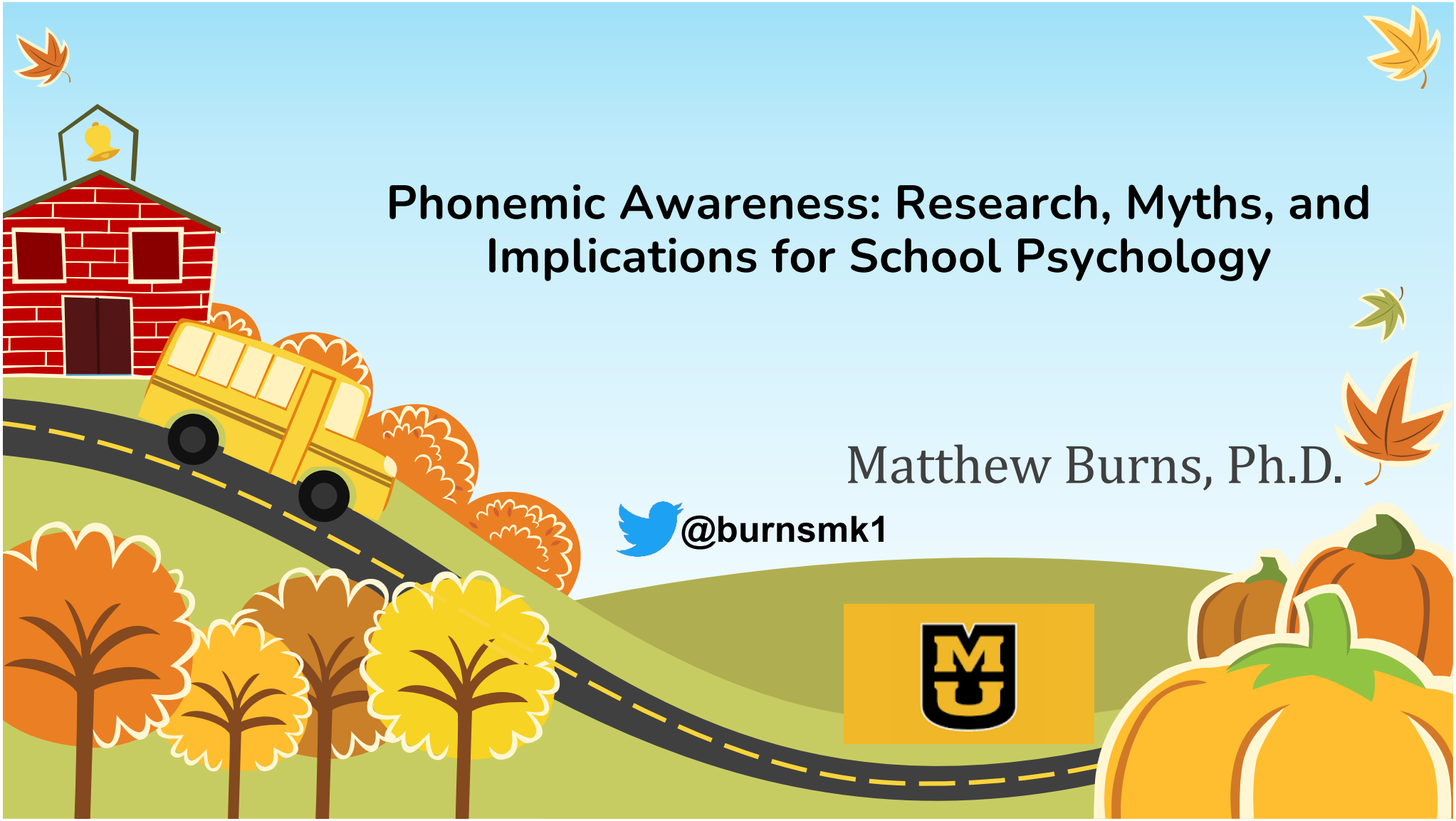
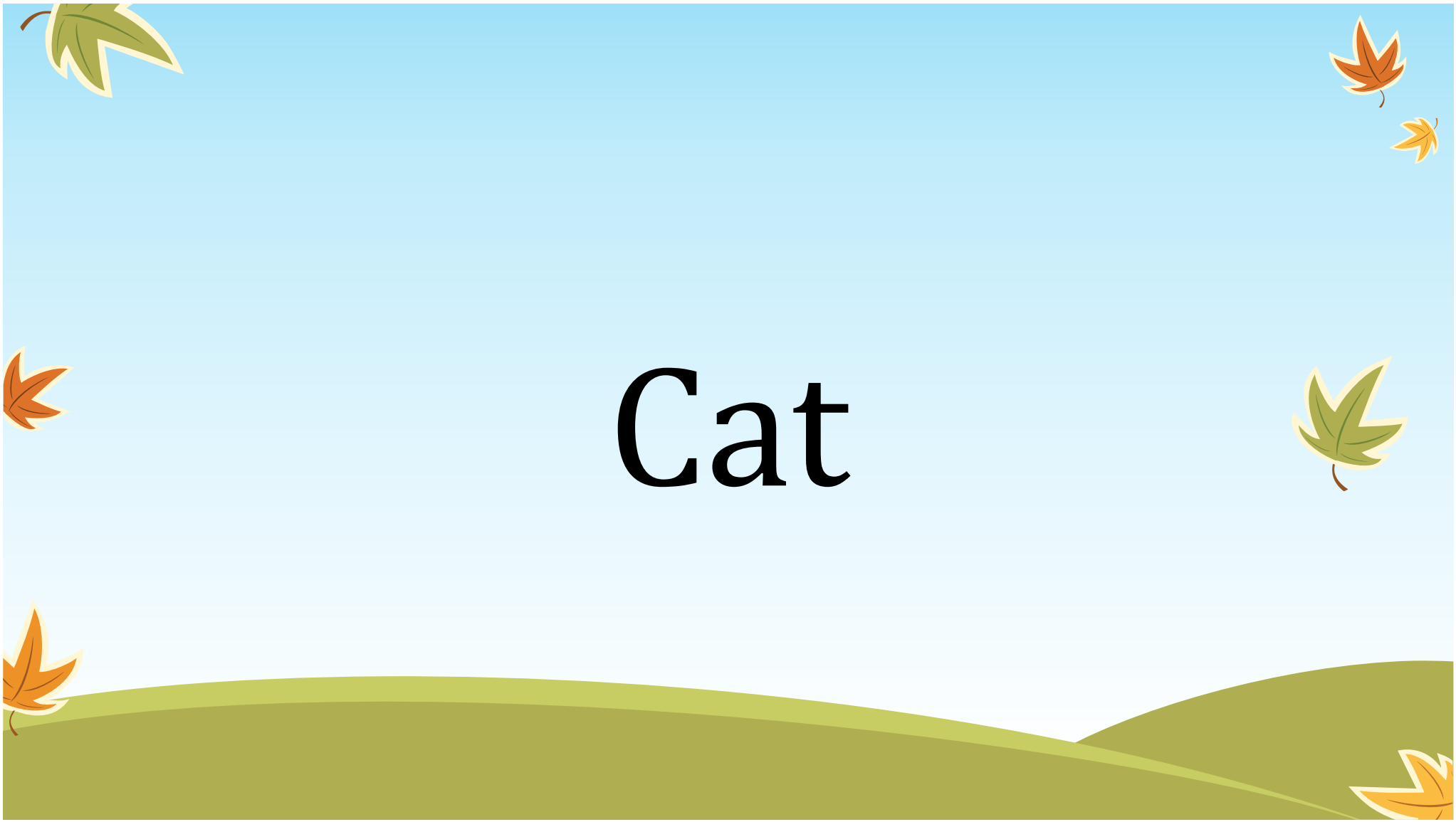
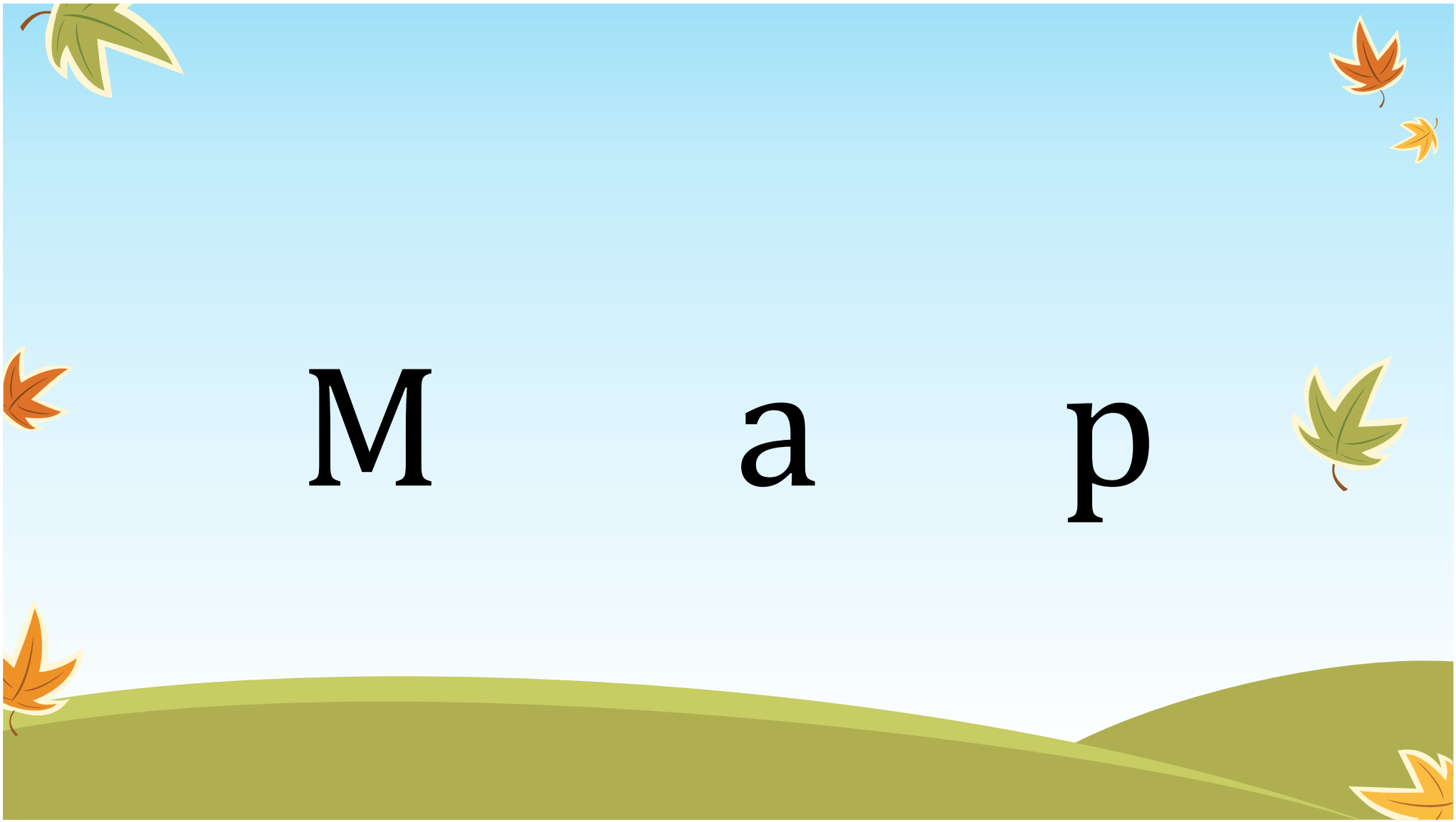

Phonemic Awareness: Research, Myths, and Implications for School Psychology
Matthew Burns, Ph.D.
@burnsmk1


Cat


M a p

What is it?

Phonemic Awareness is the ability to hear and manipulate sounds letters make; our spoken language (Armbruster, et. al, p.1)

Phonics is understanding each letter has a sound(s) that go with it; relationship between spoken and written language (Armbruster, et. al, p.17)

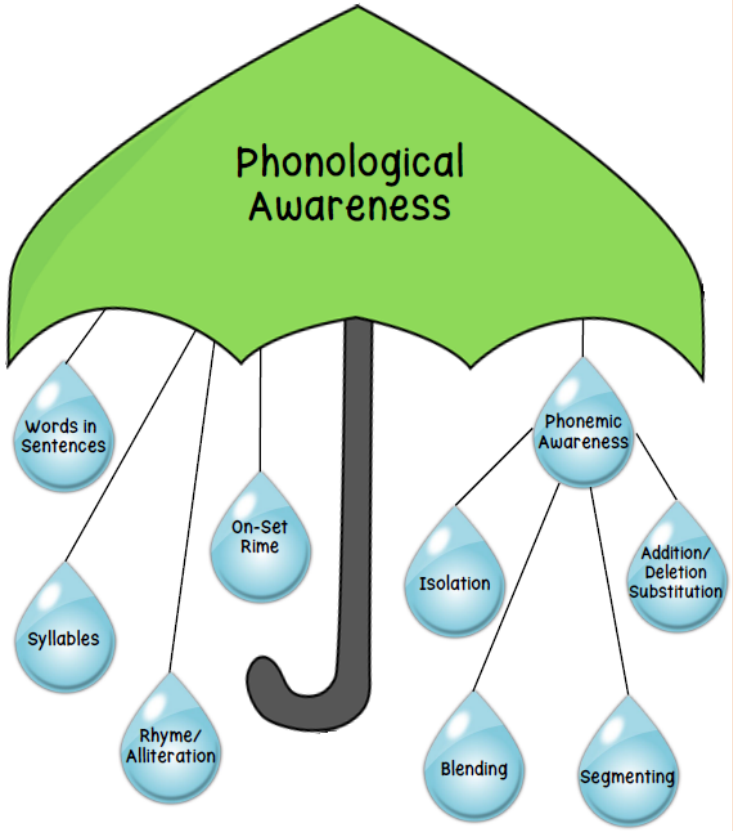
Fluency is accurate and quick reading of text where the reader recognizes words and does not need to figure out what each word is (Armbruster, et. al, p.19)

Vocabulary is the words we use to listen, speak, read, and write; how we communicate (Armbruster, et. al, p. 29)

Comprehension is understanding what is being read by actively making sense of the text with the help of various strategies (Armbruster, et. al, p. 41)

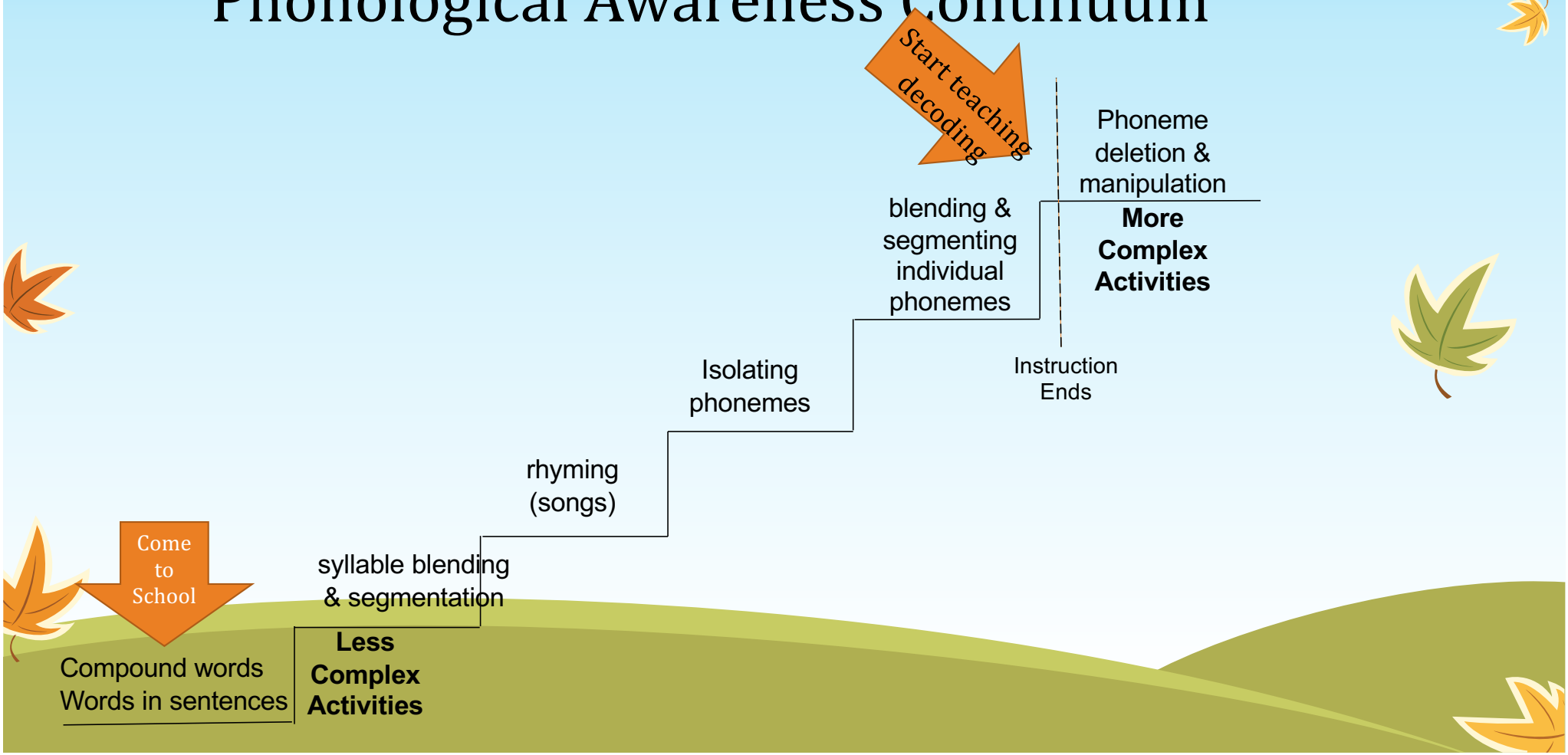
Phonological Awareness and Phonemic Awareness

Phonological awareness is a broad skill that includes identifying and manipulating units of oral language – parts such as words, syllables, and on-set rime. Sentences can be broken down into words, words into syllables, and then into onset-rime. When the word is broken into the smallest part, or individual sound (phoneme), "phonemic awareness" is used. Phonemic awareness is a subskill of phonological awareness.



Created By: Heather Sacharczyk

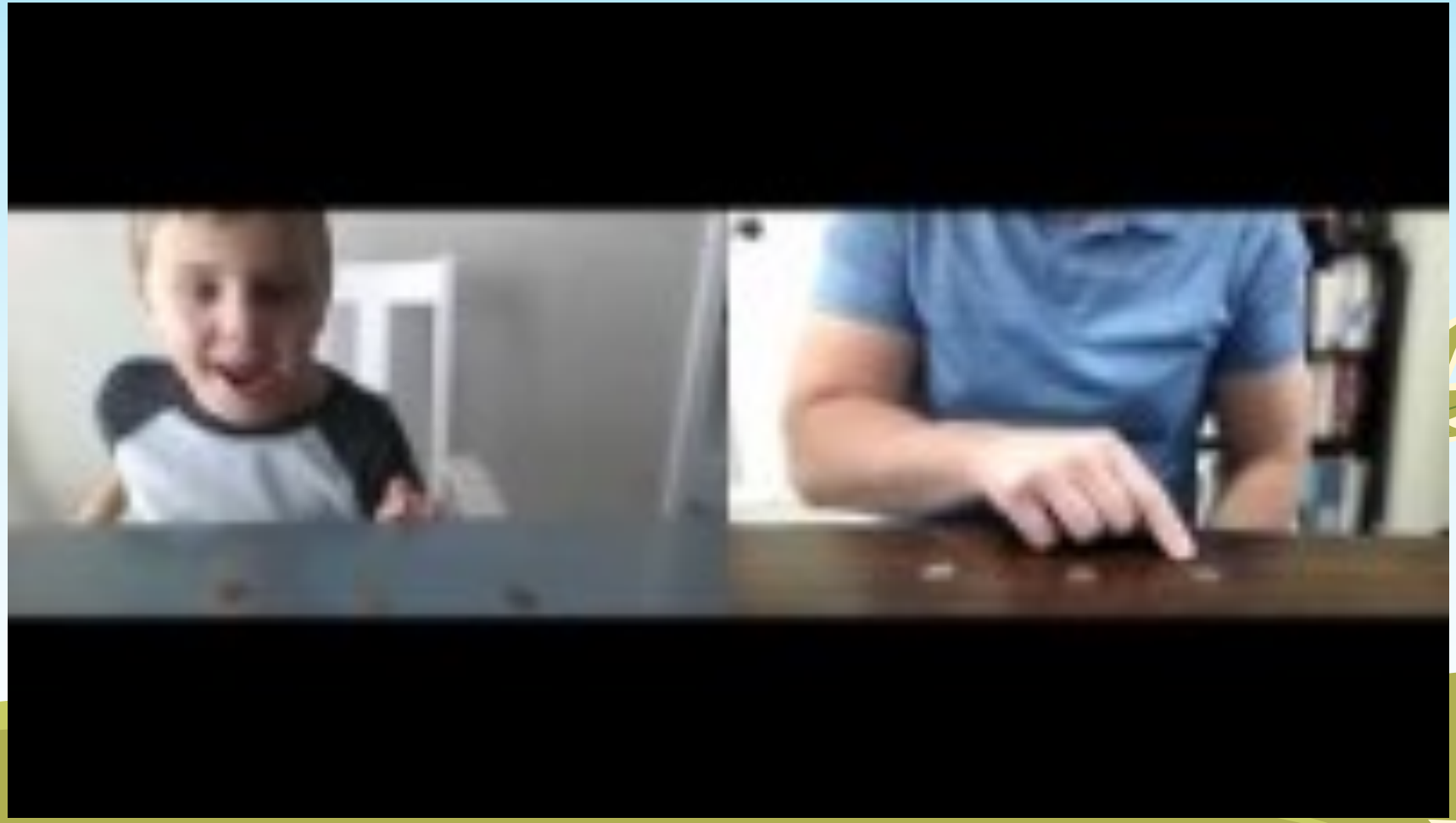
Phonological Awareness Continuum



Rhyming

Phoneme Isolation

Segmenting



Sequence to Teach

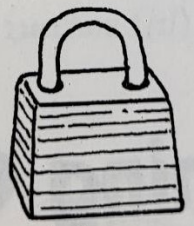
Stage	Rhyming	Isolation	Blending	Segmenting	Manipulating
Acquisition	Provide a word	Word starts with	Blend two sounds	Count sounds	Delete sound
	Categorize	Word ends with	Blend three sounds	Tap for each sound	Substitute sound
	Judge	Sound in the middle		Name the sound	
Proficiency	Nursery Rhymes Ship is loaded with	I Spy	Guess the word	Big, Bigger, or Biggest	Sound Switcheroo

ACTIVITY 27: Big, Bigger, Biggest

SKILL: oral segmentation

Using the picture cards on pages 28 and 29, or pictures cut out from magazines, display two pictures. Ask children to count how many sounds they hear in each picture name. Then have children select the picture whose name has the most sounds. For example, if the two pictures are *pie* and *cat* the children would count two sounds for *pie* (/p/ /ī/) and three sounds for *cat*, (/k/ /a/ /t/). They would then choose *cat*, because it has more sounds. Continue with the following picture sets.

- tie (2), sun (3)
- leaf (3), bee (2)
- lock (3), clock (4)
- soap (3), snake (4)
- tie (2), six (4)



3

4

When children become skilled at this, increase the number of pictures to three.

ACTIVITY 41: Sound Switcheroo

SKILL: phonemic manipulation

Explain to children that you will say a word. You want them to listen carefully to the sounds in the word. You will then play switcheroo with one of these sounds. That is, you will change one sound in the word—the beginning, middle, or ending sound. You want them to tell you which sound was switched. For example, if you say *mat* and then *sat*, children should respond that /m/ was switched with /s/. Continue with the following word pairs:

- man/pan
- fan/fat
- run/sun
- hat/hot
- pick/pack
- ball/bell
- leaf/loaf
- pig/pin
- fish/dish
- gate/game
- tap/tape
- van/ran
- zip/lip
- cup/cap
- hot/hop

Research

National Reading Panel PA and Reading

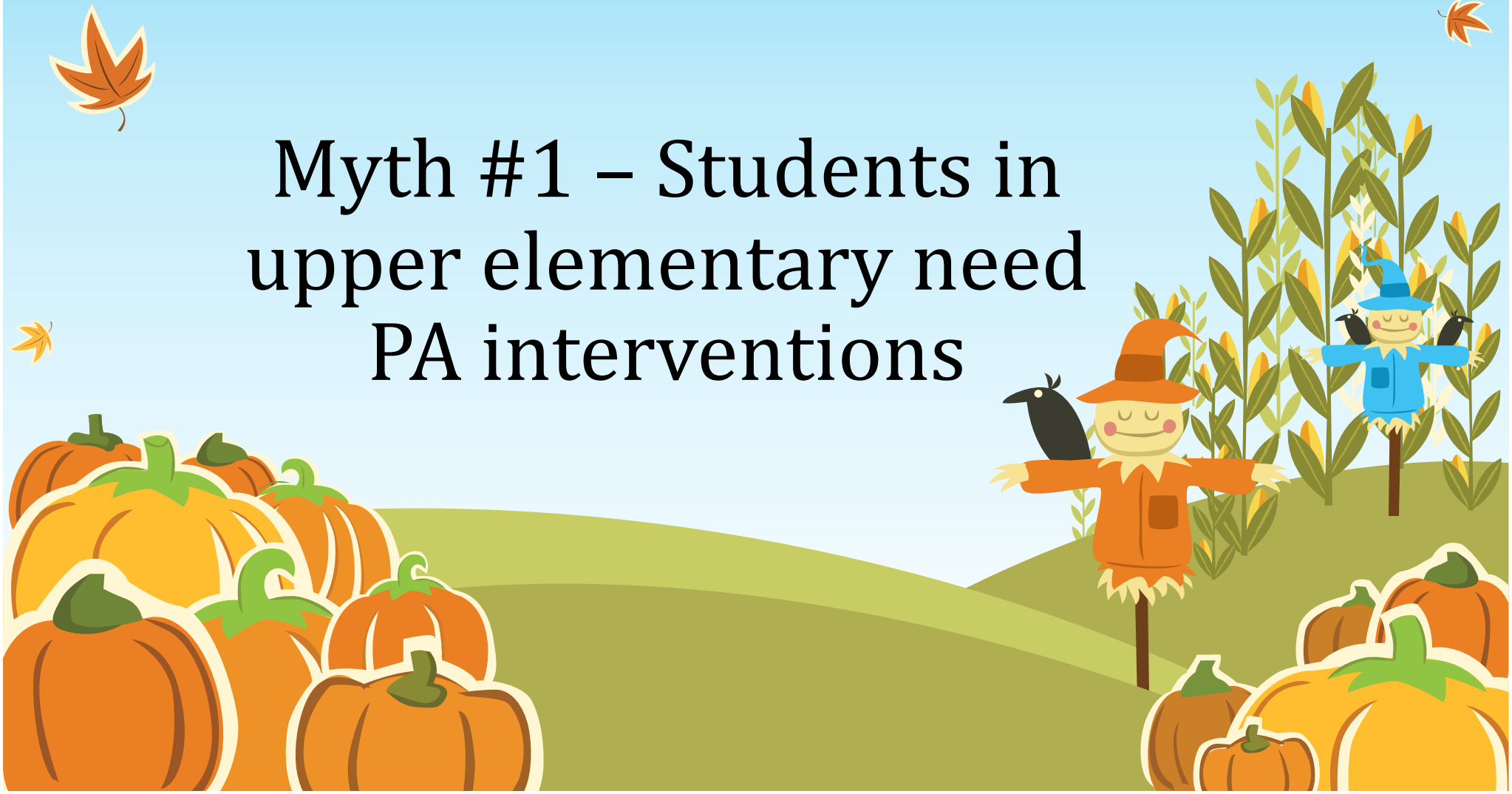
- Immediate Effect = 0.53
  - Follow up 0.45 to 0.23
- Number of Skills
  - One = 0.71
  - Two = 0.79
  - Three or More 0.27
- Letters
  - Includes = 0.67
  - Does not include = 0.38
- Grade
  - Preschool = 1.25
  - Kindergarten = 0.48
  - First = 0.49

Rice et al., 2022

- 46 studies and 119 effects
- Effect = 0.63
- Skills
  - Blending and segmenting = 0.80
  - Identification, isolation, and categorization = 0.37
  - Deletion and substitution = 0.49
- Grade
  - Preschool = 0.56
  - Kindergarten = 0.76
  - First = 0.46

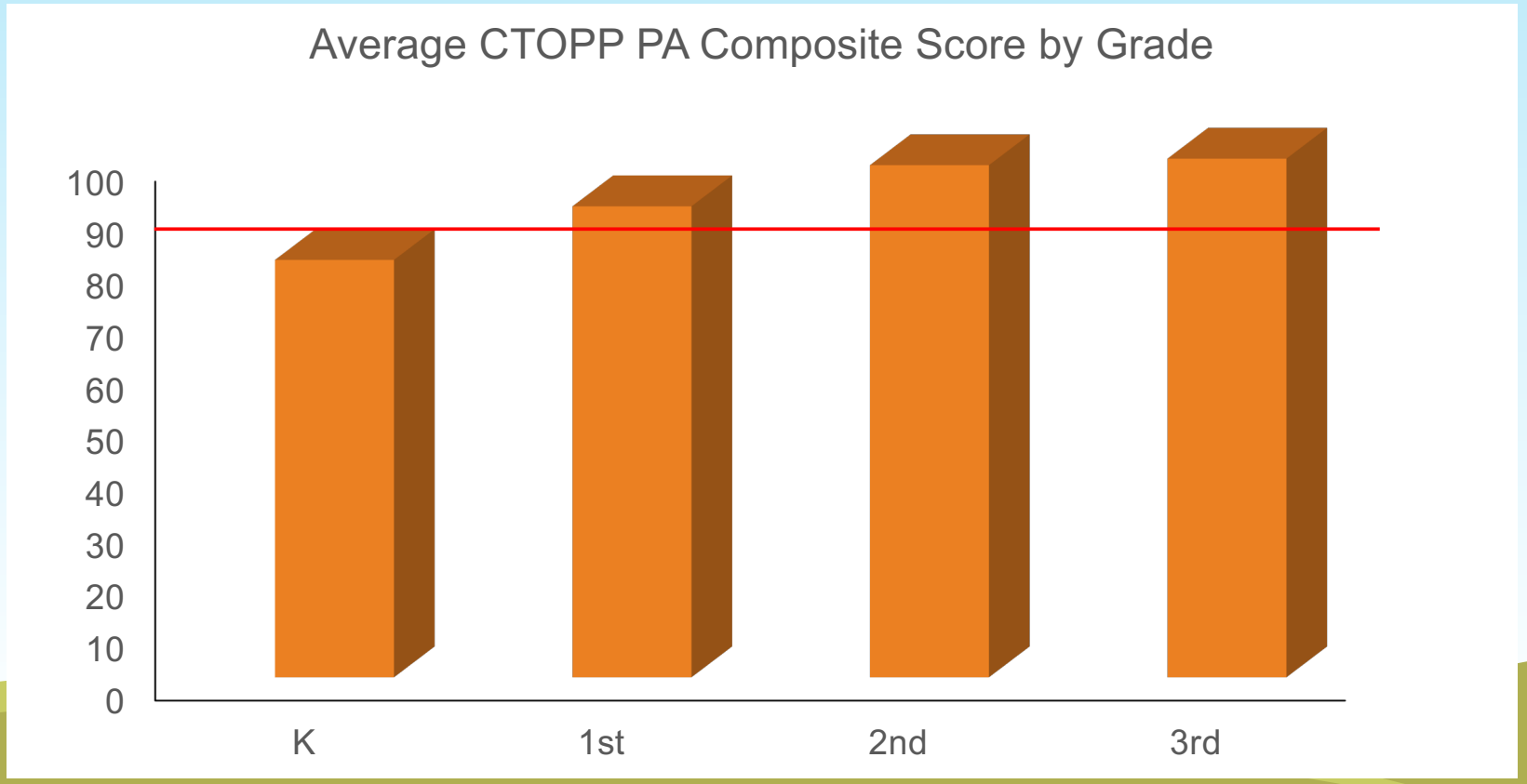
Myths

Myth #1 – Students in upper elementary need PA interventions



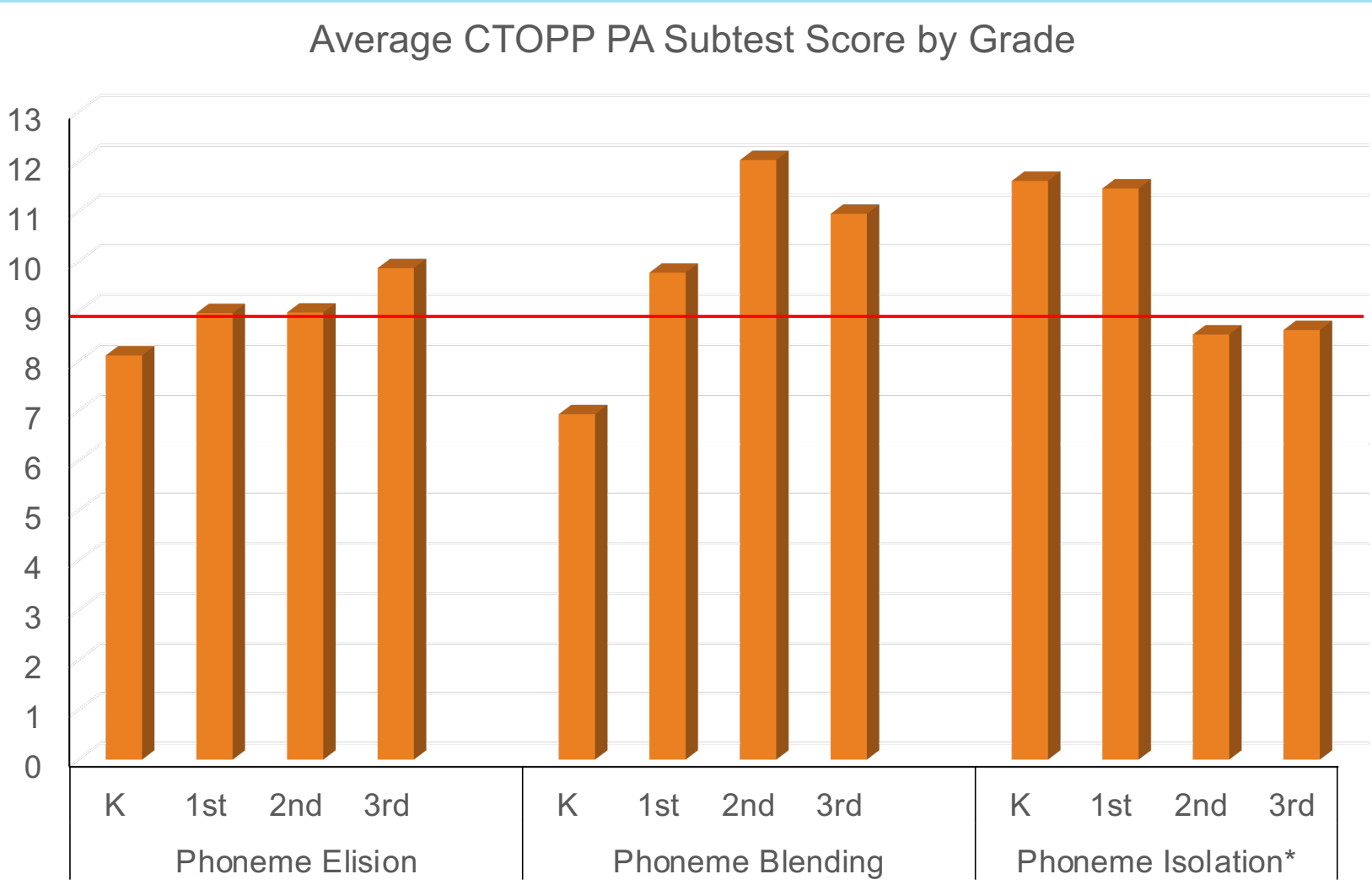
PA and Struggling Readers

- 123 struggling readers (as measured by Star-Reading)



$F\,(3, 119) = 13.36, p < .001, \eta^2 = .25$

Relationship Between DIBELS Composite and CTOPP Score			
Grade	*N*	Correlation	Number of Students Low PA
Kindergarten	28	.35*	20 (70%)
First Grade	26	.19	10 (38%)
Second Grade	32	.27	7 (21%)
Third Grade	37	.02	5 (14%)



* PI is Sound Matching for K and 1st.

Regression of Oral Reading Fluency on Phonemic Awareness (as Measured by Comprehensive Test of Phonological Processing Second Edition) and Reading Decoding (as Measured by Nonsense Word Fluency) with Decoding in Model 3 with Students in Second and Third Grades (n = 69).

	Model 1				Model 2				Model 3			
Variable	B	SE	Beta	T	B	SE	Beta	t	B	SE	Beta	t
Constant	-0.16	0.71		-0.23	-1.08	0.75		-1.43	-0.31	0.54		-0.57
Phoneme Blending	0.04	0.05	.11	0.85	0.02	0.05	.04	0.31	0.01	0.04	.03	0.36
Phoneme Isolation	-0.04	0.06	-.08	-0.67	-0.05	0.06	-.10	-0.87	0.04	0.04	.08	0.99
Phoneme Elision					0.14	0.05	.33	2.76*	-0.02	0.04	-.04	-0.47
Reading Decoding									0.79	0.10	.78	8.33*
	R^2 = .02, Δ = .02, F = 0.51				R^2 = .12, Δ = .10, F = 7.64*				R^2 = .58, Δ = .46, F = 69.36*			

*$p < .05$

Regression of Oral Reading Fluency on Phonemic Awareness (as Measured by Comprehensive Test of Phonological Processing Second Edition) and Reading Decoding (as Measured by Nonsense Word Fluency) with Decoding in Model 2 with Students in Second and Third Grades (n = 69).

	Model 1				Model 2				Model 3			
Variable	B	SE	Beta	T	B	SE	Beta	t	B	SE	Beta	t
Constant	-0.16	0.71		-0.23	-0.42	0.47		-0.89	-0.31	0.54		-0.57
Phoneme Blending	0.04	0.05	.11	0.85	0.01	0.03	.02	0.29	0.01	0.04	.03	0.36
Phoneme Isolation	-0.04	0.06	-.08	-0.67	0.04	0.04	.08	0.93	0.04	0.04	.08	0.99
Reading Decoding					0.77	0.08	.77	9.27	0.79	0.10	.78	8.33*
Phoneme Elision									-0.02	0.04	-.04	-0.47
	R^2 = .02, Δ = .02, F = 0.51				R^2 = .58, Δ = .56, F = 85.85*				R^2 = .58, Δ < .01, F = 0.22			

*$p < .05$

Myth # 2 - Rhyming is critical

PA Urban Schools

- 192 Kindergarten students
  - 99.8% were African-American
  - 46.4% Female
  - 88.3% FRPL
  - 26.6% ELL
- PAI
- LSF

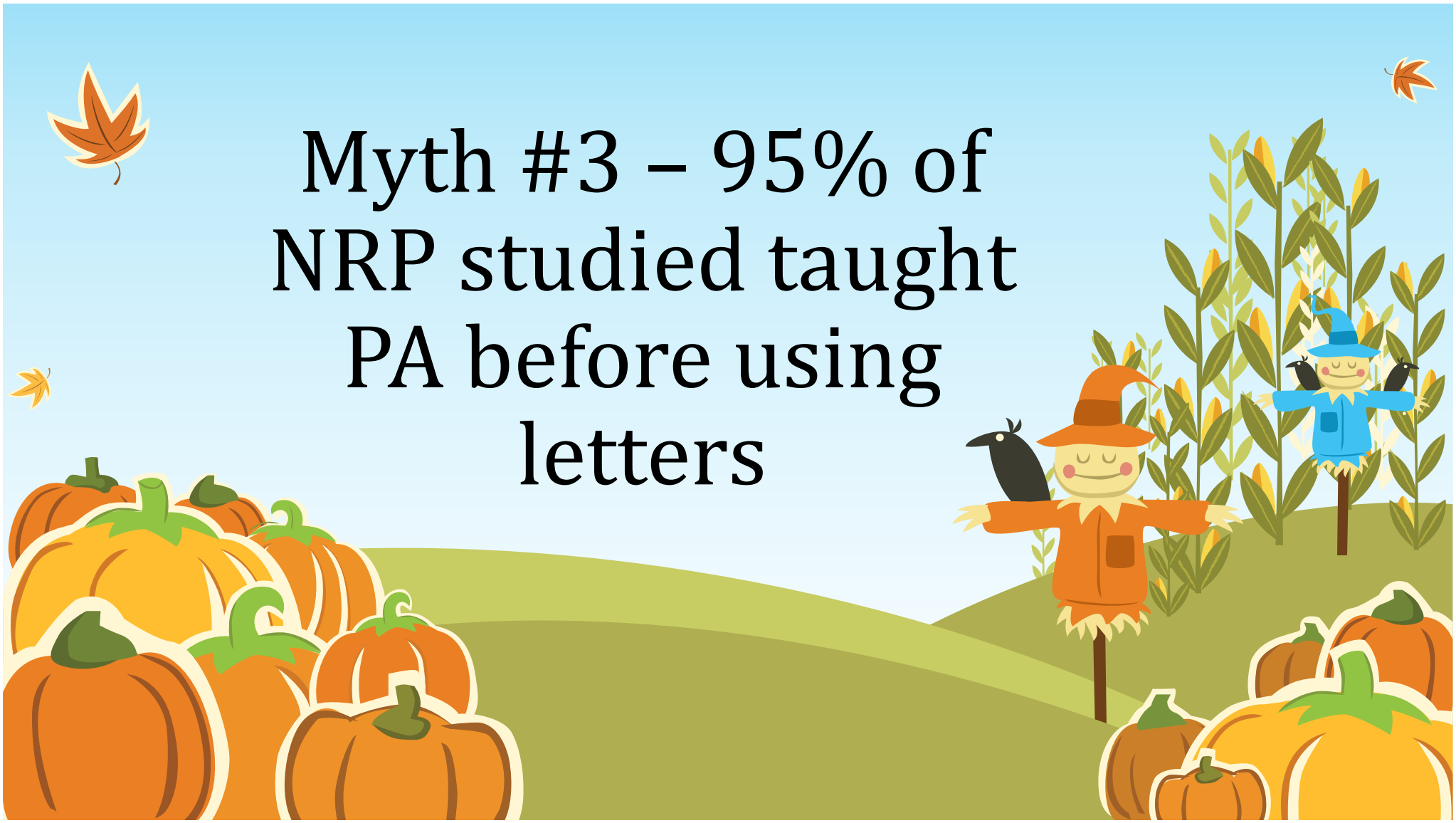
Table 2

Regression Analyses for Four Components of Phonemic Awareness on Letter Sound Fluency

	Model 1			Model 2			Model 3			Model 4		
	B (S.E.)	*β*	*t*	*B* (S.E.)	*β*	*t*	*B* (S.E.)	*β*	*t*	*B* (S.E.)	*β*	*t*
Constant	11.57 (2.46)		4.71*	8.46 (2.61)		3.24*	4.05 (3.05)		1.33	2.98 (3.07)		0.97
Segmenting	4.38 (0.56)	0.50	7.84*	2.60 (0.80)	0.30	1.33*	1.93 (0.83)	0.22	2.33*	1.70 (0.83)	0.19	2.05*
Blending				2.55 (0.84)	0.28	3.05*	2.05 (0.85)	0.22	2.42*	1.93 (0.84)	0.21	2.29*
Initial Sound							2.12 (0.79)	0.21	2.69*	1.86 (0.80)	0.18	2.34*
Rhyming										1.04 (0.53)	0.13	1.96
	R^2 = .25, *F* Change = 61.45*			R^2 = .28, *F* Change = 9.30*			R^2 = .31, *F* Change = 7.23*			R^2 = .32, *F* Change = 3.83		

* $p < .05$

Myth #3 – 95% of NRP studied taught PA before using letters



Reanalysis of NRP Data

Group	N (%)	ES
Used Letters	35 (57.4%)	0.65 (0.49 – 0.81)
Used every session	28 (45.9%)	0.62 (0.44 to 0.80)
Waited a period of time	7 (11.5%)	0.92 (0.52 – 1.32)
Did Not Use Letters	26 (42.6%)	0.44 (0.29 – 0.59)

Hedges's *g*

Removed three outliers

Regression of Effect Size of Reading Outcomes on Grade, Dosage, and Use of Letters (n = 61).

	Model 1				Model 2				Model 3			
Variable	B	SE	Beta	t	B	SE	Beta	t	B	SE	Beta	t
Constant	0.87	0.11		7.92*	0.88	0.11		7.72*	0.75	0.12		6.09*
Grade	-0.18	0.06	-.36	-2.96*	-0.17	0.07	-.35	-2.57*	-0.17	0.07	-.34	-2.65*
Dosage					-0.01	0.01	-.04	-0.32	-0.01	0.01	-.09	-0.66
Letters									0.27	0.11	.28	2.36*
	R^2 = .13, Δ = .13, F = 8.76*				R^2 = .13, Δ < .01, F = 0.10				R^2 = .21, Δ = .08, F = 5.57*			

*p < .05

Warm Up

Implications for School Psychology

Assessment

- Assess PA with kindergarten and first-grade students
  - Part of dyslexia evaluation
  - CTOPP
  - First (or initial) Sound Fluency (Isolation)
  - Phoneme Segmentation Fluency (Segmenting)
- PRESS Phonemic Awareness Inventory
  - a = .87, correlates with later reading at .50 to .60 (Burns et al., 2018).
- Be careful with PAST
  - Reliability?
  - Validity data?
  - Phonemic proficiency?

Intervention

- Help teachers understand role (and limitations) of PA with struggling readers
- Consult with teachers about PA sequence
- Be consumers of research
  - And recognize myths


burnsmk@missouri.edu