Dyslexia 101: Breaking Down the "D" Word

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- - [Amy] Once again, welcome to our webinar today, Dyslexia 101, Breaking Down the D Word. And as I mentioned previously, this is part one in a two part series. Our presenter today is Heather Caska. She is a licensed pediatric SLP and clinical director for Way to Grow Pediatric Therapy and Dyslexia Center. Heather has presented at local universities and school districts, as well as at state conferences, on the role of the SLP in language and literacy disorders. She is on the board of directors for the Arizona branch of the International Dyslexia Association and is the professional development chair for the Arizona Speech Language Hearing Association. Heather, we're very pleased to have you here with us today, I'm going to turn over the floor to you.

- [Heather] Great, thank you, Amy. Good morning, everyone, well, it's still morning here in Arizona, I know it's not where a lot of you may be. I'm really excited to be here today to share information with you about dyslexia, especially this month. This month is actually dyslexia awareness month. So I was really excited to get to present to you, and then I even saw today on social media somewhere that I think it's dyslexia awareness day. So it's very fitting that we get to start our two part series today. So just to go over the financial and non-financial disclosures, so as Amy mentioned earlier, I do receive a salary from Way to Grow Pediatric Therapy and Dyslexia Center. I'm also being paid an honorarium by Speechpathology.com for this webinar series. My non-financial disclosures are that I am a member of the board of directors for the Arizona branch of the International Dyslexia Association, as well as the professional development chair of the Arizona Speech, Language and Hearing Association. So our learning outcomes for today, so by the end of today's webinar, my goal is for you to be able to identify the core features and profile the child with dyslexia, as well as identify at least three other areas of difficulties that students with dyslexia may experience apart from word recognition difficulties. Also describe the roles of us as speech language pathologists in the identification and intervention of dyslexia. So a little bit

about myself. Some background information, I grew up in a small town in northern Arizona on the shores of Lake Powell. I then attended the University of Arizona in Tucson, where I received my bachelor's in speech and hearing sciences through the University of Arizona, and then received my master's from Northern Arizona University. My background in training for dyslexia was through the Academy of Orton-Gillingham Practitioners and Educators. I was working in a pediatric clinic and just continued to see, come across these students that were really struggling in school and knew that, you know, this was something that I really wanted to get into. I was first introduced to dyslexia in my undergrad program by Dr. Tiffany Hogan and her pediatric disorders class, and I still continue to use her as a great resource and follow her career and all of her research, and she's just been a tremendous help for my knowledge and learning more about this area. I also, in the picture here, it's my family, my husband, and we have a little boy who is almost three. And then we are expecting our second child next month. But how dyslexia is personal to me, my husband's brother has severe dyslexia. And knowing that it is hereditary, I just know that there is a good chance that one of my kids could end up with dyslexia, and so that was another reason why I became so passionate about this area. Okay, so today, the first thing we're gonna start off with is just a quick video to kinda demonstrate a round robin reading task. So this is a task that I usually do in my presentations, but since it was gonna be a little difficult to do through the webinar, I just did, I was doing a brief training with some of my colleagues at work, and so they were willing to let me video them and share this with you guys, so I'm gonna go ahead and start this video and then we'll kind of discuss it after. Right now, just start reading it again.

- Unfortunately, the word dyslexia has been used, abused and misused throughout the years, which has teachers, administrators, and school psychologists reluctant to use the word. But dyslexia does have an agreed upon definition, and there are specific symptoms associated with dyslexia.

- [Heather] Okay, Sam.

- The bottom line is that it does exist, no matter what name people give it, i.e. specific learning disability, et cetera. In fact, according to Sally Shaywitz, its prevalence is actually one in five children, which is 20%.

- [Heather] Okay. Julia, go ahead and start reading.

- Dyslexia in the simplest terms is the difficulty with phonological processing that makes it challenging to decode words, spell, and comprehend what has been read. For those with double deficit dyslexia, they also have difficulty with rapid naming, which makes it difficult for them to name things, letters, et cetera, which makes fluency--

- [Heather] Okay, Steph.

- I don't know where we're at because my second paragraph is completely different. No, look at my paragraph, it's different. No, look.

- [Heather] Can you guys show Steph where we are, she's not paying attention.

- I am. I showed you my paragraph, it's completely different.

- [Heather] Okay.

- Can you see that?

- [Heather] You start reading.

- Thank you.

- Do you see that?

- Some students have both, some just one. But the purpose of this article is to debunk some common myths, while also providing the current information along the way. They see the letter or words backwards. Although this has been a running joke on countless sitcoms, comedy stages, and just around the dinner table, it's totally untrue. People with dyslexia see letters and words the same way those without dyslexia do, they just take an alternate neurological route to connect that letter with its appropriate sound.

- [Heather] That's okay, Karina.

- It takes them longer and sometimes they don't allow themselves the time to process that information and guess, which makes it appear as though they are seeing a different letter. This is why allowing struggling students the time to process their answer is paramount for them to give a correct response. We have to teach them to allow themselves the processing time as well.

- [Heather] Okay, Ken.

- If they read more over the tubber, they would improve. I have seen a comment. Yeah.

- This doesn't paragraph.

- [Heather] Sam, can you help her, can you show her where we are?

- Oh, me, yup. I have team comment by struggling readers by well meaning teachers that try something to the effect of, if he just--

- [Heather] Okay, I'm gonna go ahead and pause the video, I know the sound quality on the video isn't great, so people are having a hard time, so we'll kinda just discuss it, if we can just go back to the slides. So what you guys are seeing in the video is a decoding simulation. And I apologize that the sound quality isn't better. So everyone is given the same passage, however, two of the passages are, the text is altered to make it difficult for them to decode. So kind of what, and again, this is, that, it's, the video is just kind of meant to show you the different behaviors and things that you could see when someone is having a hard time decoding. So what it helps you experience when you do a simulation like that is how a child may feel when you're asked to read out loud or you have a hard time. And so in the video, and I know you guys probably couldn't hear it, but I think Stephanie, she's the fourth person reading, you could maybe see it in the video as well, where she's kinda like pointing when it gets to her and she's like confused. And we keep asking her, are you not paying attention, you know, why are you not reading what we were reading? And so what that goes to show is just how that could look, and that's oftentimes what you're gonna hear in the classroom, is that the child, you know, isn't paying attention or they may try and avoid the task.

So yeah, so again, that video is available, it's on, if you wanna go on, you can watch it on YouTube, there is a link, and I can also send that if you have, if you guys wanna email me, I can send you the link so you would be able to see it a little bit better. So in that, in the video, the passage that they're reading, it does talk about myths. So that's kind of where we're gonna start today, is we're just gonna talk about the myths of dyslexia and what dyslexia is not. So all of these are some of the most common myths that we hear and that we find people believe. So the first one is individuals with dyslexia see things backwards. And you'll hear me say that a lot today throughout the presentation. Dyslexia is not a vision issue. It has to do with the phonological structure of language, the sound units of language. So again, it's not backwards, and oftentimes, that's, I think, one of the biggest misconceptions that we have. Another myth is that

these kids just need to practice more, and I hear that a lot from families where they're just being told, you know, over the summer, you just really need to practice with them more. And that's, if a child truly has dyslexia, unless they're being explicitly taught and given the strategies they need, just practicing reading is not gonna help them. Another common thing I hear is that, let's just wait and see what happens, especially with our younger kiddos, and this is something that we're gonna get into a little bit more, but early identification is so important for these children. And oftentimes, what happens is a lot of their early warning signs and risk factors, they are obviously considered developmental up to a certain point, and so a lot of times, it's just that let's wait and see what happens mentality. There's also dyslexia cannot be cured, it's not something that will ever go away, even with intensive intervention, and they can be successful, but it will be something that these individuals will struggle with. Individuals with dyslexia have a low IQ. Dyslexia is not related to a child's IQ level.

Schools cannot recognize or use the term dyslexia. So this is kind of a big grassroots movement that's kind of going across the country, and I know everyone is from all over here, but I can tell you here in Arizona, it's definitely something that we're still working on, but we have recently just passed a bill for schools to be able to identify dyslexia, especially starting with that early screening. And then also another misconception that I hear often is that SLPs are not able to diagnose or treat dyslexia. And I guess that's kind of why we're all here today, is my goal is just to help other SLPs recognize what our role is in dyslexia and that we do play a vital role. I often hear that reading and spelling, you know, are not within our scope of practice. But as hopefully you'll see as we get through the presentation that we have a very very important role in working with these children. So now that we kind of have discussed, you know, all of the things that dyslexia is not, we'll discuss a little bit more about what it is, so according to the International Dyslexia Association, it's a specific learning disability, it's neurobiological in origin. Characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit

in the phonological component of language and it's often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. So not only will they struggle with word reading, but they can also struggle with reading comprehension, vocabulary. And spelling. So this kinda just sums it up, so what does all of that mean? It just means that our individuals with dyslexia, their brain processes languages for learning how to read and spell differently. The difficulty, like I already mentioned, in the phonological aspect of language. It's believed that 15 to 20% of the population show signs of dyslexia or have symptoms of dyslexia. And that's important to remember, that does not mean that they're diagnosed with dyslexia. But they do have symptoms of dyslexia. And again, it's not always just deficits in decoding. These students, sometimes these students will be quote unquote at like good readers or average readers, but they really struggle with reading comprehension, spelling, and their writing can also be affected. So some of our early warning signs that we have for dyslexia. The biggest one is family history of speech and language or any learning difficulties. I learned early on not to ask specifically about dyslexia, family history of dyslexia, because nine times out of 10, the parents would tell me there was not a family history of dyslexia. However, as we continued through our case history interview, things would come up like oh, his dad really hated school or I struggled in school, or he has an uncle that, you know, dropped out in high school because he just, he couldn't make it through school, so all of those are red flags. Also, for those of you in, that work in schools, even just being aware of older siblings that may, you may have worked with previously. That's just a good sign that these children are gonna struggle as well. Also delayed speech and language skills. These children often have difficulty learning shapes, colors, numbers, knowing days of the week in order or even recognizing and learning the alphabet. These kids can also have difficulty pronouncing words and difficulty learning new vocabulary. And rhyming and identifying, those early phonological awareness skills are also going to be difficult. In our older kids, you might see them having difficulty knowing their right from their left, struggling with sight word recognition. They have difficulty with spelling, difficulty memorizing number facts, so

those math facts will be hard for them. And they just overall, the older they get, they get more and more frustrated with school and homework. And then just difficulty understanding what is read, so that reading comprehension. And also putting ideas in writing is difficult. So real quick, I think many of us will be familiar with the simple view of reading. If you picture Scarborough's rope, it kinda shows the different stands of reading, and we know our overall goal for reading is reading comprehension.

And it's called the simple view of reading, but we know that in fact, it's not quite so simple, it's actually pretty complex. For those of you that are not familiar with Scarborough's rope, if you just do a quick Google search of it, you can find many links to articles and information about it, but it's a really great visual, I like to share it with families as well. So when we talk about reading comprehension, we know that's our goal for reading. In order to have good reading comprehension, we need to be able to make sure that the child is decoding adequately, and as well as have strong linguistic comprehension. So if there's a breakdown in one of those areas, whether it's that word recognition or something along the lines of language comprehension, their reading comprehension is gonna be affected. So we'll break that down just a little bit more. So when we talk about language comprehension, some different areas is background knowledge.

The child, we need to make sure that they have adequate background knowledge for the topic being read. Their vocabulary, and so when we refer to vocabulary, we talk about the breadth and the depth of vocabulary, so how many words are they familiar with, and then also considering how many of those words, what is their deep knowledge, like deeper background knowledge of those words. As well as language structures. So syntax, semantics, all of that's important for adequate language comprehension. And then overall literacy knowledge, so when we think of our littles, we can talk about just print awareness, understanding a word versus a letter, even versus a number, where we would start to read on a page, punctuation, what that

means. And then for our older kids, just understanding more of those expository texts, like those genres, so persuasive, compare and contrast, descriptive, so being aware of those is also going to increase overall comprehension. And then those higher level verbal reasoning skills. Inferencing, you know, understanding metaphors, those critical thinking skills are very important. And for the purpose of today's presentation and dyslexia in general, what we're talking about, we're gonna be talking more in detail about word recognition.

So in order for a child to have adequate word recognition, we'll be talking a little bit more about phonological awareness, phonics, and then sight word recognition. And throughout this, when I'm referring to this sight word recognition, I'm not necessarily referring to those lists of sight words that are not phonetically, aren't spelled phonetically. But I'm talking about your sight word lexicon, so those words that you can read instantaneously and automatically. And I did see, I see a couple questions coming through. I saw one, so first, yes, Scarborough. S-C-A-R-B-O-R-O-U-G-H is how you spell that. Okay, so for this next task, what we're gonna do is we are gonna do a little bit of a simulation. So I'm gonna have you read a couple of paragraphs, but before we go on, I will have you kinda share some comments in the Q&A chat following each one.

And so what this is gonna do is just allow us to kind of understand how word recognition difficulties can affect our overall reading comprehension. So for this first one, I'm gonna give you guys a little bit of time to read over this passage, and then I'm gonna ask you some questions following the passage. So take a minute and read through it. Okay. Now hopefully, most of you got through the passage in time. I'm gonna ask, just ask a couple questions, and again, if you can use the Q&A chat just to share some comments and thoughts, but can somebody, did somebody just wanna share what the overall main idea of this passage was about? So there's a few coming through, so how oral language and dyslexia are related, yes. Oral language's effect on

dyslexia, good, the relationship between oral language and dyslexia, perfect, good. Now, on a scale of one to 10, with one being very easy and 10 being one of the most difficult things, can you share with me how difficult you felt this task was? Okay, so for the most part, everyone's giving it like a two, three, one, great. And was everybody able, was anybody not able to finish the passage, so if you didn't finish in time reading the passage before I stopped you, can you kinda let me know? Okay, so it looks like a lot of people, most people finished. Someone else commented that it was a little bit taxing, it took some more attention just because of the vocabulary and the terminology used in it, good.

Okay, so for this next one that you guys, I believe, already have on your handout, just the text is altered to make it a little bit more difficult to decode. However, again, keep in mind, this is not how children with dyslexia would see the passage, so they see the same thing that we do, it's, this is just altered for our sake, for you to be able to experience this. So again, I'm gonna give you guys a little bit of time to go over and read through this passage and then ask you some questions. Okay, you guys have just a few more seconds to finish up. Okay.

I'm gonna go ahead and ask you some questions now. Now, if you can, someone in your chat box, again, just give me a quick summary of what you read in this passage. I see lots of questions marks, I have no idea, no clue. Someone said about school and dyslexia, I can't summarize, I couldn't finish it. Parents of children with dyslexia. There was a question, myths about dyslexia. Good. So this one was meant to be a lot more difficult for you to read and obviously for you to kind of understand the difference of a fluent reader versus a non-fluent reader. So what this paragraph discussed was educational promises. And so as a parent, a lot of times, what's happening, these parents are being promised, you know, that your child will be reading at this grade level by this time and all of these things, and just talking about how parents should be very skeptical about it and talking about the research. So again, I'm hoping that that kind of

helped you experience what it would be like, so as a child who is struggling to decode, when you're asked to read something and then to summarize it or talk about what you have read and answer those questions, if your, most of your mental effort is going into just even understand or figuring out what the word says, the comprehension goes right out the window. Does anyone have any questions specific to this task? So there is a question about how close might that be for a dyslexic reader. I think, if I'm interpreting the question right, is how relatable would that be for someone who's dyslexic, I think this would definitely be more on someone who was more on the severe side of dyslexia. Because I did, in order for you to really experience it, I did alter most of the text to make it a little bit more difficult. So that might be more representative a child who is more severely dyslexic.

And then a question, what if we had more time to read it, would we be able to do better? Possibly, not necessarily. I mean, how many of you just got frustrated and gave up? 'Cause that's, a lot of times, what we see, is if it's taking you a really long time to read it, a lot of times, these kids will just, they stop, and if they've been struggling for a while, then you're gonna see that even more often. But again, they're not always given a lot of time. So in class, you know, you're given a certain amount of, you know, you have 10 minutes to read this passage or you have five minutes to read this passage and then answer questions. And if they're not done, oftentimes, they're being asked, well, why didn't you finish it, are you not working hard enough, are you not paying attention? So yes, maybe if you were given more time, you absolutely might have been able to, but not all students. And these also are those students that are going home and the parents are spending three hours with them on their homework, and by the end of it, mom's in tears, the child's in tears. So obviously, that was a really great question. That's another great question, someone asked, if it had been read to us, our comprehension would have been better, correct? Possibly, yes. But that also depends on the profile of the child. So some students with dyslexia will, they can definitely, if you read it to them, they will, their comprehension will be better. However, you have to

go back to the other part of that simple view of reading and look at the child's overall language comprehension too, a lot of my students that I work with, they really struggle with just recalling that verbal information, so even to read it verbally to them and them not have a visual for them to hold all of that information, process it all, and then be able to answer questions is difficult for them. So some students, yes, they may have comprehended it better if it was read to them, but not all students, it just depends on their overall language difficulties. Exactly, someone said more time does not help with working memory if, with working memory is taxed. Many students also have trouble with this, absolutely, yup. So again, that's a very good point.

Okay, so we're gonna keep moving forward now. So now we're gonna kinda start getting into a little bit more about, again, looking at that, thinking of the simple view of reading where we have word recognition difficulties versus language comprehension, we're gonna talk more specifically about those word recognition difficulties and why these students or children are having difficulties with word recognition. We know, a lot of times, when we recognize it, it's 'cause a child isn't reading fluently, we hear that, either they're substituting words, having a difficult time sounding them out. Just keep in mind that if a child is not reading fluently, there's a breakdown somewhere. And hopefully, by the end of this, you'll have a better idea of how to identify where those breakdowns are occurring.

Okay, so we know in order to have adequate word recognition, that includes phonic decoding and orthographic mapping. So these four components are essential for adequate decoding, so we have letter sound knowledge, phonological awareness, and we're gonna talk specifically about the analysis, so breaking, taking words apart, so segmenting. And phonological blending, so putting sounds back to, putting sounds back together. As well as vocabulary and phonological long term memory. Okay. So we'll kind of break up those four components a little bit more, and we're gonna start by talking about, we'll talk about letter sound knowledge, phonological awareness,

phonological blending, and then vocabulary and the phonological long term memory. So we know, with letter sound knowledge, sounds are associated with letters, okay. So that's just that basic alphabetic principle. You hear a sound, and it can be represented by a letter or a group of letters, and vice versa, you see a letter or a group of letters and know that it can represent the specific sounds. We know that English is not an easy language to learn how to read and write in. Our sound-letter correspondence is not very consistent. And I believe it's, Turkish is the most consistent there is. When we talk about phonological awareness, we talk about basic phonological awareness, which those are those early phonological awareness skills. Syllable segmentation, rhyming, alliteration.

And then the more advanced phonological awareness skills are gonna be more like segmenting sounds and words and manipulating those sounds. So deleting and substituting sounds, for example, say stop, now say stop without saying s. Or substituting say fly, now say fly, but instead of f, say s. Okay, so those are gonna be more of those advanced phonemic awareness skills. Phonological blending, we kinda, they look at, we separate that a little bit. What I found especially, and if any of you are familiar with the CTOPP, when I give the CTOPP, even my struggling readers, any time beyond first grade, they often demonstrate average blending skills. Especially on that subtest, and so it's not uncommon for, you know, the other two subtests on the CTOPP for them to have, you know, below average scores.

And their blending score to be average or even above average. And then your phonological long term memory and vocabulary, we'll talk about that a little bit more. So when, again, talking about the breadth, it's more of like what the child knows on a superficial level. So they're familiar with the word, but they may not have a strong understanding of what that word means. Whereas the depth, your vocabulary depth, is how well the person knows it. So when we talk about phonological long term memory, so down, we're gonna kinda work from the bottom up. So down there, we have the

phonological long term memory. And what research has shown is that, when it comes to word recognition skills, your decoding skills, that it's the phonological long term memory that's really important. And that phonological long term memory consists of just the words that you're orally familiar with. So even if you don't have a deep understanding of what the meaning is, and then as well as you're familiar of the word parts, so think of endings like I-N-G or even like word families, A-M for am, is if a child's familiar with that, that's gonna, that's their phonological long term memory. Their semantic lexicon that you see out there to the side. That does not necessarily affect their ability to decode words, again, in overall reading comprehension, for language comprehension, yes, the child absolutely needs to have understanding of those vocabulary words, but we're just talking specifically about their ability to recognize and decode words.

And what research has found is their true understanding of the word doesn't necessarily affect, have a direct effect on their ability to decode the word. There was a study done where they, I believe it was a group of first graders were provided 20 nonsense words. And they were gonna be tested on their ability to decode those 20 nonsense words. 10 of those words were given a definition through stories, like narrative type structured activities where, so 10 of those words were given some meaning to the word, where the other 10 were not, they were just exposed to it, like they were, read the list.

A few days later, they were given 10 more words and they were tested on how well they could decode all 30 of those words. And then what they found is there was, the children did significantly better on those 20 words that they were given a few days before because they had been familiar with them, orally familiar with them, versus those 10 words that they were just presented with that day. But then what they also found is looking at those first set of 20 words. There was really no significant difference between the 10 words that were given like those meanings versus the 10 words they

were just presented with orally. Okay, so then we're gonna talk a little bit about orthographic mapping. So according to David Kilpatrick, orthographic mapping is the process that readers use to store written words for instant and effortless retrieval. So this is where we turn those words into sight words, again, not the list of sight words, but just words that we're automatically and instantaneously recognizing. So for those of you that are sitting here reading the slides, those words are part of your sight vocabulary. This also helps to establish a stable memory of spelling patterns. And what they found is skilled readers do develop orthographic mapping naturally. Something important I would like to note on this too is orthographic mapping, orthographic memory, this is familiarity of letter order. This isn't, again, not a visual memory.

So it's the familiarity of the word, of like the letter order for a word. Orthographic, so orthographic memory, so it can be kinda broken onto two different levels, so we have orthographic recognition, which is the nature of word recognition. So this is that orthographic sequence, it's instantly recognized as a familiar word, so talking about of this decoding. Whereas orthographic recall is gonna require much more detailed and a well encoded memory of orthographic sequences. So this is where you're gonna see a lot of those students where they're average decoders, quote unquote, but they also, but they really struggle with spelling, okay.

So how many of you out there have worked with a child or are familiar with a child, or you yourself know someone where they're just terrible spellers? I definitely have a few that I'm familiar with, and so we're gonna kinda do a little task right now. So what I'm gonna do is I'm going to verbally tell you a word. You can either write it on a paper or just try and spell it out loud. Okay. Here's your first word. Your first word is rendezvous. Okay. How many of you struggled to spell that word? Okay, so that's one that's a little bit tricky. All right, here's your next word, you ready? Lieutenant. Okay, so I see a lot of you typing it into, great. Okay, and your next word I'm gonna give you is chauffer. That one's really tricky. Funny story to share with you about that word in just a sec. And then

your last word is diarrhea. Looks like a lot of you got that one, good. Okay, so those words are gonna help you represent that, how difficult sometimes recalling those orthographic sequences are, so I'm gonna now pop these, in the next few slides, I'm gonna flash a word onto the screen and I want you to read it out loud for me. To yourself, obviously. Okay, so there's your first one. Here's your next one. Next one. And then last one. Okay, so hopefully, what that kind of helped you experience is how some of those words, when you see them, they're instantly recognized. It's something where that orthographic recognition is a little bit more instilled, where you see the word and you recognize it, whereas to recall, it's a little bit trickier.

And obviously, these words are a lot more difficult, but just keep that in mind when you're thinking about these students where they're reading okay but they're, why can't they spell the word, they can read it, but they can't spell it. So a lot of times, what happens is that orthographic mapping, those letter sequences are easier for them to recognize, but then the recall, it just requires a little bit more cognitive processes where they struggle a little bit more. And I actually, when I sent in the slides, I spelled chauffer wrong, and I think it was Amy who emailed me and was like, it's not spelled correctly, is it supposed to be? So it's definitely, they're definitely tricky to spell.

Okay, we're gonna keep moving forward. We'll talk a little bit about reading development. So this can definitely be broken up into many different ways. There are a lot of different ways, researchers have kind of broken it up and talk about reading development for the, but for the sake of today and just for the sake of time, we're gonna discuss it more and look at it from the developmental relationship between phonological awareness and then also word reading development. So this chart hopefully will kinda help you see a little bit how you have your phonological skill development in the middle column, and then on the right hand side, you have your word reading skill development. So we know like that first stage in early phonological awareness, again, that's gonna be your rhyming, syllable segmentation, alliteration, just

sound, those very early phonological awareness skills line up well with learning, you know, that letter/sound knowledge. Then you move on to more of learning those basic phonemic awareness tasks, like those blending, segmenting, and that's where that phonic decoding comes in, where you might be learning some of those rules and some of those phonograms and how to, and when to apply those rules. Whereas your more advanced phonemic awareness tasks, and again, this is those, these are those manipulation tasks, as well as, so deletion, substitution, and then that's where that orthographic mapping comes in. So what research is showing is that, as children become more automatic, again, and that's the big key, is the automaticity of these phonemic awareness tasks, the more advanced, they see an improvement in that orthographic mapping and vice versa.

So when I, I'm gonna kinda talk about that just for a sec, the automaticity. And something to kinda keep in mind, even when you're looking at a child and working with them and assessing them, as when they're doing more phonemic awareness tasks or any phonological awareness tasks like this, where you're having them segment words or manipulate sounds, so say stop, now say stop without s, you want to make sure that the child is doing it automatically. So if it's taking them 10 to 15 seconds to figure it out, that in itself, even if they get it right, is a red flag that they're struggling with that. So there's a question, can a student have good decoding but be a poor speller because of orthographic recall, be dyslexic, are they just a bad speller?

That's a great question. I think, and then to answer that, you have to look at the child as a whole and go back and look at, depends on the child's age, their development, and look for some of those early risk factors. Doing a thorough evaluation, which we'll get into evals a lot more in depth in the second part, so on Thursday for the webinar. But I mean, they could just be a bad speller, but a lot of times, they are, they would be found as being dyslexic. You always wanna make sure you're looking at all of those areas that we'll talk about on Thursday, phonological processing, phonological

awareness. So that's a good question. We'll also touch briefly on the neural reading systems for dyslexia. So keep in mind that our brains were not designed, we are not hardwired to read. This is something that we have to be explicitly taught. It's not like language where our brains are hardwired to learn language, it's not the same for dyslexia. There is a really great video on understood.org that kinda talks about this a little bit more in depth. And I'm trying to see, I thought I wrote it down, but I can't find the name of it. I think maybe if you just do a quick Google search of understanding the dyslexic brain on understood.org, it's a really great one, great video. But to kinda talk about, so we do know that there's three neural systems involved for dyslexia.

So you have one anterior and two posterior systems, so you'll see on this screen here in the picture, there's the red areas, your anterior system, Broca's area. So that's going to help just pronounce the words as you're reading. And then you have two posterior systems, so you have the parietotemporal area and then the occipitotemporal area. And your parietotemporal area, the green portion, that's the area where you're gonna help sound outwards, so those sound representations of the letters. Whereas the yellow area, your occipitotemporal, is thought to help in terms of recognizing words. So that instant, that orthographic mapping, that instant recognition of words.

And then what they found, what brain scans and research has proven, is that, when it comes to somebody with dyslexia, that there is insufficient, inefficient functioning of those two posterior systems. So they have shown that there is a true difference in the brain images between someone with dyslexia and without dyslexia. And they've also shown that, with brain scans, that with adequate intervention, that those neural pathways can be repaired, and we see those areas start to improve in functioning. I see someone said Shaywitz, yeah, Sally Shaywitz has some great information about this and visuals, things like that, to kind of explain that a little bit more. In terms of genetics, we do know that dyslexia is genetic, it's, there's a strong hereditary component to it. No specific gene has been identified. And the roles of specific genes aren't quite

clearly understood yet. There are believed, the last research that I read, that there was six chromosomes they believed to be involved. However, no single locus has been identified across all studies. Okay, so we're gonna get into the comorbidities of different disorders with dyslexia now. So the first two are gonna be especially important to us as SLPs. So talking about developmental language disorders. So this chart kind of breaks up the difference between the two, so we know dyslexia are the deficits in word reading. And with dyslexia, we also know that there is a decreased rate of language acquisition, okay. So studies have shown that, in addition to phonological deficits, these children also have weaker vocabulary, morphology, syntax, and discourse before the onset of formal reading instruction. So that's important for us to know, because that's gonna help us to identify, be, you know, on the forefront of early identification for these kids. So developmental language disorders, these are the deficits in language development.

And they can have deficits in multiple domains of language. And a large proportion of these students aren't identified. I don't know how many of you are familiar with this SeeHearSpeak Podcast that Dr. Tiffany Hogan does. She had a really great episode with Dr. Elena Plante a couple months ago. And if you haven't listened to it, I highly recommend it. But in that podcast, she stated that only 30% of students with language impairments are identified, which was just really shocking to me. And another side note that this month is also developmental language, DLD, awareness month. And so there's a lot of information out there right now just about developmental language disorders in general too. And oftentimes, developmental language disorders aren't identified until later on in the school years, 'cause they see it come out more through their reading comprehension. And so how they, some common characteristics they have, they're both, in terms of diagnostic criteria, they're kind of explained through these unexpected deficits, so things that you wouldn't expect for these children to have difficulties with based on other factors in terms of cognition or exposure to, you know, to language and reading in the home. Research has found though that they are

distinct disorders. But they often co-occur. So there has been some research that has shown that 55% of children with dyslexia also have a developmental language disorder. And then 51% of children with developmental language disorders have dyslexia. So there's a lot of different research out about this right now. I think the important thing to take away from this though with developmental language disorders is that this is really important to us, because children who struggle with reading often have language difficulties outside of the phonological domain, so we know that these kids that are struggling with word recognition difficulties, they struggle with the phonological aspect, but research is showing that they also struggle in other areas of language.

And we know, as SLPs, we are the language experts, we are the ones that should be addressing and working with these students. We also need to be able to advocate for assessments for language skills, so if we're working in a school and we know that this child is really struggling with word recognition, we should encourage our team to let us be a part of that evaluation team and really do a good in depth look at all of their language skills as well. And that just goes back to also that interprofessional education is so important for successful collaboration. We need to be able to educate our team and our other members of our team on what our role can be and how we can play a part in helping identify and making sure we're addressing all of the needs of these kids.

And then also remember, despite, so when a child does get a diagnosis of dyslexia or they're identified as a struggling word reader, that despite what their language skills are at that point, we know that they are at a great risk for slower language acquisition and slower growth of just world knowledge in general. I saw someone, it's, Dr. Tiffany Hogan, I think someone was asking what her name was, and it's the SeeHearSpeak Podcast. Another two, they did just recently, within the last year, there was a working memory clinical forum through one of the ASHA journals, as well as a dyslexia forum, and so there was quite a few research articles in both that are great great resources for

you to look into. So then talking briefly about speech sound disorders, we know that children with speech sound disorders are at a higher risk to develop reading difficulties. Children with speech sound disorders also have underlying phonological deficits in terms of phonological awareness, phonological memory, spelling, and word reading. So the prevalence of dyslexia is higher in those with a speech sound disorder if they have a family history of dyslexia. So again, that goes back to one of those first slides we talked about and just finding out what that family history is. Also difficulty producing words of higher phonological complexity, so words like, so it may not necessarily be a typical pattern. It can, so their speech production errors can range from a spectrum, so it can be more, you can see error patterns that you would see in, you know, those early, those younger years. But oftentimes, what you see is more of phonological confusion, like besketti for spaghetti or steposcope for stethoscope, okay.

So we just know that the exact rate of the comorbidity between speech sound disorders and dyslexia is unclear. However, research is finding that it's highly comorbid. The next area is ADHD and dyslexia. So ADHD is just problematic levels of inattention, hyperactivity or impulsive behaviors. So there are three subtypes, you have your hyperactive impulsive type, and those are those kids that are gonna be fidgety, excessive talking, blurting out. And then your inattentive types, so these are those students that are gonna make careless mistakes, they seem to like just not be listening or paying attention, and they are just disorganized in general.

And then you have a combination of the two. So these two do frequently co-occur, they say there's an 18 to 45% comorbidity rate. And these kids are also with ADHD and dyslexia together are just at a greater risk of academic difficulty. One thing I kinda want you to always keep in mind is the question are they not paying attention because they don't understand. Oftentimes, I hear when a kid is really struggling in school, and again, going back to those different simulations, is they're just not, are they truly not paying attention or is it one of those things where they've checked out because it's so

hard for them, so you'll see that often. And I always like to use the example of, if I were to go sit in a doctorate level physics class, I would have no idea what they were talking about. Even as hard as I tried to pay attention in that class, I would probably give it maybe five minutes and I would be completely checked out and not paying attention. So I always just kinda keep that in mind, I think, a lot of times, we're quick to just go to, and we see educators as well, well, they're just not paying attention when there could be a reason they're not paying attention. So this just kinda breaks down the similarities and differences, so we know dyslexia, there is a deficit in phonological awareness, verbal reasoning, verbal working memory. ADHD, it's self-regulation or response control. See difficulties with those executive functions. And then visual working memory, however, they do share a lot of traits as well.

They both struggle with rapid automatic naming tasks, just their general processing speed, and then both are strongly heritable. We'll briefly touch base on working memory, so when we talk about working memory, you have two aspects of it. You have your short term memory, which includes your phonological, and then your visual spatial short term memory. And then the next part is your information processing. So you have your short term memory and then the information processing. Working memory is a good predictor of academic achievement.

So children who scored in the 10th percentile or lower had an 80% chance of having a significant learning disability. So when we talk about your phonological loop, your phonological short term memory, this is responsible for processing your auditory information. And it's highly correlated with word decoding abilities at a young age when you're learning to sound out words, and you see that there, so phonological awareness and phonological short term memory are also highly correlated. Your visual sketch pad is thought to be involved in identifying those orthographic patterns and words. So again, if you go back, you think about the picture of the brain and that most posterior portion, that's that orthographic mapping, that instant recognition of those

letter sequences. And then your executive working memory, so your information processing, this is what processes all of that auditory and visual information that's coming in. So your processing can be influenced by attention, the cognitive load of the task, and then other executive function skills for remembering, such as inhibition and then switching, okay. So we'll talk a little bit about the cognitive limit theory. And so this states that we can only hold a certain amount of information in our working memory. So we know that when cognitive tasks require more attention, it's gonna minimize the resources we have for higher order cognitive tasks, such as like reading comprehension, okay. So on this next slide, I'm gonna kinda talk about a little bit more, talk about that cognitive limit and schemas, so schemas are going to help us remember information a little bit easier.

So if I were to ask you to remember this sequence of letters, there's two different schemas here. So in this first one, they're kinda just chunked in groups, nothing meaningful, whereas, so those of you that are more familiar with sports, you'll see that the way it's chunked kind of takes away from that cognitive load. So you're gonna be more likely to remember that sequence in the bottom row versus the sequence in the top row. Okay, and so what that just does is it takes away, that top row, it's gonna require more attention. So it's gonna minimize the cognitive resources you have available to recall those sequences.

And so think of that when you go back to that reading comprehension simulation that we did. That second passage I gave you where those words were extremely difficult to decode, your attention was going to decoding the words, so that left minimal resources available for you for the overall comprehension, so again, going back to those students where they really struggle with the decoding and then they're not understanding what they're reading because all their mental effort is going into just figuring out what the words say. So again, the cognitive load theory. So what this talks about is that working memory, so this is grounded on the belief that working memory is gonna interact with

long term memory and then other various types of cognitive processes, okay. So we know working memory can only hold a certain amount of information. And there's three different types of cognitive load, so you have intrinsic. And this is like the inherent qualities. So this can explain why some material is more difficult to learn that other, so think of reading versus language. So language acquisition, language acquisition is inherent to us, we are hardwired to learn how to use language, whereas reading is not. So reading is gonna be a higher cognitive load, higher intrinsic cognitive load. The extraneous cognitive load refers to more of how materials are presented, okay. So if only one system, talking about auditory versus visual, is used, then you're gonna have a higher extraneous load.

However, if you use auditory and visual materials to present information, they're gonna be able to see and hear the information, which will help them retain it a little bit easier because you're decreasing that cognitive load on, the extraneous cognitive load. And then the third is the germane cognitive load. So this is dependent on the experience of the learner. So I like to use the example of just a reading comprehension task. So if a child is a new learner, what this means is they don't have the experience, they don't have the schemas in place or the strategies in place to help them learn information. Whereas a more advanced learner might.

So for reading comprehension, if you're reading a passage about something you're not familiar with, you know to kind of some of those strategies, go through, read the headings. Use tables and pictures throughout the article to help you understand the information before you go back and try to read all of it. Whereas a new learner or someone who hasn't been explicitly taught that information may not have that. So their attention is focused more on that and not, they don't have as much cognitive energy to go towards understanding that information. And some researchers do suggest that reducing the cognitive load is better, so you wanna just decrease that cognitive load in general to kind of help them. However, others believe that, if you keep that cognitive

load high, that's gonna increase retention and comprehension of information because the child is gonna be engaged, like more engaged in the task. I know that's kind of a lot to process. There's a really great article in the working memory clinical forum by Dr. Katie Squires, and she goes into a lot more detail about that information, so that's a really great resource as well. And all of these articles are referenced in the slides as well at the end. So we know that children that have difficulties in the area of working memory struggle in all of these areas. Also, rapid automatic naming is another area of difficulty for kids with dyslexia. We know that poor rapid automatic naming is associated with reading problems.

However, that exact correlation is not known. It's more closely related to reading speed, not accuracy. And related to the ability to identify those visual forms and pair the symbol with its auditory counterpart. So we know that rapid automatic naming tasks for letters and numbers does have a stronger correlation than like colors and objects, so those of you familiar with the CTOPP and you think about those earlier kids, four to six, that you use those tasks with, but definitely a good indicator that something might be going on. We also know that training rapid automatic naming will not improve reading.

However, research has found that following like intensive and explicit phonological awareness training and improved reading skills, they also see an improvement in their rapid automatic naming. Okay, so we're gonna do another quick simulation before we go on to the roles of the SLP. So for this one, you will need a piece of paper, so hopefully, everyone has a piece of paper handy. And so for this first task, you are gonna use your non-dominant hand. And then I'm going to dictate some sentences for you. So I'll give everyone a couple seconds to grab the materials that they need. Okay. So please listen carefully and write the following sentences. Peter went to the store for milk. Remember to use your best writing, please. Ben studied for his science test. Stephanie asked, where is my pencil? Given a list of one to two syllable second grade

words containing short vowels, Jennifer will, without prompting, be able to decode those words with 95% accuracy. All right. So hopefully, everybody found that task a little bit frustrating. Anybody have any comments they wanna share in the Q&A? Someone said, stopped at Stephanie, LOL. I couldn't even get through the first sentence. That was not easy, I was behind by line three, it was difficult to keep up, so fast. I was writing the sentences with you, so if you didn't keep up with me. I had to go slowly and then gave up, got worse as sentences continued, that was horrible. Managed Peter and skipped the rest, good, okay. So what that is going to show is that these students with dyslexia, kind of what they're experiencing with their writing and spelling as well. So they need more time to process information, we just talked about that in working memory, in the working memory slides and how that information processing. So oftentimes, they need to slow down to think about what they're writing. And this is gonna affect their ability to produce complete and like comprehensive sentences.

And then also not to mention their handwriting. So there's so much going on that they're thinking about, they're trying to think about spelling, they're thinking about their thoughts, trying to process information and get it all, they're obviously not thinking about handwriting either. Someone said, I even tried cursive and that didn't help either. Good, okay. Now we're gonna do one more writing task. Okay, this time, I'm gonna back to the other slide, sorry. So what I would like you to do is just take a quick minute. This time, you can use your dominant hand, no tricks or anything with this one. And I want you to just take a quick minute and write a few sentences about what you did so far today. So I'll give you guys about a minute and a half, two minutes to write that. Okay, go ahead and stop, hopefully you got a couple sentences written down about your morning or your day so far today. Now we're gonna do another one. So this time, same thing, you can use your dominant hand. I'm not gonna make you switch hands this time, however, it's gonna be a little bit trickier. So you're going to write a few sentences about what you did yesterday. And you cannot use the following words that

are shown on the screen here, so a, and, be, for, have, in, of, that, the, to. Okay, so you can't use any of those words in your sentences. Also, any time you are going to write a letter T, you must substitute it for a letter B. Any time you'd write a letter O, substitute it for a letter A. So what this is gonna help you simulate is just those word finding and the spelling difficulties. So if you're trying to write the word top, don't write T-O-P and then cross out a T and put a B. I want you to be thinking about it as you go along, so you can't use any of those words up there and you have to substitute Bs for Ts and As for Os. So I'll give you a couple of minutes to write a paragraph about, or a couple sentences about what you did yesterday.

Okay, I'm gonna have you stop. Anybody wanna share comments in the Q&A form? Maybe then just kind of, frustrating and slow, yeah. So many rules. Kept my thoughts very limited, that's such a great, someone commented that it kept their thoughts very limited, that's so true, and I think that's kind of the take home from this activity, is you can have a child who, if you ask them, tell me about your trip this summer, and they can go above and beyond with details and giving, using great vocabulary, you know. We went and visited the Grand Canyon and it was, it was ginormous or whatever they wanna say. And then if you ask them to write about it, they'll tell you it was big, I had fun. So keeping their thoughts in that, it very much limits your creativity in writing, someone else said. So it's just, again, for you to kind of help, help you experience what that writing process is like for these students too, okay.

Someone else said they needed to drastically reduce, sorry, my sentences into phrases, so again, incomplete thoughts, incomplete sentences. Someone else said I had to keep stopping because I kept writing words that weren't allowed. And then someone else said, my sentences were much more simple than my first paragraph, exactly, good. So hopefully, those simulations kinda just helped you experience the difference of a child with typical language development versus somebody that is struggling with dyslexia and just overall language difficulty. So someone else says that

puts into perspective that extra time accommodations on IEPs, absolutely, yup. And then keeping in mind, depending on what they're struggling with, sometimes that extra time isn't even enough. Okay, we're gonna keep going through so we can have a few minutes left at the end for questions. So talking about the role of the SLP. Really, everyone, I just want you to kind of understand how pivotal our role is in improving early identification of these children because of our expertise in speech and language in general. I know a lot of times, our programs, and I do know more programs are starting to get more in depth into literacy and dyslexia, but in terms of mine at the time, we didn't have a ton of information about dyslexia presented to us. But we are the experts in speech, in the areas of speech and language, and based on what you've learned today, hopefully, you know how highly correlated and how they are related and what to be looking for in these students.

So in general, just be confident in your expertise, again, we know language, and I don't want you to fear away from if someone says the word dyslexia or reading. I don't want your first response to be oh, that's not within my scope of practice. It is, it definitely is within our scope of practice, even if we don't know a lot about it, there are so many resources out there available to us. And we do have a lot of knowledge to help these students, we may just not be as aware of it. But hopefully, these webinars will just kinda be your starting point or just an addition to furthering your education and knowledge in this area. And just share facts, things that you learned, share it with other people.

And just being able to understand that relationship between, like I said, with dyslexia and other communication disorders, and then encourage appropriate use of the dyslexia label. Hashtag say dyslexia. And then just promoting effective reading instruction. I'll kinda jump on a quick soapbox really quick, there are so many programs out there, box programs that I know that are beneficial and great. But we know, as clinicians, we just need to go by what the research shows and evidence, so there's not

a one size fits all program for these kids, and keeping that in mind and definitely just advocating for what's gonna be effective for the child. And that's gonna be determined by identifying not only where their breakdowns are, but what are the child's strengths. And I think, as SLPs, that's something that we're really good at doing. I'm not gonna go into much detail about this, 'cause we all should know what are domains are in service delivery. Domains, service delivery areas. However, this, ASHA does talk a little bit more about the spoken and written language. Kind of our scope, but just know that the disorders of written language include reading, decoding, spelling, and it can involve, like we've learned today, all five language domains, and we've seen that throughout the simulations that we kind of participated in today as well. And also that they can occur at various levels, so they can occur at that sound syllable word level, so looking at just decoding and phonemic awareness in general or discourse level at that reading comprehension and written expression.

And then again, just going back to those early warning signs, and I'm hoping that, when those first popped up earlier in the presentation, that right away, you were able to recognize, whoa, that's something that we see and that we recognize. So a lot of times, we're the first people that come into contact with these students, depending on like the settings that you're working in, I myself am in a private clinic, and so that's where I was seeing, the frustration is I was seeing these kids all the time and I was the first to see these kids and to kind of educate families on, even though we're not seeing this now, this is something that you need to be looking out for. So just that early identification and education.

So then just to kinda wrap everything up, when we're done here, kinda just take some time and reflect on your feelings and what you kind of experienced with those simulations that you completed and participated in today. And also, hopefully, there was at least one new piece of information that you learned here. And then write down three important things that you'd like to share with people today. Again, this is dyslexia

awareness month, and from what I've been told, it's also dyslexia awareness day, so maybe get on your social media and share three facts about dyslexia and hashtag say dyslexia or dyslexia awareness month. Because it starts with us, those that do know, to kind of start helping and educating other people. And this time, I'll turn it back over to Amy and we can do some questions the last few minutes.

- [Amy] Great, thank you so much, Heather. I'm feeling exhausted from trying those simulations. So I can't imagine how these kids feel, I think they were very effective in giving us an idea of the frustrations and struggles that these kids are facing, so thank you for that. I also wanted to remind our audience that there is a part two on Thursday where Heather is gonna be talking to us a little bit more about assessment and treatment of dyslexia, so please tune into that if you can. If you're not able to make the live webinar, there will be a recording, recorded version of it available a couple days afterwards as usual, so don't worry too much about that. I'm going to, Heather, I'm gonna try hitting a couple of the question that have quick answers first. And then we'll move on to the ones that are perhaps a little bit more in depth. I believe it was when you were talking about phonological long term memory. There was a bit on the diagram that said familiar word parts. And by that, were you talking about things like prefixes, suffixes, and so forth, someone was--

- [Heather] Yeah. So it could be prefix, yeah, it could be prefixes and suffixes, but it could also just be when they, like word families or just, some programs call them, excuse me, like units, like A-N-K always says ank. So that would be considered like a word part.

- [Amy] Thank you. There's another question about, could you repeat the basic phonological skills? Rhyming was one and--

- [Heather] Yeah, so basic, yeah, basic phonological awareness skills would be like the syllable segmentation, so how many syllables do you hear in the world butterfly. Rhyming is one, as well as alliteration. Those are more of those early phonological awareness skills. And we do go into that a little bit more in depth in part two as well.

- [Amy] Thank you. When is the earliest that you could diagnose a child with dyslexia?

- [Heather] That's a great question. You can identify a child with dyslexia as early as preschool. And so if you go back to those early warning signs, I will say just based on my experience, there is not one specific test or even a battery of tests that can really identify those kids early on, 'cause a lot of times, they do score within average limits, and depending on how you classify and qualify, you really need to go back and look at those early warning signs, family history, all of that, because you can identify those kids as early as four, five years old. And that's really when they need to be caught, those are, 'cause we can start, you know, providing those services and making sure they're getting the appropriate instruction and exposure to what they need to hopefully eliminate those difficulties before they even are exposed to reading instruction.

- [Amy] This is a bit of a segue from that, I think. Someone's asking about qualifying students for speech services for dyslexia if a language evaluation doesn't meet the qualification for direct services under state requirements.

- [Heather] That's also a difficult question to answer. Just, I mean, obviously, and we go into more of that on Thursday as well, but depending on what your state requires. It's, they're really, I'm gonna kinda just go off and say cut scores are not appropriate, those discrepancy models. So just really, again, identifying the need for it. And I know that's not the way it works. And I don't know if this is really answering your question, but if you don't have like a formal language testing, I would just, it depends how you qualify the child for dyslexia anyway. So I don't know if the question is asking like if they come

into the school with the dyslexia diagnosis. I don't know, maybe I'm not understanding the question, sorry.

- [Amy] And the person that put that in, if you wanna put in any elaboration, we'll see if we can get back to it. We have lots of questions in the queue. So how about, is cluttering a possible indicator or a warning sign, cluttering in the family or family history?

- [Heather] To be honest, I don't, I'm not as well versed in cluttering, so I can't really answer that, but I would just say in general, any history of speech and language difficulties would be cause of concern to kind of look at a little bit more.

- [Amy] Thank you. And someone had a question, so speaking of terminology, what is the difference, if any, between the terms dyslexia and reading disability?

- [Heather] That's another good question.

- [Amy] There's lots of them here.

- [Heather] And that is also another topic we go into more about classifying on Thursday, so I won't go into too much detail, but there are different ways to classify reading disorders. I think it goes back to just identifying where the child struggles with, so if you're looking at overall reading comprehension and that's where they're struggling, is it word recognition or is it their language comprehension or is it a mixture of both? So with, if a child is struggling with word recognition, most likely, it's dyslexia. So I've heard from several different researchers in presentations that I've gone to that they estimate that approximately 80% of students that are qualified as SLD in schools have dyslexia. So we will go, I go into a little bit more detail about to classify the different reading disorders in the next presentation.

- [Amy] There's a couple people that are asking questions that are somewhat related, and it has to do with the visual aspects of dyslexia. So you know, we know that auditory skills do affect reading skills. But someone's noting that we used to think that children possibly confused B and D or D and P. And someone else is similarly asking, is there a reading disorder with a visual component where they're seeing letters backwards and so forth, and do we have a name for that type of dyslexia? Is it a subtype of dyslexia? Can you comment on that?

- [Heather] Yeah, it's not necessarily a subtype of dyslexia. We do know, and again, like I've said throughout the presentation, dyslexia is not a visual issue. However, that does not mean that a child with dyslexia does not also have some vision difficulties going on. So it goes down to making sure the child, you get a whole picture of the child, so referring as necessary to OTs or ophthalmologists, whoever that may be. So a child could have dyslexia and also have a vision difficulty, a child may struggle to read because of a vision difficulty and not have dyslexia. But there's really no subtype of dyslexia where it would be a vision concern. I think I answered all of those parts to it.

- [Amy] Okay, very good. Let's see, I'm trying to get back up. Someone is commenting on a situation she's run into recently where a neuropsych eval was done, a diagnosis of dyslexia was given, the school then did an eval that included the resource specialist and the school's psychologist, but no language evaluation was done by the SLP. Is that common? Should the parent perhaps be encouraged to request an SLP evaluation, this is about a third grader.

- [Heather] Yeah, I, and that definitely, I do see that often, I think that's common, and again, that goes back to what we were just talking about the very end of the presentation. That we do need to advocate that the SLP definitely should be involved, should do a more thorough language assessment. And I do, again, all this, all of this,

like a lot of these questions I talk about a little bit more in detail on Thursday, 'cause I do talk about neuropsych evals versus speech and language evals as well. But I would definitely encourage the SLP to advocate for that, yes.

- [Amy] I'm gonna try to hit a couple more of these before we have to wrap up here. So someone has asked, saying, phoneme awareness and discrimination require abilities to process sound differences, like between long and short vowels or between stops and continuous consonants. Please comment on how these abilities might be tested in auditory processing disorder assessments, APD assessments, or is that something perhaps that will be commented on, I feel like this one was perhaps related to a particular slide and we are just getting to it now.

- [Heather] Yeah, so that's, again, that just goes back to overall, just your overall, just like a thorough language assessment and identifying, you know, those word discrimination, sound discrimination tasks. A lot of kids, and then even just looking at the overall phonological component, like where they're struggling, the phonological memory and their ability to discriminate sounds.

- [Amy] Let's see. Sorry, our Q&A pod is full, this is a hot topic. And people are having a lot of great comments and questions.

- [Heather] And my email address is available, so you can always email me questions as well.

- [Amy] Yes, I wanted to point that out to our participants as well, that it's towards the beginning of the handout, Heather's email address is there, so if we don't get to your question today, and I know that's gonna happen to a few of you, you can shoot her an email. Let's see, let me try perhaps one or two more here. What are your thoughts on phonological awareness or early reading programs designed for toddlers?

- [Heather] I think you also just have to consider like what is still developmentally appropriate. In terms of toddlers, I think it's, you're just really, I don't know of any explicit like programs, I don't even know of any out there that would be more appropriate for anyone under like the age of four, but I don't know that for sure. I think just even those early, that's where those early nursery rhymes come in and just language tasks and getting children involved in books and stories and a lot more of that just in person engagement is gonna be the most beneficial for toddlers. As they get older, pre-K, four, five year olds, when we see if they're starting to struggle with, you know, the alphabet and recognizing letters, then something more explicit and structured could be implemented. But in terms of toddlers, I would just highly encourage a lot more of those early, you know, sound play tasks.

- [Amy] Very good. All right, well, I think that we're going to wrap it up there today. There's still a few questions in the Q&A pod, but in respect of everybody's time, I think we should probably close things up. Thanks so much, Heather, this was a fantastic presentation. As I said, I loved the simulations and I see some comments of that as well in our Q&A pod. And I do wanna encourage everybody to come Thursday if you can, if you can't, that part two will be available as a video type format within a couple days afterwards. And thank you, participants, for your excellent questions, wow, there are some really great thought provoking comments and questions today, so thank you very much for participating. I'm going to wrap up the classroom, hopefully, we'll see most of you on Thursday. Heather, thanks again. I hope everybody has a great day, I'll see you later.

- [Heather] Thank you.