

- If you are viewing this course as a recorded course after the live webinar, you can use the scroll bar at the bottom of the player window to pause and navigate the course.
- This handout is for reference only. Non-essential images have been removed for your convenience. Any links included in the handout are current at the time of the live webinar, but are subject to change and may not be current at a later date.

No part of the materials available through the continued.com site may be copied, photocopied, reproduced, translated or reduced to any electronic medium or machine-readable form, in whole or in part, without prior written consent of continued.com, LLC. Any other reproduction in any form without such written permission is prohibited. All materials contained on this site are protected by United States copyright law and may not be reproduced, distributed, transmitted, displayed, published or broadcast without the prior written permission of continued.com, LLC. Users must not access or use for any commercial purposes any part of the site or any services or materials available through the site.

Technical issues with the Recording?

- Clear browser cache using [these instructions](#)
- Switch to another browser
- Use a hardwired Internet connection
- Restart your computer/device

Still having issues?

- Call 800-242-5183 (M-F, 8 AM-8 PM ET)
- Email customerservice@SpeechPathology.com

continued[®]

Incorporating Phonological Awareness and Orthography into Speech Sound Treatment

Kelly Farquharson, PhD, CCC-SLP

Associate Professor, Florida State University
kfarquharson@fsu.edu

Instagram: @classlab_FSU

FB and Twitter: @literacyspeech

continued[®]

- Financial: Kelly Farquharson was paid an honorarium by SpeechPathology.com for this presentation. Nonfinancial: no relevant relationships to disclose.
- Non-financial: Presenter has no relevant non-financial relationships to disclose.
- Content Disclosure: This learning event does not focus exclusively on any specific product or service.

continued[®]

continued[®]

- kfarquharson@fsu.edu
- <http://classlab.cci.fsu.edu>
- Instagram: @classlab_FSU
- Facebook: www.facebook.com/literacyspeech
- Twitter: @literacyspeech

3

continued[®]

Previous Speechpathology.com Webinar

- Connections between speech sound production and literacy skills

4

continued[®]

continued

Learning Outcomes

After this course, participants will be able to:

- Explain why phonological awareness skills should be included in a speech sound treatment session.
- Describe how one phonological awareness skill could be incorporated into speech sound treatment.
- Identify one new way to incorporate orthography into speech sound therapy sessions.

5

continued

Learning Outcomes

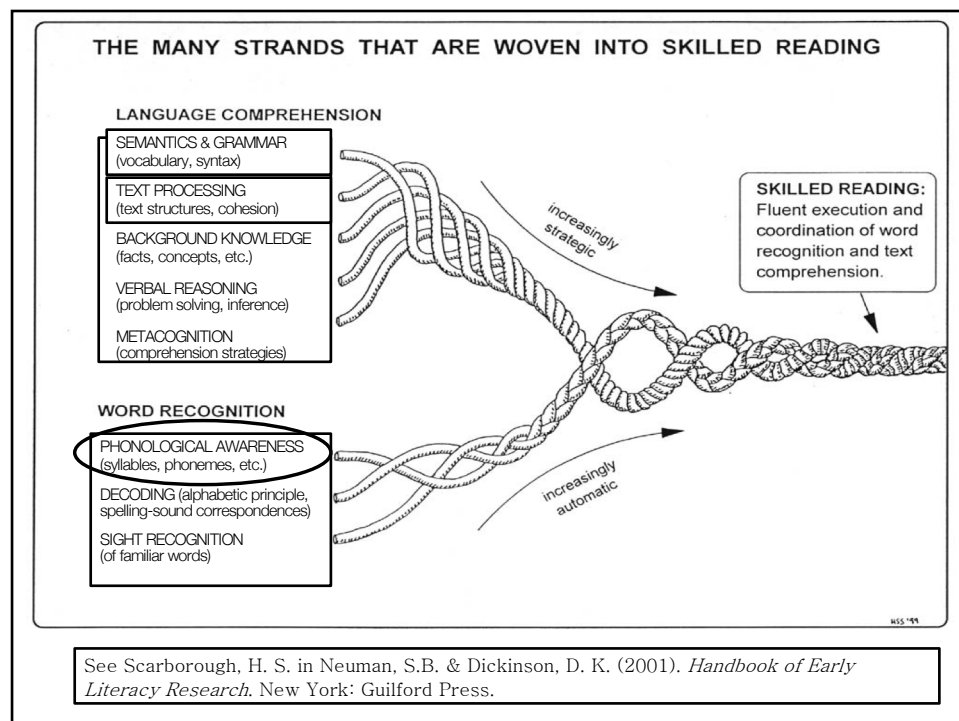
After this course, participants will be able to:

- Explain why phonological awareness skills should be included in a speech sound treatment session.

6

Phonological Awareness

7



continued

Phonological Awareness

- One's sensitivity to the sound structure of a word
- Measured by rhyming, blending, and deletion tasks
- *PA is more than just rhyming!!*

Q1

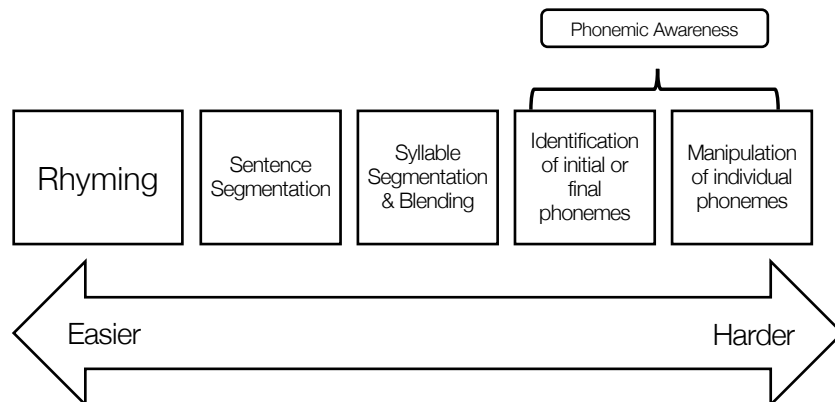
continued

Phonological awareness

- Longitudinal research supports causal link between phonological awareness and early reading (Hogan, Catts, & Little, 2005)
 - Good phonological awareness = good readers
 - Poor phonological awareness = poor readers

continued

Phonological Awareness Continuum



Phonological Awareness

PA & SSD – Relations over time

Preschool:

- Preschoolers with SSDs are at increased risk for deficits with phonological awareness (Anthony et al., 2011; Bird, Bishop, & Freeman, 1995; Foy & Mann, 2011; Lewis et al., 2011; Lewis & Freebairn, 1992; Peterson, Pennington, Shriberg, & Boada, 2009; Raitano, Pennington, Tunick, Boada, & Shriberg, 2004; Rvachew, Ohberg, Grawburg, & Heyding, 2003)
- Atypical speech sound errors and distortions in preschool are predictive of weak PA skills (Preston & Edwards, 2010)
- This is true even when language is normal (Bird et al., 1995; Overby, Trainin, Smit, Bernthal, & Nelson, 2012; Raitano et al., 2004; Rvachew et al., 2003)
- The proportion of speech sounds in error at age 5 is related to the likelihood of persistent errors at age 8 (Roulstone et al., 2009)

PA & SSD – Relations over time

School-aged:

- Children with persistent speech sound disorders (2-5th grade) have markedly weaker PA skills compared to same-age peers (Farquharson, 2012)
- Children with “residual” SSD, ages 8.5-10, exhibit cortical and subcortical differences during phonological processing tasks (Preston, Felsenfeld, Frost, Menci, Fulbright, Grigorenko, Landi, Seki, & Pugh, 2012)
- Atypical speech sound errors in preschool are predictive of school-age PA abilities; if more than 10% of the child’s speech has atypical errors, the child is likely to have deficits in PA, reading, and spelling (Preston & Hull, 2012)

PA & SSD – Relations over time

Adolescents:

- 10-14 year old children with “residual” speech sound errors (no comorbid diagnoses) have weaker phonological processing skills compared to same-aged peers (Preston & Edwards, 2007)
- Phonological processing (word reading and phonological working memory) skills have been shown to be weak even once the speech sound disorder is remediated (Farquharson, 2015; Raitano, Tunick, Pennington, Boada, & Shriberg, 2004)

Does age matter?

- These studies across child development show that PA can and should be taught at any age!
 - Activities can be adapted to use words more appropriate for older children
- English-speaking children should have all phonemes mastered by age 6 (McLeod & Crowe, 2018)

continued

PA & SSD

- Children with speech sound disorders are at risk for reading impairment
- Incorporating PA in to speech sound treatment can help to bootstrap phonological skills for both speech and reading

Q4 17

continued

Adding PA to Speech Sound Sessions

18

continued

Learning Outcomes

After this course, participants will be able to:

- Describe how one phonological awareness skill could be incorporated into speech sound treatment.

19

Splinter skills

- Don't teach phonological awareness as a splinter skill, meaning:
 - PA skills respond well to explicit instruction, but it *should be contextualized* within how those skills will be needed

Q3 20

continued

Why contextualize?

- It helps provide support for understanding when and how those skills are needed
 - It is not the case that these skills cannot be understood without context, it's just that it helps to strengthen the connections and make it more obvious why these skills matter

Q9 21

continued

- Why is it important to talk about rhyming words?
- Why is it important to be able to manipulate sounds in words?
- What other skills can you work on simultaneously?

22

Choosing words

- Choose words from the curriculum
 - Vocabulary lists
 - Spelling lists
- Choose words from popular or common story books, picture books, or graphic novels
 - Any book that the child is interested in!
- *Do not let commercial products govern which words you use!*

Q5

23

Early elementary school ideas

- A child working on the /f/ sound
- Some target words from kindergarten and first grade vocabulary lists:
 - Shade
 - Shore
 - Sheep
 - Shovel
 - Shriek

24

Early elementary school ideas

- Shade
- Shore
- Sheep
- Shovel
- Shriek

Consider
contrastive
approaches
like minimal
pairs

1. How many words can you think of that rhyme with “shade”? (made, paid, fade, raid, stayed)

25

Early elementary school ideas

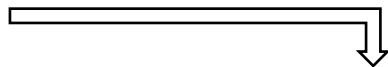
- Shade
- Shore
- Sheep
- Shovel
- Shriek

1. How many words can you think of that rhyme with “shade”? (made, paid, fade, raid, stayed)
2. What happens if you take the “sh” away from “shade” and change it to an /r/?

26

Early elementary school ideas

- Shade
- Shore
- Sheep
- Shovel
- Shriek

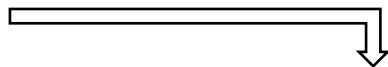


1. How many words can you think of that rhyme with "shade"? (made, paid, fade, raid, stayed)
2. What happens if you take the "sh" away from "shade" and change it to an /r/?
3. Can you think of three other words that start with the same sound as "shade"?

27

Early elementary school ideas

- Shade
- Shore
- Sheep
- Shovel
- Shriek

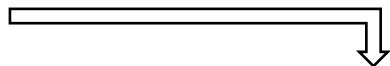


1. How many words can you think of that rhyme with "shade"? (made, paid, fade, raid, stayed)
2. What happens if you take the "sh" away from "shade" and change it to an /r/?
3. Can you think of three other words that start with the same sound as "shade"?
4. What happens if I change the /d/ at the end of "shade" to a /p/? Do those words rhyme?

28

Early elementary school ideas

- Shade
- Shore
- Sheep
- Shovel
- Shriek

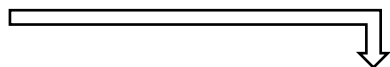


1. Let's think of a few words that are similar to "sheep". Can you think of words that:
 - a. Start with the same sound?
 - b. End with the same sound? (hop, scallop, seep)
 - c. Rhyme? (weep, leap, sleep)

29

Early elementary school ideas

- Shade
- Shore
- Sheep
- Shovel
- Shriek



1. Let's think of a few words that are similar to "sheep". Can you think of words that:
 - a. Start with the same sound?
 - b. End with the same sound? (hop, scallop, seep)
 - c. Rhyme? (weep, leap, sleep)
 - a. Then you can talk about how some words can end in the same sound and rhyme and some words can end in the same sound and not rhyme

30

Early elementary school ideas

- Shade
- Shore
- Sheep
- Shovel
- Shriek

Now consider
how you can
expand this to
also target
vocabulary

1. Let's think of a few words that are similar to "sheep". Can you think of words that:
 - a. Start with the same sound?
 - b. End with the same sound? (hop, scallop, seep)
 - c. Rhyme? (weep, leap, sleep)
 - a. Then you can talk about how some words can end in the same sound and rhyme and some words can end in the same sound and not rhyme

31

Early elementary school ideas

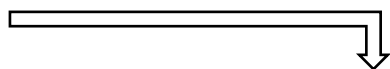
- Shade
- Shore
- Sheep
- Shovel
- Shriek

1. Let's think of a few words that are similar to "sheep". Can you think of words that:
 - a. Start with the same sound?
 - b. End with the same sound? (hop, scallop, seep)
 - c. Rhyme? (weep, leap, sleep)
 - d. Are from the same category? (farm animals)
 - e. Are from the same category AND start with the same sound? (sheepdog)

Q10 32

Early elementary school ideas

- Shade
- Shore
- Sheep
- Shovel
- Shriek



1. Let's think of a few words that are similar to "sheep". Can you think of words that:
 - a. Are from the same category? (farm animals)
 - b. Are from the same category AND start with the same sound? (sheepdog)
 - c. Are not farm animals but start with the same sound? (shark, shrimp, shellfish)
 - a. Expand on these things – what makes them the same and different?

33

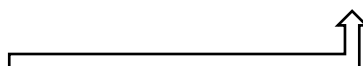
Early elementary school ideas

- Shade
- Shore
- Sheep
- Shovel
- Shriek

In addition to examples previously mentioned, when the target word is a verb, you can also add:

- a. Can you think of another verb that means the same thing as "shriek"?
 - i. (yell, shout, scream, holler, yelp, screech, bellow, roar) [see next slide]

Moving from
vocabulary to
morphosyntax



Q10

34

continued

The diagram shows a horizontal double-headed arrow representing a spectrum of distress. Below the left arrowhead is a box labeled 'Less upset', and below the right arrowhead is a box labeled 'More upset'. Above the arrow, several words are placed in rounded rectangular boxes. From left to right, the words are: Shriek, shout, screech, scream, holler, Roar, bellow, yelp, and yell. The words are arranged in two rows: the top row contains Shriek, shout, screech, scream, and holler; the bottom row contains Roar, bellow, yelp, and yell.

35

continued

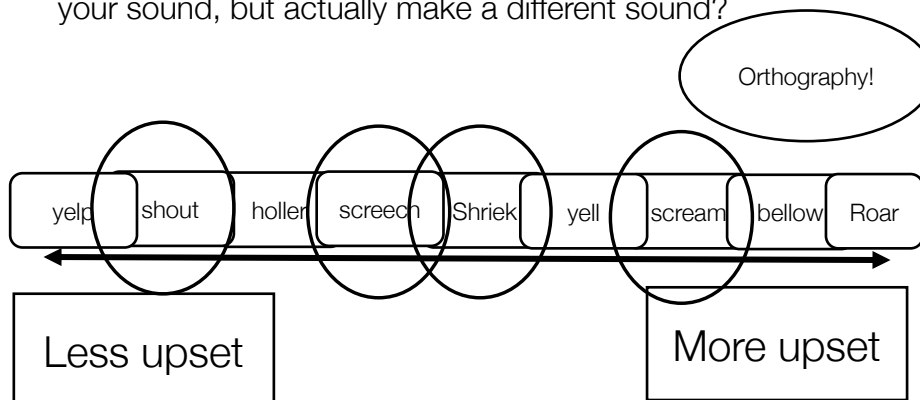
Now, which of those words start with your SOUND?

The diagram shows the same horizontal double-headed arrow spectrum from 'Less upset' to 'More upset'. The words are now arranged in a single row in rounded rectangular boxes: yelp, shout, holler, screech, Shriek, yell, scream, bellow, and Roar. Two words are circled with black lines: 'yelp' at the far left (under 'Less upset') and 'Shriek' in the middle (between 'screech' and 'yell').

36

continued

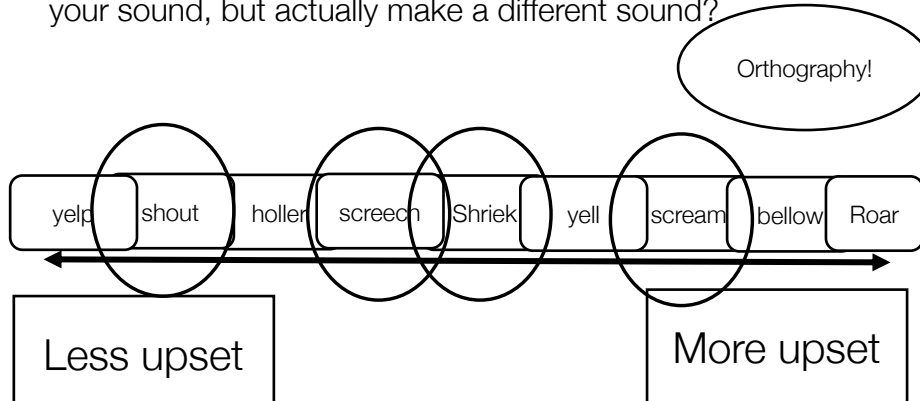
- Now, which of those words start with your SOUND?
- And which of those words start with the same LETTER as your sound, but actually make a different sound?



37

continued

- Now, which of those words start with your SOUND?
- And which of those words start with the same LETTER as your sound, but actually make a different sound?

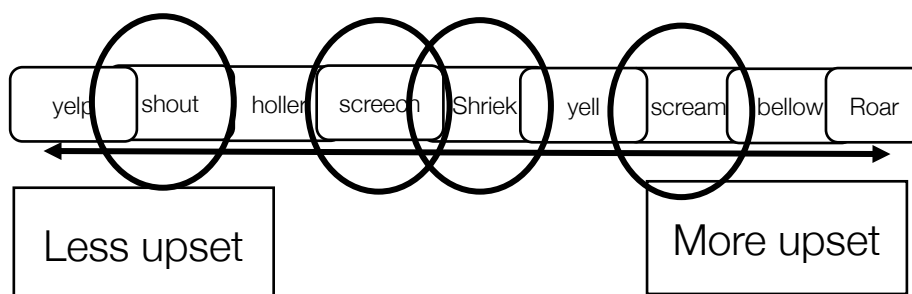


38

continued

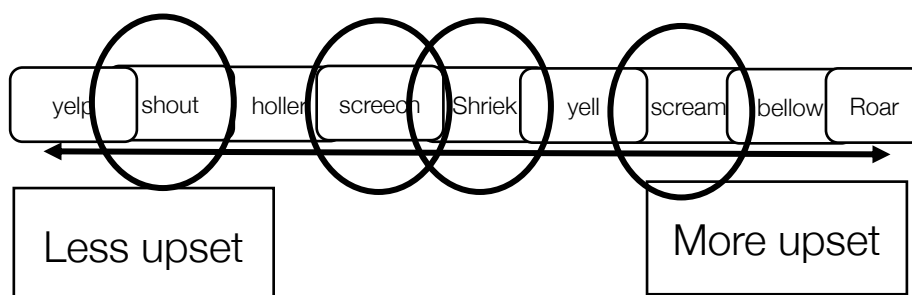
continued

- Now, which of those words start with your SOUND?
- And which of those words start with the same LETTER as your sound, but actually make a different sound?
- How do we make these past tense?



continued

- How do we make these past tense?
 - Let's do each one and talk about if they sound the same/ different
 - "shouted" : adds a syllable -ed because the original word ends in /t/
 - "shrieked" : ends in /t/ because the original word ends in a voiceless sound
 - "screamed" : end in /d/ because the original word ends in a voiced sound



Q10

Orthography

41

Learning Outcomes

After this course, participants will be able to:

- Identify one new way to incorporate orthography into speech sound therapy sessions.

42

What is orthography?

- Literally means “correct writing” (Apel, 2011)
- The letters and letter patterns that convey meaning in written language
- How spoken language is represented in print

43

Orthographic Knowledge & Awareness

- Understanding how letters and letter patterns map on to sounds, and how we store those relationships in our memories
 - (Apel, 2011; Ehri, 2014)
- Important for many populations of children
 - Speech sound disorders (Farquharson, 2019; Sutherland & Gillon, 2005)
 - Dyslexia (Alt et al., 2019; Baron et al., 2019)
 - Developmental language disorder (Chambre et al., 2019)

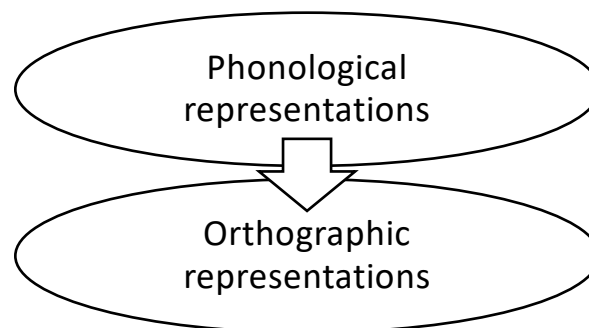
Q6

What is a sight word?

- The sight of the word immediately activates its pronunciation and meaning in memory
- To build sight words in memory, **orthographic mapping**, is required
- What is needed for orthographic mapping?

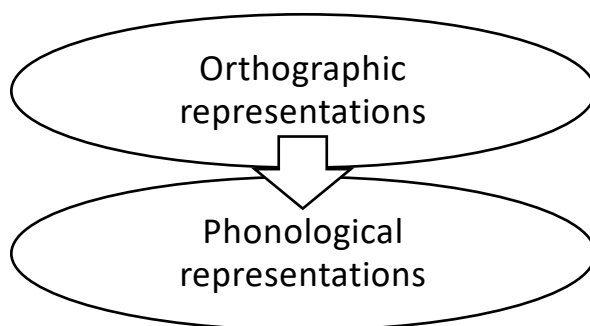
(Ehri, 2014)

PONY = BOLOGNA



continued

COUGH=THROUGH= ROUGH = THOUGH



continued

SSD and mapping

- Children with SSD often struggle to make the translation between phonology and orthography (Sutherland & Gillon, 2005).
- Long-term difficulties even after the sound is remediated (Farquharson, 2015; Felsenfeld et al.)

continued

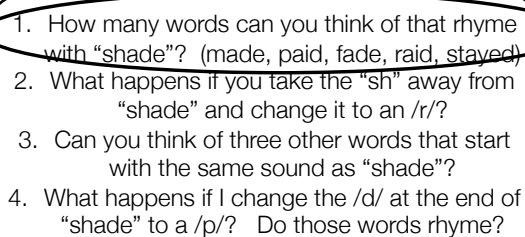
How young is too young?

- Exposing children to orthography is a fantastic and powerful linguistic tool
 - *Facilitates learning phonological skills*
- This is appropriate at any age – what you ask of the child will vary based on age
 - 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
 - Older children can write words, sentences, stories

Q7 49

Ideas for Incorporating Orthography

- Shade
- Shore
- Sheep
- Shovel
- Shriek

- 
1. How many words can you think of that rhyme with "shade"? (made, paid, fade, raid, stayed)
 2. What happens if you take the "sh" away from "shade" and change it to an /r/?
 3. Can you think of three other words that start with the same sound as "shade"?
 4. What happens if I change the /d/ at the end of "shade" to a /p/? Do those words rhyme?

50

Ideas for Incorporating Orthography

- Target word: Shade
 - (Non-exhaustive) List of rhyming words: made, paid, fade, raid, stayed
 - Can you come up with non-words? How would they be spelled? How did you decide that?
- Talk about the different spelling patterns!
 - -ade
 - -aid
 - -ayed
- They all sound the same, but LOOK different!

51

Ideas for Incorporating Orthography

- Target word: Shade
 - (Non-exhaustive) List of rhyming words: made, paid, fade, raid, stayed
- Talk about the different spelling patterns!
 - -ade
 - -aid
 - -ayed
- Practice writing/spelling these words

52

Ideas for Incorporating Orthography

- Target word: Shade
 - (Non-exhaustive) List of words that share the same sound: made, paid, fade, raid

- Talk about the differences

- -ade
- -aid
- -ayed

If you have a child who gets frustrated by these differences, the best thing you can do is ACKNOWLEDGE how hard this is! English is a difficult language. And if your language system is impaired, it's even harder. Acknowledging that is the kind of support that our kids really need.

- Practice writing/ spelling

words

53

Orthography in Treatment

- Write out the words
 - On paper, in sand
- Spell the words
- Get the spelling list from the teacher and have the child identify if their sound is in any of the words
 - If so, practice those ones in therapy
 - If not, can you incorporate PA by making a rhyming word that starts with their sound and rhymes with the target spelling work?

54

continued

- Talk about the different letter patterns that can make their sound
 - k, c, ck, ch, etc
- Get vocab words from the teacher and find the sound
- Photocopy chapters from books and use a highlighter to find the words with their sound
- Some commercially available products have the letters that make the sound highlighted. Ask questions like, “Do you know why these letters are highlighted?”
 - Meta-awareness is often challenging

55

continued

My favorite context:

- Books!

56

Print Referencing

- See print referencing research:
 - Justice, L. M., & Ezell, H. K. (2004). Print Referencing. Language, Speech, and Hearing Services in Schools.
 - Justice, L. M., McGinty, A. S., Piasta, S. B., Kaderavek, J. N., & Fan, X. (2010). Print-focused read-alouds in preschool classrooms: Intervention effectiveness and moderators of child outcomes. Language, Speech, and Hearing Services in Schools.
 - Justice, L. M., Kaderavek, J. N., Fan, X., Sofka, A., & Hunt, A. (2009). Accelerating preschoolers' early literacy development through classroom-based teacher-child storybook reading and explicit print referencing. Language, Speech, and Hearing Services in Schools.
 - Piasta, S. B., Dynia, J. M., Justice, L. M., Pentimonti, J. M., Kaderavek, J. N., & Schatschneider, C. (2010). Impact of professional development on preschool teachers' print references during shared read alouds: A latent growth curve analysis. Journal of Research on Educational Effectiveness, 3(4), 343-380.
 - Zucker, T. A., Justice, L. M., & Piasta, S. B. (2009). Prekindergarten teachers' verbal references to print during classroom-based, large-group shared reading. Language, Speech, and Hearing Services in Schools.

57

Prepping for a book-based treatment session

- Go through the book in advance and find:
 - Words that have the child's target speech sound
 - Bonus points if the sound is not represented by the "typical" orthography (e.g., the "sh" sound in "transportation")
 - Words that have multiple syllables
 - Words that have easy rhymes
 - Words that have difficult or no rhymes
 - Make them up!
 - Words that could be good for deletion or blending
 - Words that might be new vocabulary items
 - Words that could teach a morphosyntax structure

58

continued

Book-based therapy session

- Incorporate PA and orthography examples presented herein
- Let the child lead – did they find a letter or letter pattern that you did not? Talk about it!
 - Can they find “their” letter (the first letter of their first name)

59

continued

Conclusions

60

Assessment Implications

- Test phonological awareness in all SSD evaluations
- Obtain material from classroom teacher that gives information on decoding, phonological awareness, or spelling skills
- Screen early and often; and don't screen "just" for speech sound production

61

Treatment Implications

- Include phonological awareness
- Try minimal pairs
- Include reference to orthography

62

Treatment Implications

- Partner with reading specialists and special educators
- Push in to the classroom
- Use curriculum based vocabulary

63

Clinical Implications

- Children with SSD may have poor phonological awareness and difficulty with letter sound correspondence
- SLPs are on the front lines of defense for these children
 - Early SSD and language impairments put children at risk for later literacy deficits... EVEN IF the issue has remediated
- Be mindful of the warning signs and open to collaboration or consultation

Selected References

- Alt, M., Gray, S., Hogan, T. P., Schlesinger, N., & Cowan, N. (2019). Spoken word learning differences among children with dyslexia, concomitant dyslexia and developmental language disorder, and typical development. *Language, speech, and hearing services in schools*, 50(4), 540-561.
- Baron, L. S., Hogan, T. P., Alt, M., Gray, S., Cabbage, K. L., Green, S., & Cowan, N. (2018). Children with dyslexia benefit from orthographic facilitation during spoken word learning. *Journal of Speech, Language, and Hearing Research*, 61(8), 2002-2014.
- Brosseau-Lapr , F., & Roepke, E. (2019). Speech Errors and Phonological Awareness in Children Ages 4 and 5 Years With and Without Speech Sound Disorder. *Journal of Speech, Language, and Hearing Research*, 62(9), 3276-3289.
- Cabbage, K. L., Farquharson, K., Iuzzini-Seigel, J., Zuk, J., & Hogan, T. P. (2018). Exploring the overlap between dyslexia and speech sound production deficits. *Language, Speech, and Hearing Services in Schools*, 49(4), 774-786.
- Chambr , S. J., Ehri, L. C., & Ness, M. (2019). Phonological decoding enhances orthographic facilitation of vocabulary learning in first graders. *Reading and Writing*, 1-30.
- Colenbrander, D., Miles, K. P., & Ricketts, J. (2019). To see or not to see: How does seeing spellings support vocabulary learning?. *Language, speech, and hearing services in schools*, 50(4), 609-628.
- Farquharson, K. (2019). It Might Not Be "Just Artic": The Case for the Single Sound Error. *Perspectives of the ASHA Special Interest Groups*, 4(1), 76-84.
- Farquharson, K., Tambyraja, S. R., & Justice, L. M. (2020). Contributions to Gain in Speech Sound Production Accuracy for Children With Speech Sound Disorders: Exploring Child and Therapy Factors. *Language, Speech, and Hearing Services in Schools*, 1-12.
- Gillon, G., & Macfarlane, A. H. (2017). A culturally responsive framework for enhancing phonological awareness development in children with speech and language impairment. *Speech, Language and Hearing*, 20(3), 163-173.
- Hume, S. B., Schwarz, I., & Hedrick, M. (2018). Preliminary Investigation of the Use of Phonological Awareness Paired With Production Training in Childhood Apraxia of Speech. *Perspectives of the ASHA Special Interest Groups*, 3(16), 38-52.

65

- kfarquharson@fsu.edu
- <http://classlab.cci.fsu.edu>
- Instagram: @classlab_FSU
- Facebook: www.facebook.com/literacyspeech
- Twitter: @literacyspeech

66