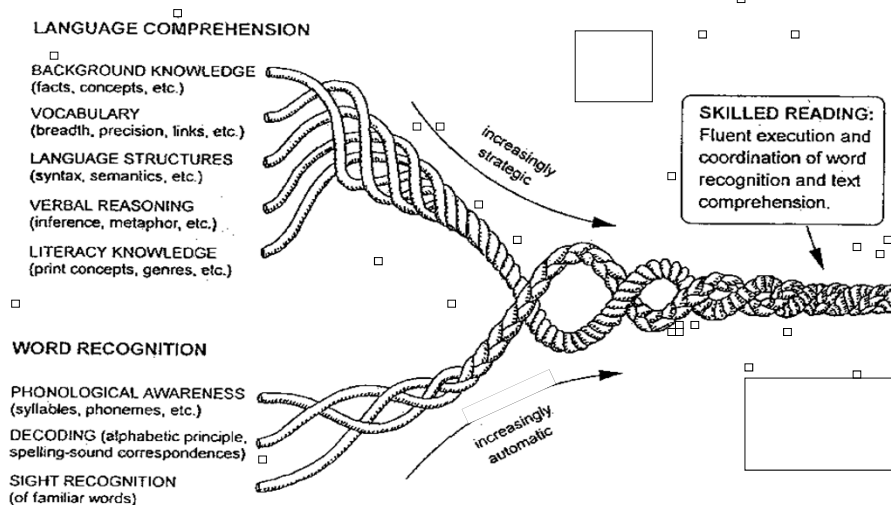
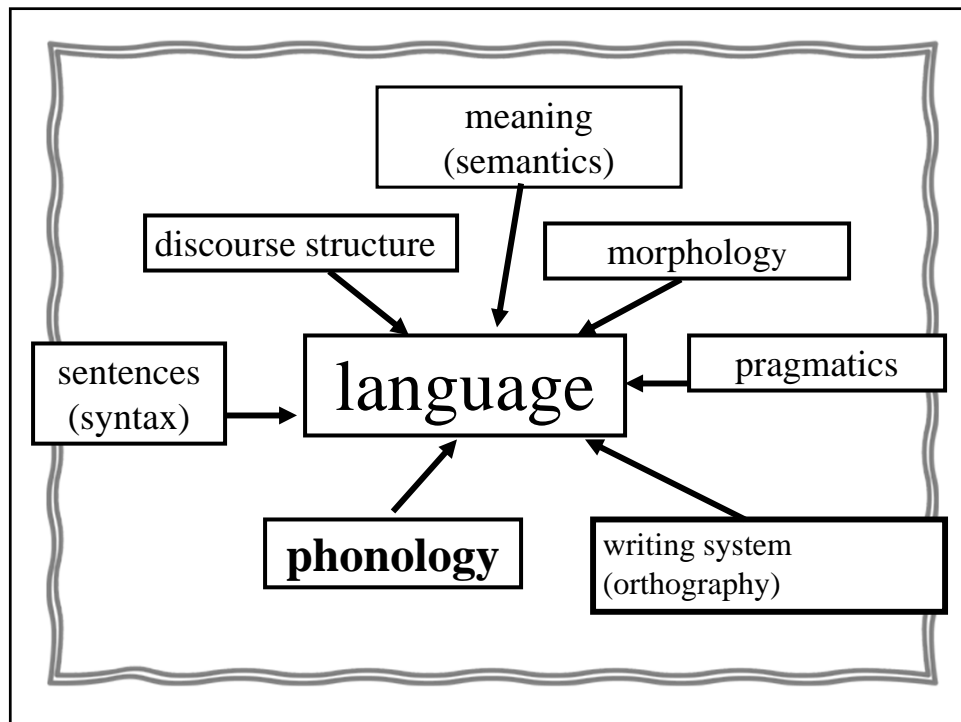


Sorting Out the “Ph” Factors in Foundational Reading Skill

Louisa C. Moats, Ed.D.
(louisa.moats@gmail.com)

The Many Strands that are Woven into Skilled Reading (Scarborough, 2001)





Phonemes held in working memory create mental “parking spots” for graphemes.

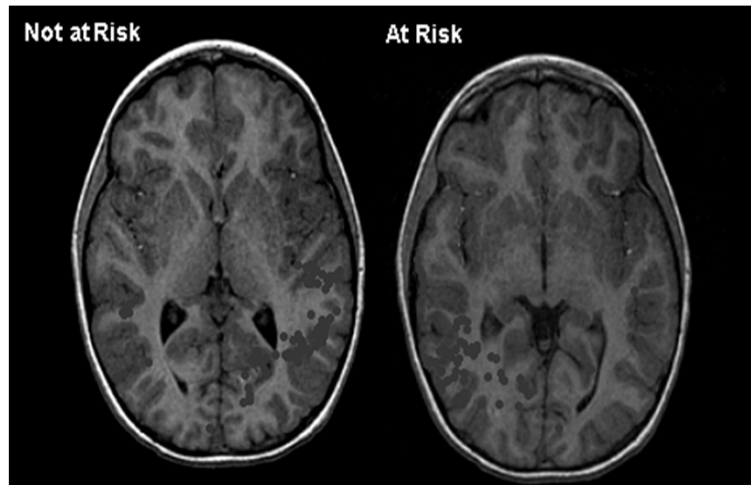
/b/ /ē/ /ch/ /ə/ /z/

b ea ch e s

/sh/ /ā/ /p/

sh a p e

5 Year Olds Before Learning To Read



Phoneme Awareness: How Many Speech Sounds?

ice _____

sigh _____

peak _____

keep _____

weight _____

cheese _____

sing _____

fox _____

quick _____

batter _____

Phoneme Segmentation of “Hard Words”

LANGUAGE, SPEECH, AND HEARING SERVICES IN SCHOOLS, October 2008, 39, 512–520

% correct

	SLPs	Teachers
knuckle	90	73
sing	71	45
think	75	41
poison	60	34
squirrel	51	18
quick	70	11
box	61	10
start	31	6
fuse	21	3
use	17	3

Why Is Phoneme Awareness Challenging?

“Children faced with the task of learning to read in an alphabetic script cannot be assumed to understand that letters represent phonemes because awareness of the phoneme as a linguistic object is not part of their easily accessible mental calculus, and because its existence is obscured by the physical properties of the speech stream.”

(A. Liberman, 1989, Haskins Laboratories of Yale University)

8

A Phoneme is a Mouth Gesture

Consonant sounds are closed speech sounds.
What is your mouth doing as you say each of these sounds?

/p/	(pop)	/t/	(tip)	/k/	(back)
/b/	(bob)	/d/	(dip)	/g/	(bag)
/m/	(mob)	/n/	(nip)	/ng/	(bang)

Intervention! (NRP, 2000)

The **National Reading Panel** concluded that
“ . . . teaching children to manipulate phonemes in words was highly effective under a variety of teaching conditions with a variety of learners across a range of grade and age levels and that teaching phoneme awareness (PA) to children significantly improves their reading more than instruction that lacks any attention to PA.”

Direct Teaching of Phoneme Awareness Pays Off

Gains from training in phonological awareness in kindergarten predict reading comprehension in Grade 9!

Kjeldsen, Niemi, Olofsson, & Witting (2014),
Scientific Studies of Reading, 18:452-467.

Word perception, memory, and retrieval depend on phonological processing.

/f/ /l/ /u/ /sh/
/f/ /l/ /e/ /sh/
/f/ /r/ /e/ /sh/

tenet, tenant
secede, succeed
loitering, littering

Recognition of word form enables access to word meaning (Perfetti, 2011)

ATTENTION

Due to remodeling construction, SUBWAY will be closed for today. We apologies for any incontinence this has caused.

Please visit our nearest location at 38 th and Sheridan Blvd. in the Kings shopping center.

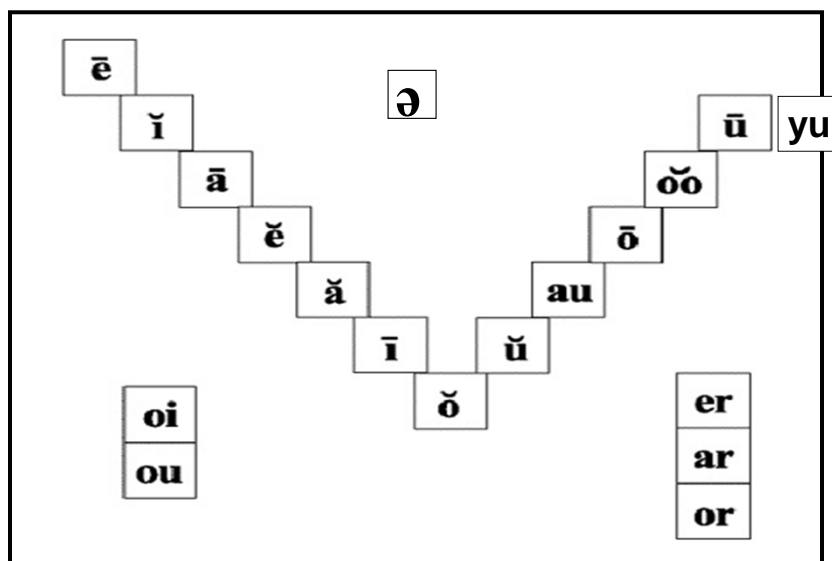
Summary So Far

- Phonological processing weaknesses typically (but not always!) characterize poor readers at all ages
- Phoneme awareness tasks (segmenting, identifying and manipulating individual speech sounds in words) are important predictors of risk
- Teaching PA systematically in the first year of schooling has lasting beneficial effects

Consonant Phonemes by Place and Manner of Articulation

	lips (bilabial)	teeth on lips/ labiodental	between teeth (interdental)	behind teeth (alveolar)	roof of mouth (palatal)	back of throat (velar)	glottis
stops unvoiced voiced	/p/ /b/			/t/ /d/		/k/ /g/	
nasals	/m/			/n/		/ŋ/	
fricatives unvoiced voiced		/f/ /v/	/θ/ /ð/	/s/ /z/	/ʃ/ /ʒ/		
affricates unvoiced voiced					/tʃ/ /dʒ/		
glides unvoiced voiced					/y/ /w/	/wʰ/ /w/	/h/
liquids				/l/	/r/		

Vowel Sounds of English, by Articulation



Think Sound, Not Spelling

**Phonological awareness
can be done in the dark!**

Pronunciation (articulation) is key.

A phoneme is NOT a letter!

Children Confuse Sounds That Share Features of Articulation

<u>E</u> FRY	e <u>v</u> ery
<u>I</u> NEMS	i <u>t</u> ems
<u>P</u> ASMET	<u>b</u> asement
GO <u>A</u> CH	gar <u>a</u> ge
<u>S</u> GAT	s <u>k</u> ate

Which Errors are Phonologically Driven?

#6

1 fnn	fan	6 wot	wait	11 gmm	dream
2 pnt	pet	7 gok	chunk	12 bab	blade
3 dng	dig	8 cld	sled	13 kog	coach
4 mip	mob	9 sng	stick	14 fit	fright
5 rop	rope	10 gnt	shine	15 cne	snowing

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Refer to Mouth Position When Teaching Speech Sounds

- How high is the tongue?
- What part of the tongue (tip, middle or root) is lowered or raised?
- What is the position of the lips?
- Is the sound stopped or continuous?
Nasal or not nasal?

Ehri, L. (2014) *Scientific Studies of Reading*

Be Aware of Coarticulation, Allophonic Variation

- dress, train -- affrication
- take, stake, kate – aspiration, deaspiration of stops
- ladder, latter – tongue flapping
- better, button, buckle -- syllabic consonants
/r/, /n/, /l/
- back vs. bank; pig vs. pink -- vowel nasalization before a nasal consonant

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Allophonic Variation: Which is the best keyword to associate with each phoneme?

short e, /ĕ/ --- egg; elephant; engine; Ed; echo

short I, /ĭ/ --- igloo, Indian, itch

consonant /d/ --- desk, dress

consonant /t/ --- table, train, twin

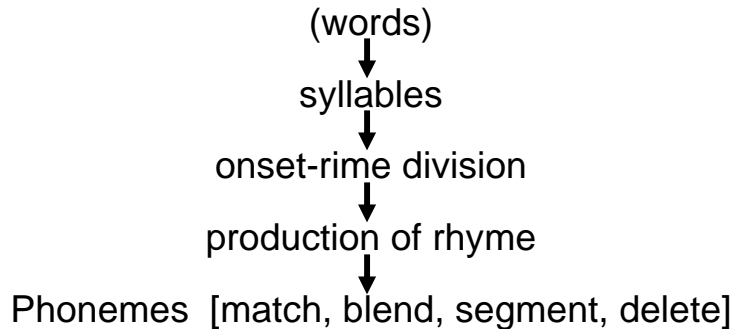
PA Benchmarks Between Ages 4–9

Typical Age	Skill Domain
4	Rhyme identification, alliteration.
5	Rhyme production, phoneme matching, syllables counting.
5.5	Onset-rime, initial consonant isolation.
6	Phoneme blending, segmentation (simple).
6.5	Phoneme segmentation, blending, substitution.
7	Initial and final sound deletion.
8	Deletion with blends.
9	Longer and more complex deletion tasks.

General Principles of Instruction

- brief [10–15 minutes], distributed, frequent lessons
- two to three activities within a lesson
- goal is phoneme segmentation/ blending by first grade
- progressive differentiation of what's in a word – larger linguistic units to smaller

Progress Through Phonological Space



General Principles, Teaching PA

- teach the IDENTITY of each sound
- have children produce words and sounds
- model, lead, observe (I do one, you do one)
- give immediate corrective feedback
- use movement – vocal, manual, whole body
- transition to letters as appropriate.

Using Sound Boxes

- Say the word.
- Model: listen as I say the sounds.
- Guided practice: let's do one together.
- Now you map the sounds.

/sh/ /ar/ /k/



○	○	○	
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Sound Substitution With Colored Blocks

- Show me “shop”.
- Now show me “chop”.
- Now show me “chip”.

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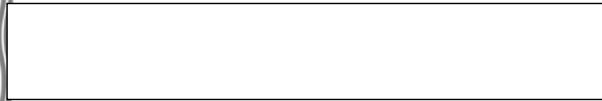
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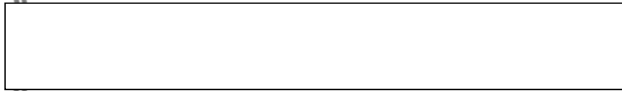
Sound Chaining with Colored Blocks



steem



stream



street



streets

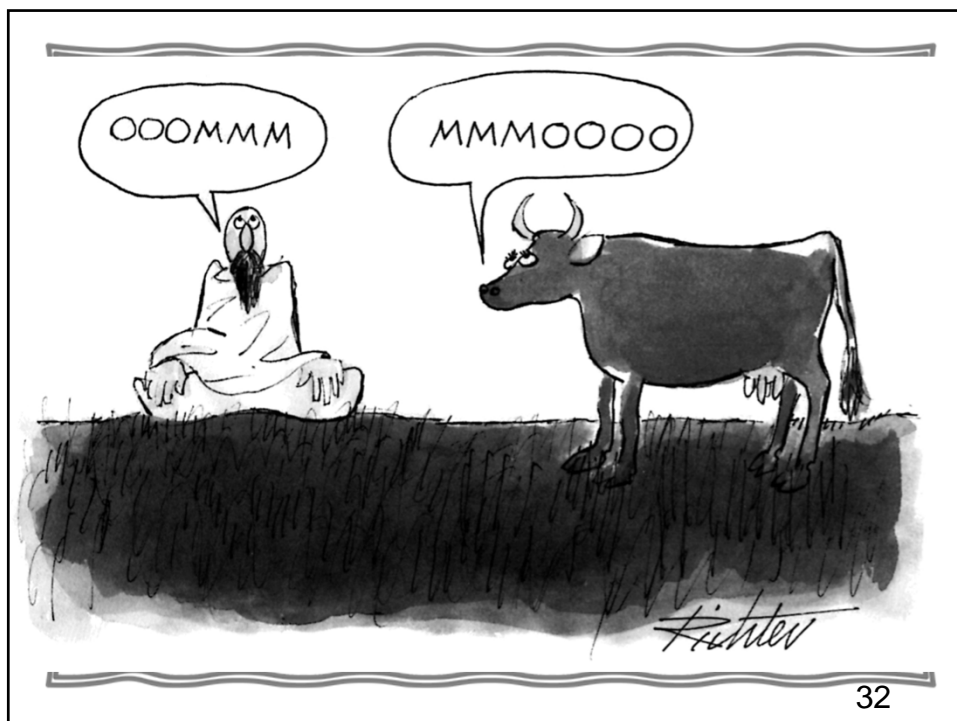
Exercise: Minimal Pairs and Sound Chaining

- three, free, tree, tee, teem, steam, stream, streams, streets

- rain, _____, _____, _____,

Phonemic Awareness: Reversal

pay	male	safe
sick	lime	note
Max	sign	file
zone	chow	ice



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












Correcting Confusions

- Did I say cloud or clown?
- Say this after me: “ir-reg-u-lar” “nu-cle-ar”
- Is your word (“abset”) the same as mine? “absence” What is different?
- What was the word we just learned? (word retrieval)

Adaptations for Children at Risk

- Reduce competing noise.
- Say everything clearly and at an appropriate volume.
- Ask children to look at you when you speak. Touch if necessary.
- Ask for oral production of sounds and words.
- Write or use pictures and objects as you talk.

Teach Correspondences, Cumulatively and Systematically... to Automatic Application

Consonant Sound Wall for K-1 (Adapted from Moats, 2000)					
/b/	/p/	/t/	/d/	/k/	/g/
B b bat 	P p pig 	T t ten 10 	D d dog 	C c cat  K k kiss 	G g go 
/m/	/n/	/ŋ/	/f/	/v/	/θ/
M m man 	N n nest 	-ng ring 	F f fish  -ff fluff 	V v van 	Th th three 3 
/θ/	/s/	/z/	/ʃ/	/ç/	/j/
Th th this 	S s sun  -ss dress 	Z z zipper 	Sh sh sheep 	Ch ch chips 	J j jet 
/w/	/l/	/y/	/h/	/l/	/r/
Wh wh wheel 	W w well 	Y y yarn 	H h house 	L l lamp  -ll bell 	R r rake 

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SUMMARY

- All components must be taught!
- Evidence is very strong that the PRIORITY for K-1 and students who are not proficient is explicit, systematic instruction in phoneme awareness, letter knowledge, phoneme-grapheme correspondences, word structure, and careful decoding of written text.
- Once they CAN read, students are much more likely to become readers!

THANK YOU