Becoming a Speech Sound Detective Part 3

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NOTE: You will need to download PEPPER font to your computer to read the IPA symbols in this transcript. It is available at <http://www.waisman.wisc.edu/phonology/pepper.html>.

Welcome back for Part 3 of Becoming a Speech Sound Detective. I hope I didn't make your “head hurt” too much in the first two modules with that review of phonetics and phonological processes. I think, however, you'll find that building up and refreshing your skill in those areas will enable you to do some real-time adjustments in your assessments and your interventions for the benefit of the young people that we’re serving. So let's move into Part 3 now.

We're going to review three of the myths in this module. The first one is “standardized assessments provide all the information needed for therapy.” There's a lot of information in standardized assessments but I want to remind you that there are some things you should be doing in addition.

What's a really good assessment protocol for children with speech sound disorders? [Note: the speaker is reviewing the list on the PowerPoint slide.] Hearing screenings. I do hope that we are remembering how critical hearing is to the development of speech sounds and even mild hearing loss can be implicated in a child's speech production. So you want to make sure you have current hearing results anytime you are evaluating a child for speech sound disorder. I encourage you not to assume it was done or to say the child passed the new student screening, I would make it part of your protocol.

Oral mechanism examination -- you know I've done lots and lots of oral mechanism examinations and I found something of note ten percent - twenty percent of the time. It gets pretty easy to say “I'm going to drop this because I can watch what the child is doing. Everything is okay.” Well, you don't want to miss those few occasions when there is something very definitely going on within the oral cavity or with the child's ability to move the articulators. So, don’t skimp on the oral mechanism examination.

Standardized assessment -- when you do an assessment you want to choose one that includes both phonetic and phonological analysis. I think we understand well enough in our in the field that doing only one or the other doesn't give us enough information. There are a variety of assessments out are that provide this. The Goldman-Fristoe Test of Articulation – 3 has the companion the Khan-Lewis Phonological Analysis - 3 assessment. [Note: the speaker incorrectly said Goldman-Fristoe Woodcock.] You would want to get both of those. You use the same stimulus plates that two different analyses. Another one is the DEAP, the Diagnostic Evaluation of Articulation and Phonology, and there are others that are on the market. I urge you to make sure you have a current assessment in your repertoire that will give you information about both phonetic and phonological skills.

I encourage you to do a speech sample and I understand that there isn't time to do a speech sample but I think that you're going to find it incredibly valuable. I heard a presentation recently by a woman from the US Department of Education. She commented that in their review of IEPs of children with communication disorders they were surprised that there was no goal addressing improvement of the child's intelligibility. She thought, as a special educator, that was our purpose. This really struck me. I think we write our goals for correcting phonemes whereas our overall goal really should be improving intelligibility. Use of speech samples is the best way to get this information. The Percent of Consonants Correct is the measure that I recommend you complete most often. On occasion, you're going to have a child with vowel errors or cluster errors and you might do Percent of Vowels Correct or Percent of Consonant Clusters Correct. The way that it works is that you identify all of the consonants in the child's production that should be there, how many of the child produces correctly, and then you calculate a simple percentage. That becomes a very nice measure of intelligibility and growth of the child's ability. I've seen some examples where the child's performance on the standardized assessment doesn't change much in terms of the standard score or percentile rank, but I've seen significant growth in the number of constants correct. That's often because we have gotten rid of final consonant deletion or syllable reduction so the child is using more consonants and that's dramatically improving the child's intelligibility. It does take some time, but you can do it as a tallying activity. I think once you get the hang of it that you'll find it's valuable and it's not as onerous as it looks at first.

Stimulability -- the standardized assessments include stimulability testing and those are fine. The “gold standard” for stimulability testing is Adele Miccio’s probe that's been around for about 15 years, which we will spend a moment going over.

Let's talk about norms. We need to remember that norms vary, based on the criterion that are used for selecting “correct.” You need to identify if the norm says that if fifty percent of the children have the phoneme that's average or customary and then that becomes the age level of the norm. Other norms are based on the age when 75 to 90 percent of children acquire the phoneme. So it's reflecting the upper age limit at which most children master the phonemes. You need to make sure that you're differentiating the difference between those approaches. The other thing I want to make sure you remember is that you must use the norms for the assessment instrument that you select. You cannot use say the Goldman-Fristoe Test of Articulation – 3 and then use the Iowa Nebraska norms. You need to use the norms for the assessment because it is standardized. You need to base it on the normative sample on which that standardized assessment was based.

The Iowa Nebraska norms are very commonly used. [Note: the speaker is referring to a screen shot on the PowerPoint slide.] Obviously, this slide is not legible but you know that this comes in the VDOE Guidelines that are on the VDOE, Virginia Department of Education, website. Notice that these are based on the age at which ninety percent of children produce the phoneme correctly. So, these reflect where you have mastery for most children. I recently got the question - did I think these are going to be updated being that these are now 26 years old. Well, I guess the good news is that children's development doesn't change a lot as there is not a huge amount of difference between the Iowa Nebraska Norms and some of the norms that came out in the previous decades some 40, 50, 60 years ago. I think you can still have confidence in the Iowa Nebraska norms.

Another approach to looking at norms is to look at developmental classes for children with speech delays and Shriberg’s work, again it's couple decades old, that it's very well founded and you can go to the bank with it as they say. He has divided these in the classes of which are early developing, middle developing, and late developing. These data are based on children with speech delays. I think you look at that and say “oh yeah, there aren't many kids on my caseload that are missing those in the early developing row but I have a lot of kids on my caseload that are missing the late developing and then some on my caseload that are missing those middle developing.” Some other data that Shriberg gathered, which I think is informative, is how long it takes our children with speech sound disorders master phonemes. A quick look at this slide for these are the early, middle, and late developing phonemes. We see a typical period of development (for the early developing), so most children will develop these between a year and a half and two and a half years of age. Typical children have mastered them. They produce them correct ninety percent of the time by age three. The children that end up on our caseload master them by age seven. We see a similar delay here for the middle developing and for late developing. I think one of the things that we should be concerned about is how much later these kids are mastering these. It alarms me that we are taking so long, or we did so long 20 years ago (when these data were gathered), in helping these kids master these phonemes. I challenge you to try to get these kids in and off your caseload with mastery much more quickly so they can get back into the general curriculum and have speech that is not attention getting and is comparable to that of their same-aged peers.

I went over a good assessment approach. Some clinicians, many of them are master clinicians, just “do their own thing.” They've been seeing children with articulation errors for a long time. “I just have these 20 words I use and that as a basis to begin therapy.” I'm not sure that's really accurate. I think that we need to be looking a little bit more deeply. So we need to link with standardized procedures to make sure we know if the problem is developmental in nature or not, to identify the incidence of phonological process errors rise to a level of concern. Remember my comment that you need to have the phonological processing representing twenty percent of the opportunities or more? So you have to give enough opportunities to be able to identify that it was present. One out of five times is not sufficient, that's twenty percent, but that's not really enough opportunities. You need to look at stimulable and non-stimulable phonemes, considering the phonetic context, and you need to identify intelligibility. So these are standardized procedures, which give us the breadth of information that we want to use.

Percent of Consonants Correct -- I mentioned earlier. Typically, it's done with a speech sample of 200 intelligible words. They need to be intelligible because how do you know what the intended consonant was if you can’t identify what the word was. Now we are pretty good listeners. We can figure the word out, based on context. So it doesn't mean 200 accurate words. But if the child's word is unintelligible (you know you listen to it three times and you have no idea what the child said), you don't put that in your sample for the Percent of Consonants Correct. You need to transcribe narrowly and so that means you're going to be using diacritics. I would recommend you go back to the diacritics that we discussed in Module One. Then you just do the simple math to calculate percentage. Use a comparable approach for the Percent of Consonant Clusters Correct. This is an excellent vehicle for tracking progress.

Just a reminder to you about the growth of the inventory. Intelligibility -- at age two, strangers typically understand about half of what a child says and they are about eighty-seven percent intelligible to parents. This is not because of parents want to know what the child says; they just know what the child talks about. I have a two and a half year old granddaughter right now and I can understand most of what she says because I'm a good listener, being trained as a speech-language pathologist. Some things I don't know because it is her special word for a friend, for a toy and the parent is around her (my daughter's around her all the time), so she knows what she means by that word. By two-and-a-half to three, the child is intelligible to strangers and unfamiliar listeners about seventy-five percent of the time. So, if we have a child whose intelligibility to an unfamiliar listener is less than seventy-five percent, who is older than three, that's a real concern for us isn't it?

I mentioned the Miccio stimulability probe and you can see that this is in the DOE guidelines. I just selected a portion of it to put on this slide. The value of the Miccio is that it includes a large variety of contexts. We produce the phoneme in isolation when possible. It is pretty hard to do the /p/ completely in isolation; you got a little bit of a vowel after it. Then the Miccio includes with three different vowels -- /i/, with /a/, and with /u/. So, we're moving from front to back and from high to low in vowels. Then we have it in the context of prevocalic, intervocalic, and postvocalic. You notice I use those terms prevocalic, intervocalic, and postvocalic. We often say initial, medial, and final position, but I think this is more accurate because it is being clear about the fact that a vowel is adjacent to the consonant. It is a little bit different if you have a consonant adjacent. Is that really a medial consonant, or is it a final consonant (in the syllable). So, the term “intervocalic” is a bit more accurate.

So how would this work? [Note, watch the curser on the PowerPoint slide.] Let's go down here and do the /s/. So we would do it in isolation. “Look at me, listen, say what I say, /s/.” Then continue with /si, isi, is, sa, asa, as, su, usu, us/. Write down the percent correct. I encourage you to not just write in ✓ or X, or plus or minus, but to transcribe it. Write down the child’s error and write down the diacritic that assists you in doing your analysis. You don't want to just say that we have X number of phonemes where the child was stimulable eighty percent of the time. You want to look at the data and report the child was stimulable when it was prevocalic, or the child was stimulable with a high, front vowel. You want to do your analysis based on the position with respect to the vowel and then the vowel’s position within the mouth.

Let's use the results. On the Miccio, we found that the child produce the /w/ for the /l/ in /lu, ulu, ul/ but produce the l correctly in /il, ili, li/ and in /al, ala, la/. So you have some target words you're going to begin with. Based on the Miccio results, which ones would be most helpful? Which ones would be least helpful?

You can stop the recording if you wish to look at it for a moment. Let's take a look at the answer. In this case, the child will have more success with “lady, leap,” and “lamp,” when there was no low back vowel the child will have more success. So how do we use this in therapy? Well as we start therapy, we want the child to have success. You want to be in that zone where the child is beginning to feel success. Probably the fifty to seventy-five percent success rate keeps that children motivated, keeps them moving, and then you begin to slowly add contexts which are more difficult. You're going to stay with those that facilitate correct production and then slowly begin to add those which were challenging as shown on your Miccio.

Here's another example. We've got a child with an /r/ error. We did the Miccio we found that the child vowelized it for [ur], [ar], glided in [ru], [uru], [ra], [ara] so he was doing /wu, uwu, wi, iwi/. But, the child was correct in /ir, iri, ri/. So which of these words is going to be most helpful? read, write, rain, raw, and reach? Read and ride, in this case it matches the Miccio information about that high front vowel and that will be more facilitating. You want to start out by avoiding those with low back or neutral vowels. Not that we don't “go there,” but you want to start with success. You want to start with words and consonant vowel combinations that will facilitate correct production

Myth number five – “The Van Riper approach is best.” We've used this for a long time. Van Riper was an outstanding speech-language pathologist, one of the fathers of our field, and the approach he gave us works very well for some errors. Start out with isolation (/s/), then syllables (/su, us/), words (some), phrases (give me some); sentences (give me some apples). We've been using this for decades and it worked well, but it's limited with some of the errors that our children have. So, we need to look at the phonetic and phonological processing errors to determine the best approach for therapy. If we go back to this approach, the old Van Riper traditional approach, it works very well for single phoneme phonetic errors. It does not work well when we have a child with multiple errors or phonological process errors.

So in your phonetic analysis you want to do an analysis of manner, place and, voicing. Which manner categories, which place categories are challenging. Does the child have difficulty with the voiced and voiceless combinations? You want to look for phoneme collapses. This is like a favorite sound. The child reverts everything to /n/or /b/ and it doesn't seem to matter, there doesn't seem to be a pattern to it. They revert a stop, they revert a fricative, they revert a glide. They revert other bilabials, they revert velars.

You want to look for consistency of error patterns. You want to look for consistency when the child is saying multisyllabic words; you want to look for consistency in conversation. For example, you want to pick it up in your Percent of Consonants Correct. [Note. The speaker made a correction to the slide. “That should be PCC with the closing parenthesis, not a PCC “0” on that slide.”]

You want to analyze the vowel context in your stimulability testing that we just did on the Miccio. And, you also want to compare it with the developmental norms. Again, as a reminder, you must use the norms for the assessment there are using. You may pull out the Iowa Nebraska norms in addition but make sure if you're using the new Goldman-Fristoe Test of Articulation - 3 and its companion the Khan-Lewis – 3, you need to use those norms.

Phonological analysis - you want to make sure you're analyzing patterns present in over twenty percent of the opportunities. That error could be an isolated error pattern, it can be an error pattern the child's working on developing, or it could actually be a phonetic problem that just happens to look like a phonological process error.

You want to look for consistency again in conversation so you want to take a look. “What did I see what I did my PCC?” “Am I seeing the same pattern of final consonant deletion, cluster reduction when I took my speech sample that I saw on the standardized assessment?” You also want to make sure you're including information from the oral mechanism and the hearing screen.

There are a couple of other areas to look at. For example, are there challenges in speech perception? Why are we focusing on speech perception? We did that very commonly early in our field. We always started out by perceiving the phoneme and then we begin to recognize that many children didn't need that step. It looks like about seventy percent of children with speech sound disorders hear the difference between their production and the correct production very well. That's a good thing; it makes it easier to self-monitor and to self-correct if you can hear the difference. The flip side of that is about thirty percent of children can't hear the difference. That's going to make it harder for those children to self-monitor, to self-correct. So I urge you to do a quick analysis by asking the children to identify your correct and incorrect productions to see if they can hear the difference. If they cannot hear it, that will be an additional area you want to work on so that children can do some self-monitoring so they can identify when they’ve made the sound and error and learn how to correct it.

Phonological awareness -- children with severe speech sound disorders are at high risk for phonological awareness problems. Lots of research has been done in that area. Barbara Hodson, who created Cycles, modified cycles 10-15 years ago to add phonological awareness activities in recognition that the typical child with a phonological process problem also had a phonological awareness problem. So, she started working on boosting that while working on the child's intelligibility. Recalling that phonology is part of language it isn't surprising that some of the young people we see with speech sound disorders also have language problems. That may be an area we need to include as we are planning our intervention.

Do we have a child who knows he or she has a speech sound disorder? Does a child care about doing anything about the speech sound disorder? Know I know those of you listening to this have a basket full of tricks that you use to get the children motivated, to address their speech sound disorder. You also want to be looking to see if there are errors that suggest childhood apraxia of speech.

I mentioned this about the speech perception errors, that about seventy percent of children with speech sound disorders have no difficulty in perceiving difference between their error and the targets sound. So when should we address speech perception when we have a child who can't hear the difference? We need to address it so the child can be able to identify his or her error and make the correction. Clearly, we don't want these kids relying on us; they need to be taking responsibility for their own production. I'm reminded of a speech-language pathologist I worked with very early in my career that had difficulty with the child carrying over outside of the speech room. Perhaps that dependency on the speech-language pathologist was well entrenched. She took the school picture of herself and taped it on the back of the chair in front of the child and so the child was seen his speech language pathologist while in the classroom. A pretty clever activity, pretty clever technique.

I really want to encourage you to get comfortable doing probes. A probe is when you come up with your own word list or you borrow it from one that's available and you evaluate how well the child is doing in a variety of contexts. There are a couple probes that are available in the marketplace. Ken Bleile has a couple books out that include a lot of probes you might just search for him. Wayne Secord got a couple books out that also include probes and he's got the S-CAT, the Secord Contextual Articulation Test. Those might be available to you to use or you can create your own and assesses with stimulability. It helps you identify the key phonetic context, where you're going to start your intervention. By doing probes periodically with the same word list you can see “now, look, we're beginning to generalize.” “I'm beginning to see that the child is carrying over this correct production to a more challenging phonetic environment.” So it's often a good idea to have a list of words with varying phonetic environments and to repeat this regularly during your intervention.

This is an example of maybe a probe you might have for a child that exhibits fronting -- key, cat, code, king kay, and cane. The one on the right side is a probe that you might have for a child that exhibits stopping -- push, shoe, sheet, fish, she, ship. Some of these have a phonetic context that will facilitate and then some have a phonetic context that will be challenging. So think about those on this slide. [Note: Pause.] Now let's take a look at the next slide and see what we think.

So for the child with the fronting error, all of those words might be helpful except cat, coat, and cane because of the influence of the final consonant (alveolars /t/ and /n/). [Note, the speaker misspoke and referred to velars on the video.] The probe list that we had for the child who was stopping, we would expect most of the words to be helpful except for “sheet” and “ship” because we've got the influence of the plosives in there. It's helpful as you're looking at your probes to identify – “I’m expecting certain words on here to be helpful and I'm expecting certain words on here to be challenging” -- and keeping track of those data assist you in watching the child’s generalization of skills.

So, here's an example of a probe for you to create. You have Billy who has errors with the /s/ phoneme. Develop a probe list of words that you might use to facilitate correct production. In this case, you want words that will make it helpful to produce. Think about vowels or consonants adjacent to /s/ that facilitate place, manner, and tongue tenseness. So if you wouldn't mind stopping the recording here, come up with a list of about 15 words.

Here's a list that that we included. “Seat, sit, set,” -- those are going to be helpful because you've got a high front vowel that's tense and you've got the final consonant of /t/ in the same place. “Peace, miss” -- again, you've got a vowel that's going to be helpful and you haven't moved too far back in the mouth. Move now to bilabials, also a little bit further away from the alveolar. “Spin” and “hips,” you've got a combination of a cluster here and so we're looking to see if having a cluster with an adjacent /p/ is helpful. You notice that /p/ is voiceless so we're not switching voicing on the child for that example. “Steam” -- this is often really helpful because and we've got a high, front consonant followed by a high, front vowel. That combination can be very helpful for many young people as they're trying to get that /s/. “Snip, snake” -- you've got a comfortable place but now you're changing voicing. That’s helpful to see the influence of switching over to voicing. “Taste” might be helpful here because you've got the influence of the alveolar placement for the/ /t/ both before and after the /s/. Although the /3/ is not the highest front vowel, it is a high, front vowel. [Note: Speaker made a side comment. I really wanted to spin on my list because I put it on there twice for you.]

Now, words to avoid – “slim” and “slow.” Why do I think you should avoid those? Well if you've got a child with lateralization, you are just enabling that lateralization by putting the /s/ adjacent to an /l/. However if you've got a child with lateralization you're going to want to probe periodically for /sl/ blends to see how well that child is able to maintain the tongue tenseness for this and then relax a little bit for the /l/.

Ok, so here we have some probe data and what might this suggest for you for intervention? So you've got an /r/ probe and here we have the child says /c2d/ for “shred,” /bitc rob/ for “beach robe,” /krqb/for “crab,” /p28nt/ for “print,” /g3]m wum/ for “game room,” /hizr9a/ for “he’s wrong.” In the vocalic R (/6/) probe, we have /d2t/ for “dirt,” /c7g1/ for “sugar,” /f72i/ for “furry,” /b85d/ for “bird,” /st05/ for “star,” and /sk2rs/ for “scarce.” So what does this tell us about phonetic context? What does this probe suggests is going to help the child in the ones that are going to be more challenging? So take a look at that. Stop the recording if you need to ponder.

So what do we think? I would pair the /r/ in clusters, medially, within the word or in abutting words, as in “beach road.” That's a really good example of abutting consonants -- that having the consonant in the word immediately before it gets your tongue in the right position. You have “beach,” which ends with /C/, which is palatal, it's tight, it's high. That appears to facilitate production of the consonantal /r/ in beach robe. We notice that the child has more success with a palatal alveolar or velar consonant that is adjacent. We also notice that to get tension for the /6/, it seems to do better in a stressed syllable or with abutting consonants and so having a constant adjacent seems to assist with getting the necessary stress for the /6/. I hope that this gives you some ideas about how to approach Rs and how your probe can assist you and in looking at phonetic context to choose your target words.

Again, let’s talk about phonetic context in selecting targets. What's wrong with some of these? [Note. The speaker is referring to words on the PowerPoint slide.] We've got a child with the fronting error and we give them a stimulus word “cat.” A child with a vowelization error we give the stimulus word “water,” and a gliding error and we give them the stimulus word “blue.” So, what's wrong? Cat. The error phoneme is in the word the child produces the /k/ as a /t/ so you're just facilitating that error. Vowelization, -- the /wE/ facilitates that vowelization with the /w/ sound, and for gliding you're going to get the child more likely to say /bwu/ for /blu/ because of the lip rounding of the /u/. So these words would not be facilitating. We would switch that to working on fronting by not having that compounding influence of the alveolar. Vowelization -- I would not include any words with the /w/ early on and for gliding, I would not include any words with the /u/ in it early on.

Intervention planning. You're going to decide if you need to do speech perception training and, if so, what phonemes will we use.

Is this a phonetic error? If so, which phonemes are we focusing on? Is this phonological process error? What approach might we use? Perhaps we're going to use a contrasting approach, maybe minimal pairs, multiple oppositions, and maximal opposition. Which phonemes? As you use these approaches, which are very successful approaches, I think you'll find that completion of these modules will really assist you in choosing your words and making progress with these approaches. These three contrasting approaches, minimal pairs, multiple oppositions, and maximal oppositions, are based on choosing word pairs that differ either minimally are maximally in manner, place, and voicing. Do we need a childhood apraxia of speech approach and if so what characteristics will we address?

Do we need to pair this with language intervention? Are there certain phonemes and processes that we need to pair with language? For example, if you've got a child with final constant deletion, you're probably seeing morphological errors because of the importance of final consonants. You might be pairing inclusion of the final consonant with the language task of making plurals, making verb tenses (present or past). That helps the child see the importance of including that final consonant.

Some children are going to need an intelligible core vocabulary. Their intelligibility is so poor that there's a high level of frustration so you may be teaching the child how to say certain keywords in the child's life more intelligibly. I remember a presentation I saw by David Hammer, an excellent speech-language pathologist, who was working with children with childhood apraxia of speech who couldn't say his name “Dougie.” He could not get that velar. And so he (David) came up with a substitution and the child's production became bit more like /d4di/ (using an interdental stop to approximate the /d/). The child had two stops in there, so was much closer to the child's production. That's the approach of an intelligible core vocabulary. You want to choose words that are really important in this child's life and so that the people around them know what they say. I worked with a child with severe unintelligiblility, who couldn't say her name that had a /k/ in it and that became the focus in this intelligible core vocabulary. I wouldn't have worked on /k/ originally but it was obviously important for the child's name. I asked the mom at the next session how things went and she said, “Oh, there were tears all around.” I said “oh, what's wrong?” She replied, “nobody's ever heard her say her name before.” I think that speaks to the importance of getting that core vocabulary.

How do you evaluate progress? Standardized assessments are not the way to evaluate progress. Percent of Consonants Correct and probes are excellent ways to evaluate progress. How often do you want to assess progress? Every month to six weeks or four to six sessions is really a good approach to use.

I want to just take a moment to remind you about “SLP-induced” errors. That “whoops I didn't mean for this to happen.” Epenthesis -- the adding of the schwa amidst a cluster as in /s1pi. /, We've added that schwa there. Or adding the schwa at the end of a word when it ends with a stop as hope /hop1/ or speech /spi.1/. In that case, it ended with an affricate and the same thing can happen. It occurs most commonly with a stop, so within consonant clusters, between abutting consonants like /het1d9g/, or after final stops. Duration errors -- sometimes we have been stressing the duration of continuants and we end up with them occurring for too long of a period in the young person we are working with.

Allen Kamhi, in a great article he wrote for *Language, Speech, and Hearing Services in the Schools* back in 2006, reminds us that the most efficient approach “gets something for free.” For example, the problem with the old Van Riper approach is that you don't go on to the next phoneme until the child has mastery of the previous phoneme. Many of us realize that we didn't need to do that when we had errors, for example, on both /s/ and /z/. We would work on them together because they are similar. You've got the same manner the same place; you're only dealing with voicing differences. And so, why not get the child through speech therapy much more quickly by working on them together? A phonological processing approach definitely “gets something for free.” If you've got a child that is stopping “everything under the sun” and he doesn’t have that sense of the continuous airflow, you're not going to work on each one of the nine affricates separately. You're going to be working on them as a group, getting the child to focus on constricting the airflow, not stopping it. The likelihood is that you all see a dramatic change in all nine of the fricatives rather than going one by one.

So evidence tells us that we do better if we teach several sounds or processes at a time. That we should provide many opportunities for client practice, that you should be challenging yourself to get the most possible opportunities for client practice in every session. The only way to get better at speech sound disorders is to practice speech. An approach that many folks have found is very helpful is to do 10 minutes, multiple days of the week, sometimes four or five days a week. Perhaps doing therapy right outside the child's classroom or in the back of the classroom. Then you don't lose that time you have walking from one place to another. You can get10 minutes of good drill work in.

Assess continuously. You don't want to continue to work on something that the child successful with it. You don't want to continue to work on something if the child is not being successful. If the child's performance is consistently below 25 percent, you need to change your approach. If the child is not moving progressively up towards 75 percent you need to make some adjustments. Research tells us we don't need to continue past eighty percent accuracy. A lot of research mentions that children continue to make progress on their own once they reach that eighty percent measure.

So John Lubbock says “we see what we see depends mainly on what we look for.” So hopefully in these three modules I've given you an idea about what to look for when you're working with children with speech sound disorders. I hope you've gotten a couple new ideas that you can take away with you that will make a difference with the children on your caseload tomorrow.

So -- these were the myths we talked about. Hopefully you are in agreement with me that these indeed are myths. I've got a couple reference pages here [Note – on the PowerPoint], a lot of the items that I referred to are listed here in the two reference pages. I want to thank you very much for your participation in these three modules and best of luck with your speech sound disorder therapy. Thank you