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Incorporating Phonological Awareness and Orthography into Speech Sound Treatment

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SpeechPathology.com Course #9245

- [Amy] Hi, good afternoon and welcome to today's speechpathology.com webinar. We're very pleased to have Dr. Kelly Farquharson joining us today, who is going to be presenting on Incorporating Phonological Awareness and Orthography into Speech Sound Treatment. Kelly is an SLP and associate professor and director of the Children Literacy and Speech Sound Lab at Florida State University. Her research interests include school-aged children with phonological and language disorders, the effect of those disorders on the acquisition of literacy skills, and the cognitive, environmental and academic factors that contribute to phonological and language disorders. Prior to pursuing a research degree, she was a school-based SLP in Pennsylvania. So, welcome, Kelly, and thank you so much for joining us today.

- [Kelly] Thank you, Amy. Thank you so much for having me back at speechpathology.com. I'm really glad to be here and it's always great to work with you guys. So, I appreciate your willingness to give me the opportunity to talk about this topic today. So, as Amy mentioned, I'm gonna be talking about incorporating phonological awareness and orthography into speech sound treatment. I do have on this first slide here, some contact information, which I'll show you again at the end of the webinar, but I do want to encourage you to follow along some of my social media channels. So we have an Instagram account, classlab_FSU and we're active on Facebook and Twitter as well at literacyspeech. And these channels are opportunities for us to engage with clinicians outside of structured webinars and presentations like these. So, I would love the opportunity to continue today's conversation through any of those channels if there's interest to do so. These are my disclosures. Here's my contact information again this time, sorry, including my website, which is classlab.cci.fsu.edu. And I wanted to actually thank the speechpathology.com staff and individuals for allowing me to develop this content today. I presented a webinar through speechpathology.com last year on the connections between speech sound production and literacy skills. And after that webinar, I got a lot of great questions from

practicing clinicians across the country who really wanted to dig a little bit deeper into some concrete examples of how they could implement some of the practices we're gonna talk about today. So, I'm thankful for that feedback because that is actually what led to the inspiration for today's webinar, talking about explicit examples for how we can incorporate phonological awareness and orthography into speech sound treatment. So I'm thankful for those questions and for the opportunity to expand my thoughts on how we can do that in our treatment sessions. So there are a few learning outcomes for today. After this course, my hope is that participants will be able to explain why phonological awareness skills should be included in a speech sound treatment session.

Participants will be able to describe how one phonological awareness skill could be incorporated into speech sound treatment, and then identify one new way to incorporate orthography into speech sound therapy sessions. So, I'll revisit each one of these learning outcomes as we progress through so that I can make sure that everyone's on the same page with which learning outcome we're talking about in that time. So let's just start with phonological awareness. Some of this information may be information that you've heard before or seen before, but I really like to spend some time making sure that everybody's kind of thinking about these skills in the same way. And so this graphic is from the chapter by Hollis Scarborough in the "Handbook of Early Literacy Research."

And this is commonly referred to as the reading rope. So there's a lot to take in here. Let me just kind of orient you. So you've got on this side of the rope here, this idea of skilled, fluent execution of reading. This is where we expect most kids to be by about third grade, maybe fourth grade, sometimes that can really shift depending on the specific curriculum. But by about third or fourth grade, we're expecting kids to have this skilled, fluent execution of reading. And that importantly includes two major constructs. And this is a depiction of a theoretical framework that's very commonly

used in reading research called the simple view of reading. And the simple view of reading suggests that reading comprehension, which is where this green arrow is right here, this skilled fluent execution of reading, which leads to comprehension, is comprised of language comprehension and word recognition. So this language comprehension piece, as you'll see, there's a variety of language-based constructs and skills that fall into the idea of language comprehension. So we've got semantics and grammar, text processing, background knowledge, verbal reasoning, metacognition, each of those corresponding to one of the threads that are woven into this rope. And then we've got word recognition. Word recognition includes skills like phonological awareness, decoding, and sight word recognition. And of course, each of those corresponds to a thread that's woven into the rope.

So each one of these skills are really equally important for reading comprehension. And it's important for us to have a sense of how much each of these skills may contribute to a child's success. Or if we're seeing a child who is having difficulty with reading comprehension. It's really important for us to get to the bottom of what the problem could be. And so we really need to do a pretty in-depth assessment to figure out are we seeing weaknesses in the areas of language comprehension, or are we seeing deficits in areas of word recognition? All of these fall under the scope of practice for speech language pathologists. But what we're gonna focus on today is phonological awareness in particular.

And we will talk a little bit about sight word recognition as well. But I wanna highlight a few things here. Phonological awareness here is listed as one kind of solitary skill. And what we're gonna talk about is why it's important to not treat phonological awareness as a splinter skill. So I'm gonna go into some more details about what I mean by that. What I really want participants to be thinking about here is the importance of incorporating phonological awareness and contextualizing it in a way that makes it meaningful, so that it's not a drill-based activity that's kind of decontextualized and

separated from how children use and think about language, but it's really contextualized in a way that helps it make sense for why a child would need those skills. So, importantly, we're gonna spend a lot of time talking about phonological awareness, but I do also want participants to remember in the grand scheme of things, there are a lot of skills that contribute to this goal of third grade or fourth grade reading proficiency. And phonological awareness is only one of those skills. So we are gonna dig into it a lot today, but it really is only one skill that's necessary for this end goal of skilled fluent execution of reading. So we're gonna define this skill as your sensitivity to the sound structure of a word.

And this is often measured by looking at a child's ability to rhyme or to blend phonemes together, or to delete a specific phoneme from a word. But importantly, phonological awareness is much more than just rhyming. And so rhyming is an important skill, but we've all seen kids who have a hard time with rhyming but actually have a little bit more advanced skills in blending and deletion that can be quite surprising when we see those things.

And so it's important to acknowledge that that may be a child who has some underlying phonological awareness deficits, but there are certainly some strengths that that child has as well. So we want to think about rhyming, but phonological awareness is much more than rhyming. We've seen longitudinal research support a causal link between phonological awareness and early reading. And this is from pretty extensive research from a data set that was collected in Iowa, a longitudinal epidemiological study that looked at the contributions of language to longterm reading outcomes from kindergarten through 12th grade. And across different time points, this study has consistently, this group of researchers affiliated with the study have consistently found that children who have good phonological awareness as early as kindergarten end up as good readers in second grade and fourth grade. And children who have poor phonological awareness in kindergarten end up as poor readers in second grade and

fourth grade. And so as much as we've said that phonological awareness is only one skill that contributes in the reading rope, it's still a really important and highly sensitive one to the prediction of longterm outcomes. And so when we talk about phonological awareness being more than rhyming, I think it's helpful to kind of think about it along the continuum. And it looks like maybe there is a small formatting problem here. I apologize. I'm gonna suggest that easier, you can just pretend that that word is right here, and that harder is right here. And so we're really thinking about this continuum of easier skills to harder skills here. So, we've got an easier skill along this continuum, is a skill like rhyming. And so this can be as simple as asking a child to identify if two words rhyme. So do cat and Matt rhyme?

Or having them generate a rhyme for you, which is a little bit more challenging. So tell me a word that rhymes with cat. So they've got to come up with that word on their own. And I say that this is easier, but that's all relative as well. So it's easier in the grand scheme of this continuum of phonological awareness skills, but it is not necessarily an easy skill. And if you've ever tried to teach the concept of rhyming to a child, then you probably know exactly what I mean because this can be quite challenging to teach because it is a little bit abstract too. And that's gonna be particularly true for children who have phonological impairments.

When that system is impaired, there's certainly gonna be some difficulty in learning more complex ways to manipulate phonological skills. We've got rhyming and then we've got things like sentence segmentation where manipulating or segmenting the number of words in a sentence. And then we can move into segmenting language into smaller units. So we're gonna move from segmenting sentences into their individual words. And then moving into taking those individual words and segmenting or blending those into their syllables. From there, we can think about identification of initial or final phonemes. So what sound do you hear at the beginning of the word cat? Or can you tell me another word that starts with the same sound or ends with the same sound as

cat? And then we've got manipulation of individual phonemes. And so here is where a lot of our deletion tasks come in. Phoneme deletion is a very predictive skill of later literacy success. So say the word cat without ck, so deleting that initial k sound from that word, or adding a sound to the end of the word or the beginning of the word. So really kind of manipulating and playing around with those individual phonemes. So one thing, just to clarify some terminology that is commonly confused among this topic is that these two blue squares are referring to phonemic awareness. And so phonemic awareness is really a specific skill that's within the phonological awareness umbrella. This idea of phonemic awareness, we're really thinking about the individual phonemes within the words as opposed to larger chunks of language.

So here with rhyming, we're thinking of the whole word level, sentence segmentation as the whole word level, syllable segmentation is at the syllable level. But these two blue boxes, we're really thinking about individual phonemes. And that is phonemic awareness, which is different but very, very similar to phonological awareness. So that could be quite confusing. One way that I like to think about this is that phonological awareness activities are those that can be done with your eyes shut. So we're not referring to the print or the letters or the orthography. Now if we are doing those activities and we're referring to the print or the letters or the orthography, that's phonics.

And so those three skills are very similar, very interrelated, but they are different skills. So phonological awareness is this broad umbrella term referring to the manipulation of sounds within the language. We don't need to refer to print. So we could do those activities with our eyes closed. When we start referring to the print or the orthography, now our eyes need to be open and those are phonics skills. And they're very interrelated. And oftentimes, we can kind of go back and forth between them within one therapy session very seamlessly. And we're gonna talk about that a little bit too, because I think that's actually a very helpful activity, is to see within a very small

timeframe how a child can do with and without the orthography being present. So one of the things we're gonna talk about today is just that, what does it mean when a child has success with an activity, when orthography is present compared to when we're asking them to do an eyes-closed task and just think about the sound without looking at the letters? So, a quick review of the research that connects phonological awareness to speech sound disorders. This is kind of a relations over time, very quick journey through first preschool age research, then school age research, and then some research on adolescents. So we've got preschoolers who have speech sound disorders who we know are at increased risk for deficits with phonological awareness. There's really been a substantial amount of work showing that. And we know that in particular children who have atypical speech sound errors and distortions in preschool are those who are gonna be markedly at more risk.

And so those are children who synchronously have weak phonological awareness skills in preschool. So here when we're thinking about atypical speech sound errors and distortions, we're thinking about things like a lateral lisp or other atypical patterns like backing, or initial consonant deletion. Any of those types of errors that are just not part of normal development could be indicative markedly so. I think what's really important here is that this is true even when language is normal.

So, these are kids who have typically developing language skills, at least at the time of testing. And so these are weaknesses in the phonological system that exists even when language is normal. And some important research out of the UK has shown us that the proportion of speech sounds that are in error at the age of five could be related to the likelihood of persistent errors at age eight. So, one of the things that really interested me in this topic was my time as a school-based SLP in Pennsylvania. I would see so many kids who were continually on my caseload year after year and I was doing what I thought was my best work to help them. And over time, I felt like I was not making much progress and these kids were persisting with their errors. And so

I really wanted to get a better sense of what might be underlying some of those issues. And what most of the research shows us is that these connections to phonological awareness are really predictive of later success, including success with speech. So in our school aged kids, we found that children who have persistent speech sound disorders. In this study, this was actually my dissertation research, children who had persistent speech sound disorder second through fifth grade had markedly weaker phonological awareness skills compared to same age peers. Additional research, and this is a really interesting study looking at fMRI using fMRI technology. And in this sample, they tested children who were between the ages of eight and a half and 10 who had residual speech sound disorders. I have that in quotes only because I fear that the term residual makes it sound like these types of errors are just leftover and not that big of a deal as opposed to potentially why a child is continually struggling with speech and reading.

But in this study they found that this population of children exhibited cortical and sub-cortical differences during phonological processing tasks. So their brains are actually processing information differently. And then this was a followup study of the preschool study from the last slide, where they talked about children who had atypical speech sound errors and they followed those children longitudinally and found that their atypical speech sound errors in preschool were predictive of their phonological awareness abilities in school age.

And so they recommended a rule of thumb that if more than 10% of the child's speech includes atypical errors, that child is likely to have deficits in phonological awareness, reading and spelling. And then some followup work looking at adolescents, this is a similar work from Jonathan Preston, they have found that children between the ages of 10 and 14, again, this population of children sometimes referred to as those who have residual errors. Again, these children had weaker phonological processing skills compared to their same age peers. And we have found similar results that the

phonological processing skills are weaker in children in adolescents who had a history of speech sound disorder. And in these two studies, both of these groups of children no longer had a speech sound disorder. So their speech sound disorder had been remediated, yet their phonological working memory and their word reading abilities were markedly lower. And so there could be a lot of other explanations for that as well. It could be the case that some of these children could actually even be identified as having dyslexia. But I think a very important point here is that these are kids who have remediated speech sound disorders. That means their overall speech sound disorder has been fixed, yet we're still seeing some of these underlying issues. And so we think a lot about, does age matter? Is a child too young for speech sound therapy? Is a child too old to be working on phonological awareness?

And these studies across child development show us that phonological awareness can and should be taught at any age. And what we're gonna talk about today is how activities can be adapted to use words that are more appropriate for older children. So the activities themselves don't need to change. What we're gonna talk about today are how to maybe choose words differently, and choose different words that might be more meaningful for older children.

And of course, we know from recent studies from Sharynne McLeod and Kate Crowe in 2018 showed us that English-speaking children should have all phonemes mastered by the age of six. And so we know that children aged four, five, and six are eligible for speech sound treatment if they have sounds in error that are inappropriate. And we most importantly shouldn't be waiting until a child is eight or nine to provide services when they should be able to produce all phonemes by the age of six. And so I think what's really important in going forward here is that we know our children with speech sound disorders are at risk for reading impairments. And so one thing that we can do as SLPs is incorporate phonological awareness into our speech sound treatment to help bootstrap those phonological skills to help both speech and reading. So, how do

we do that? So, we're gonna talk about some specific examples of how to add phonological awareness to speech sound sessions. We're moving now into the second learning outcome. We've moved from the first learning outcome of why we should include phonological awareness. Now, we're gonna move into the how. So, I mentioned earlier that teaching phonological awareness as a splinter skill is not recommended. So what I mean by that is that phonological awareness skills respond well to explicit instruction, but it should be contextualized within how those skills will be needed. So if we're treating or training phonological awareness skills in a drill-based format with flashcards and kind of decontextualizing them from the actual vocabulary or spelling word that a child might need to use that word for, it can be really confusing and it can make a child really unsure of why or how they need to be working on this particular skill.

So, I really recommend that we contextualize it and I'm gonna go into some details of what I mean by that. When we contextualize our treatment, we're helping to provide support for understanding when and how phonological awareness skills are needed. And here I'm saying phonological awareness skills, but this is really the case for any of our targets, vocabulary or syntax. And so it's not the case that these skills can't be understood without context. It's just that for the children that we're thinking about, it helps to strengthen the connections and make it more obvious why these skills matter. So as we're working through these next few slides, I want you to think about why is it important to talk about rhyming words? Why is it important to be able to manipulate sounds and words, and what other skills can you work on simultaneously? So hopefully, as we work through these examples, you'll have some answers to these reflection questions. So, I wanna talk about choosing words first. I highly recommend choosing words from the curriculum. Now, this might be slightly easier for those of us who are working in a school and maybe less accessible for those who are working in a university clinic or working in a private practice, or another setting, an outpatient clinic. However, I strongly recommend to the best extent that you can, obtaining the child's

vocabulary lists and spelling lists and choosing your targets for therapy from those lists. Choosing words from popular or common storybooks. So picture books, or graphic novels. So, really any book that the child is interested in, choose your targets from those books, words that they're definitely gonna see again, words that they're definitely gonna need to or want to say, or practice, words that are maybe high-frequency, but regardless if they come from a book that a child is interested in, then they become high-frequency for that child because they're gonna see them a lot whenever they read those books. And I just strongly recommend that we don't let commercial products govern which words we use.

So it's very common to use articulation cards from a flashcard deck or a specific workbook, and they're colorful, and they're great, and kids can color them, and we can photocopy them, and that's great. But we should really be more systematic about how we're choosing our words. We really shouldn't be letting commercial products decide for us which words we should use. We should really be working to best support the child, and particularly in school settings when it's our job to make sure that we're helping them access the curriculum. It's really important for us to make sure that we're choosing words that they're gonna see in the curriculum again, that they need to know for the purpose of succeeding in the curriculum or words that they're gonna show up in the books that they're interested in reading.

So I'm gonna give you a few examples for a child who is working on the sh sound. So I've focused specifically on this sound, but you can really substitute or incorporate any other sound here. So, most of my examples are gonna include the sh sound, but this could easily be the s sound, r, l, t, h, any of the sounds that you may be targeting in treatment. So just for instance, I chose some target words from kindergarten and first grade vocabulary lists. So we've got shade, shore, sheep, shovel, and shriek. So, I've chosen just five words here. And I think one important point is that we don't need to target every single possible sh word. In fact, it's really nice if we can limit our list to

words that are either related to each other or are just a little bit more circumscribed in a way that we can really see the influence of our treatment. So, if we're only targeting that sound within these five words, and we're really engaging the child in highly meaningful activities that are contextualizing phonological awareness, orthography, and even other language skills into our speech sound treatment, then we can really see the influence of our treatment by then testing untrained words. So, all of these words have sh at the beginning of the word. You can probably quickly think off the top of your head of another five at least that start with sh. And you can kind of put those sh words, the five that you're not gonna treat in therapy on a probe list and then every four weeks, six weeks, do a quick speech sound probe and see how the child is generalizing their skills to words that haven't been trained.

So, I don't think we need extensively long lists in order to target speech sound production. And that's even true whenever you're doing high dosage therapy and you're wanting to get a lot of trials, you can get a lot of trials without working on a ton of different words. So I'm gonna focus on these five words for this example. And I'm gonna start with how I might think through in a therapy session, the ways in which I can incorporate phonological awareness in targeting these words. So I'm gonna think of just starting with the word shade.

And so I might do my normal speech sound production activities with the child and have them produce the word shade and have their good sh sound. Make sure that their lips are rounded, make sure that their tongue is in the right position. And I might do my normal, almost more traditional articulation approach with that child to have them produce the word shade. So, I want to get my speech sound trials in. But then I'm gonna expand this a little bit and say, I wonder how many words you can think of that rhyme with the word shade. And so I've got this non-exhaustive list here of made, paid, fade, raid, stayed. There's a variety of options that could be on this list. So I might ask the child then, we're taking a little break here from actually producing the speech

sound related to this word and we're thinking about the phonology of the word itself. So how many words can you think of that rhyme with the word shade? So, one thing you can think of here is using a contrastive approach to like minimal pairs. So minimal pairs is a contrastive approach to speech sound therapy in which you choose the targets based on the child's error pattern. So, if you have a child here who's saying, producing an s instead of an sh, so the child says sade instead of shade, you can draw attention to the fact that the way that the child produces it as sade rhymes with the target word shade, and you can really highlight that through an approach like minimal pairs. So sade, shade, I hear you saying two different words there. Let's try and make those words sound the same.

Shade, shade. Let's see if we can make those words sound the same. Let's think of other words that might rhyme with shade. So we can kind of really expand on that. And then we can start to play with manipulation of the phonemes a little bit. So then what happens if I take that sh sound, or shh. Let's make that sh sound again, shh. Oh, that sounds really good. What happens if I take that sh sound away from the word shade and change it to an a. So I'm gonna take away this sh, shh, and I'm gonna make the word aid.

And so now I'm doing a deletion activity and I'm doing a blending activity. So I'm deleting that sh, what do I have left, aid, and now I'm gonna change that to an a at the beginning, a, aid. So now I'm building on those phonological awareness skills, but also targeting their speech sound production. Can you think of three other words that start with the same sound to shade? And so now I'm thinking of additional words on their lists that might start with the same sound. So now we're really practicing that sh sound at the beginning again. So we've kind of gone back and forth here just within this quick little activity of practicing their speech sound, thinking of words that rhyme with it, doing some deletion and blending. And now let's go back to identifying phonemes. Can you think of three other words that start with the same sound as shade? And so

maybe these are three words that are already on our list here. And maybe there are three words that the child thinks of. And I also encourage here the use of non-words or pretend words because if a child is able to think of a word that starts with the sh sound, it matters less at that point if it's a real word. What really matters is that they're thinking about sounds at the beginning of words. And the same goes for rhyming. I do encourage use of non-words for that too. The point is really just to draw attention to the phonology of the word. And it matters less so that it's a real word. What happens if I change the d sound? So here on question three, we were thinking about initial phonemes. And now we can change to final phonemes. So what happens if I changed the d sound, duh, at the end of the word shade to a puh sound. So I had shade. What happens if I change shade to shape.

And so we can give the child lots of opportunities to continue to say that sh word to get lots of trials for that speech sound production, but we're asking them to think about and manipulate the words differently. And then, okay, so we had shade and shape. So now we have those two words. Can you say them again? Shade, shape. So now we're getting lots of trials. Can you say them again? Now do those words rhyme and so now we can bring back this idea of, do those words rhyme? Do they sound the same at the end? If they sound the same at the end, then they might rhyme. If they don't sound the same at the end, then they don't rhyme.

So let's listen to the sounds at the end of these words. Shade, shape. Do they sound the same at the end? And so here, you're really drawing attention to this, not just for the purpose of teaching rhyming, but this is also helping with some auditory discrimination of listening to the phonemes at the end of the word. So, now I'm gonna move to a new word on our list here. I'm gonna move to the word sheep. And here, I'm gonna do something very similar, but I'm gonna move into how we can expand. This was one of our reflection questions on a few slides ago of how we can target additional language skills quite seamlessly and easily as we're working on speech production

using these words. So now we're gonna move to the word sheep. Can you think of a few words that are similar to the word sheep? How about a word that starts with the same sound? So, let's say our target word sheep, and then let's think of a word that starts with the same sound. What's that sound again? Shh. Okay, let's think of another word that starts that same sound. How about a word that ends with the same sound? So we can have words like hop, scallop, seep. So again, we're drawing attention to the final position of the word. So we're not just thinking about the initial position of the word, we're also thinking about the final position of the word. Can you think of words that end with the same sound as our word sheep? So we can say sheep and then think about that p sound at the end.

But we're repeating the word sheep to try and get lots of trials for speech production. What about words that rhyme with sheep? So we've got weep, leap, sleep as a few examples. So then once we've got this list of rhyming words, we can talk about how some words end in the same sound and rhyme, but some words can end in the same sound and not rhyme. So we can give them lots of examples of how we have to think more broadly about how words can sound the same and sound different. And what does that mean as far as their rhyming ability goes? So we can also think here about how we can expand this to target vocabulary. So I'm still targeting the sh sound at the beginning of the word sheep. So we've done, can you think of words that start with the same sound and with the same sound rhyme? Now, can you think of words that are from the same category? So farm animals, so let's say our target word again. We've got the word sheep. Where do we see a sheep? We might see a sheep on a farm. Who else might you see on a farm? And this gives you a chance to really expand into additional animals that you would see. So we're digging into vocabulary here and doing some semantic relationships and expanding this beyond speech production and really digging into teaching some semantic skills as well. And you can use visuals for this, of course. But you're really thinking here about different categories and how different words might be related to one another. Let's take that one step farther. Can

you think of a animal that's from the same category? So it would live on a farm like a sheep, and it also starts with the same sound as sheep. So now we're putting two constraints on words they can think of. And this was a tricky one because all I could think of was sheep, dog, but maybe you'll think of other ones. But then we can also expand into other animals that are not farm animals, but start with the same sound. So here we've got, can you think of a farm animal that starts with the same sound? We've got a limited list.

What about animals that are not farm animals, but they start with the same sound. Here we've got shark, shrimp, shellfish. And so we can expand on that. What makes these things the same or different? And so we're able to then talk about semantic relationships in a different way, and synonyms, and antonyms, and similarities and differences. So these are animals, but they don't live on a farm, so where do we find them? And then what else makes them the same as a sheep or different from a sheep? So we can really dig into that. And for these ones in particular, we're really getting lots of trials for speech sound production, because we're saying, how is a sheep and a shark the same?

So tell me those two animals again. We're talking about a sheep and a shark. How is a sheep different from a shark? And giving them lots of opportunities to not only practice their speech sound production, but dig into those semantic relationships as well. Then we can move from vocabulary to morphosyntax. So we're gonna move to this word on the list here, shriek. So in addition to all the examples that we've previously mentioned. So you can do the same things here with the word shriek. So tell me a word that rhymes with it. Tell me a word that starts with the same sound or ends with the same sound. So we can do all that too. But because this word is also a verb, we can also build our vocabulary in a different way here. So can you think of another verb? So remember a verb is an action word. Can you think of another verb that means the same thing as shriek? And then we can come up with a list. So we can say yell, shout,

scream, holler, yelp, screech, bellow, roar. And so here again, we're doing semantic relationships, but instead of nouns, we're working on verbs. And then what I like to do when I have a list like this of verbs, you can really do this with anything, but when I have a list of verbs like this, I like to really think about how these verbs might be the same and how they might be different from each other. So I use spectrums a lot. So I would have here, at the end of this spectrum, we've got words that are related to the word shriek, but are referring to being less upset. And then we've got these verbs mean that we're more upset.

And so we can kind of organize these. So maybe this is you're doing this with maybe index cards or maybe this is a way to contextualize the flashcards that you're using a little bit more. You can make these up or have the child make them. You can also, if you're doing teletherapy right now or ever, you can also use PowerPoint just like I am and move the little squares on the screen on the spectrum that makes the most sense. So I might put yelp here as less upset and I might put roar here as more upset. So I kinda like to establish those two anchors on either side of the spectrum. So which one would I say means the least amount of upset versus the most amount? So I've got yelp at one end and I've got roar at the other, and then I might put shout here. And then I might put holler here.

So, you're gonna have differences in how you might organize these, but it might end up looking something along these lines and you can have a great discussion with the kids on your caseload about why you might put shriek before screech instead of screech before shriek, or you might put yell before holler. Just depending on what those words really mean to you in the context that you've seen them and the context that you've used them. So it's a great source of language, a great source of describing. So, I do this a lot with the kids that we see in my lab because this really helps us to think about the complexities of language and the ways that things are related to each other. And then also, I think it's really important that we can be targeting their speech sound

production the entire time. Now that we've got this list created, we can say, okay, now let's look at this word list again. Which of these words start with your sound? So remember, we're working on sh right now. So we can say, okay, I see shout starts with your sound and shriek starts with your sound. So we can be really explicit circling back to speech sound production. And of course, this is great for kids who do and don't necessarily have issues with morphosyntax or issues with semantic relationships. We can be working on this even if that is a strength of theirs. But certainly, when we've got to target both of those skills, this is a nice way to kind of incorporate both at the same time.

So, now we found the words on the list that have your sound. Can we find any words on this list that start with the same letter as your sound, but actually make a different sound? So now we're getting into the complexities here of screech starts with the same letter as shout and shriek. They all start with the same letter. Scream starts with the same letter as shriek and shout, but they actually make a different sound. And so now that kind of gets us into this idea of incorporating orthography into treatment. So, so far we could be using print for any of these activities. We could have been using letters and print this entire time and that would be phonics, and that would be great. But we've been really thinking about just talking about the sounds, just incorporating phonological awareness and talking about words that rhyme, talking about words that start with the same sound.

But here, we can actually start to really draw attention to the letters and the orthography. And I'll just say, I think it's absolutely fabulous to do this at any stage. This is appropriate for any age level because if these are children who are experiencing difficulties with phonological awareness or the use of phonology for speech, that's going to bleed into difficulties with the use of phonology for reading and spelling. And so the earlier that we provide them with some of these models and these examples, the better. Now, we can take this one step further and say, how can we make these

past tense? So we've got all of these verbs here. How can we make these past tense? So we can start working morphemes here? How can we make it sounded like we did these things yesterday? And so then we can talk about, go through each word. Today I yelp, yesterday I yelped. Today I shout, yesterday I shouted. Today I holler, yesterday I hollered. So we can go through each one and see what we would add to the end of that word to make it past tense. And is it gonna be ed across the board or do we have to adjust it because it's an irregular past tense. But then we can also talk about the sounds that we hear. So in the word shouted, we add the full syllable ed because the original word shout ends in a t sound. So we can hear that t at the end, shout, and then we add the full syllable ed. Something different happens for shrieked though. So we have shrieked that ends in the shrieked, we put a t at the end and not ed. When we add the letters ed, it actually sounds like a t because the original word ends in a voiceless sound, ends in that k. So we don't necessarily need to use these exact terms when we're talking to children in our therapy sessions. But I wouldn't necessarily shy away from it either.

So I like to talk about why do you think we didn't say shrieked, but we said shouted. What's the difference there? So we can talk about, well, this ends in a t, maybe that's why. What does this end with? This ends with ck, shriek. I don't hear any voicing whenever I make that ck sound. So we can really talk about that. This is gonna help increase their awareness of sounds. This is gonna help the kids who have a hard time hearing the sounds in the final position of words, or hearing the sounds in the initial position of words. Then we've got a word like screamed. And so when we say screamed, that ends with the d sound because the original word scream ended in a voice sound. What sound do you hear at the end of the word scream? So we're really, again, kind of tapping back into phonological awareness, even though we've also started moving into morphological awareness, and the idea here of morphosyntax and building past tense out of present tense words. So we've kind of done a full gamut of activities here where we've moved from speech production into phonological

awareness, into orthography, which we'll talk a little bit more about in the coming slides, into some vocabulary and semantic relations, then into different verb tenses and morphosyntax structures, and then back to phonological awareness and producing our sounds again correctly with the appropriate speech sound at the beginning. So let's talk a little bit more about orthography here. So our last learning outcome was to identify one new way to incorporate orthography into speech sound therapy sessions. So we've already alluded to this a little bit by talking about the ways that two words might start with the same letter, but actually start with a different sound. So we had an example like shout and scream. They both start with the letter s, but one starts with the sh sound and one starts with the s sound. So just a quick reminder here, what we're talking about when we say orthography.

The word orthography literally means correct writing. This reference here that Kenn Apel paper from 2011 on orthographic knowledge is such a fantastic read. If you have the time or you're interested, this is also an ASHA publication, so it's freely available to ASHA members. It's a wonderful primer to understanding why orthography matters so much for kids with varying levels of language abilities. But what we're talking about here are how letters and letter patterns convey meaning in written language. This is how spoken language is represented in print.

So we know that orthographic knowledge and orthographic awareness, we're referring here to how children or how any individual would understand how letters and letter patterns map onto sounds and how we store those relationships in our memory. This is important for many populations of children. There's lots of work looking at this in children with dyslexia, but there's also a newer work coming out on children with speech sound disorders. And of course, we also know that children with developmental language disorder have difficulties with orthographic knowledge and orthographic awareness. So this is really an important skill for us to be working on regardless of what the disability category is that we're working on. So I could probably

spend another hour just talking about sight words, but I'll minimize that just to clarify. What we're talking about when we think about sight words, is that the sight of the word, so reading it in print immediately activates the pronunciation of the word and the meaning of it in your memory. So just the sight of it can activate automatically how you say it and what it means. And so in order to build that lexicon of sight words in your memory, we need orthographic mapping. So for orthographic mapping, this is a very, very quick overview of what we need, but we need to have a strong phonological system.

So in memory, we think of those as our phonological representations, how we've represented phonological forms in memory, those need to map onto orthographic representations. What we see happen sometimes is that we have the sound of the word, they sound the same, but the actual print version, the letter patterns are different. So pony and bologna are two examples. And of course, you'll have to forgive the Americanized version of this pronunciation. But here we have an example of words that sound the same at the end.

So the phonology is the same, but that's mapping onto orthographic representations or letter patterns that are not the same. So children need to learn that consequential relationship between phonological representations and orthographic representations. But also that it works in inverse, that sometimes we have orthographic representations that look the same, but actually they end up sounding differently. So we've got letter patterns that look the same and sounds that are different. So we've got O-U-G-H, and that shows up in cough, through, rough, and though. So here kids need to learn that sometimes we see letter patterns that look the same, but they actually sound differently. And so for our kids who have speech sound disorders, this mapping process can be really tricky. And we know that there's actually a difficulty in this population of children to make that translation between phonology and orthography. And there have been documented longterm difficulties even after that speech sound is

remediated. We talked about that a little bit earlier too. So here we're thinking about how young is too young. So is it okay to be exposing children to orthography and different orthographic patterns really early on in their training and their treatment with us. And really exposing children to orthography is a fantastic and powerful linguistic tool. This facilitates learning phonological skills. This gives them a visual to tie those phonological skills to. This is appropriate at any age, but what you'll ask of the child will vary based on their age. So it's appropriate to talk about it regardless of how old the child is, but you're just gonna adapt what you're actually gonna ask them to do depending on how old they are. So, for instance, younger children can identify letters and talk about hearing the sounds that different letters and letter patterns make. Younger children can trace letters and make letters out of play-doh.

Whereas we might ask older children to actually write the words out, or to make a sentence using the word, or to even come up with a list of words and then develop a story using those lists of words. So a few ways, I'm gonna tap back into our word list of shade, shore, sheep, shovel and shriek from sh therapy session. So again, we can ask a child, how many words can you think of that rhyme with shade? These are all the questions we asked earlier. Ways we can tie orthography into this. Let's pull this first one out, for instance. So how many words can you think of that rhyme with the word shade? So again, this is a non-exhaustive list of rhyming words, but we've got made, paid, fade, raid, stayed.

What we can do here is also ask the child to come up with non words. Are there words that they came up with maybe that aren't actually real words, but how would they think about maybe spelling those words? And then how did they make that decision? So, how did they decide that that word might be spelled that way? And then you can talk about the different spelling patterns. So I think this is really where there's some magic that can happen and seeing the rhymes of these different words. They all rhyme, but the onset is different and the rhyme is also different. So we've got A-D-E, A-I-D, and

A-Y-E-D, but they all say aid. And so here we're able to really dig into those orthographic representations and make really explicit connections for the child across the words that they've been thinking of so that they can really see how these different spelling patterns might look the same but actually sound, or it might look the same and sound different, or the inverse, like this example here where they look different, but they sound the same. So you can practice writing and spelling these words. You can have children. There's a lot of multimodal and multi-kinesthetic ways that you might consider doing this as well. A common approach is to kind of have maybe even a sandbox or a lunch tray that has sand in it, and children can spell out the words in the sand. If you've got kids who have fine motor difficulties, then you can think about different ways to adapt this so that they're not necessarily compromising their access to orthography because they're having a hard time writing.

You can use technology. You can use whiteboards and or fun markers, crayons, different ways to engage in practicing the prints and getting familiar with the orthography. I think one important point here is if you have kids who get frustrated by these differences, the best thing that you can do is to really just acknowledge that. So I've seen a lot of clinicians, parents have a hard time explaining to a child, "Well, you just have to re memorize that A-D-E, A-I-D, A-Y-E-D, they all sound the same, you just have to memorize that. And that might be true too. But I think if we have kids who are getting frustrated by these differences, the best thing we can do is acknowledge that. English is a difficult language. And so if you have a language system that's impaired, learning these structures is even harder. And so sometimes the best thing we can do to help these children make progress is to acknowledge the kind of support they really need is just hearing them and knowing that this is really hard. So, what's the best way we might be able to learn this if this is so tricky? So, I know what you're learning right now is so challenging. But I want to help you learn it. So let's try and think of some ways together that we can do this. So other ways that you can incorporate orthography in treatment. So writing out the words, as I mentioned on paper and sand,

spell the words. I love getting the spelling list from the teacher and have the child identify if their sound is in any of the words. If it is, if their sound is in some of those spelling words, practice those words in therapy. So make sure you give them lots of exposures to that word, both in print and the opportunity to produce it correctly. So if these are words they're gonna be required to spell, they need lots of practice with that. If their spelling list doesn't include any words that have any of their target sounds, can you incorporate phonological awareness by making a rhyming word that starts with their sound. So if all the words on that list that week start with the r sound, but they're working on sh, can you rhyme every single one of those spelling words with an sh word, real word or non word, but something to just help increase their access to those words in print and in speech.

You can talk about the different letter patterns that make their sounds. So if they're working on the k sound, you can talk about that. Sometimes you see it as the letter k. Sometimes you see the letter c, sometimes you see ck, sometimes you see the ch like in school. You can get the vocabulary words from the teacher and then find their sound within their vocabulary words. I like, this is one of my favorite things to do, is to photocopy chapters from books that they might be reading.

So this is textbooks or chapter books and maybe it's books that they own, maybe it's books they're reading in class, but making photocopies of the pages if you have access to that. And then using a highlighter to find the words with their sound. And so this can be really important, especially whenever you're working on a sound that might be represented by a variety of different letters. So, if you have a child who is working on the f sound, you might see that come up as ph at the beginning of a word like photocopy. And so that can be really helpful to identify their sound when they're not used to necessarily seeing it in a form other than what we show them. So some commercially available products as I mentioned, I don't like to have those govern the words that I use in therapy. But a lot of those products will maybe highlight the letters

that make the sound. And so you can use questions like, I wonder why these letters in this word are highlighted. And just even that level of meta awareness can sometimes be challenging for the kids that we're working with. So my favorite context to work on any of these skills, orthography, phonology, phonological awareness is within the context of books. And for the sake of time, I'm just listing a bunch of resources here that have done this. A lot of this work is by Laura Justice and her team. But if you look up print referencing research, you'll see that in most of these studies, they have found that just referring to the print as you're reading, that means you're reading a book to a child and you're pointing to the words as you read them. That simple act has substantial positive outcomes for preschoolers and early school-aged children. So I will kind of leave that for you to pursue later on your own. But this is a really powerful tool. Just by pointing to the print, we can help improve print knowledge, print awareness, and phonological awareness.

So if I'm preparing for a therapy session for a child with a speech sound disorder, and it's a book-based treatment session, meaning I'm gonna use a book as my primary tool in this treatment session, I'm gonna go through the book in advance and I'm gonna find a variety of things. So I'm gonna first look for words that have the child target speech sound. And for me, I consider it a bonus point if the sound is not represented by the typical orthography. So like the sh sound that we hear in transportation is not represented by the letters s and h. And so I think that is an absolute bonus if I'm able to find something like that. I'm also gonna look for words that have multiple syllable, so I can segment and blend multiple syllables, words that have easy rhymes. So single syllable words are typically ones that have very easy rhyming partners. And then words that have difficult or no rhymes. So photosynthesis or another complex multi-syllabic word that will be difficult to rhyme. But you can do it if you make it up. So you're gonna have to get creative and have the kids make up some rhyming words. And that's a really nice way to also focus on phonological awareness. I also look for words that could be good for deletion, phoneme deletion or phoneme blending, words that might

be new vocabulary items for a child. So words maybe they've never heard before, or words that would help me teach a specific morphosyntax structure. And then within that book-based therapy session, I'm doing everything that we've talked about so far. I'm incorporating phonological awareness and orthography, and lots of trials for speech sound production. I'm letting the child lead. So did they find a letter or a letter pattern that I didn't? So let's talk about that. Can they find their letter? So most kids are really motivated by finding the first letter of their first name. So if you're working with Tyler, then T is his letter, and so let him find all the T's in the book.

And are they capital letter T's or are they small letter T's, and you can really talk about the orthography there too. So in wrapping up, some conclusions, for assessment purposes, I think it's really important that we make sure we're testing phonological awareness for all of the kids on our caseload who are referred to us for speech sound disorders. I think it's crucial that we obtain material from the classroom teacher because a lot of our referrals come from the classroom teacher. And so these are individuals who have data already on these kids. They have data on their decoding skills, on their phonological awareness skills, and depending on the grade level, maybe even their spelling skills.

And I do recommend screening early. So screening early in kindergarten and screening often, and not screening for just speech sound production. Also looking at their phonological awareness skills. In our treatment sessions, we should be including phonological awareness. I hope you feel prepared to do that now. I think trying and incorporating minimal pairs for the kids for whom you've decided that's an appropriate approach. And then reference the orthography during your treatment sessions. I think there's also a lot of magic in collaboration. So partnering with reading specialists and special educators, pushing into the classroom. Even for speech sound production sessions, we can push into the classroom and really try to see ways that we can incorporate speech sound production abilities within our skills within the classroom.

And using curriculum-based vocabulary in spelling words. We know that our children with speech sound disorders are likely to have poor phonological awareness and difficulty with letter sound correspondence. And we're really the ones who are on the front lines of defense for these children. We know that even sometimes after the speech sound disorder has been remediated, there's some difficulties with literacy. So we want to be mindful of those warning signs and we want to be open to collaboration or consultation. Here are some of my references and I would love to continue the conversation. So I hope to hear from you and I hope you enjoyed this workshop today.

- [Amy] All right, thank you so much, Kelly. Always great to learn from you. Had some really, really great strategies that we can use with our kiddos. So thank you for sharing your knowledge with us as always.

- [Kelly] Thank you, Amy.

- [Amy] And so let's go ahead and wrap it up there. We appreciate your time and look forward to seeing you again soon. Take care.

- [Kelly] Thank you so much. You too.