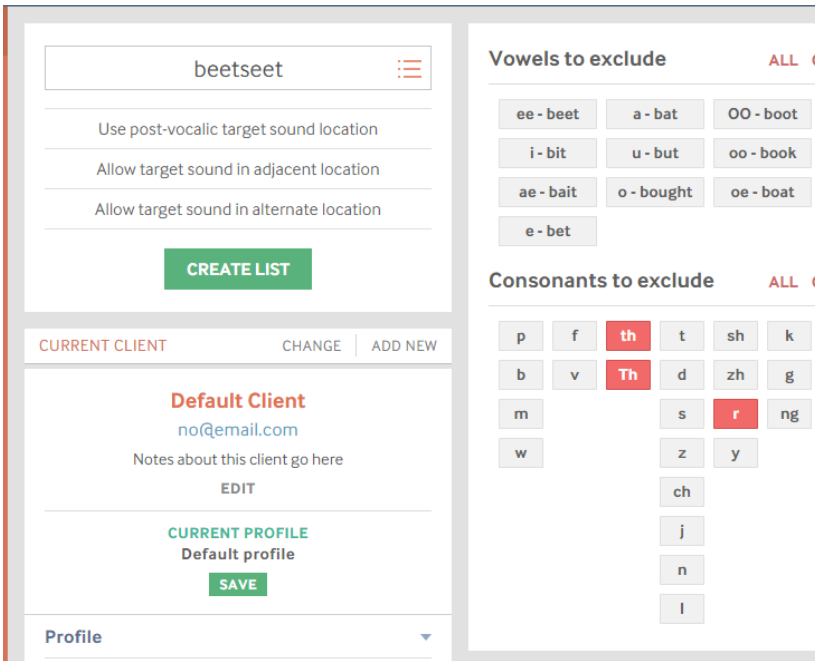


Practice Phase

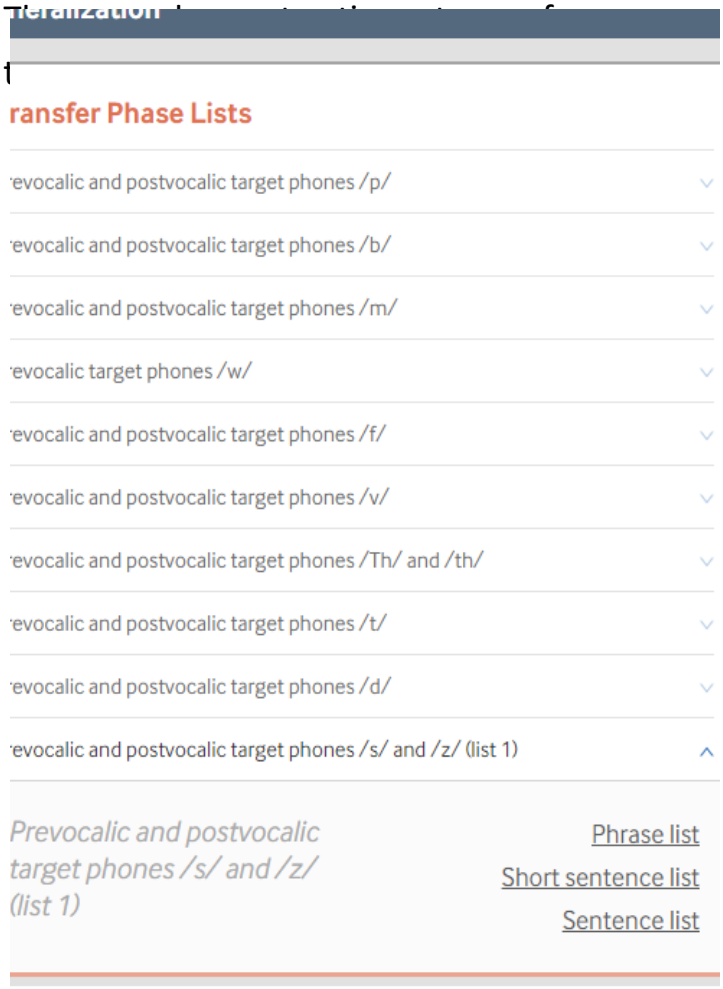
To find a suggested facilitating context Seedword, you click on the 3 bars in the Seedword box.



A dropdown list will appear. In this case, we are working with a student with a frontal lisp so the word **beetseet** is recommended. There will be times that none of the suggested words work and in that case, you can probe for other words or you will need to go back and work on correct oral placement before you are at this phase. If you find a word, you can type it into the box as long as it follows a pattern of CVCCVC, VCCV, CVCCV, VCCVC.



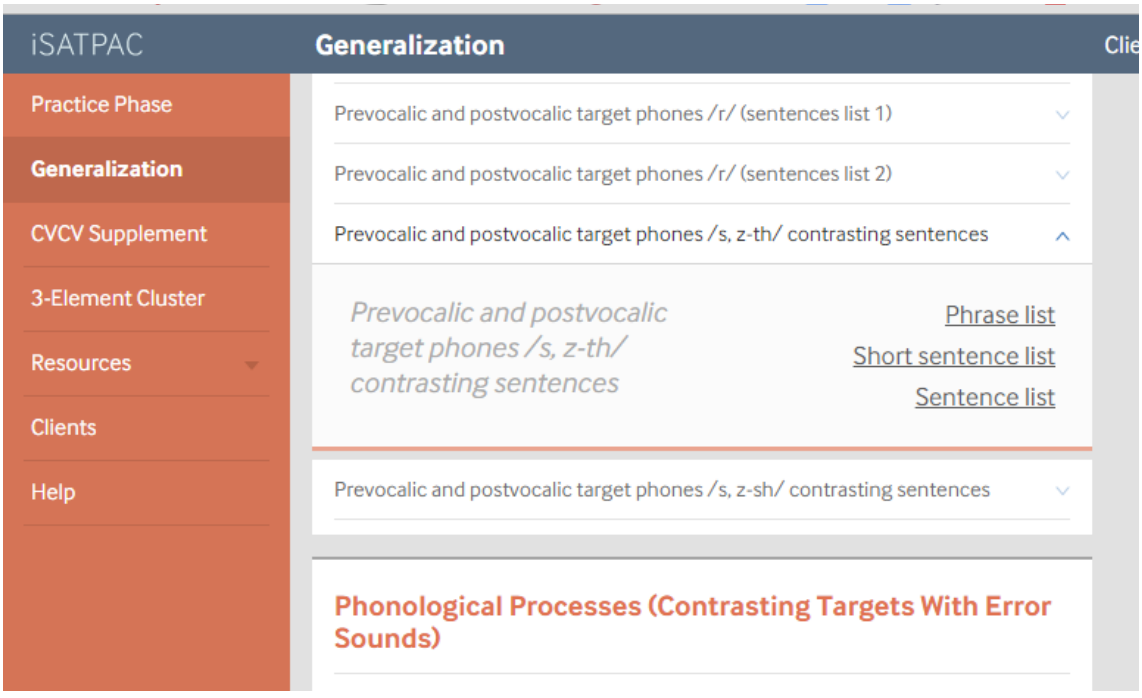
You are able to eliminate sounds from your lists. You can eliminate the sounds that are not in the student's repertoire (R in this case) and sounds that will interfere with the target sound (TH sounds in this case for a student with a frontal lisp).



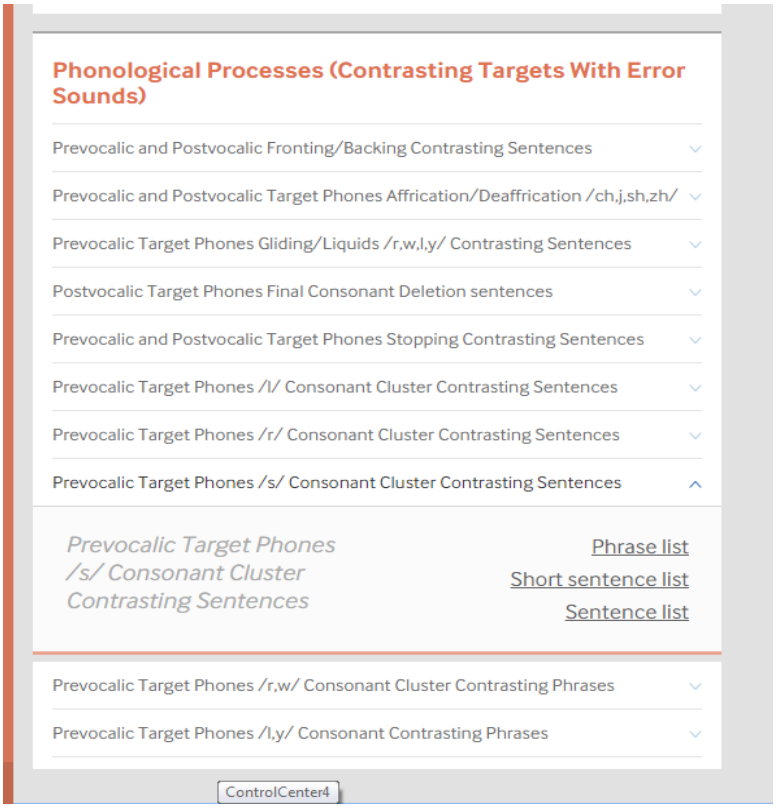
Generalization/Transfer Phase

Moving into the Generalization/Transfer Phase, there are phrase, short sentences (for kids who cannot say longer sentences) and longer sentences. The short sentences have a prevocalic and postvocalic target sound while the longer sentences have many target sounds.

The Phrase List has the target sound both prevocalic and postvocalic abutting against every consonant sound with each phrase having both a prevocalic and a postvocalic target sound (Soft Whisper, Knapsack Mess). This can be helpful as you can find contexts that might be more difficult (e.g., st) that might require more practice.



There are also some target sounds that have contrasting phrases/sentences where the difficult interfering sounds (e.g. THs in this case) are brought back and now the student has to contrast the target sound with the formerly interfering sound.



There are also Phonological Process contrasts. In this case, it is the stopping process for /s/ clusters (e.g., Steve took a nap.) The student has to contrast the st from the following /t/. The natural tendency for these students would be to stop both words (Teve took) but here they have to contrast the difference (Steve took).

There are also CVCV lists which have been very helpful for kids with Developmental Apraxia of Speech (DAS) also called Childhood Apraxia of Speech (CAS). In the case below, all consonant sounds are eliminated except for p,b,m,w,t,d,n (which are the only consonants in their repertoire). When the lists are generated, the child is able to say all the words easily in List 1 as these are all reduplications (See next page).

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

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 (below) is where they often 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.

This continues with List 3 with systematic vowels with random consonants and list 4 all random. By list 3, being able to use various vowels and consonants together, the are really able to communicate and be understood.

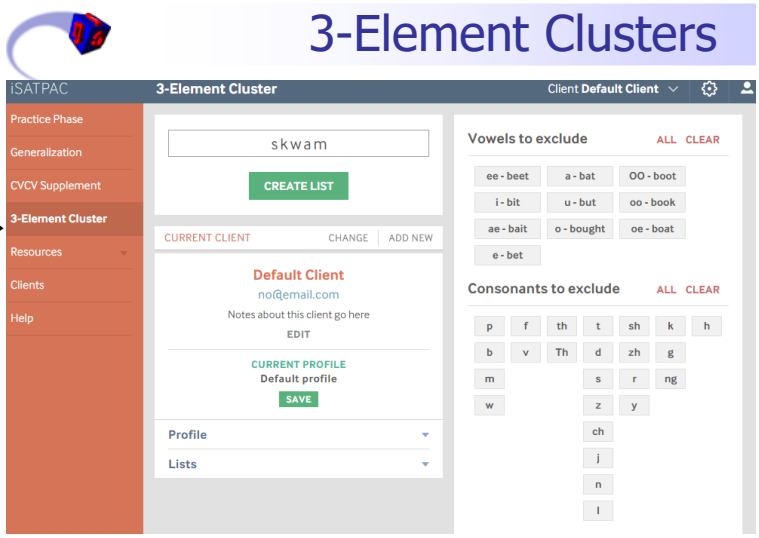
SATPAC List

CVCV Supplement Lists SATPAC

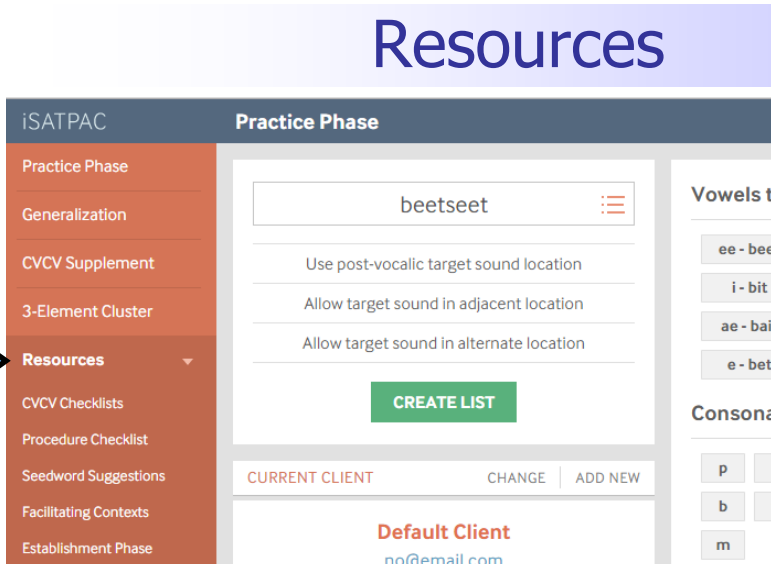
List #2

1.	□□□	boebOO	boʊbu	□□□	momOO	mɔmu
2.	□□□	moemee	moʊmi	□□□	wewi	wɛwɪ
3.	□□□	wOOwOO	wuwu	□□□	dedoe	dɛdoʊ
4.	□□□	dOOdae	dudeɪ	□□□	nOOnu	nunʌ
5.	□□□	ninoo	nɪnʊ	□□□	didOO	dɪdu
6.	□□□	deedae	dideɪ	□□□	wOOwi	wuwɪ
7.	□□□	wowae	wɔweɪ	□□□	momoe	mɔmoʊ
8.	□□□	meemoe	mimoʊ	□□□	boobi	bʊbɪ
9.	□□□	boobe	bubɛ	□□□	pepo	pɛpɔ
10.	□□□	poopi	pupɪ	□□□	boebOO	boʊbu
11.	□□□	bobu	bɔbʌ	□□□	moomoo	mʊmʊ
12.	□□□	meemu	mimʌ	□□□	wiwee	wɪwi

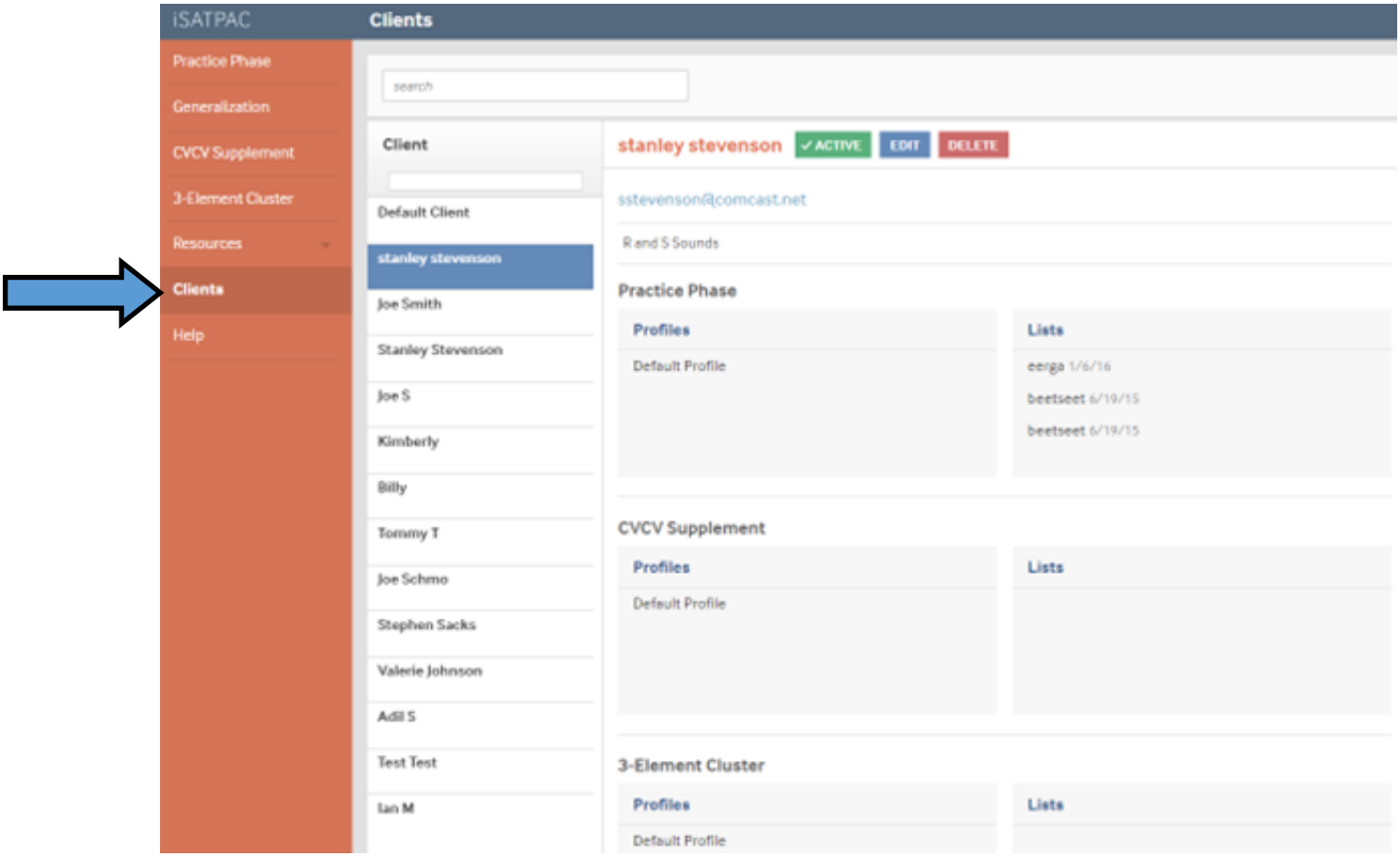
CVCV lists can also be used to contrast phonological processes. Here, all the consonant sounds are eliminated except for /t,d,k,g/. When you get to list 3, you will get front to back and back to front contrasts (TOGO, KADA).



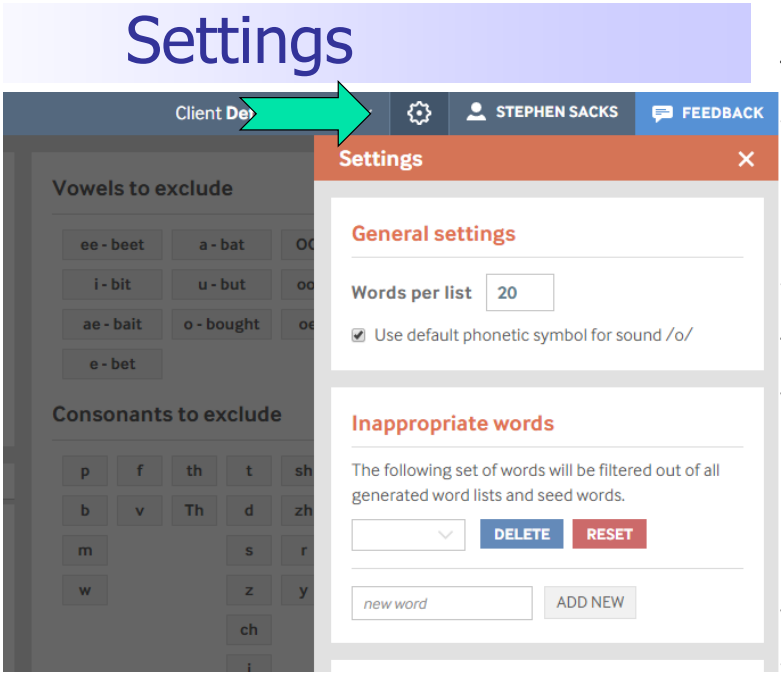
You can click on the 3-Element Cluster screen and put in a word like SKWAM and the program will create 2 lists-one systematic and one random.



When you click on the Resources tab, you can pull up and print out if you like the CVCV Checklist, the Practice Phase Procedures Checklist, Seedword Suggestions, Facilitating Contexts and the Establishment Phase Checklist



When you click on Client, you can either create info that will be saved or switch from client to client. Personally, I never use this and just create lists whenever I want them using the Default Client.



To modify the settings, click on the little wheel by the green arrow. You can change how many words are in your list from the default of 20 or modify the Inappropriate words. There are a lot of CVC combinations that are inappropriate to show up in your lists so many of these have already been excluded. However, new CVC words might develop particularly if you work in a high school. You can then add these to your list of inappropriate words and they will not appear in your lists.

There is also a Help tab for various topics. Like many help files, this one will probably not answer your question. Contact steve@satpac.com and I will get back to you with an answer.

Peer-Reviewed Studies

Using the SATPAC Approach to Remediate Students With a Frontal Lisp

One group of 10 students (Group 1) was seen for 15 weeks. Therapy sessions were 10 minutes once a week in individual sessions. The other 10 students (Group 2) did not begin therapy until the first group finished. All students were pretested using an /s/ phrase list and spontaneous conversation.

After the first group was finished, all 20 students were reevaluated using an /s/ phrase list and a spontaneous speech sample

The second group then began therapy following the same procedure as the first group.

This is TP. At his initial evaluation he used interdental placement on all lingua-alveolar sounds and affricates. He had the most difficulty with his placement than

Training:

As needed, placement techniques (i.e, wide stabilized tongue on back molars) and oral-placement techniques (i.e., EE-POP) as well as tongue differentiation (i.e., moving the tip of the tongue with the back of tongue still) were used to develop a correct EET. This transitioned into EETS, EETS-EE, EETSEE and finally BEETSEEK. The SATPAC Intratherapy Generalization Lists 1-9 were used.

The treatment time required for correct placement before using the SATPAC Program varied from student to student. One student moved into the SATPAC Program on the first session while one required 8 sessions before beginning the SATPAC Program. The majority of the students (13/20) began the SATPAC Program between the second session and fifth session.

Four students had difficulty with /bitsik/ and facilitating context words became /bissit/, /bitsit/, or /biksik/. The word /bitsik/ was the targeted word for all students but these four said what became their new target words. That is, for one of the students I modeled /bitsik/ and the student replied /bitsit/. While the recommended facilitating context word was /bitsik/, if the /s/ phoneme was correct, students were not corrected and whatever they said correctly became their new facilitating context word.

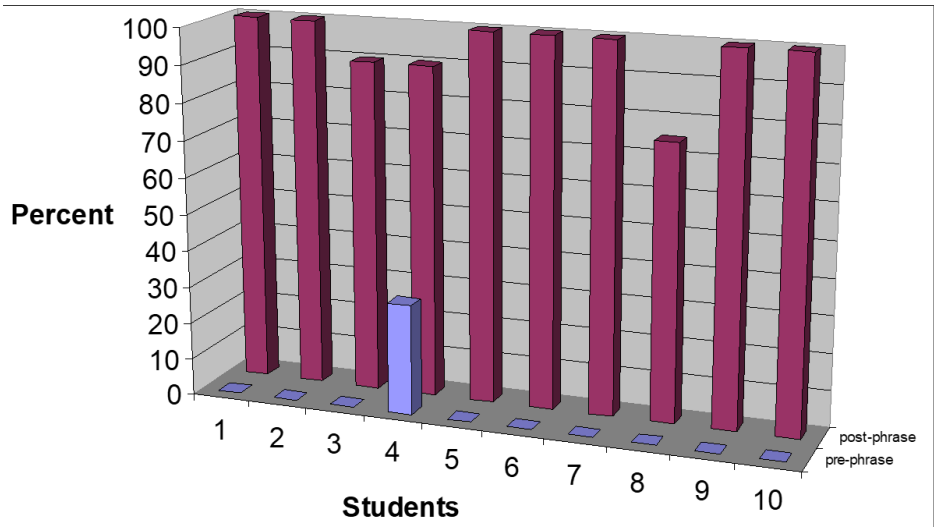
TP USING A TALLY COUNTER FOR THE FIRST TIME IN COVERSATION:

When we first started, he didn't seem to have any idea when he was saying his target sound /s/ as shown in this left photo saying the word SISTER incorrectly. However, when I called this to his attention, he slowed

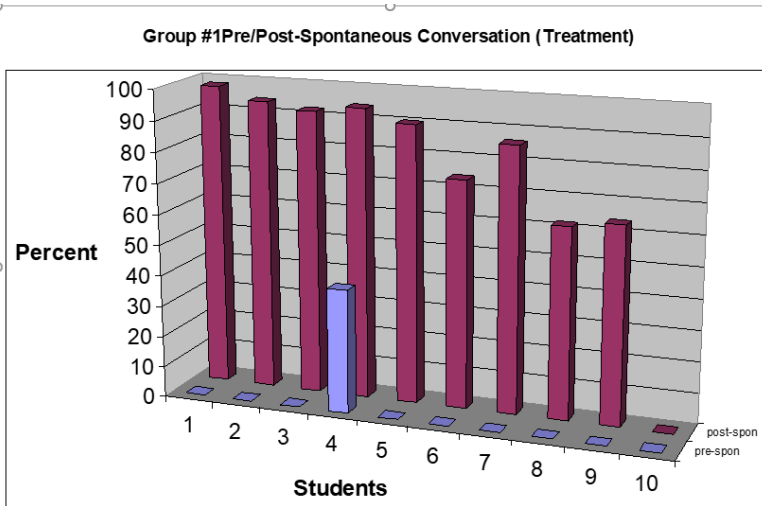
dramatically and you could see that he was really concentrating and thinking about when the /s/ sound was going to come in his conversation. This was his first /s/ after I called it to his attention:

Results:

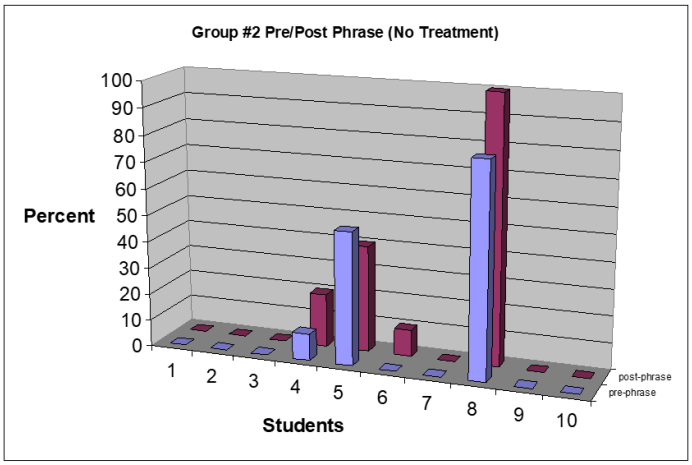
For group 1, this graph shows pretreatment in blue and posttreatment in maroon using phrases. You can see huge improvement from pretest to posttest.



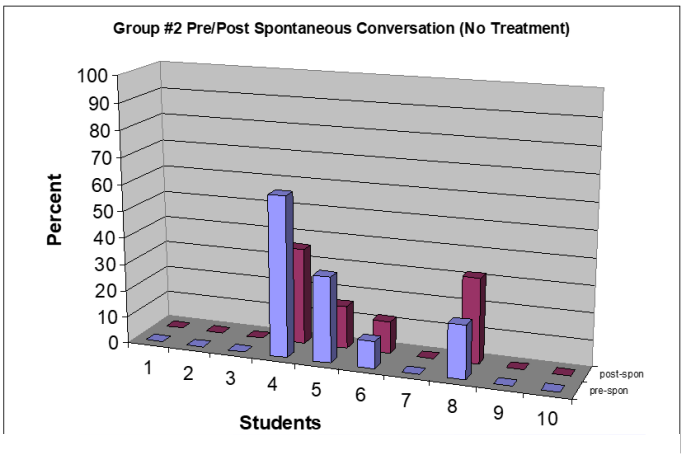
For group 1, this graph shows pretreatment in blue and posttreatment in maroon in conversation, again with huge improvement. Interestingly, student 10 who was at zero for both evaluations was the first student I posttested. She had been using perfect /s/ sounds in conversation and I was shocked when I posttested her and she did not get one /s/ correct. I ran into her in the hall the following week and started talking to her and she made perfect /s/ sounds!



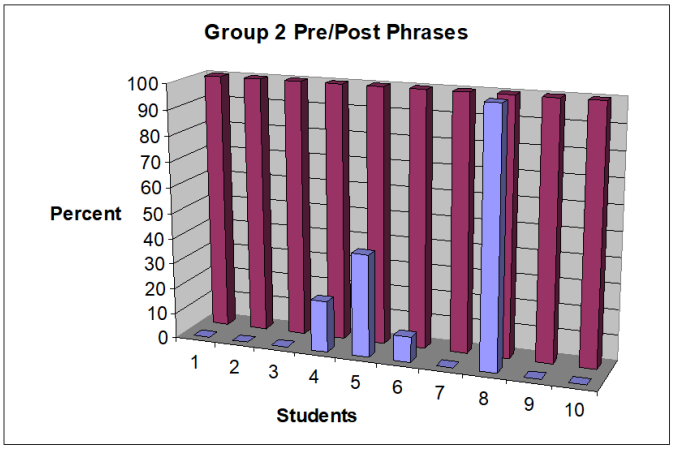
This is group 2 during the same period for phrases. They did not receive treatment pre or post testing and you can see that there is just a mishmash of performance with no significant change.



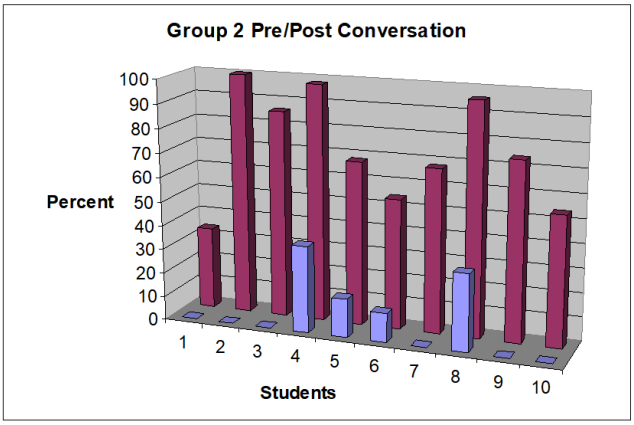
This is group 2 during the same period using spontaneous conversation. They did not receive treatment pre or post testing and you can again see that there is just a mishmash of performance with no significant change.



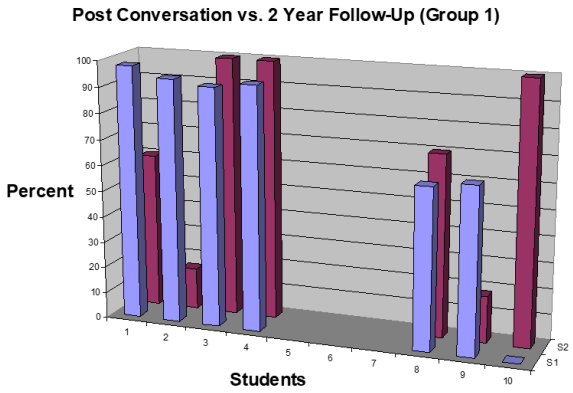
This is group 2 after receiving treatment. You can see a huge improvement from pretest in the maroon with every student scoring 100% on the phrases posttest.



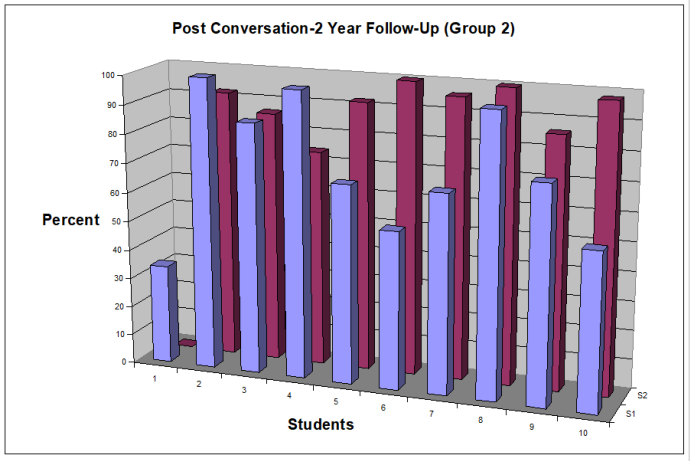
Group 2 posttest shows significant improvement in conversation. All scores for both groups were significant at the highest level after they had received treatment.



I did a 2-year follow up with these students and interestingly even though it had been recommended, none of them received any more therapy than they received in the 2 1/2 hour study. The 3 empty spaces were from students who had moved. You can see that 3 student regressed while the other 4 improved. Student 10 is the one I referred to earlier who tested at 0% but was using her /s/ sound perfectly in therapy. You can see she went from 0% on the posttest to 100% at the 2 year follow-up. For some reason, she just did not do well the day I tested her at the first posttest.



Group 2 students did very well with all but one having maintained their progress and 6 of them improving. Interestingly, student 10 was TP who went from 54% to close to 100%. Just having him learn about correct placement for /s/ was enough for him to apply it to all of his other sounds that he was saying interdentally.



Discussion:

The two year follow up data showed that two of the 12 who appeared remediated were actually not and slipped back below the 75% level. This suggests that stability checks perhaps on a monthly basis would have been useful to monitor the students to confirm that they remained consistent. Five of the eight who did not appear remediated moved up into the 75% or above level without additional therapy suggesting that perhaps just a few more sessions would have led to showing that their /s,z/ error sounds were remediated or that monthly checks would have shown improved production into the 75% competence area.

2013 Study

- Sacks, Flipsen, & Neils-Strunjas (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, Issue , pp. 559-577.) revealed significant improvement in persistent /s/ with the SATPAC approach when administered by the first author (who is also the program designer).
- Attempting to replicate using other clinicians trained in the approach.

- Between groups alternating treatments design
- Measure baseline performance, treat group 1 while group 2 waits.
- Then measure performance on both and treat group 2 while group 1 waits
- Measure both groups again and re-measure after an additional 12 weeks to check for maintenance.

So the previous study was highly successful but the problem was that I did the therapy and I have intimate knowledge of the SATPAC Program. Could the same results be seen by other SLPs doing the therapy?

Progress Measures

- Measured production accuracy of /s/ in:
  - 1. CPAC /s/ probe (words and sentences; Secord & Shine), and
  - 2. conversational speech
- Allowed for measurement of performance in the structured context of therapy and to monitor generalization.

There were slight modifications in this study from the previous study. In the previous study, students were seen for 10 minute individual sessions for 15 weeks for a total of 150 minutes (2 1/2 hours total). In this study, students were seen for 15 minute individual sessions for a 12 week period or 180 minutes (3 hours total).

Therapists were trained by attending SATPAC workshops as well as asking questions when they arose.

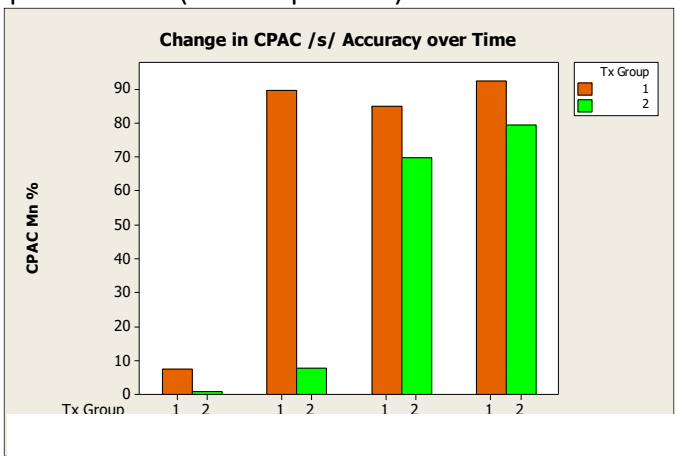
There was a significant difference between the two therapists in terms of success.

Observations about Treatment

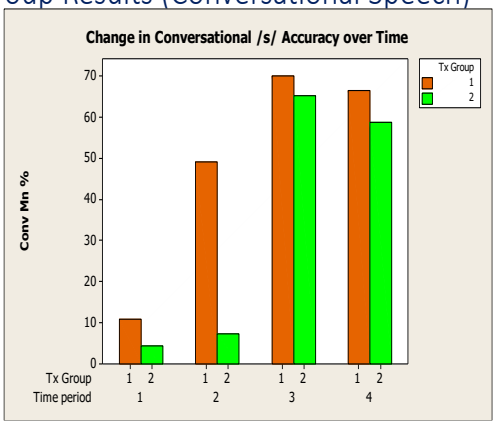
One SLP administered the program more faithfully that the other and consequently showed significantly better results (9/10 scored 90%+ in conversation vs. 2/5 at 90%+ for the other SLP when the study was completed.

All students completed treatment but one moved at the end of the school year and was no longer available for follow-up

Group Results (CPAC probe)



Group Results (Conversational Speech)



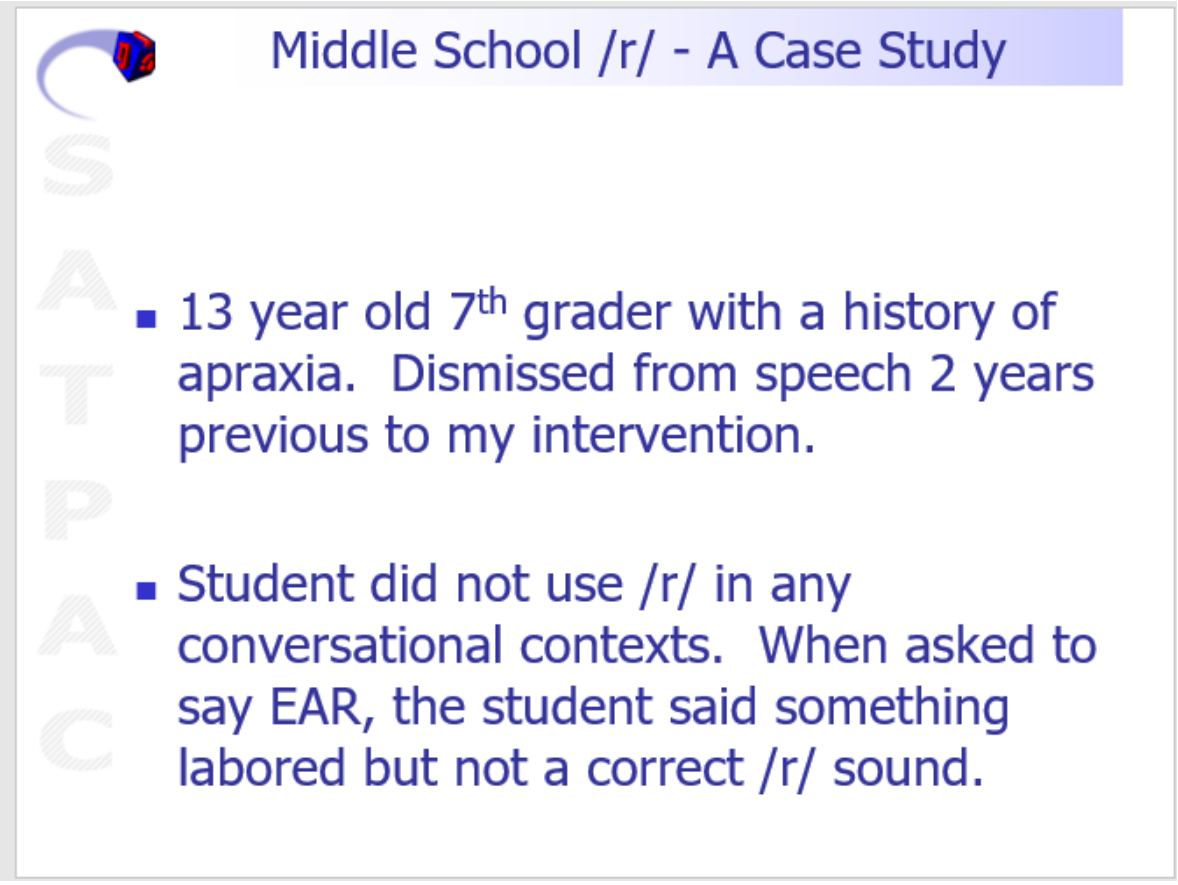
Overall Results and Conclusions

- Group results show obvious effects for both the CPAC probe and conversational speech.
- Individual results showed obvious signs of improvement for 8/12 participants to acceptable levels of performance on both measures.

- **With a relatively short treatment period (12 weeks) and relatively brief sessions (15 minutes per week), the SATPAC Approach appeared to be effective at correcting persistent /s/ errors.**

So with other SLPs, the results were similar to the results from my initial study and with more adherence to the SATPAC Approach, the results were outstand for the 1 SLP who was more compliant.

The middle school student /r/ study was written up in ASHA Perspectives (Perspectives on School-Based Issues, Vol. 16, No. 3, 64-78) by Flipsen, P and Sacks, S. in 2015.



Remediation of residual /r/ errors: a case study using the SATPAC approach

But do these errors matter? They are often described as mild distortions such as dentalized or interdental /s, z/, lateralized fricatives and affricates, or derhotacized /r/ (a production that is neither /w/ nor /r/ but represents an intermediate, distorted form where the /r/ quality is partially lost). These are unlikely to interfere with message intelligibility or have a significant impact on reading. However, **negative peer reactions** (Crowe Hall, 1991) including **teasing or bullying** (Sweeting & West, 2001), and negative perceptions by adults (Burroughs & Tomblin, 1990) have been documented. Such negative social consequences alone are valid concerns and should be sufficient to qualify a child for services in the public schools, because guidance from the US Department of Education indicates that " … academic failure is not a prerequisite for services" (ref: http://www.asha.org/publications/leader/2007/070508/070508d.htm). The potential for longer-term negative consequences of these errors have also been suggested. Allard and Williams (2008) reported, for example, that **ratings of 'employability' were significantly lower for an adult (an actor) who produced /s/ distortions** compared to the same adult who produced no errors. Thus, remediation of residual speech sound errors appears justified.

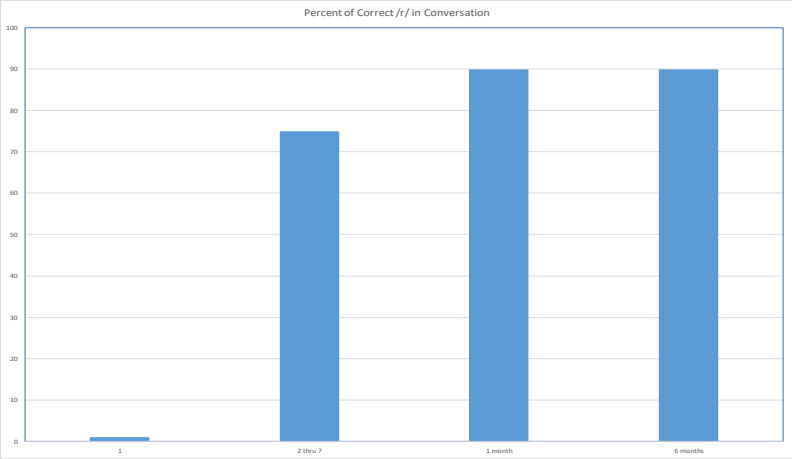
This student was seen for 7-30 minute sessions (or 3 1/2 hrs. of direct therapy) over a 4 month period.

As the student proceeded through the lists, he was continually checked to see if he could say EERGA without the tongue depressors. After approximately 1000 correct productions, the jaw stability tongue depressor was removed. After approximately 4000 correct productions, the student could produce the target independently, and the lists began again without any tongue depressors.

The student's mom observed the speech sessions and parents did 15 min. of homework 5-6 days a week.

At his final session, he was 75% accurate in conversation. At this point he was using a tally counter to monitor 100+ correct productions of /r/ daily 5-6 days a week.

He was seen for two follow-up session one month and 6 months later with both being at approximately 90% accuracy. During that time, the student used the tally counter to do 100 /r/ sounds in conversational speech 3-5 times a week. After 6 months, all intervention stopped.



2 Year RTI Study

5 students each year were chosen (4 with frontal lisps and 1 with /r/ issues)

Students were seen weekly for 15 minute individual sessions

Homework was given weekly.

Results Summary

7/10 students averaged 90%+ in conversation (6 90%+ and 1 84%)

The average length of therapy was just under 5 hours of direct therapy

(5 hrs.=20 15 minute weekly sessions)

2 Year RTI Study-Examining the 3 Students Who Were Not Remediated

CH /s/ 8-7
Initial 5% 5% (CPAC)
After 5 hrs. 16% 18% (CPAC)
Conversation 0% 0%
After Summer Vacation 0% 4%

CH never got the /s/ sound with any consistency. After 20 sessions (5 hrs.), he was at 17% accuracy on the CPAC and 0% in conversation. This student needed more intense therapy than 15 min. once a week so was referred for therapy and went through the IEP process.

2 Year RTI Study-Examining the 3 Students Who Were Not Remediated

DE /s/ 8-2
Initial 0% 3% (CPAC)
After 3.75 hrs. 89% 96% (CPAC)
Conversation 42% 45%
After Summer Vacation 66% 24%

DE made significant gains with the /s/ sound after 15 sessions (3.75 hrs) and I was so confident that he was remediated, that I dismissed him. Big mistake. My clue should have been his level of conversation which was around 44%. That simply is not good enough and he should have continued in the RTI Program at that point until his conversational competence was 75% or higher.

2 Year RTI Study-Examining the 3 Students Who Were Not Remediated

JM /s/ 7-7
Initial 0% 1% (CPAC)
After 5 hrs. 96% 92% (CPAC)
Conversation 58% 64%
After Summer Vacation 4% 6%

JM also made significant gains with the /s/ sound after 20 sessions (5 hrs. total) but should have continued as his conversational level was at 61%. Unfortunately, the school year ended and he totally lost his conversational competence over the summer. My guess is that with more RTI, he would regain that competence fairly quickly and make gains so that he would be remediated

Using the SATPAC Program & Approach with Middle School Students with Highly Unintelligible Speech.

Presented at the Annual Convention of the American Speech-Language-hearing Association,

Los Angeles,CA (2017)

Case Study #1 DY

History

- He had been receiving speech therapy continuously since age 5.
- Received special education SAI services since 6 yrs. old with the speech diagnosis.
- For his triennial assessment when he was 8.1 years old, on the GFTA-2, he had a standard score of 40 and an age equivalent of 3-1.
- Following triennial assessment at age 11, primary diagnosis changed to SLD.
- No mention of apraxia or hypernasality was seen on his IEPs.

The main thing I noticed about DY was his hypernasality. I found him very difficult to understand when he talked without context. So I was wondering why he was so hypernasal. It looked like his structures were normal. I read that you sometimes see hypernasality with people with apraxia.

Case Study #1 DY

Status at beginning of my therapy:

- Hypernasal
- kw/kl, -/s, p/pr, -/t, sh/ch, g/d, k/t, w/r, -/-m, s/str, fw/fr, -/d, -/g, -/th, -/j, -/-sk, -/-r, d/j, t/ch
- Maweea ae ko-I, ka-ee a pa-ee ae a ko do wi some owan dyu /Maria ate cotton candy and Patty ate a corn dog with some orange juice.
- Intelligibility approximately 50%
- Phonological processes-FCD, Prevocalic CD, cluster reduction/simplification, backing, deaffrication, gliding

In addition to his hypernasality, he had many consonant deletions and phonological processes.

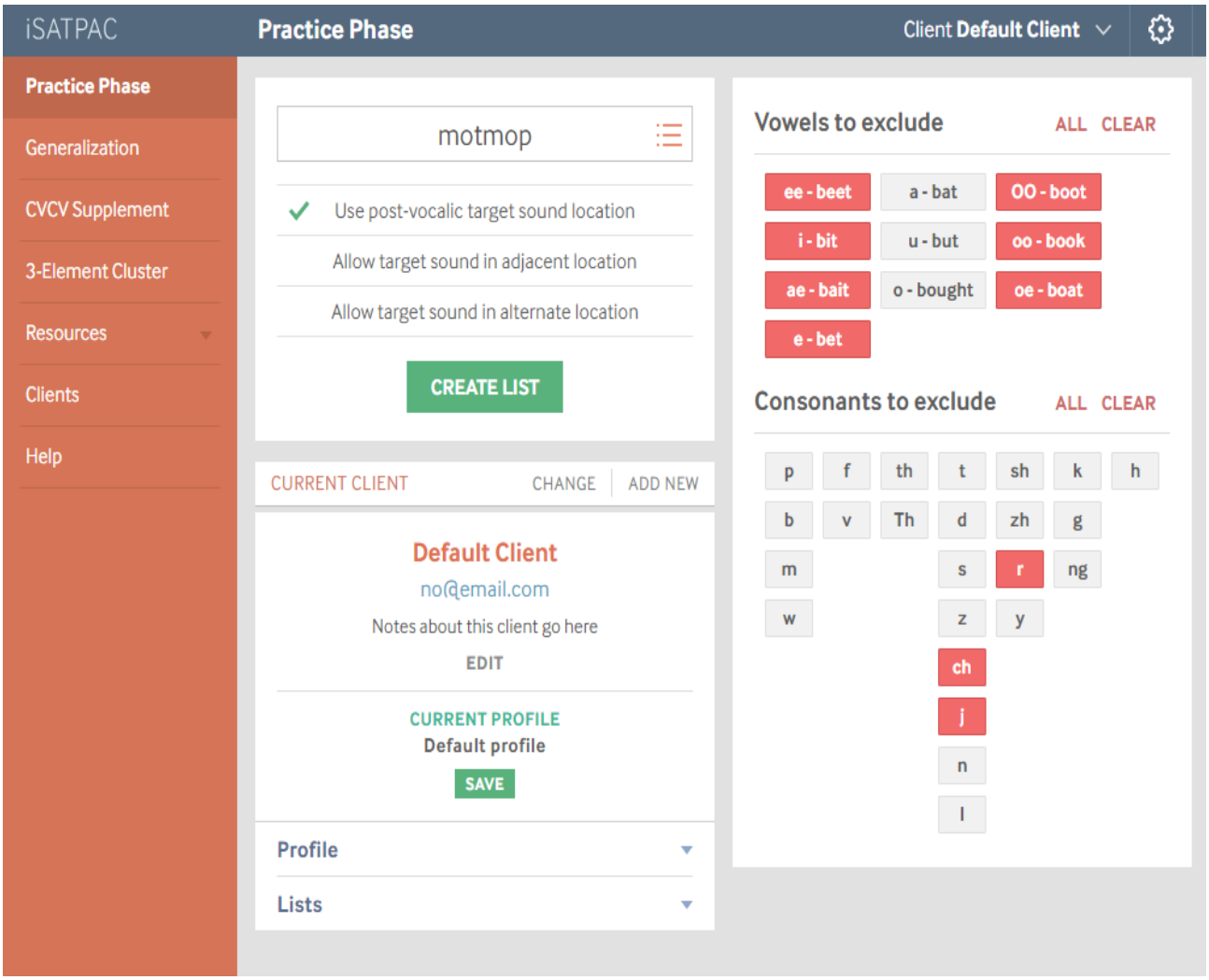
DY Goals

- Using all consonants w/emphasis on final consonants MOTMOP
- Eliminate hypernasality through opening mouth MOTMOP eliminating all vowels except A,O,U
- All S, L clusters EESTA,
- CH, J sounds
- Slow rate

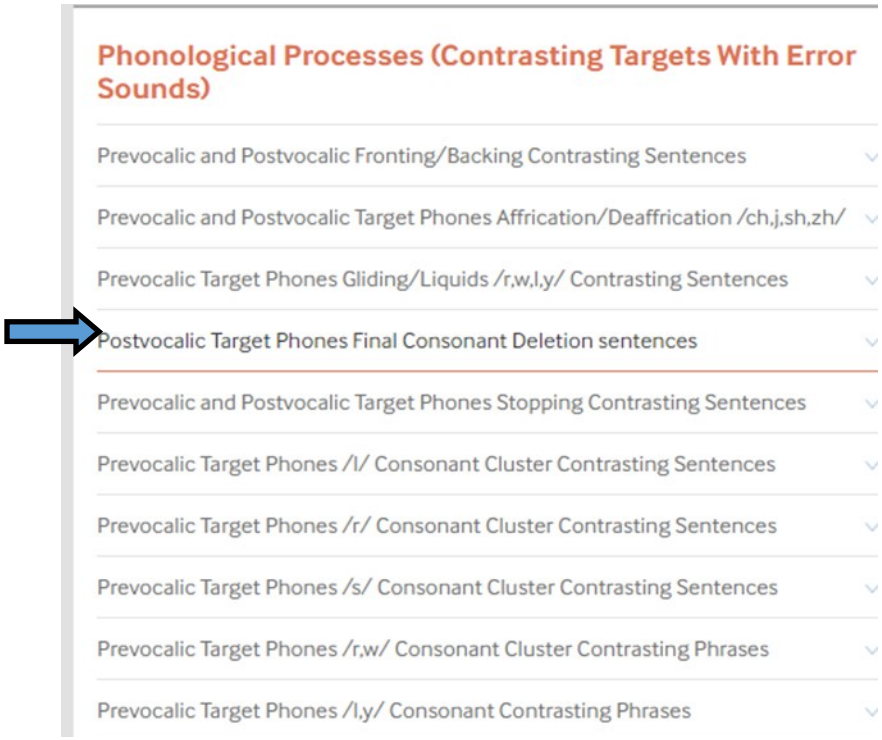
MOTMOP has proven to be really magical for students with FCDs. The fact that each nonword has two postvocalic consonants, is really good practice.

Just like everything else with SATPAC, with lots and lots of repetitions, the final consonants come in and transfer to conversational speech.

We really worked on wide mouth opening (see the next picture). Also, we practiced s-clusters a lot as these really helped his intelligibility.



Look at the vowels on the top right. Notice that all vowels are excluded except for a, o, u. These vowels require the mouth to be wide open when said correctly. This took some modeling and practice but he started opening his mouth more and his hypernasality decreased significantly.



After MOTMOP, we went to the Generalization/Transfer Phase Final Consonant Deletion Sentences.

Postvocalic Target Phones
Final Consonant Deletion sentences

1. That was fun.
2. The cat goes fast.
3. I work for him.
4. Does Gus eat fish?
5. Where does Tom camp?
6. Rich bought a cap.
7. A mouse was in the house.
8. It was the boy's dog.
9. Mitch won't fight his dad.
10. Come home this Christmas.
11. Watch out for dead mice.
12. Tom likes to eat fat.
13. Matt bought a watch.
14. Bob can leap up.
15. The rat ate the fig leaf.
16. His pet dog is smart.
17. Joan can break your nose.
18. Rich Smith has a nice car.
19. His trip to Europe was fun.
20. Watch him eat five beets.
21. Tap dance is fun.
22. Sam--race them tonight.
23. Keep right at the dip.
24. Mom said "Top this one."

Name:_____Date____/____/____

_____/100

The way this went was very similar to when kids first started using a tally counter. They slowed down significantly and had to really concentrate on saying the final sounds. With practice and lots and lots of repetitions, this skill developed and he was able to use final consonants at a normal rate.

I modeled these sentences exaggerating the final consonants at first and as their skill developed, saying the sentences normally.

Every session, we began practicing s-cluster lists. He had particular difficulty with the ST cluster.

Again, lots and lots of repetitions and he improved although when therapy ended, he was still inconsistent in conversation.

Practice Phase SATPAC

	List #1			List #2	
1	□□□ eesta	istæ	□□□	eesta	istæ
2	□□□ eestu	istʌ	□□□	ista	ɪstæ
3	□□□ eesto	istɔ	□□□	aesta	eɪstæ
4	□□□ eestoe	istoʊ	□□□	esta	ɛstæ
5	□□□ eestoo	istʊ	□□□	asta	æstæ
6	□□□ eestOO	istu	□□□	usta	ʌstæ
7	□□□ eestoo	istʊ	□□□	osta	ɔstæ
8	□□□ eestoe	istoʊ	□□□	oesta	oʊstæ
9	□□□ eesto	istɔ	□□□	oosta	ʊstæ
10	□□□ eestu	istʌ	□□□	OOsta	ustæ
11	□□□ eesta	istæ	□□□	oosta	ʊstæ
12	□□□ eeste	istɛ	□□□	oesta	oʊstæ
13	□□□ eestae	isteɪ	□□□	osta	ɔstæ
14	□□□ eesti	istɪ	□□□	usta	ʌstæ
15	□□□ eestee	isti	□□□	asta	æstæ
16	□□□ eesti	istɪ	□□□	esta	ɛstæ
17	□□□ eestae	isteɪ	□□□	aesta	eɪstæ
18	□□□ eeste	istɛ	□□□	ista	ɪstæ
19	□□□ eesta	istæ	□□□	eesta	istæ
20	□□□ eestu	istʌ	□□□	ista	ɪstæ

As he developed this skill, we would practice these lists as fast as he could.

Practice Phase SATPAC

List #6

A boy bought a new eespu (ispʌ).
□□□ **I** bought a new eespu (ispʌ)?
□□□ A boy **sold** a new eespu (ispʌ)?
□□□ A boy bought an **old** eespu (ispʌ)?
□□□ A boy bought a new **aespu** (ɛispʌ)?

An uspu (ʌspʌ) hit a mean man.
□□□ An uspu (ʌspʌ) **painted** a mean man?
□□□ An uspu (ʌspʌ) hit a **crazy** man?
□□□ An uspu (ʌspʌ) hit a mean **chicken**?
□□□ An **aspu** (æspʌ) hit a mean man?

I met a eespOO (ispu) walking home.
□□□ Did you **pass** a eespOO (ispu) walking home?
□□□ Did you meet a eespOO (ispu) **flying** home?
□□□ Did you meet a eespOO (ispu) walking **to the beach**?
□□□ Did you meet a **eespa** (ispæ) walking home?

My uspu (ʌspʌ) won a penny.
□□□ Did your **friend's** uspu (ʌspʌ) win a penny?
□□□ Did your uspu (ʌspʌ) **lose** a penny?
□□□ Did your uspu (ʌspʌ) win a **nickel**?
□□□ Did your eespa (ispæ) win a penny?

I want a big eespu (ispʌ).
□□□ Do **I** want a big eespu (ispʌ)?
□□□ Do you **have** a big eespu (ispʌ)?

Notice how much better he sounds while doing these sentences!

S Cluster Story-Stop the Stew

Stan was stirring the stew he was cooking for his friends Skip and Steven. They liked stuff like seafood so Stan decided to toss in some squid and sticks of cinnamon. Stan stirred and stirred but there was something wrong with the stew. It wouldn't get thick no matter how much he stirred.

So Stan tried something else. He stuck some corn starch in the stew and started stirring. Pretty soon the stew was getting thick. Stan thought, That corn starch made the stew really stable. But it started getting so thick that Stan thought, I've got to stop the stew! Stan took the stew off the stove and tried to get out the corn starch. That was impossible as it was all mixed into the soup stock.

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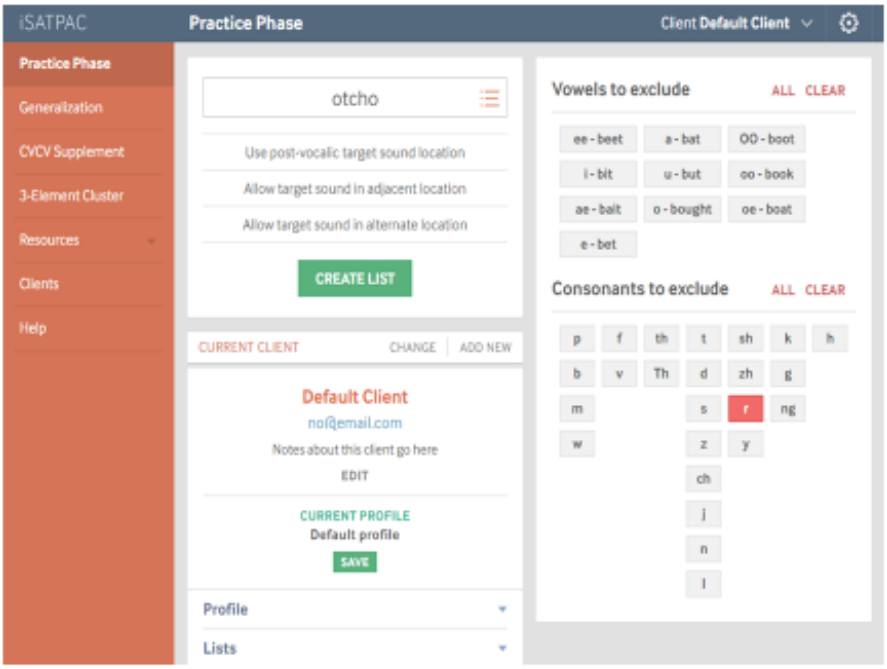
I write silly stories for my students with their targets in them. Notice the difference between the first trial and the second and while the second shows a lot of improvement, you can tell how much he is concentrating to say these clusters correctly.

CH OTCHO



For the CH, we worked on OTCHO to make sure we got the /t/ sound as he was doing sh/ch. Note how only the /r/ is excluded because now CH is our target and cognates are automatically excluded from the lists so there will be no J sounds.

Reading CH Story

This was very similar to the /st/ cluster in that you can hear a significant improvement but it doesn't sound natural yet and you can tell he is really concentrating on saying the sound correctly.

Case Study #2 GT

History

- He had been receiving speech therapy continuously since age 4-8.
- Has been in SDC classes since kindergarten.
- For his triennial assessment when he was 7-4 years old, the SLP recommended an evaluation for AAC due to his very poor intelligibility.
- On triennial assessment at 10-4, it was noted that he interdentalizes all L-A sounds (s,z,t,d,l,sh,ch,j) uses reduplication on words (e.g., nununu/banana and deletes final consonants.

This student made all his lingua-alveolar sounds with the blade of his tongue interdentally. That was really significant because if you try talking that way, you will have great difficulty being understood!

Case Study #2 GT

Status at beginning of my therapy:

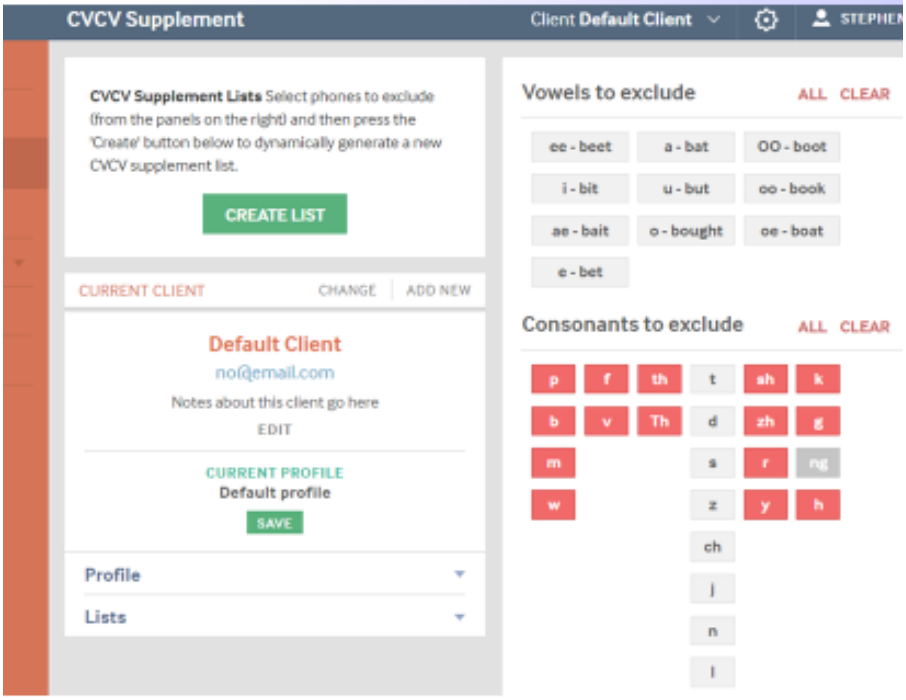
- I he my bwuda move i hi apame/I help my brother move in his apartment.
- Little mouth movement, most L-A sounds made with blade interdentally.
- Intelligibility approximately 25%
- Phonological processes-FCD, cluster reduction/simplification, fronting of L-A sounds, gliding/vowelization
- Grammatical issues

Also, he is really difficult to understand in that he deletes a lot of final consonants and doesn't have much mouth opening. There was also what I would call a psychological issue in that he knew he had difficulty with his pronunciation and was reluctant to speak.

GT Goals

- Final consonants MOTMOP
- Improve intelligibility through opening mouth MOTMOP eliminating all vowels except A,O,U
- All L-A sounds w/correct placement using CVCV lists
- CH, J sounds
- Slow rate
- Simple grammatical sentences

L-A Placement-CVCV Lists



Again using MOTMOP for mouth opening and final consonants. We also worked on the CH, J sounds, a slow rate and simple grammatical sentences. While this was a special education low IQ student, he had a good grasp of the direction we were going in in speech and was very motivated and worked hard.

The initial step was to develop correct tongue position for the /t/ sound with the back of the tongue stabilized on the back molars. This literally took months but once he got it, he took off.

This list was an example of how you can really customize lists for individual needs. Because all of his sounds in the L-A area were said interdentally and with the blade of his tongue, I eliminated all sounds except those in the L-A area. Then using CVCVs, we just practiced all those sounds using a mirror and a flashlight to watch correct positioning. I also stabilized his jaw with infant tongue depressors.

Case Study #3 JN

History

- He had been receiving speech therapy and special education continuously since age 4.
- Dismissed from speech at age 11 because he "can communicate his needs to peers and teacher."

This was a 7th grade student who the teacher referred because she said "I can't understand a word he says". I thought she must be exaggerating but she really wasn't! What was astounding to me was that he had previously been dismissed from speech therapy.

Case Study #3 JN

Status at beginning of my therapy:

- Intelligibility approximately 25%
- Phonological processes-FCD, cluster reduction/simplification, deaffrication, gliding
- Repetitions
- Little mouth movement
- Poor grammar

JN had many phonological processes but his main problems were that he didn't open his mouth when he talked and that he was very dysfluent.

JN Goals

- Using all consonants w/emphasis on mouth opening MOTMOP eliminating all vowels except A,O,U
- TH, R sounds
- Slower rate
- Simple Grammatical Forms

Again, MOTMOP was key for him to get his mouth open and use final consonants and to slow his rate. This was also a low IQ special education student but was motivated and through lots of repetitions, understood what he needed to do to improve his speech.

Working once a week for 1-2 years with these students, they all made significant improvement. What I did not see coming, was the change in self-image these 3 boys had. They all began initiating conversation which they did not do previously and the teachers reported that they were so much more confident in class and with their interactions with their peers.

The following 4 case studies are real-life examples of students that I worked with and how I worked to remediate their deficits.

A.E. Age 8-3 (missed all /r/ and /s/ sounds (frontal lisp) on an articulation test)

1) What do we target? /s/ and /r/

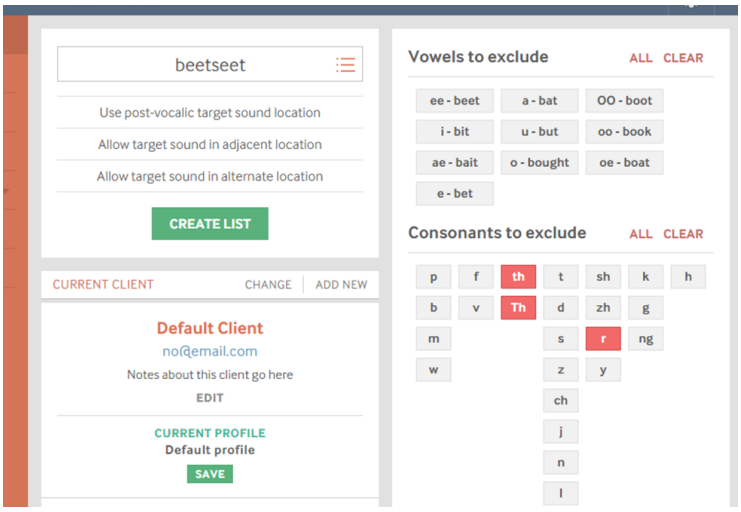
2) Where do we start? Using the SATPAC Approach to establish the sounds ending up with something like BEETSEET for /s/ and EERGA, EERSHA, or EERNA for /r/

3) Practice and Generalize/Transfer

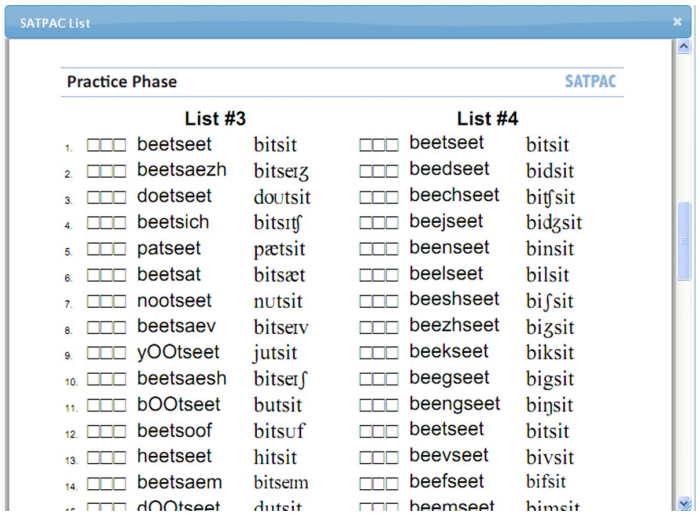
For /s/, BEETSEET (target is prevocalic), exclude /r/ and TH sounds, do the 6 Practice Phase Lists, Generalization/Transfer /s/ phrases, sentences and contrasting (S,Z, TH) phrases and sentences.

For /r/, EERGA (target is postvocalic) exclude /s,z/, do the 6 Practice Phase Lists, Generalization/Transfer postvocalic /r/ phrases, sentences (prevocalic or mixed pre/post if appropriate).

Setup



Practice Phase Lists 1-6



Generalization/Transfer Phrases/Short Sentences/Sentences

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

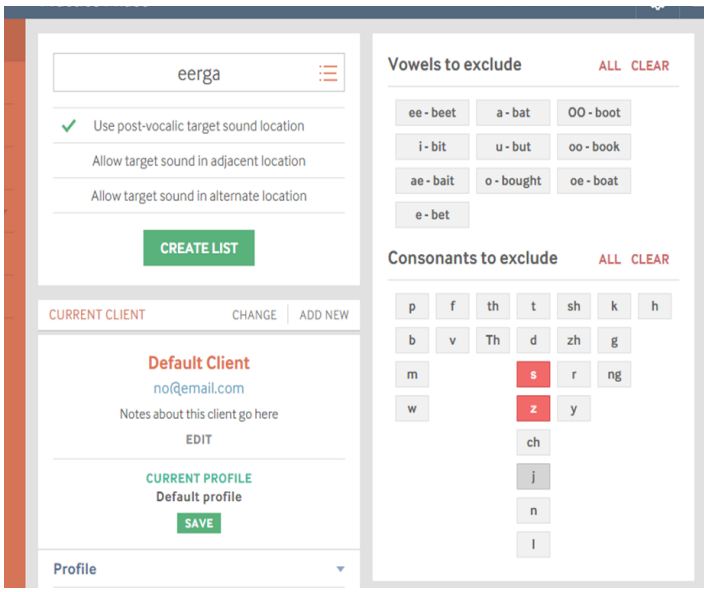
1. She had a soft whisper.
2. Sam never cleans up.
3. Grace bought cough syrup.
4. We went to the soup house.
5. The sick rooster died.
6. I like inside days.
7. The skater was pretty.
8. The bus drove to school.
9. I swam in August.
10. You must accept it.
11. The spoons were metal.
12. I found a jigsaw piece.
13. Chris will sell it.
14. The dish soap was green.

Contrasting Phrases/Short Sentences/Sentences

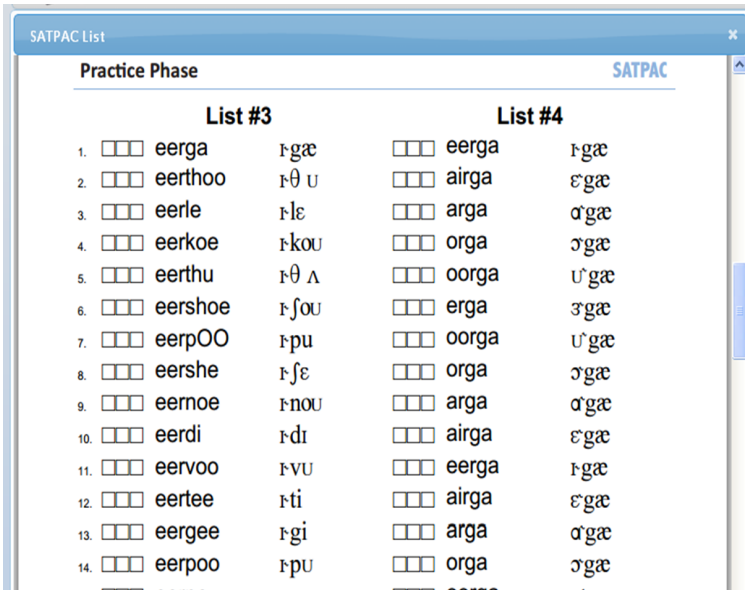
Prevocalic and Postvocalic Target Phones
/s,z,Th,th/ contrasting sentences

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.
12. Mothers think fast.

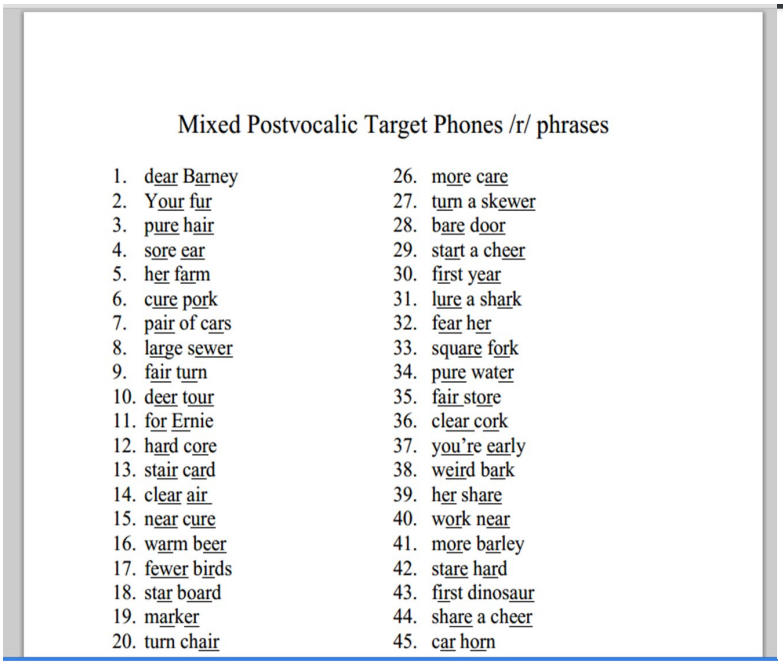
Setup



Practice Lists 1-6



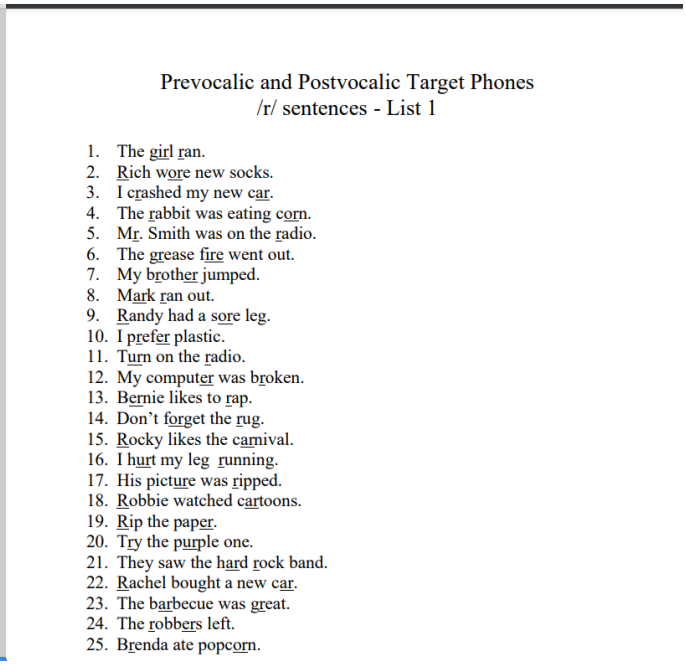
Generalization/Transfer Phrases, Sentences



Mixed Postvocalic Target Phones /r/ phrases

1. dear Barney
2. Your fur
3. pure hair
4. sore ear
5. her farm
6. cure pork
7. pair of cars
8. large sewer
9. fair turn
10. deer tour
11. for Ernie
12. hard core
13. stair card
14. clear air
15. near cure
16. warm beer
17. fewer birds
18. star board
19. marker
20. turn chair
26. more care
27. turn a skewer
28. bare door
29. start a cheer
30. first year
31. lure a shark
32. fear her
33. square fork
34. pure water
35. fair store
36. clear cork
37. you're early
38. weird bark
39. her share
40. work near
41. more barley
42. stare hard
43. first dinosaur
44. share a cheer
45. car horn

Pre/Post /r/ Phrases, Sentences



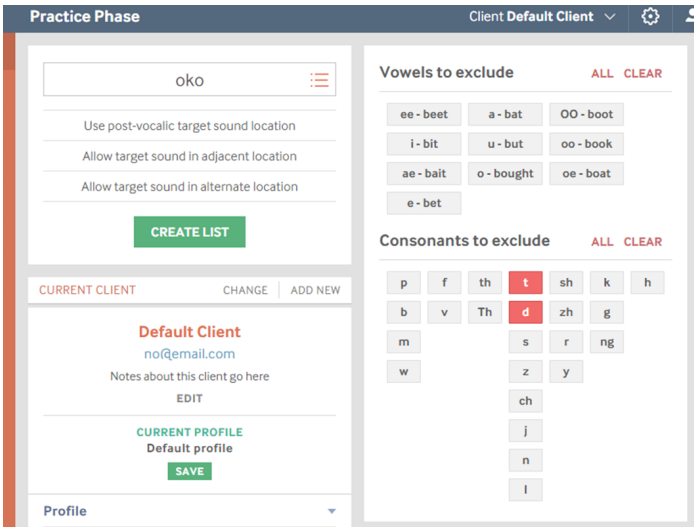
Prevocalic and Postvocalic Target Phones
/r/ sentences - List 1

1. The girl ran.
2. Rich wore new socks.
3. I crashed my new car.
4. The rabbit was eating corn.
5. Mr. Smith was on the radio.
6. The grease fire went out.
7. My brother jumped.
8. Mark ran out.
9. Randy had a sore leg.
10. I prefer plastic.
11. Turn on the radio.
12. My computer was broken.
13. Bernie likes to rap.
14. Don't forget the rug.
15. Rocky likes the carnival.
16. I hurt my leg running.
17. His picture was ripped.
18. Robbie watched cartoons.
19. Rip the paper.
20. Try the purple one.
21. They saw the hard rock band.
22. Rachel bought a new car.
23. The barbecue was great.
24. The robbers left.
25. Brenda ate popcorn.

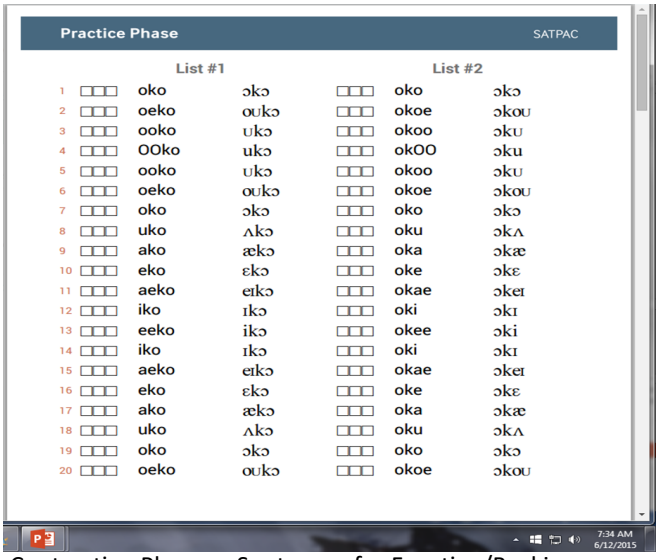
CD age 6-1 (on an articulation test, student fronted all /k,g/ sounds

1) What do we target? Fronting phonological process (t/k, d/g) so either /k/ or /g/
2) Where do we start? I start with OK (as in lock). If the student cannot make the /k/ sound, then that needs to be established. From OK, I go to the seedword OKKO (target is prevocalic.
3) Practice and Generalization/Transfer OKKO (target is prevocalic) /t,d/ are excluded, 6 Practice Phase Lists, Generalization/Transfer /k/ phrases, sentences then Fronting Contrasting sentences (can also used CVCV lists eliminating all consonants except for /t,d,k,g/

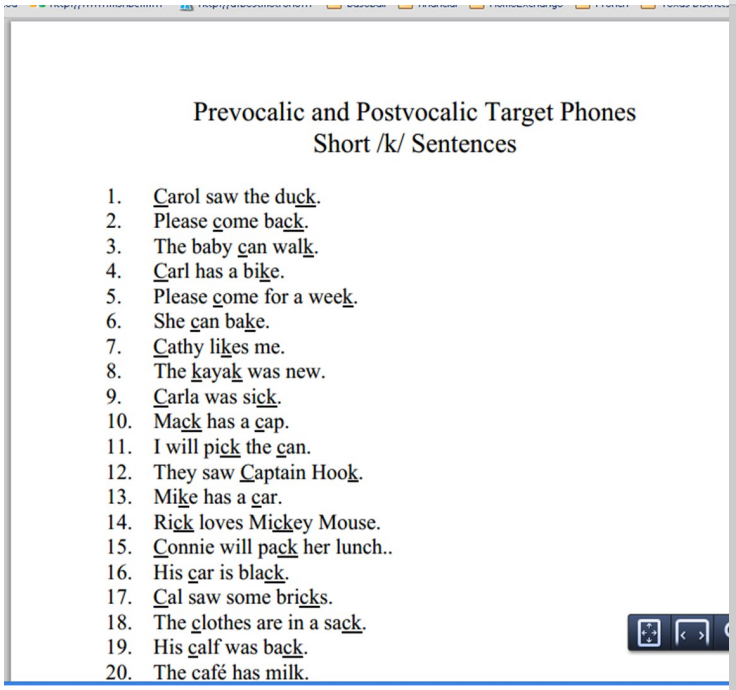
Setup



Practice Phrase Lists 1-6



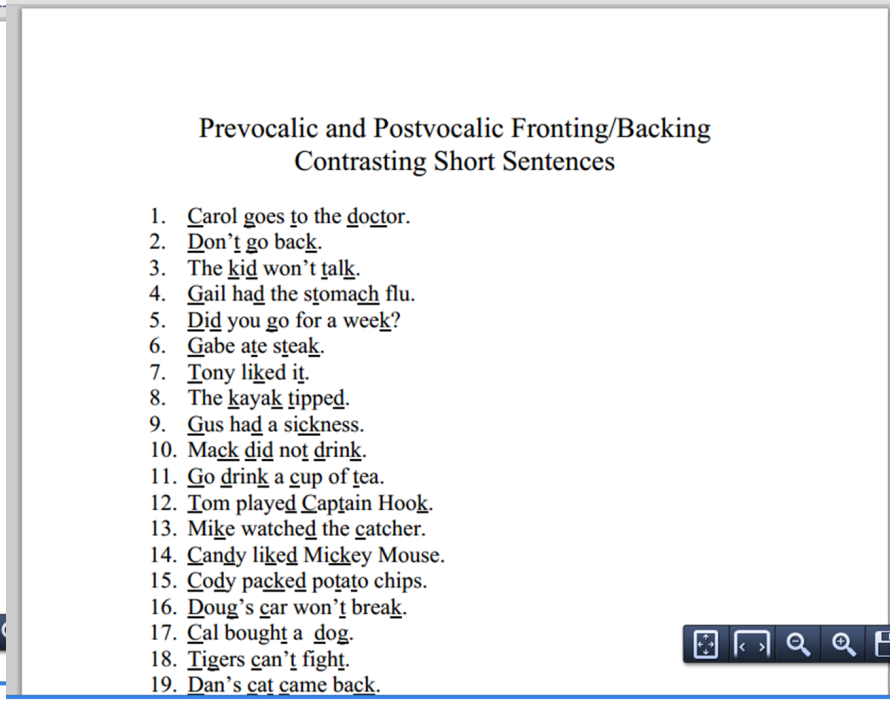
Generalization/Transfer Phrases, Sentences



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.
11. I will pick the can.
12. They saw Captain Hook.
13. Mike has a car.
14. Rick loves Mickey Mouse.
15. Connie will pack her lunch..
16. His car is black.
17. Cal saw some bricks.
18. The clothes are in a sack.
19. His calf was back.
20. The café has milk.

Contrasting Phrases, Sentences for Fronting/Backing



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.
11. Go drink a cup of tea.
12. Tom played Captain Hook.
13. Mike watched the catcher.
14. Candy liked Mickey Mouse.
15. Cody packed potato chips.
16. Doug's car won't break.
17. Cal bought a dog.
18. Tigers can't fight.
19. Dan's cat came back.

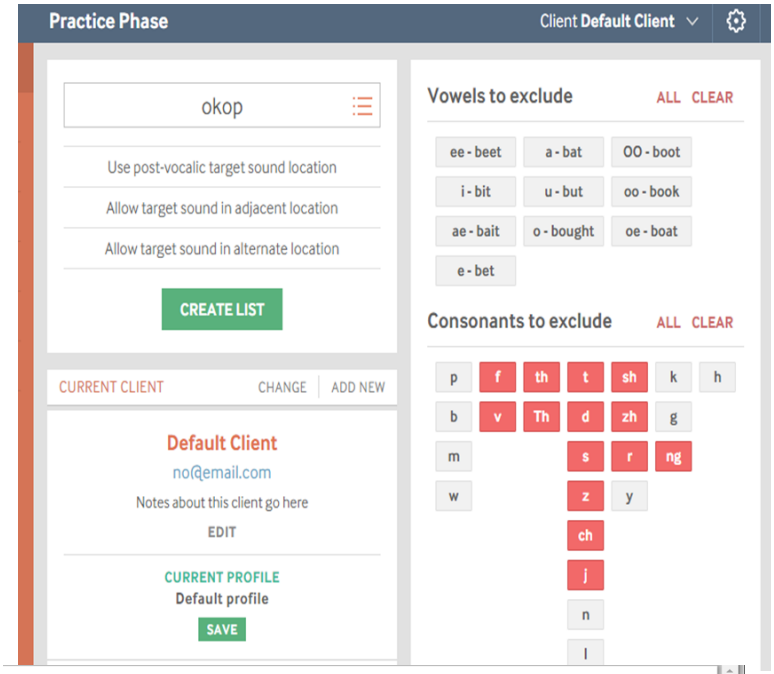
F.R. Age 4-3 (see below from the results of an artic. test)

1) What do we target? Phonological processes of fronting (t/k, d/g); stopping (t/sh,s, d/z, b/v, p/f, t,d/th); consonant cluster reduction (p/pl, p/sp); FCD (kni/knife, da/that); deaffrication (t/ch, d/j) and gliding (wud/rug, dee-e/deer)

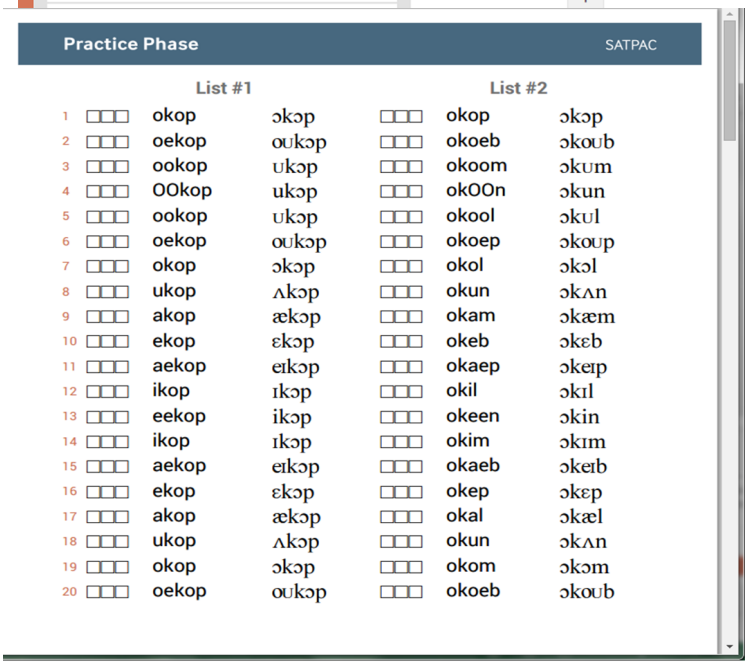
2) Where do we start - To address Fronting and FCD - OKKOP

To address Stopping, Cluster Reduction and FCD - EESNEEP

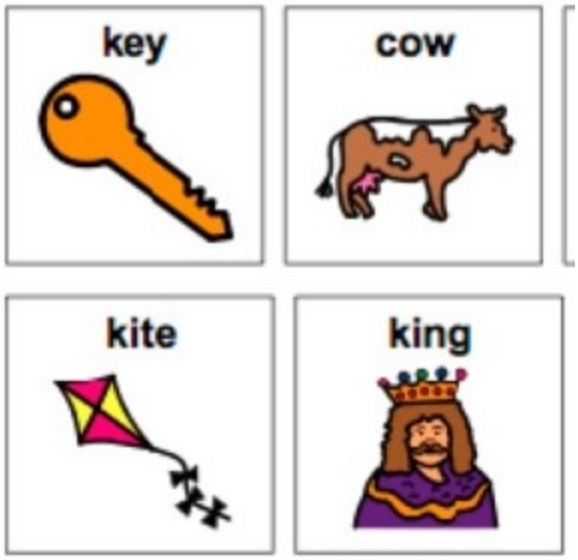
3) Establish, Practice and Generalize/Transfer Phases— OKKOP (target is prevocalic); exclude (t,d,ch,j,sh,zh,f,v,s,z,th,r,ng); Practice 5 lists (sentences are probably too difficult); use CVCV lists to contrast /t,d,k,g/



You can see how most of the consonant sounds are excluded. An easy way to look at this is that he doesn't have fricatives or affricates which eliminates all the sounds except for /r/ and NG which he also doesn't have. He does have /t,d/ which are excluded because they are going to interfere with the target sound /k/.



You can also see that in List 1, the final consonant is always /p/. This is an excellent place to start because if he says OKO, the SLP can really exaggerate the very visual /p/ sound and pop it. When the student gets to List 2, now there are all the different consonant sounds as the final consonant but all of these are in the student's repertoire so he needs to only concentrate about putting the sound in that position.



At this point with a 4 year old, you may want to do pictures of the target /k/ and some simple short phrases or sentences.

Finally, you can use the CVCV lists and begin with list 3 which contrasts the /t,d,k,g/ sounds when you eliminate all the consonants except those four.

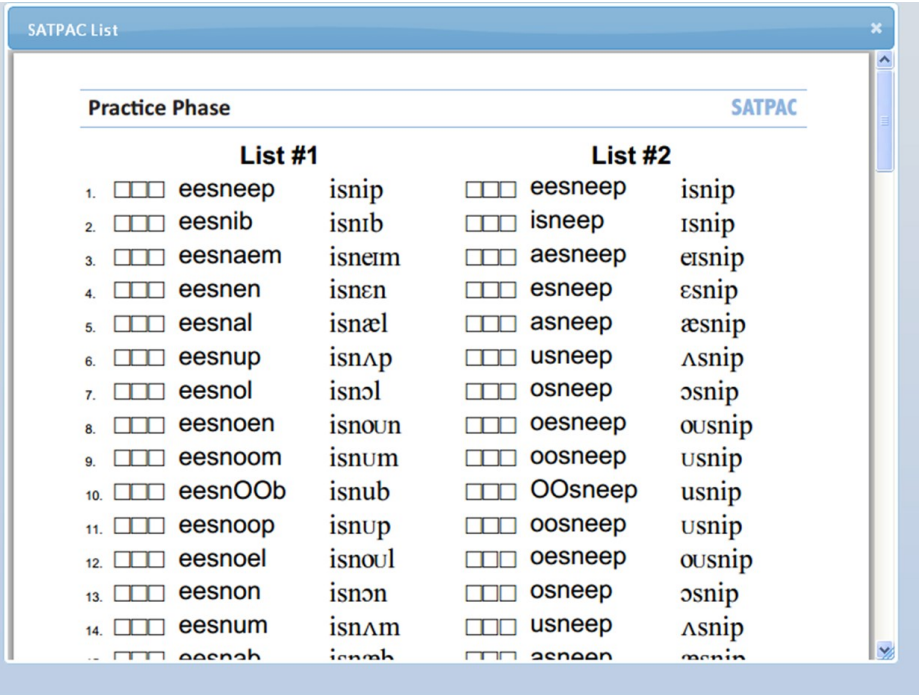
CVCV Supplement Lists SATPAC

List #3

1	□□□	keegee	kigi	□□□	kaetae	keɪtei
2	□□□	digi	dɪgɪ	□□□	gede	gɛdɛ
3	□□□	kaetae	keɪtei	□□□	taga	tægæ
4	□□□	tege	tɛgɛ	□□□	tutu	tʌtʌ
5	□□□	daga	dægæ	□□□	togo	tɔgɔ
6	□□□	tutu	tʌtʌ	□□□	toekoe	toʊkoʊ
7	□□□	dodo	dɔdɔ	□□□	toogoo	tʊgʊ
8	□□□	doegoe	doʊgoʊ	□□□	gOOgOO	gugu
9	□□□	gootoo	gʊtʊ	□□□	tookoo	tʊkʊ
10	□□□	tOOdOO	tudu	□□□	koedoe	koʊdoʊ
11	□□□	goodoo	gʊdʊ	□□□	doto	dɔtɔ
12	□□□	toedoe	toʊdoʊ	□□□	kugu	kʌgʌ
13	□□□	toto	tɔtɔ	□□□	gada	gædæ
14	□□□	kugu	kʌgʌ	□□□	dege	dɛgɛ
15	□□□	taka	tækæ	□□□	gaetae	geɪtei
16	□□□	kege	kɛgɛ	□□□	tigi	tɪgɪ
17	□□□	daedae	deɪdeɪ	□□□	teegee	tigi
18	□□□	kigi	kɪgɪ	□□□	diti	dɪtɪ
19	□□□	teedee	tidi	□□□	kaetae	keɪtei
20	□□□	kiki	kɪkɪ	□□□	deke	dɛkɛ

Establish, Practice and Generalize/Transfer Phases— EESNEEP (target is postvocalic); exclude (t,d,ch,j,sh,zh,f,v,k,g,th,r,ng); Practice 5 lists (sentences are probably too difficult); use other materials like SPARC pictures

This student does not use fricatives but typically you can get them to do EES and then keeping the airflow going, into the NEE and finish it with a popping /p/. After lots and lots of repetitions, you would go to the Establishment Phase or Practice Phase.

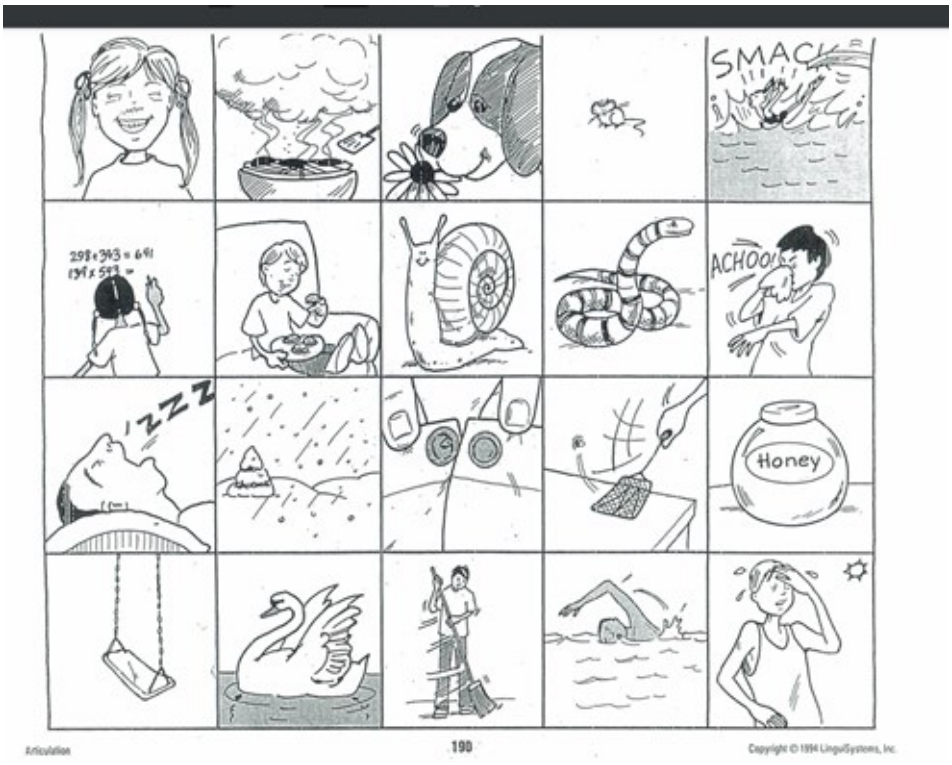


SATPAC List

Practice Phase — SATPAC

	List #1		List #2	
1.	□□□ eesneep	isnip	□□□ eesneep	isnip
2.	□□□ eesnib	isnɪb	□□□ isneep	ɪsnip
3.	□□□ eesnaem	isneɪm	□□□ aesneep	eɪsnip
4.	□□□ eesnen	isnɛn	□□□ esneep	ɛsnip
5.	□□□ eesnal	isnæl	□□□ asneep	æsnip
6.	□□□ eesnup	isnʌp	□□□ usneep	ʌsnip
7.	□□□ eesnol	isnɔl	□□□ osneep	ɔsnip
8.	□□□ eesnoen	isnoʊn	□□□ oesneep	oʊsnip
9.	□□□ eesnoom	isnʊm	□□□ oosneep	ʊsnip
10.	□□□ eesnOOb	isnub	□□□ OOsneep	usnip
11.	□□□ eesnoop	isnʊp	□□□ oosneep	ʊsnip
12.	□□□ eesnoel	isnoʊl	□□□ oesneep	oʊsnip
13.	□□□ eesnon	isnɔn	□□□ osneep	ɔsnip
14.	□□□ eesnum	isnʌm	□□□ usneep	ʌsnip

List 1 is all EES in every word. I've found that the goal at this point is to concentrate on the /s/ being correct and not worrying too much for the final consonant. Then list 2, every final consonant is /p/ which is easier. Then you can go back to List 1 and concentrate more on the final consonants along with the /s/.



Because this student stops the /s/ sound in a cluster in real life (top/stop), you would want to avoid any plosive sounds. This list all has continuous airflow on the abutting consonant against the /s/ making it easier to say (sm,sn,sw). I would start with EESMILE, EESMOKE, etc. and don't correct the sounds the student can't say (like EESMART might come out EESMAT).

C.G. Age 6-4 (only FCD on an artic. test)

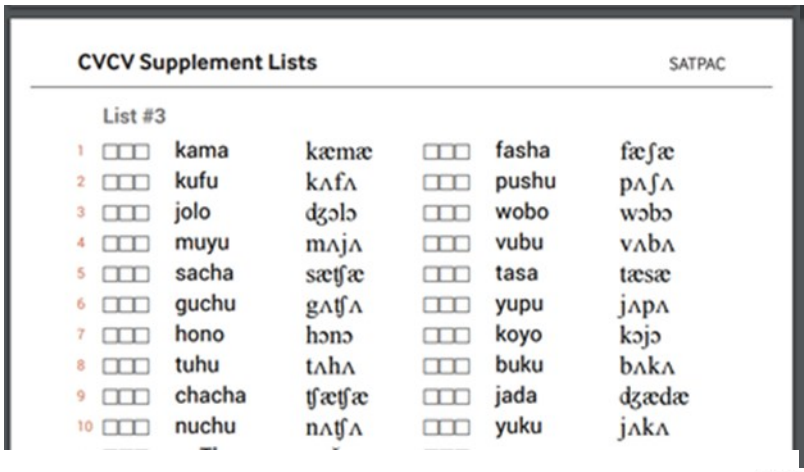
I've had a few students enter first grade and the teacher tells me that she can't understand the student. Interestingly, these kids typically have all age appropriate sounds but just leave off the final consonants and typically speak with a fast rate with little mouth opening (Me a my fre we to hi hou/Me and my friend went to his house).

Where do we start? To get his mouth open, I would use a CVCV list (see below) and exclude all the vowels except for a (bat), u (but) and o (bought). In this case I would also exclude the /r/ sound because he doesn't have it but at this age it's not an issue.

Practice and Generalize/Transfer Phases: To work for FCD and mouth opening, I would also use MOTMOP excluding all the vowels except for a (bat), u (but) and o (bought). In this case I would also exclude the /r/ sound.

For Generalization/Transfer, use sentences for FCD and stopping. Items like S-CAT stories are good practice (see below for Tony and Pat story).

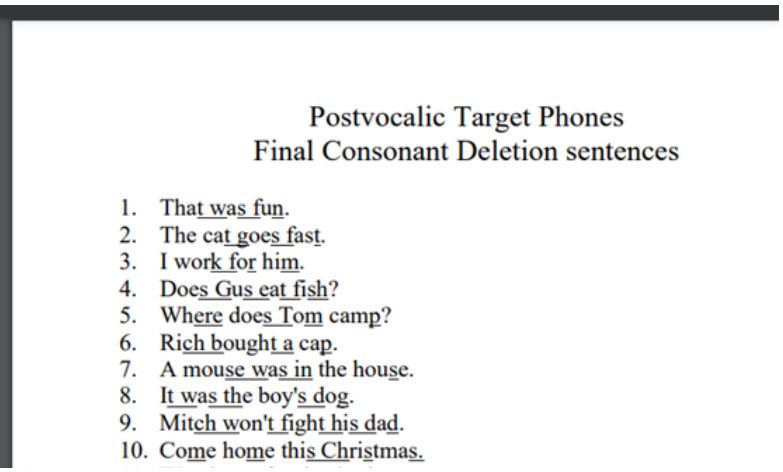
My experience with these kids is they are typically quick to remediate. Once the get the idea of opening the mouth, slowing down a little and using the final consonants, they become quite normal in their intelligibility.



CVCV Supplement Lists SATPAC

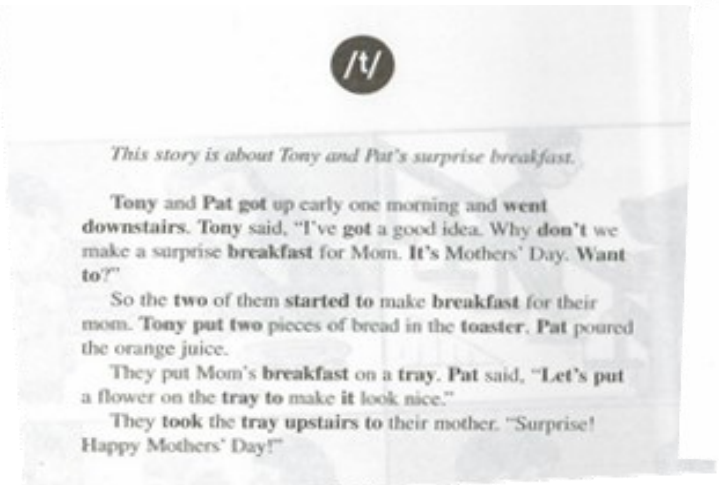
List #3

1	□□□	kama	kæmæ	□□□	fasha	fæʃæ
2	□□□	kufu	kʌfʌ	□□□	pushu	pʌʃʌ
3	□□□	jolo	ʤɔlɔ	□□□	wobo	wɔbɔ
4	□□□	muyu	mʌjʌ	□□□	vubu	vʌbʌ
5	□□□	sacha	sæʧæ	□□□	tasa	tæsæ
6	□□□	guchu	gʌʧʌ	□□□	yupu	jʌpʌ
7	□□□	hono	hɔnɔ	□□□	koyo	kɔjɔ
8	□□□	tuhu	tʌhʌ	□□□	buku	bʌkʌ
9	□□□	chacha	ʧæʧæ	□□□	jada	ʤædæ
10	□□□	nuchu	nʌʧʌ	□□□	yuku	jʌkʌ



Postvocalic Target Phones
Final Consonant Deletion sentences

1. That was fun.
2. The cat goes fast.
3. I work for him.
4. Does Gus eat fish?
5. Where does Tom camp?
6. Rich bought a cap.
7. A mouse was in the house.
8. It was the boy's dog.
9. Mitch won't fight his dad.
10. Come home this Christmas.



/t/

This story is about Tony and Pat's surprise breakfast.

Tony and **Pat got** up early one morning and **went downstairs**. **Tony** said, "I've **got** a good idea. Why **don't** we make a surprise **breakfast** for Mom. **It's** Mothers' Day. **Want to**?"

So the **two** of them **started to** make **breakfast** for their mom. **Tony put two** pieces of bread in the **toaster**. **Pat** poured the orange juice.

They put Mom's **breakfast** on a **tray**. **Pat** said, "**Let's put** a flower on the **tray to** make **it** look nice."

They **took** the **tray upstairs to** their mother. "Surprise! Happy Mothers' Day!"

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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).

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