



Why Phonemic Proficiency is Necessary for All Readers

Sponsored By



Consortium on Reaching Excellence in Education®

www.corelearn.com



Meet Our Presenter



Dr. David Kilpatrick

Professor of Psychology

State University of New York, College at Cortland

New York State Certified School Psychologist

Author of *Essentials of Assessing, Preventing, and Overcoming Reading Difficulties*

kilpatrickd@cortland.edu

Today's Objectives

1. Learn some common misconceptions about phonological/phonemic awareness and reading
2. Understand the role of phonemic skills in reading an alphabet-based writing system
3. Learn why some children struggle in reading

A Common Misconception About Reading: “Children Learn to Read in Different Ways”

- This confuses *teaching* and *learning*
 - We teach things they don't learn; they learn things we don't teach!
- We TEACH reading in different ways; they LEARN to read ***proficiently*** in only one way
- Teaching is what we do—learning is what their brains do
- It's amazing there's even one way our brains read so efficiently
 - Perceive words in 1/20th of a second
 - Read 150-250 words a minute
 - Have 30,000 to 70,000 words in our instant, orthographic lexicon
 - Add new words to that lexicon after 1 to 4 exposures
- There are not 2, 3 or 4 ways our brain is set up to do that!
- All skilled readers have the same basic skills
 - All skilled readers can read nonsense words, even if not taught phonics
 - All skilled readers have large and continuously expanding sight vocabularies

Common Misunderstandings About the Role of Phoneme Skills and Phonics Skills in Reading

- Many children do not need phonics
- Phonemic awareness only relates to early learning of CVC words
- Phonemic awareness is not involved in sight-word acquisition
- Not thought to be worth training after first grade
- If a student doesn't develop this by second grade, they never will

Two Levels of Word-level Reading Skill Deficits

What distinguishes skilled word readers from poor word readers?

1. The ability to identifying unfamiliar words by sounding them out
2. The ability to remember the words they read

Phonic Decoding Skills Alone Cannot Explain Efficient Orthographic Learning

- Most of our intervention and explanatory efforts focus on the first of the two levels of word reading – phonic decoding
- Many tutored dyslexics develop normal nonsense word reading but lag in word identification tests with real words and in fluency
- Dyslexics in consistent orthographies develop recoding skills but lack fluency

What is YOUR Theory About How We Remember the Words We Read?

- We all have a theory, but you may not know yours
 - If you can't think of yours, just work backward from any interventions you use or recommend
- Our instruction focuses on on READING words, not on LEARNING words

Three Types of Learning Required for Word-Level Reading

1. Paired-Associate Learning (PAL)

- The presence of one specific stimulus activates another specific stimulus
 - Appears to be central for letter-sound learning
 - Often conflated with orthographic learning

2. Statistical Learning

- Deriving patterns from multiple instances
 - Phonic patterns and general orthographic knowledge

3. Orthographic Mapping

- One specific spoken word (with associated meaning) is mapped to one specific letter string
 - Specific skill to efficiently build the orthographic lexicon

Three Types of Learning Required for Word-Level Reading

Type of Learning	Likely Role Word Reading	Effort	Domain	Speed of acquisition	Skills Required
Paired-Associate Learning	Letter Names & Sounds	Conscious	Specific to specific	Dozens to hundreds or even thousands of exposures	Visual discrimination & memory phonological memory
Statistical Learning	Deriving common patterns- supports phonic decoding & orthographic generalities	Implicit	Generalize from specific examples	Unknown– likely dozens to hundreds of exposures (may vary by pattern type)	Currently under study
Orthographic Mapping	Remembering specific words and word parts	Implicit	Specific to specific	1-4 exposures	Letter-Sound proficiency Phonemic proficiency

Some Realities About How We Remember the Words We Read

- Literate adults have between 30,000 to 70,000 words in their sight vocabulary/orthographic lexicon
 - These are familiar/known words that are instantly and effortlessly recognized on sight (thus *sight vocabulary*)
- Words in the orthographic lexicon require only 1/20th of a second exposure for reliable recognition
- Once words are learned, they are not forgotten
- The million dollar question . . .
- This reality of implicit learning must be accounted for
 - And I believe researchers can

Theories and Assumptions About Word-Level Reading

Theories of Word-Level Reading

1. Three-cueing systems approach

- Actually a theory about getting meaning from print
 - But has a lot to say about identifying words
- No real change since the 1960s despite over 45 years of research
- Central to whole language, balanced instruction, MSV, literacy-based approach; the foundation for LLI & Reading Recovery

2. Visual Memory Hypothesis

- Classic whole word approach, flash card approach, repeated readings; even incorporated into the phonic approach
 - It's the phonic approach to irregular words and word memory

3. Phonics

- Also called a *code-based approach* and *structured literacy*
- Focuses on word identification, not word memory

Orthographic Memory Is Letter Sequence Memory, Not Visual Word Form Memory

- Cattell's findings in 1886
- Findings from the 1970s (e.g., Vellutino)
 - Dyslexics did not have deficient visual memories
- Reading correlates moderately to strongly with phonological skills but very weakly with visual memory
- Orthographic memory vs. visual memory
 - Kevin reading Calvin & Hobbes
 - If a first grader learns "bear" he can instantly identify "BEAR"
 - bear, BEAR, **Bear**, *bear*, **bear**, *BEAR*, **bear**, *bear*, BEAR
- Most students who are deaf struggle tremendously with word-level reading

The Alphabetic Principle

- Chinese writing vs. alphabetic writing
- We do not write words!
 - We write sequences of characters designed to represent sequences of phonemes in spoken words
- Poor access to the phonemes makes reading alphabetic languages very difficult
- Phoneme skills are needed for BOTH sounding out new words AND remembering the words we read

Why Do Some People Struggle in Word-Level Reading?

- 40 Years of scientific research says: *The Phonological-Core Deficit*
- Nature of alphabetic writing (next slide)
- Weakness in one or more of the following (typically more than one of these, sometimes all of them):
 - Phonemic awareness/analysis
 - Phonemic blending/synthesis
 - Rapid automatized naming
 - Phonological working memory
 - Nonsense word reading, letter-sound knowledge acquisition
- Very well established with no substantive alternatives

Phonemic *Tasks*
vs.
Phonemic *Skills*

Phonemic TASKS vs. Phoneme SKILLS

- We need to move from a *task* mentality to a *skill* mentality
- There are many phoneme *tasks* but only two *skills* are needed for reading
- Synthesis and analysis play different roles in reading:
 - Phoneme blending is needed for phonic decoding
 - Phoneme analysis is needed for remembering words

Phonemic TASKS vs. Phoneme SKILLS

- The most common synthesis task is *blending*
- For blending, TASK = SKILL
 - The blending *skill* needed for phonic decoding is directly captured by an oral blending *task*
- For analysis, there is no simple correspondence between task and skill
 - Tasks include:
 - Rhyming
 - Segmentation
 - Manipulation
 - Alliteration
 - Isolation
 - Categorization/Identification
 - *Note: There are two to six variants on each of these tasks*

Notes on the Two Types of PA

- There are only two PA *skills* needed for reading
- First, *phoneme-level synthesis/blending* is needed for phonic decoding (reading via the phonological route)
 - This is established in typically developing readers by late first grade
 - Many with dyslexia develop this skill via phonic instruction and develop decent nonsense-word reading
- Second, *phonemic analysis proficiency* is needed for efficient orthographic learning
 - This is established in typically developing readers by late second to late third grade
 - Those with dyslexia do not develop this skill and thus typically remain dyslexic
 - Thus, there is a lag in benefit for the value of PA analysis in reading
 - It is helpful earlier when the skill is accurate but not automatic (mid to late first grade), but comes to fruition when automatic (thus the “sight word explosion”)

National Reading Panel (2000) on the role of Phonemic Skills in Word Reading

(From Section 2 page 32)

Blending:

“The skill of blending is needed to decode unfamiliar words.”

Segmenting:

“Phonemic segmentation helps children *remember* how to read and spell words . . .” (emphasis added)

Linguistic skill

Phonological
Blending

Academic skill

Letter-Sound
Knowledge/Skills

Linguistic skill

Phoneme
Awareness
(Analysis)



**PHONIC
DECODING**
Identify
Unfamiliar Words

(Word Identification)

**ORTHOGRAPHIC
MAPPING**
Permanent Word

Storage
*(Word
Recognition)*

To understand highly effective
prevention and intervention,
we need a

CRASH COURSE ON HOW WORDS ARE LEARNED

David Share's Self-Teaching Hypothesis

- We teach ourselves most of the words we know
- Orthographic learning occurs one word at a time
- As students sound out new words, orthographic connections are formed
 - When newly encountered words are not sounded out, they are poorly remembered
 - Self teaching does not refer to “the code,” but presumes you know the code and can use it reliably
- Orthographic learning is implicit – it typically does not involve conscious thought or effort
- From 2nd grade on, typically developing readers remember words after only 1 to 4 exposures

Linnea Ehri's Orthographic Mapping Theory

- *Orthographic mapping* is the mental process we use to store words for immediate, effortless retrieval.
- In other words, orthographic mapping is what we do to make an unfamiliar written word into an automatic “sight word.”

Linnea Ehri's Orthographic Mapping Theory

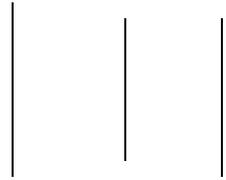
- Sight words are highly familiar spellings (i.e., letter sequences), regardless of the visual look of the word
 - e.g., bear, BEAR, **Bear**, *bear*, **bear**, *BEAR*, **bear**, *bear*, BEAR
- Sight words are anchored in long-term memory (LTM) via a connection between something well established in LTM (the word's pronunciation) and the stimulus that needs to be learned (the letter sequence in the word's spelling)
- Phonemic segmentation *skill** and letter-sound knowledge are central to this connection-forming process

*Segmentation *skill* is not the same as segmentation *task* performance (more later)

How We “Map” Words

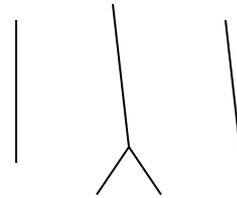
Words that are “Opaque”
(i.e. words without a one-to-one correspondence)

/m/ /ā/ /k/



m a k e

/r/ /ē/ /d/



r e a d

/c/ /ō/ /m/

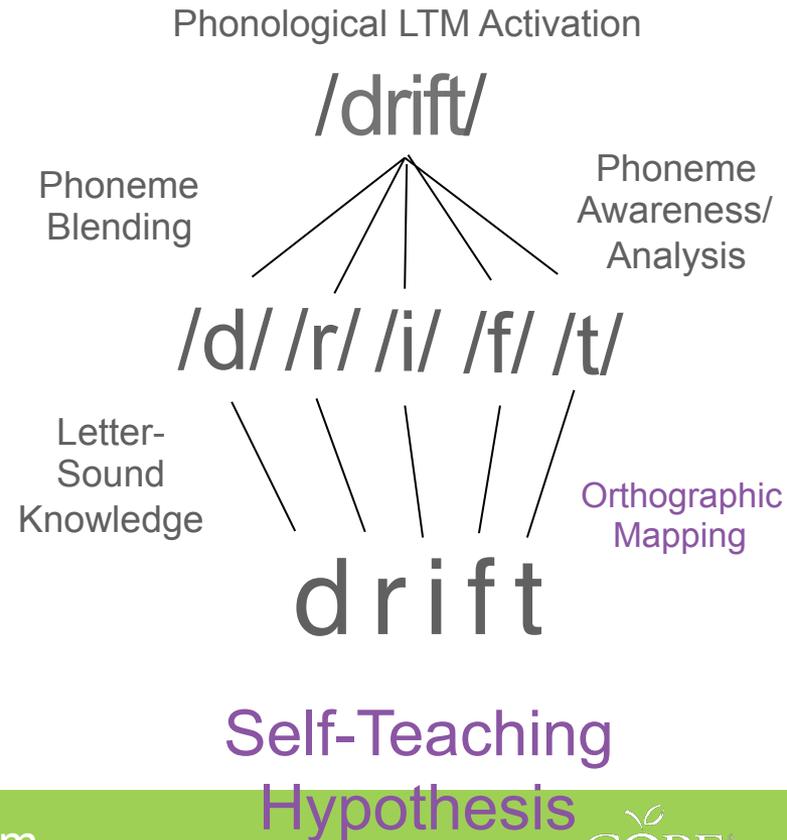
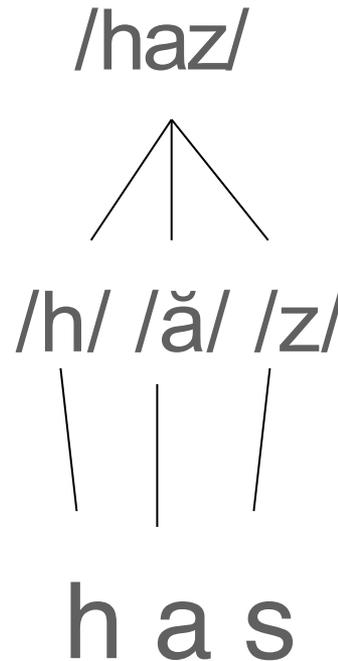
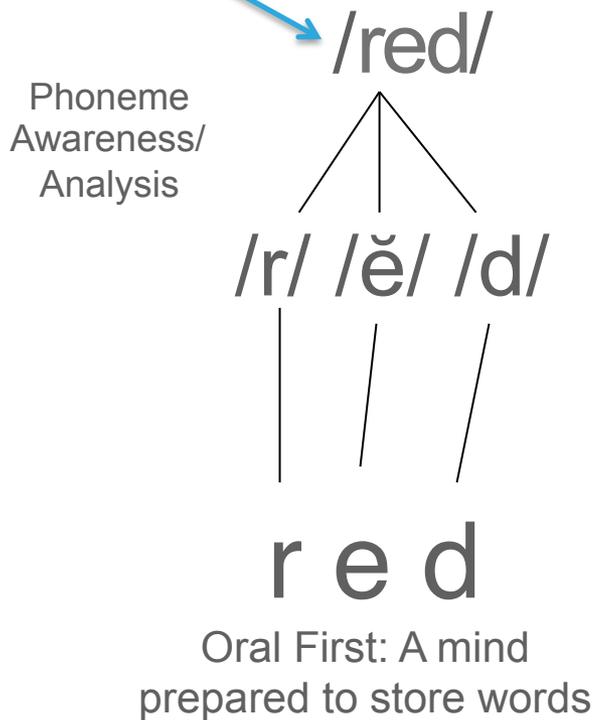


c o m b

How We “Map” Words

“Transparent” Words
(i.e. words with one-to-one correspondence)

PLTM



What about irregular words?

- Irregular and opaque words take longer to learn
 - Only 1-2 extra exposures for typical readers; many more for RD
- Most irregular words are off by only one element
 - (*said, put, comb, island*; multiple violations are rare: *one, iron*)
- Irregular words not a challenge for orthographic mapping
 - “Exception words are only exceptional when someone tries to read them by applying a [phonic] decoding strategy. When they are learned as sight words, they are secured in memory by the same connections as regularly spelled words . . .” (Ehri, 2005 p. 171-172)

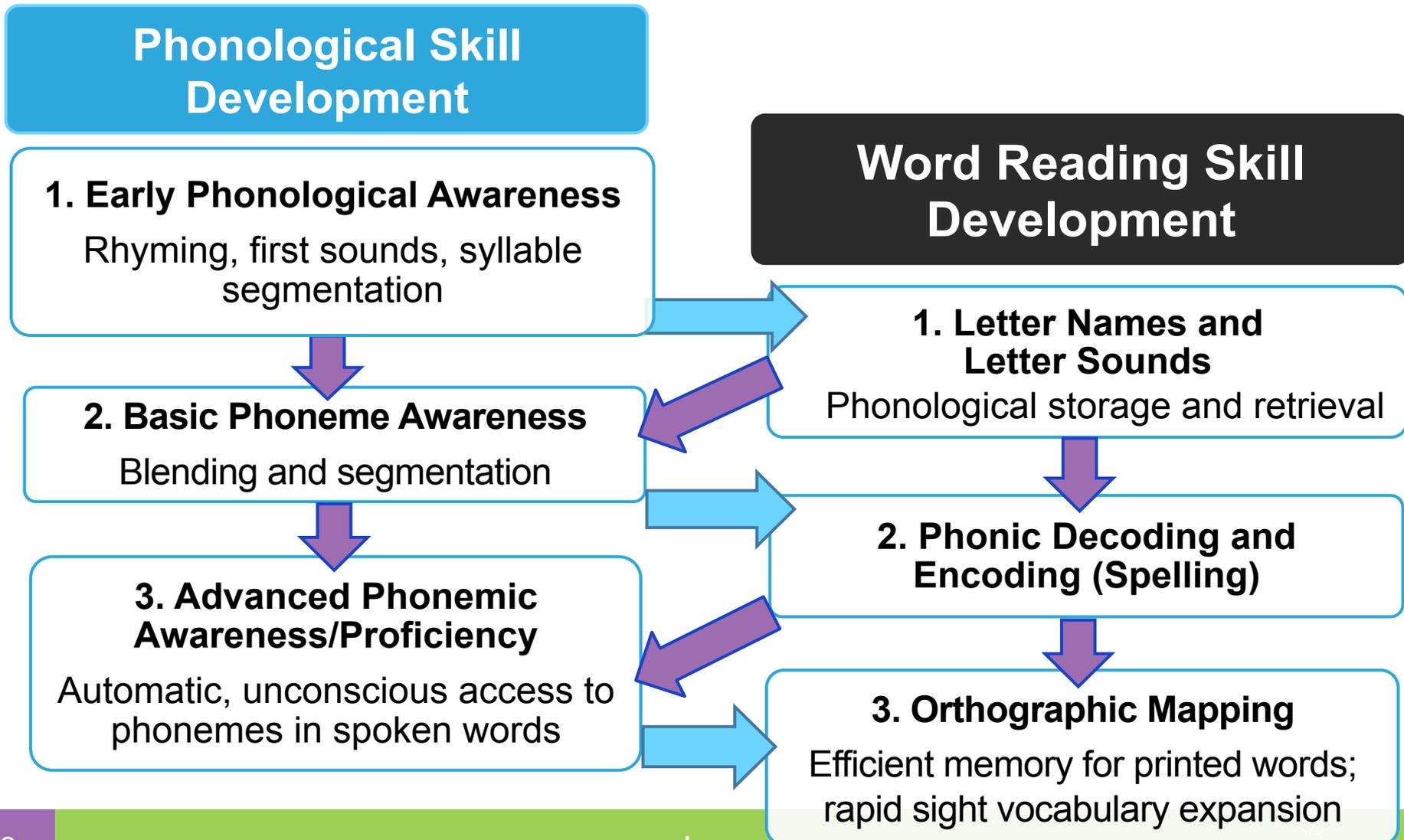
What about irregular words?

- Many regular words require mapping “adjustments” like irregular words
 - Silent e words, vowel digraphs, consonant digraphs are all opaque
 - Multisyllabic “regular” words with vowel reduction require mapping adjustment, much like irregular words (e.g., *holiday*, *market*)
- Irregular words are not the *cause* of reading problems in English
 - Even very regular orthographies (e.g., Italian, Spanish) have RD, and their RD is based upon poor orthographic mapping
 - It makes English phonic decoding harder to learn, but these irregularities are not the cause of poor sight word reading
 - Even regular words are poorly represented in the orthographic lexicons of poor readers

How Words are Learned for Instant, Effortless Retrieval

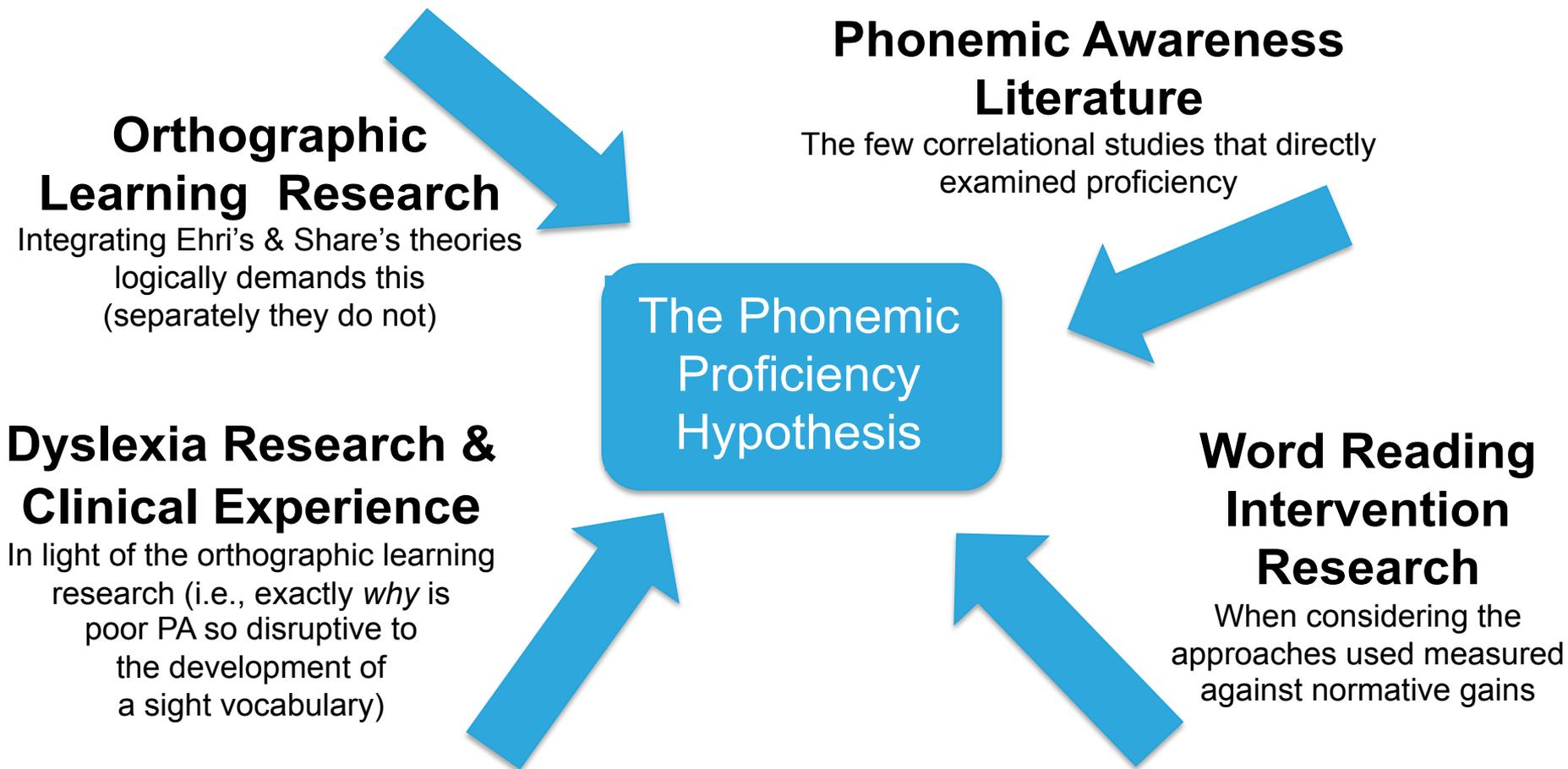
- Orthographic mapping requires:
 - Letter-sound proficiency
 - Phonemic proficiency (this goes well beyond what is tested on our universal screeners)
- **This now answers the issue we posed at the beginning—how word memory can be implicit**

The Developmental Relationship Between Phonological Skills and Word-Level Reading



The Phonemic Proficiency Hypothesis of Orthographic Learning

Current Evidence for The Phonemic Proficiency Hypothesis



Summary

- Word-level reading is based upon phonological/phonemic skills
 - This is due to the alphabetic nature of our writing system
- Visual skills are not a source of reading problems
- Skilled readers are all good at phonic decoding and orthographic mapping – neither is optional
 - Weaker readers are weak in both
 - Skilled readers have large sight vocabularies, weak readers do not
 - Phonics skills are essential, but not enough
 - Phonemic proficiency and letter sound proficiency are essential for skilled reading

Questions?



Get in Touch with CORE!

info@corelearn.com

888.249.6155



Consortium on Reaching Excellence in Education



@COREInc