Becoming a Speech Sound Detective Part 2

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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>.

Hi, I’m Lissa Power-deFur again. I'm back with you for Part Two of Becoming a Speech Sound Detective. As with Part One, there are going to be some activities for you to do so I'd like you to be prepared to take a little more than 30 minutes with this so that you can stop the recording and do the activity and then turn the recording back on. All right. Let's get started.

Myth number two. “Phonological processes are merely areas of substitution and omission.” Well, phonological process errors are really quite complicated. We've come to understand, over the last couple of decades, that phonological processes or patterns are systemic sound changes that affect classes of phonemes or phoneme sequences resulting in simplification of the production. My source is this book by Rob Lowe from 2010 [Note. See PowerPoint slide.] This is a workbook that, if you're feeling a little bit weak in your knowledge of phonological processes, you might look for. It's relatively inexpensive. It gives you some good background and some activities to do.

Let's go back over this definition again, phonological processes or patterns. You will see both words used and so just put them together as synonymous in your repertoire. It's a systemic change; it’s not episodic. It is because the child has a rule system that is not correct and it affects the whole class of phonemes or the majority of the class of phonemes. What it does is, it simplifies the pattern, and so we end up seeing the child using phonological patterns that you might see in a younger child. Remember, this is a language problem at this point. Phonology is one of the components of language and what we're seeing is that the language system related to speech sound is in error.

Let's first look at the syllable structure processes. We have syllable deletion -- the child completely deletes a syllable. Reduplication – the child takes the same syllable and repeats it; “baba, wawa, mama.” I think that's a good example of how this is simplification. We see that commonly (we’re excited about that) in a 12-15 month old. We're not excited about that in a 36-48 month old. It is a simpler pattern we see early in the acquisition of speech.

Epenthesis is adding a schwa where it shouldn't be as in /s1w8m/ /s1tim/ opposed to “swim” and “steam.” Or, it could be at the end as in /hqt1/. So, we're adding a vowel, which typically becomes a schwa, where it shouldn't be.

Final consonant deletion -- common pattern that we see in young children. We see /bq/ for “bat.”

Initial consonant deletion -- we see /qt/ for “bat.” This is not as common in young children. It's something I'm going to be alerted to in a toddler to see if that disappears on its own and I've seen cases where it's hasn’t. So it's a red flag for you to watch for in that child's development.

Cluster deletion -- they just don't have any cluster at all and so instead of “steam,” they say /im/. Cluster reduction or substitution, that instead of “steam,” they say /tim/ and so they have reduced it from two consonants to one or a substitution they might do something completely different like /'im/ instead of “steam.”

What I'd like you to do is take these structures that we just talked about here, you might want to look at this list to refresh your memory, and apply it to these patterns. So we've got a child says /nqnq/, a child says /me/ for mop, who says /3]/ for say, says for green /in/ for green, says /t3] n/ for plane, says /m4d1/ for mud. So stop the recording, fill these out, and we'll see in a moment.

Okay. How'd you do? So “banana” we have syllable reduction. We have two syllables instead of three. You might have thought that was reduplication but we've seen is that they've got the last two syllables and /nqnq/ and we've dropped the /b/. /me/ is FCD, final consolation deletion. (I'm sure our abbreviation FCD is in your notes.) /3]/ is initial consonant deletion. /in/for green is cluster deletion. There's no evidence of a consonant there at all. Cluster reduction -- we've got /t3] n/ for “plane.” It's kind of an interesting one. They've got the voiceless plosive of the /p/ and the placement of the /l/ to create this cluster reduction of /t/. That's a process called coalescence. And last, we have epenthesis, /m4d1/.

Ok, of these which ones are going to have the biggest impact on a child's intelligibility? Those where we have deletions. Final consonant deletion, initial consonant deletion, and cluster deletion. So, when we have a child who's omitting, deleting consonants it has a huge impact on intelligibility.

Let's look at assimilation -- labial assimilation, velar, nasal assimilation. These are all assimilating a placement. So if there is another labial in the word we tend to assimilate that in an error pattern. Velar, if there's another velar, we tend to assimilate that. For example, a child who might say /kqk/ for “cat,” we've got some velar assimilation going on there that the child has a velar for the first phoneme and they’re assimilating that tongue placement and replacing a /t/with a /k/. That isn't necessarily a substitution pattern of /t/ for /k/, which is what we used to write down. It might be backing, but we definitely know it's assimilation and we need to look at a lot of productions of the child to see which it is.

Nasal assimilation -- one nasal in the word influences another. We move on to voicing where we are more likely to add voicing before or after the vowel depending on whether the consonant adjacent to it is voiced. Metathesis is inverting -- /p4sk2t8/ instead of “spaghetti.”

Coalescence, I just gave you that example from the previous one where they back here we had /t3] n/ for “plane.” This is an example of that coalescence. We got that /p/, he voiceless stop here plus the placement of the /l/ and produce the /t/.

Another practice opportunity here. You have a child that says /bop/ for boat, g9g8/ for doggy, /tqt/ for cat, /n4n8/ for sunny, and /dqg/ for tag. You'll see pretty readily how easy it is to label these assimilation patterns. Stop the recording and come back in a moment.

The first one is labial assimilation -- that both of the phonemes are labials. The influence of the first one causes the /t/to be changed to a /p/ -- labial assimilation. Velar assimilation, you've got the /g/ in doggy in the intervocalic position that's influencing the initial phoneme to become a velar. Here we have alveolar assimilation. We’ve got the final /t/, which is influencing the initial consonant here to become an alveolar. [Note – see PowerPoint slide, the word was “cat.”] “Sunny” -- we've got nasal assimilation, that /n/ here. That intervocalic influences the initial consonant to become a nasal. Then here our last one is an example of voicing. We've got a voiced phoneme at the end, the /g/, which facilitates prevocalic voicing assimilation.

Then we have some substitution patterns with phonological processes -- stopping, stridency deletion, fronting, depalatalization, palatalization, affrication, deaffrication, backing, and alveolarization. [Note – see PowerPoint slide.] What we have here is that when a phoneme shouldn't be stopped, it becomes stopped. When a phoneme should have stridency, it's reduced. So “Sam” becomes /tqm/ and that can be both stopping and stridency deletion. Fronting -- we were moving it in front of that placement of the /c/. In /tqt/ for “cat,” we have an example of fronting as well as velar assimilation. Depalatalization, what you're doing is you're move the tongue away from the palate. So in “shoe” the /C/ is a palatal consonant. If we say /su/, we are depalatizing it. We are moving away from the palate. It also could be alveolarization, because we are moving it to the alveolar ridge.

Palatalization is moving it to the palate where it shouldn't be there so for “sue” (/SU/) the child might say “shoe” /CU/. So he’s moving it back to the palate. Affrication and deaffrication are our opposites here. Affrication is making something an affricate when it shouldn't be. A child who says /ts4m/ for “some” (/S4M/) is adding /t/. Now you've got a little bit of stopping that's going on, but we also have produced an affricate there. Or the child that is supposed to be saying “shoe” and says /.u/. That's a more clear affrication because we know that /. / is an affricate in Standard American English.

Deaffrication -- when you're dropping either the stop or the fricative portion of the affricate. So /.u/ becomes either /tu/ where you're dropping the fricative portion or /CU/ if you're dropping the stop portion.

Backing and fronting are opposites of each other. Backing moving everything to the back of the mouth and so in our “cat” example, it became /tqt/. We move the /k/ forward. Then, if we move it back, it would become /kqk/, because we are moving it back.

Al right. Guess what? Another opportunity to practice. Label these particular patterns for me. Here we have a child who's supposed to be saying “sheep” and says /tip/, supposed to be saying “seat” and says /hit/, says /.o/ instead of “show,” says /d4mp/ instead of “jump,” and says /dzqm/ instead of “jam.”

Let's see how you did. Stopping -- so we've got a child who is stopping the frication to make it a /t/. Also, might have some depalatalization there, right? Because you've moved it forward from the palate. You also could call that alveolarization. So we've got three different potential patterns with one production. Well, yeah, that's kind of the way it is with kids’ rule systems, isn't it? But, it does help you identify which process the child is using and you look to see if there is pattern. The rule of thumb for phonological processes is that you look at the number of opportunities and if it’s present in at least 20 percent of the opportunities then we have a pattern error that we need to address.

Our next one -- the child says /hit/ for “seat” and so this child is dropping stridency. Child says /.o/for “show”-- adding affrication. /d4mp/ for jump, they’re dropping affrication -- that's deaffrication. /dzqm/ for jam, this is alveolarization. They've moved the /j/, which is a palatal, up to the front both the /d and the/ z/ are produced at the alveolar ridge. It's still an affricate. That's where that close transcription is so important. We wouldn't want to say merely that this is incorrect. This child understands the concept of making an affricate, which is a good thing. We just have to help the child move it further back in the mouth.

What logical process errors do you see here? Let's see what you found out. We have a child who says /bu/for “book” and /me[/ for “mouse,” so we have final consonant deletion. The child says /wo/ for “slow” and /k9/ for “claw” and so we've got some gliding. You've got that /w/ for /l/ and we’ve got cluster reduction. /ku/ for “shoe,” /gok/ for “goat,” we've got a child with backing. A child says /d4d/ for “judge” and /ju/ for “zoo” -- we've got stopping. We also have affrication in that /ju/ for “zoo,” but notice that there's a commonality there. The child is stopping the airstream and so I would focus on the fact that the child doesn't know how to continue the airstream appropriately for that affrication. Then we have /tsop/ for “soap” and /mq./ for “math.” We've got affrication for both of those.

Here's another one to try. Look at these two youngsters and write down for yourself whether you think it's a phonetic and phonological error. Let's take a look at Sam he produces all phonemes correctly except for the alveolar fricative. So he's got /sI4n/ - that dentalization of “sun” also in /b4sI/and /zIu/. You notice I really didn't do interdental. I just did a dentalized version. [See the video for production.] Tom has producing /t4n/, /p4n/, /bud/, /ne]p/, /b3]d/, and he produces “step” as /t2p/, “blue” is /bu/ and “grew” as /gu/. What do you think?

We have a phonetic error with Sam. He's got dentalization of his /s/ and /z/. So that is simply a matter of moving his tongue up to that alveolar ridge. But Tom's got phonological processing errors. He’s got cluster reduction where he is reducing these three clusters to single phonemes and we see stopping. He was stopping the /s/, stopping the /f/. Both of these have the same placement and same voicing. Stopping the /z/ and he's got the same placement and the same voicing, and /ne]p/for “knife,” again same voicing and placement. /b3]d/ for “beige,” again he's stopping. So we would be focusing with him on getting rid of that stopping and getting an airstream moving. Then we would want to help him add a second element to his clusters because that will improve his intelligibility.

Take a look at this child who’s three years six months. Remember what I said about twenty percent of opportunities. I'm giving you a short sample here but assume the error is present in at least twenty percent of the opportunities. So, look at these. We have child who supposed to say “swing” and says /sIwia/,”shovel” and says /t4b1l/, f or “thumb” the child says /fum/, for “knot” the child says /det/, for “code” says /to[t/, for “fishing” says /f8t8a/, for “zoo” says /du/, and for “tree” says /twi/. So go through and identify the errors and then decide what would be your intervention.

What we have here is dentalization on the /sw8a/, stopping for /t4b1l/, stopping for/fum/, stopping for /det/, fronting for /to[t/, stopping for /f8t8a/, stopping for /du/, and gliding for /twi/. Knowing that this child is three and a half, we are probably not going to be as concerned about this gliding for /twi/ because we know that /r/ is one of the more difficult phonemes to produce and it's not mastered well up into seven or eight years of age. The dentalization of the /s/ suggests that /s/ is probably emerging. I think I'm going to be focusing on this stopping issue. This child is stopping the airstream, he doesn't really know how to continue it, so I would focus on teaching continuance. I wouldn't focus on it on just working on the /c/ by itself or /'/ by itself. I would work on it in the sense of teaching the fact that air continues as opposed to stopping it and working on it as a manner class.

Here's another one. What would you use in this intervention? We have a child who says /t4/ for “cup,” /wet8/for “rocket,” /w38/ for “rake,” /d4/ for “gum,” /wqd1/ for “wagon,” /p8/ for “pig,” /t4/ for “sun,” /be]tit1l/ for “bicycle”, /he[/ for “house,” and /tu/ for “shoe.” Take a look at what processes are present and then think about what you would address in intervention.

We've got a lot of final consonant deletion here, don't we? We’ve got some gliding, a little fronting - two examples of gliding, we've got four examples of fronting, and two of stopping. But final consonant deletion is overwhelmingly present there and we know that dropping consonants has a hugely negative impact on intelligibility. So, in this case I would focus on addressing the final consonant deletion. Secondarily, I would look at those velars. They are early developing and I would try to get rid of some of that fronting. My first focus, as I said, will be final consonant deletion.

What are some areas of concern as we get the phonological processes? At any age, if you've got an initial consonant deletion you really want to be paying attention to that. It is not common in the development of young children to drop the initial consonant and it sometimes is an early marker of childhood apraxia of speech. However, we don't say the child has initial consonant deletion therefore he has apraxia. It is one of those features that I would watch. I would do a phonetic inventory regularly. A phonetic inventory is where you just write down exactly that child says. This works very well for young children who don't have a very large vocabulary but becomes pretty challenging as the children get a lot larger vocabulary. At that point, I would move on to something more like Percent of Consonants Correct or some standardized assessments.

Backing is also not done commonly in young children so if I'm seeing backing, I’m going to be concerned. That's at any age. After age three, if we've got a child who's still deleting syllables, who has significant cluster deletion, not just ten percent of the time that is of concern. (Cluster deletion meaning there's no consonant present.) It's not that they've dropped an element of the cluster but they have completely dropped the consonants. Voicing errors -- voicing errors are very uncommon because that's one of the things most children are able to do pretty well.

Other errors that we are really concerned about -- lateralization. A lateral /s/ is not a developmentally appropriate error. You never see it developmentally in a child and so no matter what the child's age if you've got a lateralization of the /s/, you're going to want to try to address that.

This is not a presentation on childhood apraxia of speech but any time at any age if you see characteristics of childhood apraxia of speech you want to be able to attend to those.

Thank you very much for your engagement in module 2. I'll see you again in module 3.