

Optimizing early reading interventions for at risk children

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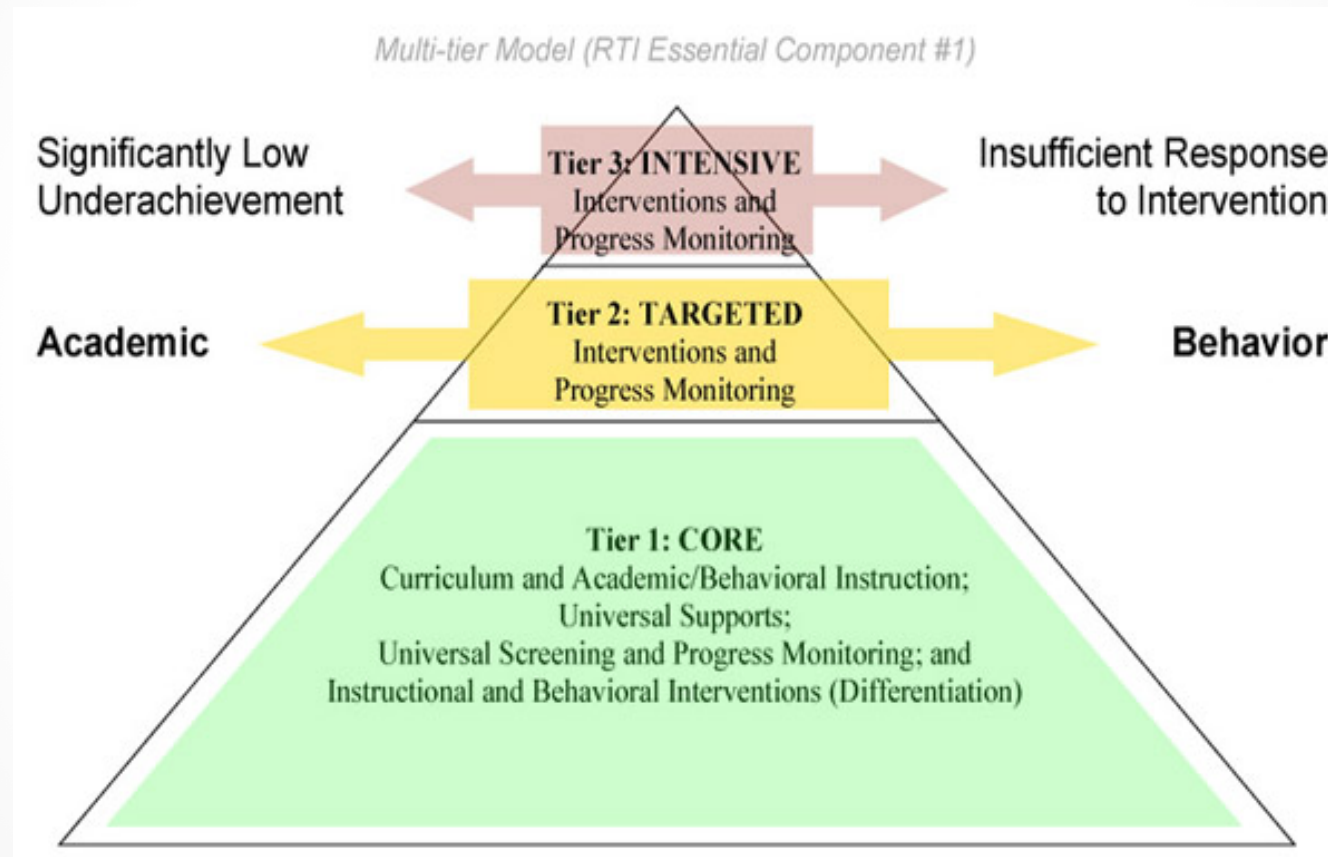
The Importance of Early Intervention

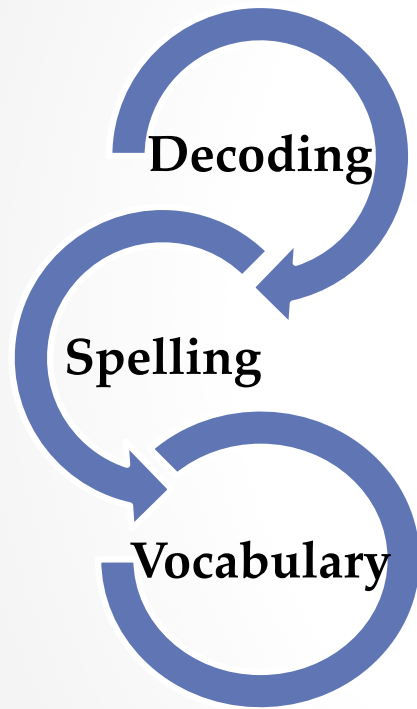
- Early intervention is crucial to the prevention of reading difficulties and raising literacy standards.
- 1 in 5 children struggle with literacy
- Up to two thirds of poor readers can learn to read at age-expected levels with appropriate early intervention (e.g. Savage, Carless, & Erten, 2009)
- The principled assessment of evidence-based quality teaching allows the exclusion of 'environmental deficit' in candidate cases of developmental dyslexia

Current Best Practices

- Focus on systematic teaching of **phonics – the assembly of pronunciations of words from component speech sounds** (e.g. McArthur et al., 2012)
- Teach letter-sound knowledge (grapheme to—phoneme correspondences) and phonological awareness
- Expose children to books e.g. shared book reading
- Teach vocabulary
- Teach for and with practices to assist comprehension
- **Quality** teaching differentiated to needs

RtI: A 3 tiered model of early intervention





- Intervention 1: Kindergarten
 - Parental early involvement interventions with technology.
- Intervention 2: Grade 1
 - A) Direct Mapping and Set for Variability(DMSfV).
 - B) Current and Best Practices (CBP)
- Intervention 3: Grade 2
 - Spelling Intervention using the Simplicity Principle.
 - Vocabulary-taught control
- Intervention 4: Grade 3
 - Morphological Awareness and Vocabulary Intervention.

Design: 4 sub-studies with teacher
training and direct student support

New theory-driven interventions

- One view is that reading fluency is the use of accurate automated Grapheme Phoneme (GPC) and other letter-string data to access word knowledge within a connectionist network (Ehri, 2015)
- **So: opportunities to automate GPC links in words richly represented in real texts likely to be important**
- Consider the words 'w' 'a''s''p' and
- 'b' 'e''l''t'
-

EHRI'S MODEL

VISUAL ROUTE

VISUAL-PHONOLOGICAL
ROUTE

Printed page:

belt

belt

Reader's perception:

b e l t

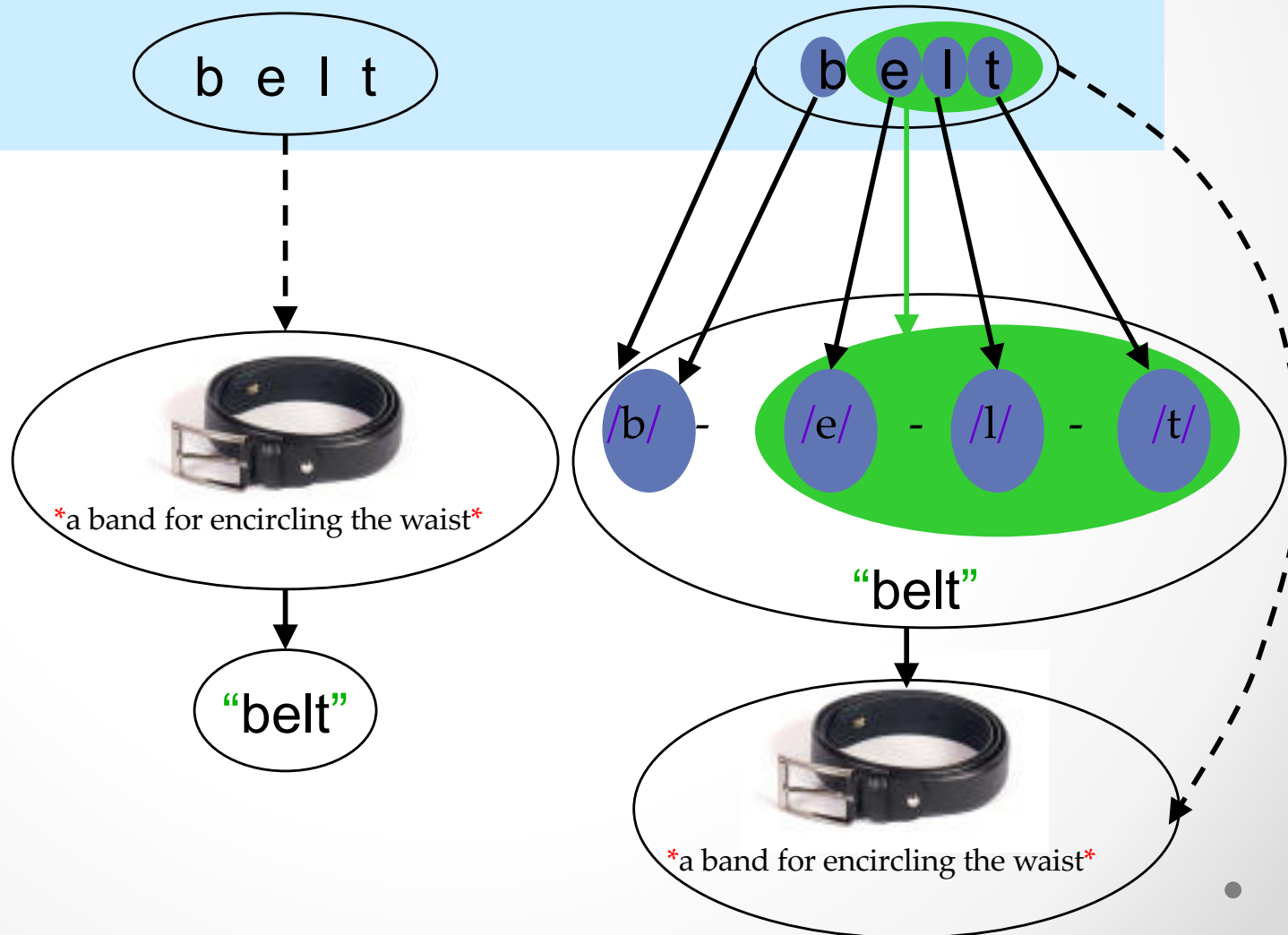
b e l t

Connections:

Arbitrary ---
Systematic —

Lexical Information in
Memory:

- A meaning *--*
- A pronunciation "--"
- Single phoneme /-/



EHRI'S MODEL

VISUAL ROUTE

VISUAL-PHONOLOGICAL
ROUTE

Printed page:

wasp

wasp

Reader's perception:

w a s p

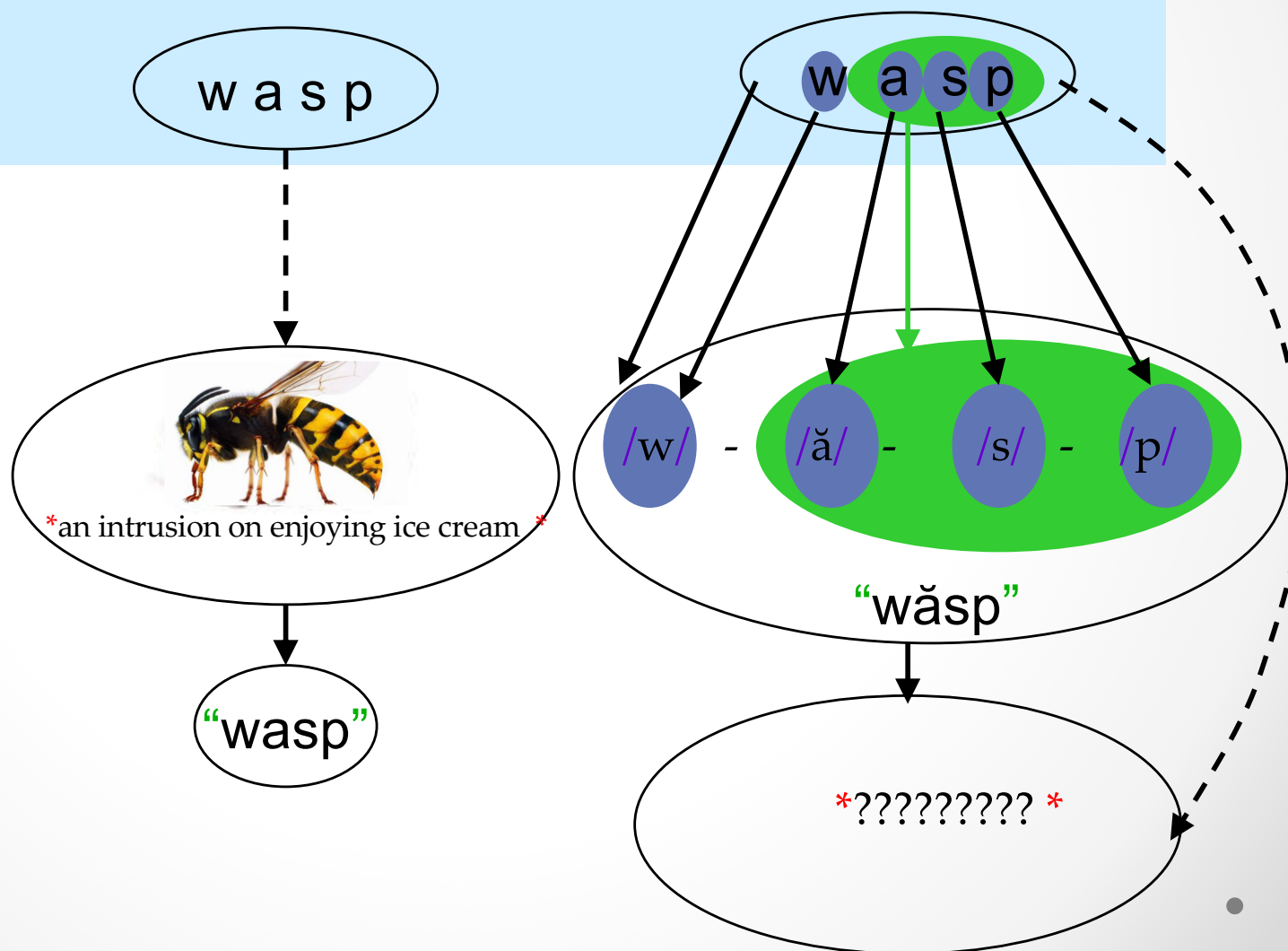
w a s p

Connections:

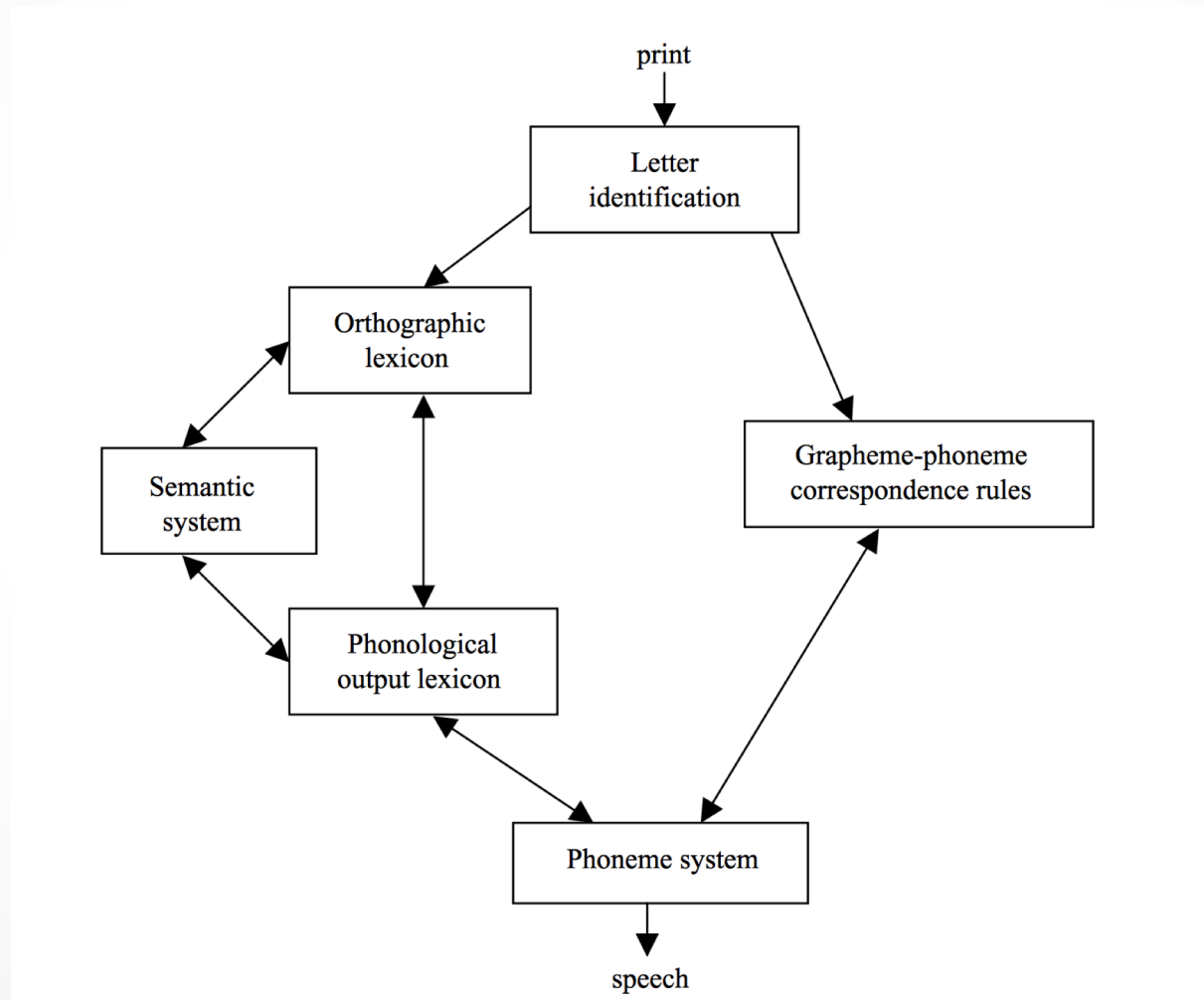
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The dual route view



Self-teaching

- When children apply grapheme to phoneme rules to new words they can pronounce them
- These are opportunities to store the spelling of these words (Share, 1999)
- This can be shown in children's sensitivity to the spelling of pseudowords such as YAIT
- Children co-read about YAIT in a text described as 'the coldest city in the world'
- Subsequently exposed to YAIT and YATE and made spelling choice judgments – they were above chance
- **Suggests a sensitivity to individual items**

Set-for-Variability

- English is opaque or ‘deep’ (Seymour et al., 2003)
- So: strategies for dealing with depth (especially variable vowels) are important
- **A ‘set for variability’** Elbro et al., 2012; Tunmer & Chapman, 2012)
- **ESSENTIALLY – the idea that we need to do more than apply phonic rules to access stored pronunciations (and MAY be particularly true in a deep orthography)**

Set-for-Variability

Not a new idea..!

- First discussed by Gibson (1965) who termed it 'set for diversity', later termed 'set for variability' by Venezky (1999)

But what is it?

- A strategy for vowel variability (e.g. **speak** vs **bread**, Gibson, 1965; Lovett, et al., 2000; Steacy et al., 2016).
- A strategy for 'mispronunciation correction' for exception words (e.g. '*pint*' pronounced as if rhyming with '*mint*', muscle, as 'muskl-e' Dyson et al., 2017)
- A universal strategy for all words (Elbro et al., 2012)

Set-for-Variability

Elbro et al. (2012, Elbro & de Jong, 2017)

- Decoding is:
 - A) phonemic assembly e.g. 'd'-'o' -'g'.
 - B) matching a 'spelling pronunciation' to a known word in their lexicon ... e.g. 'dog'
- **A '2 process model' of assembly**
- **The first part has historically been emphasized in education**

Set-for-Variability

Spelling pronunciations and word pronunciations differ

- Linearity vs 'co-articulation'
- Articulatory features (consider 'bean' vs 'beat')
- Schwas, glottal stops, stress, phonotactic constraints:

a /t/ phoneme differs in the words *butter*, *cat*, *kitten*, *stand*, *tip*, and *train*. In all cases, the recoded /t/ must be resolved with its allophone in pronouncing the correct word.

- Children use phonetic cues e.g. BN CHRK KUT (Treiman, 1993).

Set-for-Variability

SfV predicts growth in regular and exception word reading (Elbro et al., 2012).

SfV is associated with vocabulary knowledge and reading (Tunmer & Chapman, 2012)

What happens if we **teach decoding** as:

A '2 process model' of assembly

- **Does it measurably improve decoding, word and sentence reading and spelling over common /best practices?**

Methodology

Design

- A CONSORT quality dual site 2-arm cluster RCT
- Tier 1 and Tier 2 Pre-post-test design and grade 2 delayed post-test

Participants

- **Tier 1**
- Quebec, Alberta $n = 429$ grade 1 students
- Nested in 50+ classrooms in 26 schools **teachers**
- **Tier 2**
- **All at-risk participants** after fall semester ($n = 201$)

Hypotheses

- *H1: Novel' dynamic' interventions teaching close linkage between taught GPCs and text, variable vowel digraphs and set-for-variability strategies add value at tier 2 over current and best practices and have sustained impact at a delayed post-test on standardized outcome measures.*

Grade 1 study: Fall tier 1 whole class supports

- Screening all students Pre-test (fall start) Mid-test (end of fall) Post-test (end of winter) and follow-up (grade 2)
- Data sharing, resource sharing
- Teacher professional development session on early reading (3 hours in small groups)
- Teacher consultation (generally pairs of teachers) for differentiation
- Paired observations of classrooms and ratings of literacy teaching on 1-5 scale using Early Literacy and Language Classroom Observation ELLCO (Smith et al., 2008) – **rated quality was high**

Winter tier 2 Intervention

- **Mid-test: Re-screened and identified 'at-risk' = all children below the 30th % -ile on WRAT word reading test ($n = 201$)**
- BY school groups of 3-4 children in one of 2 interventions:
- 1) A novel RfI phonics / word reading intervention called DMSFV: **D**irect **M**apping and **S**et for **V**ariability
- 2) A standardized '**C**ommon or **B**est **P**ractices' (CBP) phonics / word reading intervention
- For winter semester (average time per child = 10-11 hours) 30 minutes 2-3 times per week outside

Winter tier 2 Intervention

- Well-matched quasi-experimental design with
- School level randomization
- Controls for demographics, regular teaching quality
- Language background, parent reports of difficulty
- Quality of training and delivery of interventions
- Early literacy and language abilities
- School literacy experiences

Intervention 1: DMSfV

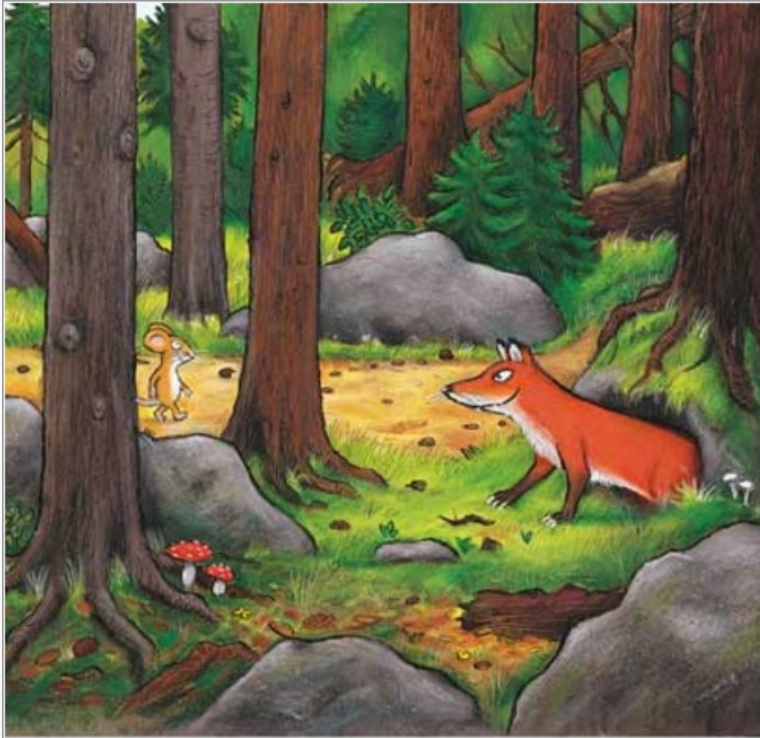
The DMSfV (Direct Mapping and Set for Variability) intervention:

- Systematic synthetic phonics: Taught phonic rules (esp variable multiple vowels e.g. 'ou' and 'magic e' rule)
- Taught SfV principles and to substitute ('flip') GPCs from given rules to find a word in lexicon that makes sense
- Trained children to use either alternative phonics rules when decoding did not work (e.g. 'wasp', 'shoulder' regularized)
- Shared book reading with text for each session embodying the specific taught graphemes or exception words *of that day*
- ALL differentiated for the reading levels of children and sense of 'playfulness / games / active learning'

Intervention 1: DMSfV

- We first taught the *concept* that phonic rules do not always yield a clear pronunciation of words and that a second process (a 'strategy') is needed.
- A staged 5-step plan for variable vowels:
 1. Children blend phonemes of a letter string, looking for and applying well-taught phonic rules.
 2. Children evaluate their first attempt to synthesize a pronunciation: 'Is this a word I know?')
 3. If no, children then replace the vowel with an alternative vowel pronunciation they know
 4. Children synthesise this revised phoneme string
 5. Children re-evaluate this blended string using the same reflective lexical decision process as above.

High densities of taught units in shared book reading



A mouse took a stroll through the deep dark wood.
A fox saw the mouse and the mouse looked good.
*"Where are you going to, little brown mouse?
Come and have lunch in my underground house."*



"It's terribly kind of you, Fox, but no —
I'm going to have lunch with a gruffalo."

"A gruffalo? What's a gruffalo?"
"A gruffalo! Why, didn't you know?"

Intervention 2: CBP

The Common and Best Practices phonics / reading intervention had the following characteristics:

- Equal time spent on 'dual foundations' of regular phonic rules (synthetic phonics) and high frequency exception 'sight words'
- Taught common phonic rules for common words (e.g. some vowels and 'magic e') BUT DID NOT teach production of words from variable rules
- DID NOT train children to use either alternative phonics rules or wider context when decoding did not work (e.g. 'wasp', 'shoulder' regularized)
- Shared book reading DID NOT embody the *specific* taught graphemes or exception words of the day (but was differentiated for reading levels of children)
- Did have some differentiation and 'playfulness'

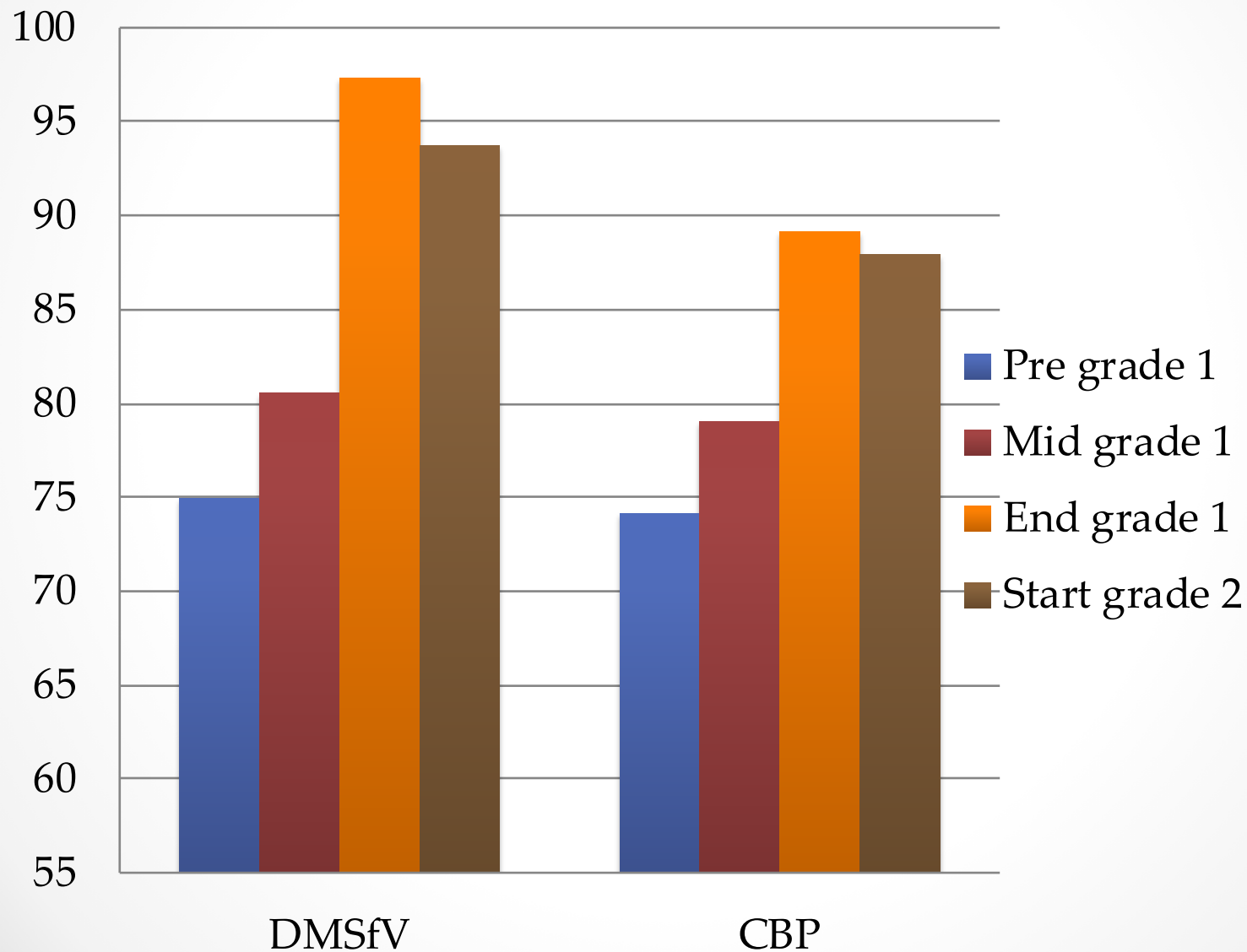
Treatment integrity

- Rubric with 17 prompts for *Content, Time Management, Teaching Quality* and *Learning Environment* created
- (0 = not done 1 = partly done 2 = done scale)
- 15-20% of lessons observed
- 87.5% ongoing inter-rater reliability for these
- Mean ratings between 1.78 and 1.90 (max = 2)
- No differences by condition ($F < 1$, n.s.)

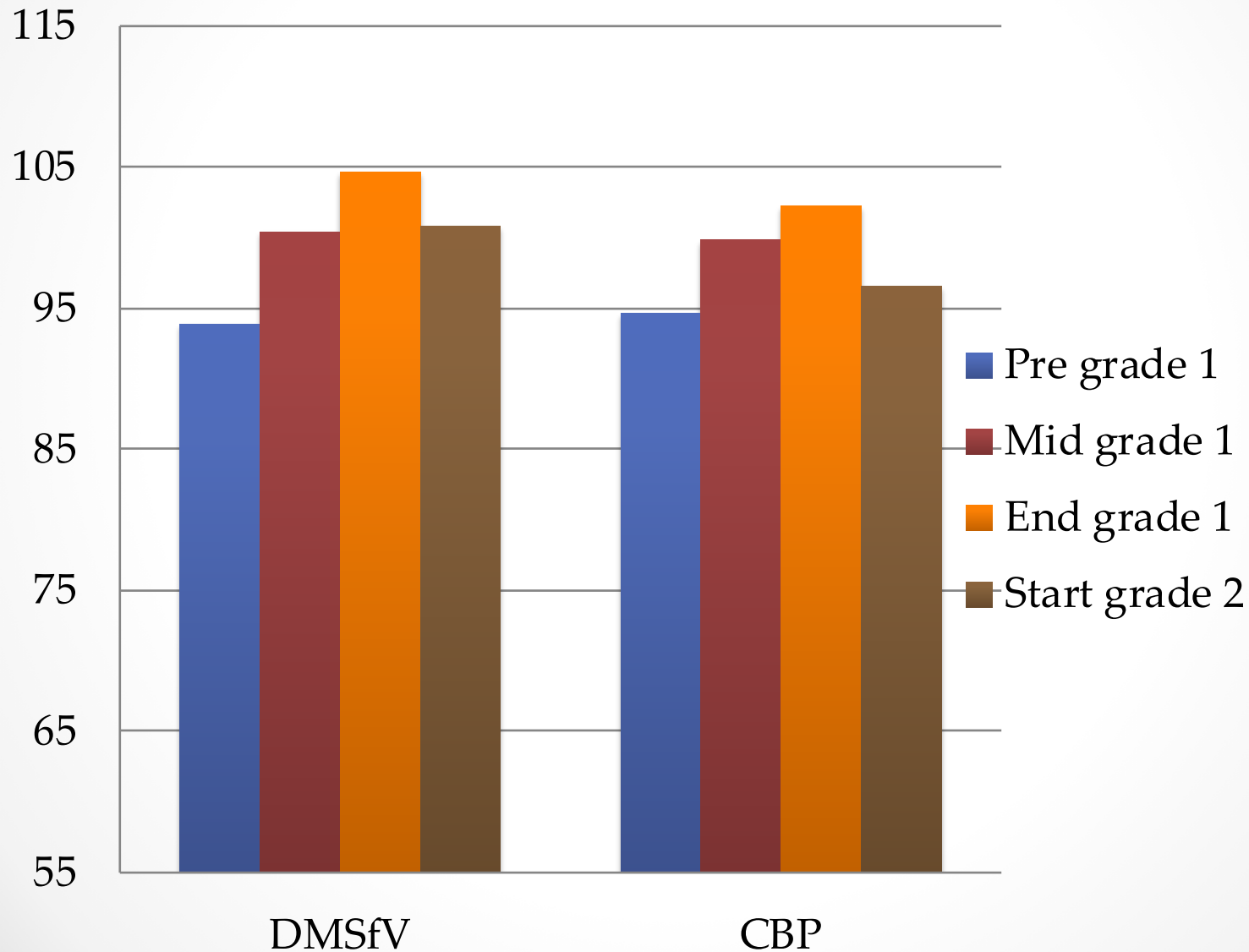
Results

- 3-level hierarchical model controlled:
- School and Province at level 3
- Mid-test attainment (WRAT) at level 2 and mid-test attainment at level 1
- **DMSfV advantaged on:**
- **Word Reading and Spelling (post-test end of grade 1) Word Reading and Sentence comprehension at delayed post-test (beginning of grade 2)**
- **But NOT on Pseudoword reading**
- **‘Value-added’ effect sizes across measures = around .2 post-test and .5 delayed post-test for DMSfV**

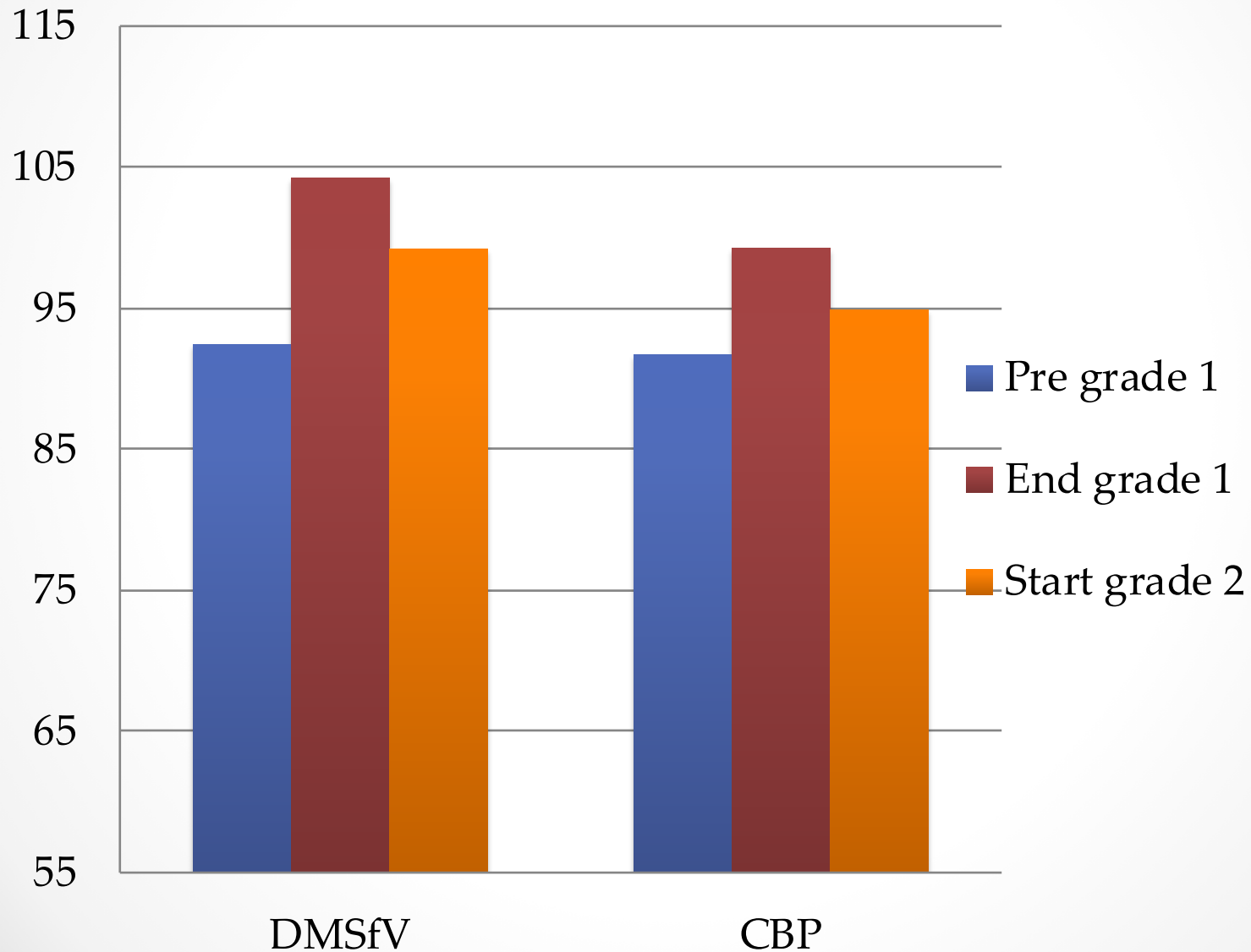
Results: WRAT Word Reading



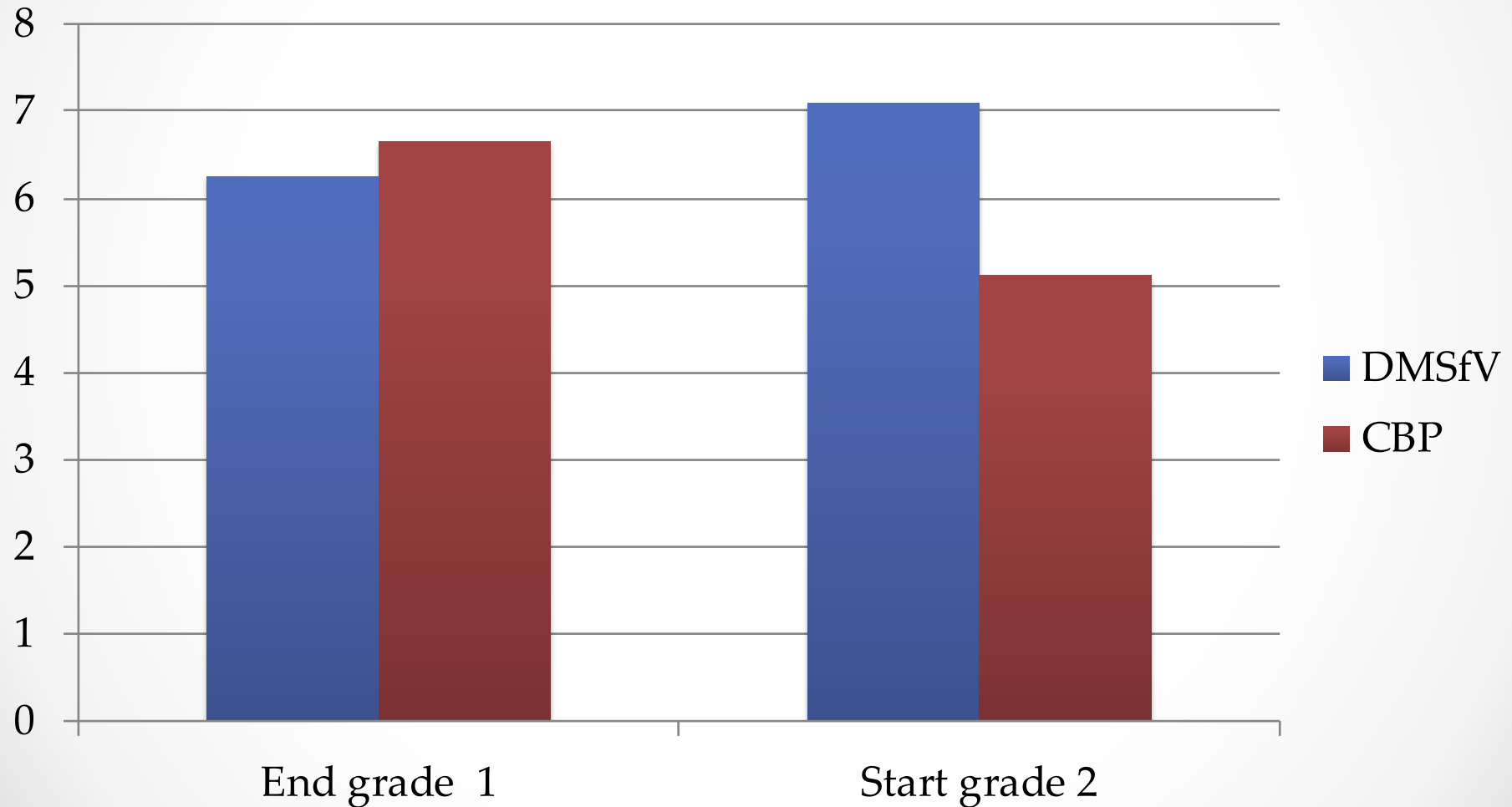
Results: WJ Pseudoword decoding



Results: WJ Spelling



Results: GRADE Sentence Comprehension (stanine)



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wasp

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w a s p

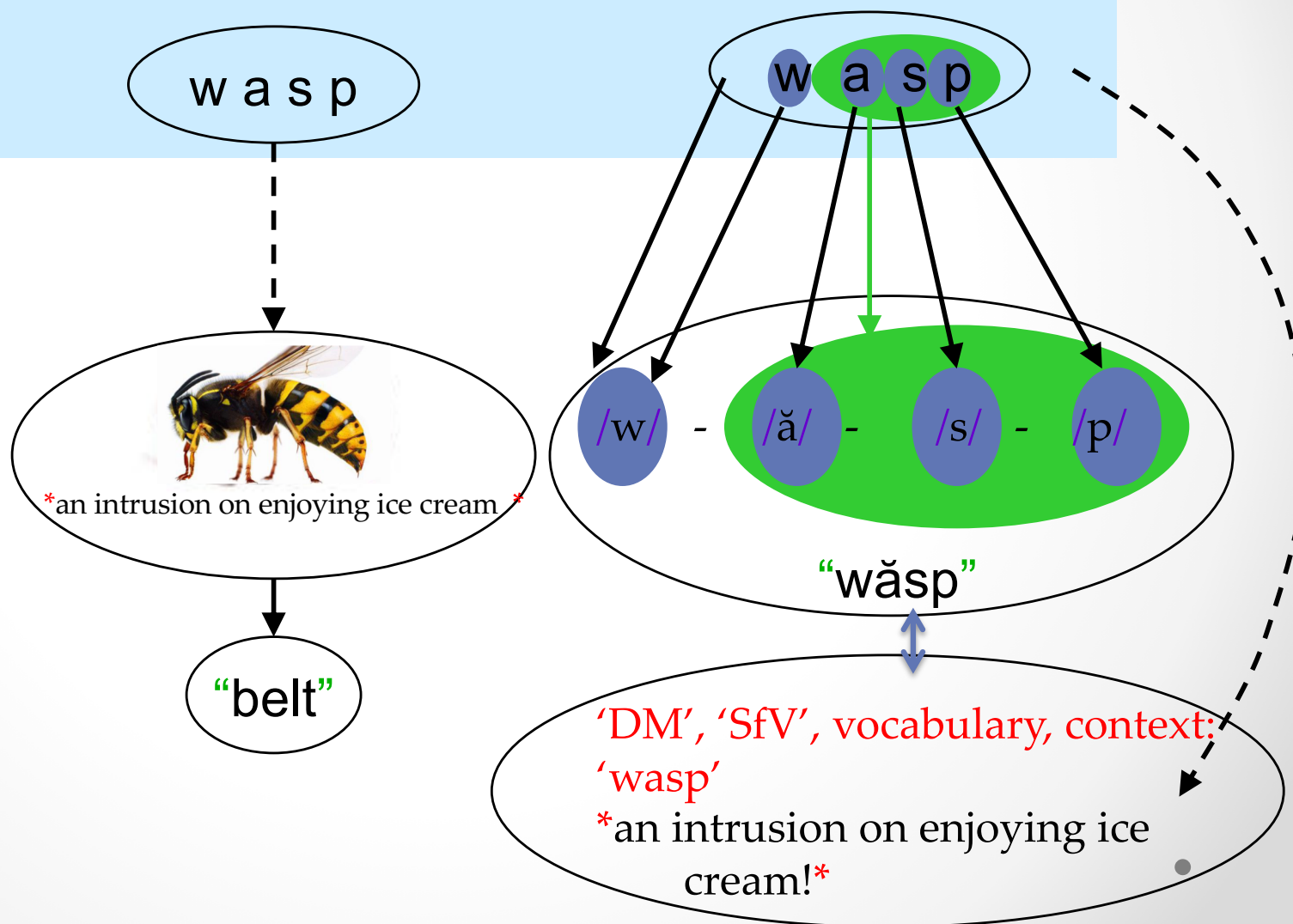
w a s p

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Conclusions: Grade 1 study

- The 'tier 2' reading interventions did show effects even after documented good regular tier 1 teaching
- BUT The DMSfV approach was far the more successful of the two for word reading and phonological awareness
- **CBP is no guarantee of success**
- **Medium** effect sizes for interventions evident at delayed post-test for DMSfV intervention
- Other data suggest it transfers into French

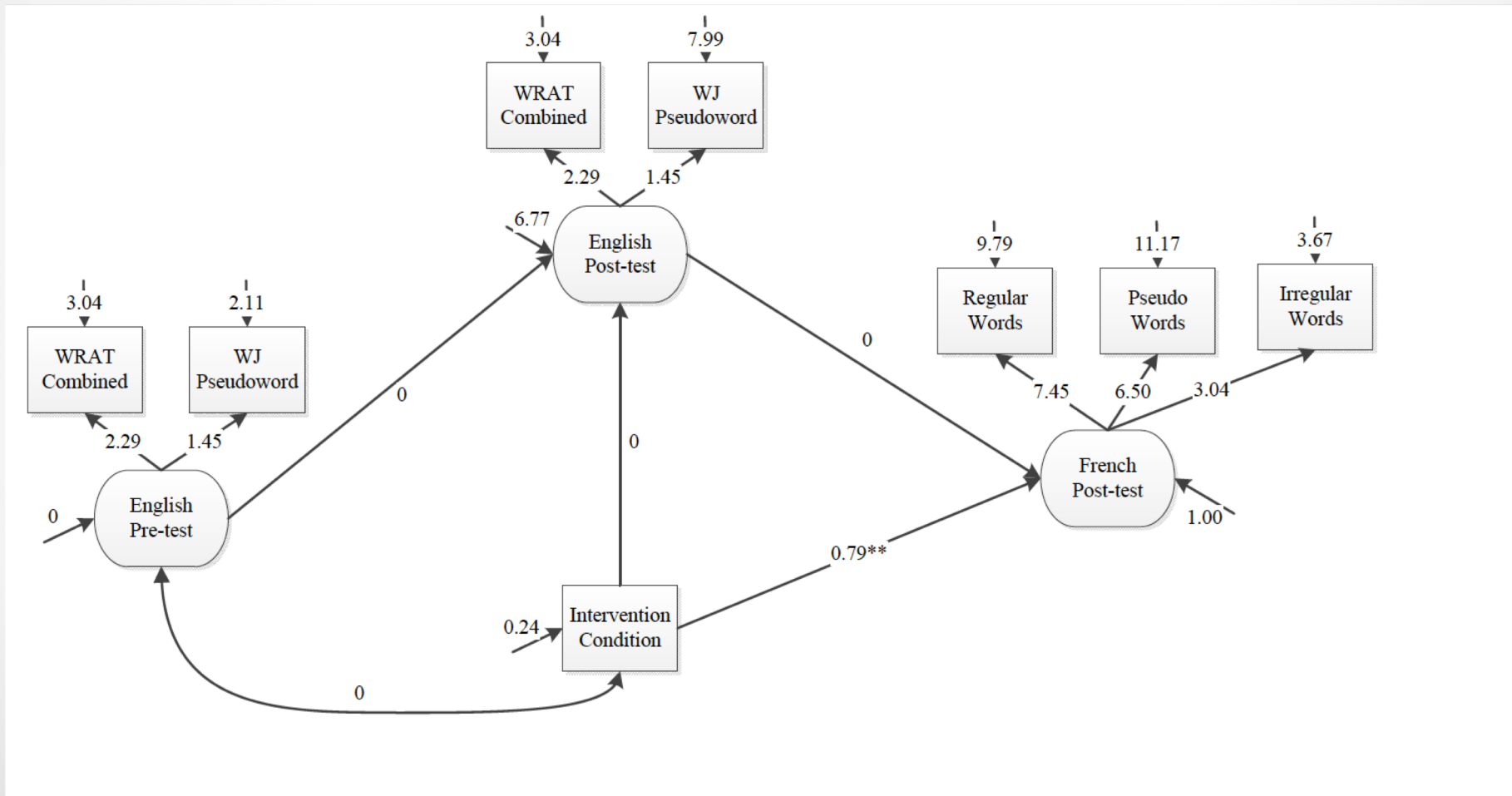
Transfer effects in French

- Montreal Quebec 'English' schools have French Immersion
- Core curriculum delivery in French (around 70%)
- **NOTE: Côté (2017) found SOME transfer in English for pseudowords $p = .055$ ES = .3 in her sub-sample $n = 90$.**
- So does it transfer? YES! significant effects for DMSFV on French pseudoword and word reading (small-medium ES) and medium effect for irregular words
- What transfers?
- The principle of reading: Process-level decoding NOT specific GPCs
- (Côté, 2017; Côté & Savage, 2018 submitted)
- **Effects suggest SfV is a general process** (Elbro et al., 2012)

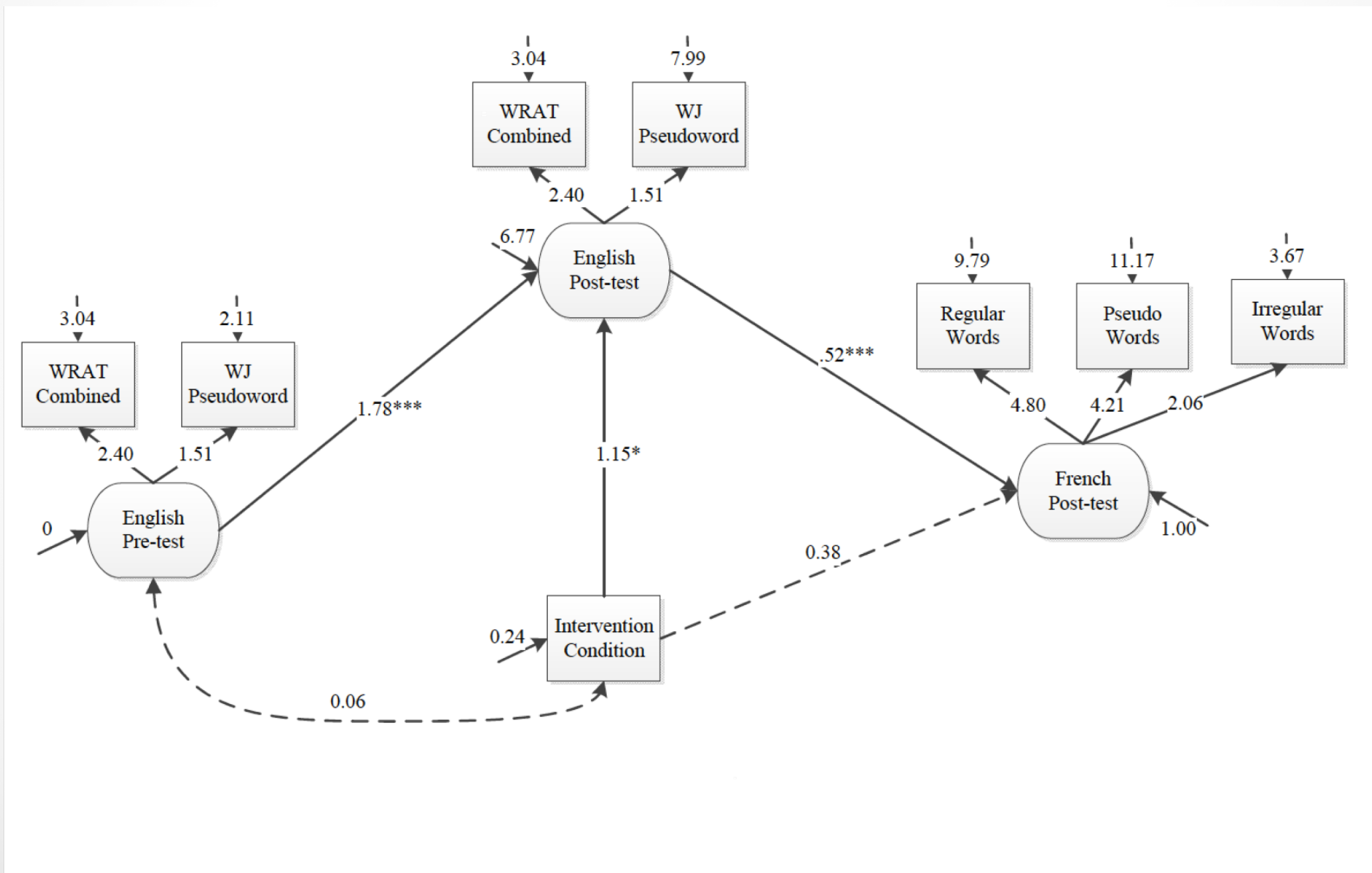
Transfer effects in French

- Côté and Savage undertook a **mediation** analysis
- This asks whether effects one language operates through that in the other
- It involves us looking at individual variation not at group differences
- So, does transfer in English mediate the transfer shown in French?
- Yes, after covarying student-level English variation:

Does English mediate 'transfer' in French?



Does English mediate 'transfer' in French?



Intervening in Grade 2 why phonic skills? (Again)

Phonics is based on 2 skills:

- Letter-sound knowledge **and** phonemic awareness
- Both need to be supported and in-place for children to be able to 'sound out' or 'decode' or use 'phonics'

Why phonics in Grade 2?

Table 4. Accuracy (per cent correct) and speed (seconds per item) of letter identification by each language group (standard deviations in parentheses)

			Letter-sound identification	
			%	s/item
Simple syllable structures	Shallow	Finnish	94.44 (4.71)	1.48 (0.55)
	.	Greek	96.40 (5.09)	1.05 (0.27)
	.	Italian	95.13 (7.67)	1.06 (0.46)
	.	Spanish	95.55 (4.99)	1.03 (0.44)
	.	Portuguese	92.48 (7.84)	1.40 (0.50)
	.	French P1	91.22 (10.83)	1.38 (0.61)
	Deep	French P2	98.03 (4.32)	1.26 (0.18)
Complex syllable structures	Shallow	Austrian	96.85 (3.32)	0.74 (0.16)
	.	German	99.51 (1.79)	0.75 (0.19)
	.	Norwegian	98.65 (2.46)	0.84 (0.22)
	.	Icelandic	95.73 (5.33)	1.02 (0.24)
	.	Swedish	98.74 (1.75)	1.36 (0.37)
	.	Dutch	89.51 (4.66)	0.94 (0.27)
	.	Danish P1	94.92 (7.30)	1.11 (0.41)
	.	Danish P2	97.95 (2.42)	1.05 (0.27)
	.	Scottish P1	93.97 (6.03)	1.88 (1.01)
	.	Scottish P2	96.03 (4.68)	1.03 (0.27)
	Deep			

Children learning to read English usually identify letters-sounds almost as well as children learning more transparent orthographies

Why phonics in Grade 2?

Table 5. Accuracy (per cent correct) and time (seconds per item) data (standard deviations in parentheses) for reading lists of very familiar words, with outcomes for content, function and combined content and function words for each language group

			Familiar word reading					
			Content words		Function words		Combined content/function	
			%	s/item	%	s/item	%	s/item
Simple syllable structures	Shallow	Finnish	98.17 (4.09)	1.38 (0.91)	98.41 (3.43)	1.13 (0.72)	98.29 (3.76)	1.25 (0.83)
	.	Greek	96.59 (5.90)	1.60 (0.63)	98.61 (2.97)	1.31 (0.67)	97.60 (4.75)	1.45 (0.66)
	.	Italian	94.88 (17.54)	2.18 (1.18)	95.76 (16.61)	1.23 (0.58)	95.32 (16.97)	1.70 (1.04)
	.	Spanish	94.17 (10.29)	1.40 (1.23)	95.28 (9.71)	1.31 (1.00)	94.72 (9.96)	1.35 (1.11)
	.	Portuguese	77.19 (19.45)	3.44 (2.44)	69.88 (20.77)	3.00 (1.81)	73.54 (20.32)	3.22 (2.14)
	.	French P1	72.47 (27.57)	7.04 (10.87)	85.68 (20.87)	4.19 (6.74)	79.07 (23.54)	5.61 (9.00)
	Deep	French P2	98.47 (4.67)	1.00 (0.29)	100.00 (0.00)	0.64 (0.21)	99.23 (2.45)	0.84 (0.26)
Complex syllable structures	Shallow	Austrian	97.08 (4.94)	1.34 (0.64)	97.86 (4.42)	0.82 (0.29)	97.47 (4.68)	1.08 (0.56)
	.	German	97.42 (4.90)	1.35 (0.74)	98.02 (3.77)	0.76 (0.39)	97.72 (4.34)	1.06 (0.66)
	.	Norwegian	91.53 (16.55)	2.13 (1.39)	92.08 (14.23)	1.71 (1.19)	91.81 (15.34)	1.92 (1.30)
	.	Icelandic	93.39 (9.15)	2.36 (1.65)	94.74 (8.58)	1.88 (1.21)	94.07 (8.84)	2.12 (1.46)
	.	Swedish	93.56 (9.31)	2.64 (2.57)	96.67 (4.81)	1.39 (1.22)	95.11 (7.50)	2.01 (2.09)
	.	Dutch	92.66 (7.10)	2.02 (0.84)	98.21 (5.03)	1.17 (0.67)	95.44 (6.71)	1.60 (0.87)
	.	Danish P1	70.94 (26.78)	1.15 (1.03)	71.20 (29.93)	2.51 (2.00)	71.07 (27.71)	1.85 (1.42)
	.	Danish P2	92.22 (13.88)	1.18 (1.40)	92.92 (10.45)	0.91 (0.82)	92.57 (11.74)	1.05 (1.09)
	.	Scottish P1	32.59 (24.83)	8.19 (6.08)	35.18 (26.23)	7.36 (6.43)	33.89 (24.97)	7.78 (6.19)
	Deep	Scottish P2	79.07 (18.32)	2.11 (1.40)	73.70 (21.34)	2.25 (1.59)	76.39 (19.27)	2.18 (1.41)

Even after Grade 2, students learning English do not read words as well as Grade 1 students learning other European orthographies

That data clearly!

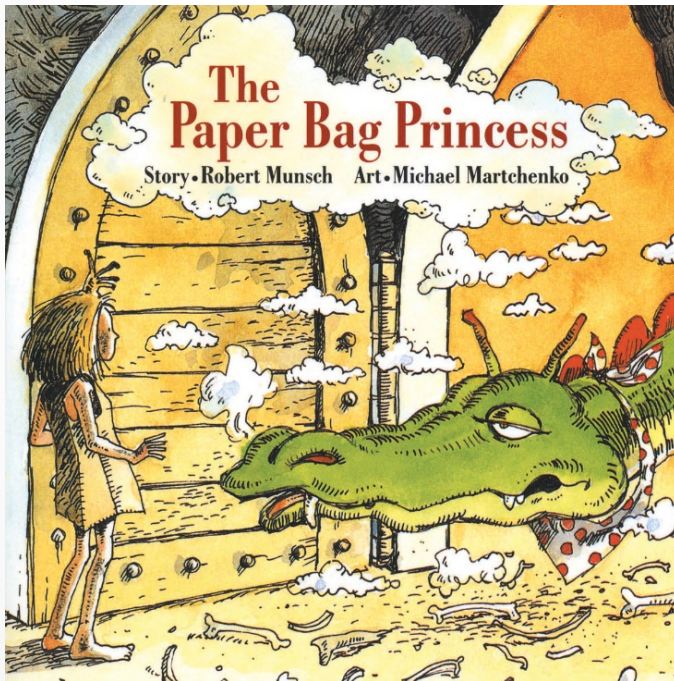
- Scottish and other European children do not differ on basic letter sounds > 90% accuracy
- Scottish children know 1/3 of the matched content and function words of most European counterparts (except Denmark)
- Europe and Scandinavia: 90% accuracy (by P1)
- Denmark: P1 72 % P2 : 92%
- Scotland: P1 34 % P2 : 76%

Phonics programs for Grade 1

Jolly phonics:

1. s, a, t, i, p, n
2. c k, e, h, r, m, d
3. g, o, u, l, f, b
4. ai, j, oa, ie, ee, or
5. z, w, ng, v, oo, oo
6. y, x, ch, sh, th, th
7. qu, ou, oi, ue, er, ar

Robert Munsch



Example (The paper bag princess)



Elizabeth gra**** the **ocker and b***** on *** d****
ag**n.

*** dragon stuck hi* n*** out o* *** d*** and s**d, “Go
aw**, I l*v* to **t prin*ess*s, but I h*** alr**d* **t** a
ole case tod**. I am a ver* b*s* dragon. C*m*
back t*mor***.”

“Wait,” shout** Elizabeth. “Is it tr** that *** *r* **
smartest and f**r*est dragon in *** *h*I w**ld?”

“Yes,” s**d *** dragon.

Example (The paper bag princess)



Elizabeth gra**** the **ocker and b***** on the
d*** ag**n.

The dragon stuck hi* n*** out o* the d*** and s**d,
“Go aw**, I l*v* to **t prin*ess*s, but I h*** alr**d*
t a **ole cas**e tod**. I am a ver* b*s*
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“Wait,” shout** Elizabeth. “Is it tr** that *** *r* the
smartest and f**rcest dragon in the *h*I w**ld?”

“Yes,” s**d the dragon.

Example



Elizabeth grab**bed** the **kn**ocker and **ban**ged on the **door** again.

The dragon stuck his **nose** out of the **door** and **said**,
“Go aw**ay**, I **love** to **eat** princ**esses**, but I have
al**ready** **eaten** a **whole** cast**le** tod**ay**. I am a very
busy dragon. Come back **tomorrow**.”

“Wait,” shout**ed** Elizabeth. “Is it **true** that you are the
smartest and **fier**cest dragon in the **whole** **world**?”

“Yes,” **said** the dragon.

Example



Elizabeth grabbed the knocker and banged on the door again.

The dragon stuck his nose out of the door and said, “Go away, I love to eat princesses, but I have already eat^{en} a whole cast^{le} today. I am a very busy dragon. Come back tomorrow.”

“Wait,” shouted Elizabeth. “Is it true that you are the smartest and fiercest dragon in the whole world?”

“Yes,” said the dragon.

The Simplicity Principle

...

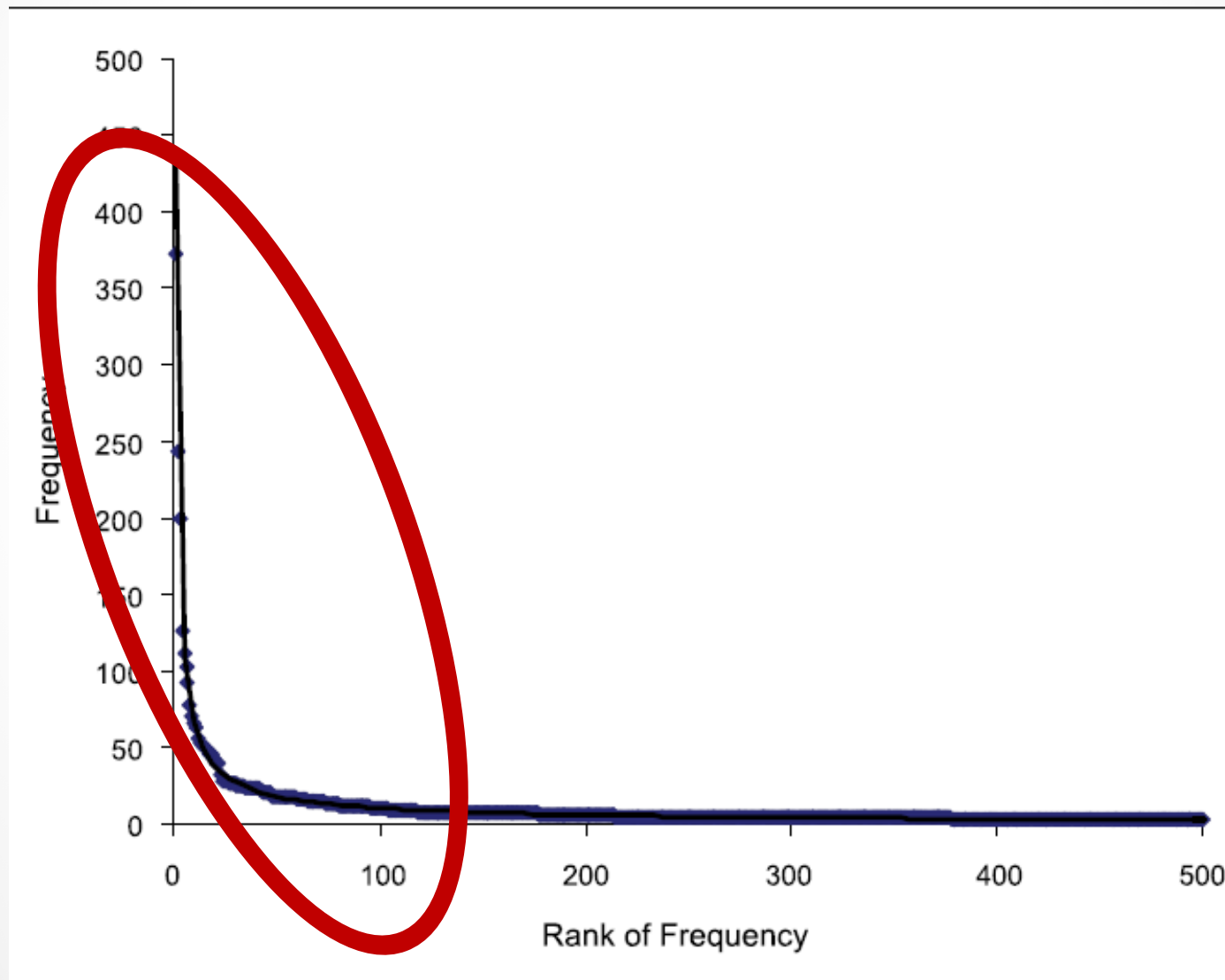
Background

- “The theory of optimal instruction states that there is an optimal amount of information to teach that will lead to maximum generalisation” (Solity & Vousden, 2009, p.9)
- What is the optimal amount of information to teach in reading?

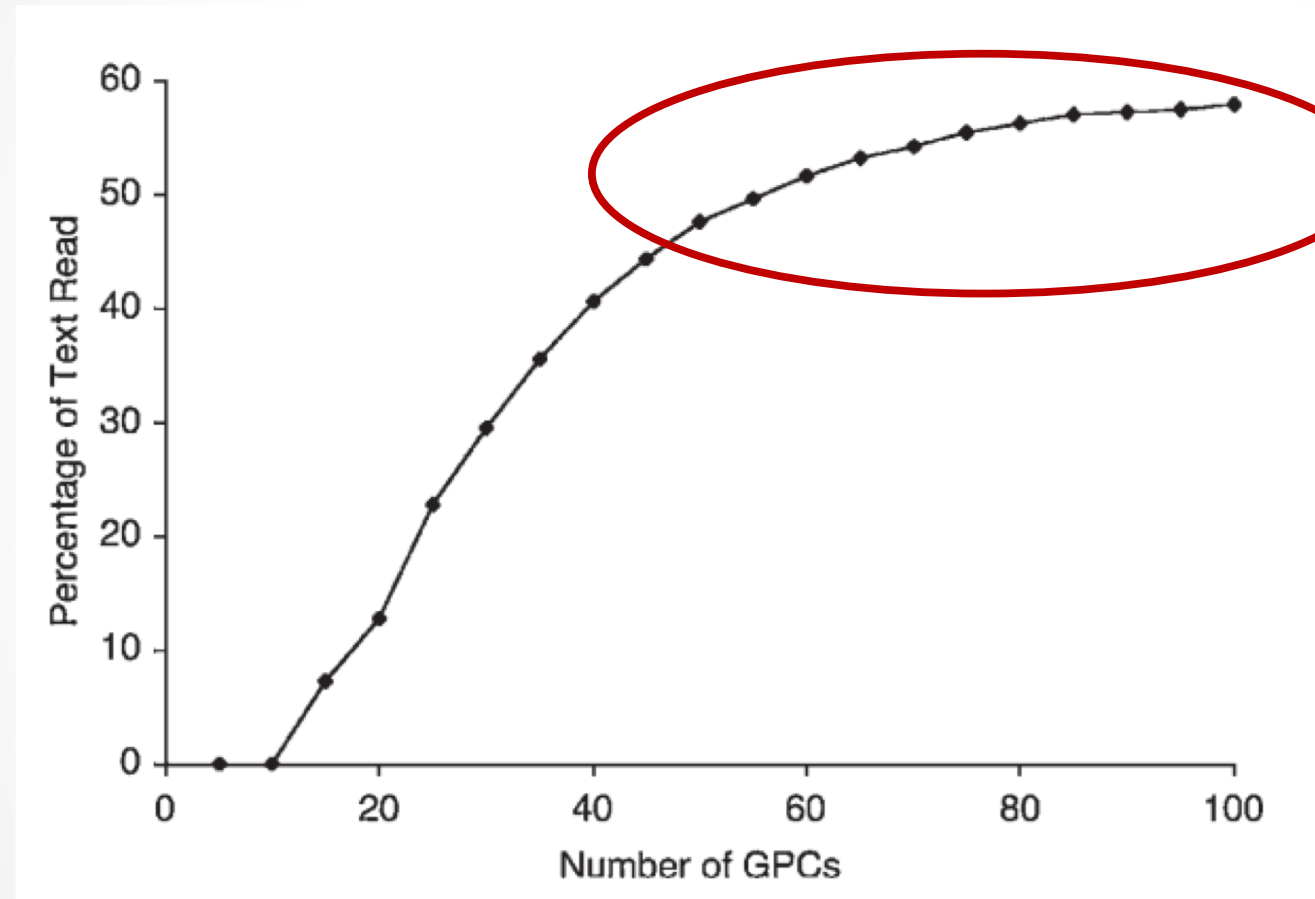
Background

- Analysis of 685 contemporary children's books:
 - **100 most frequent English words account for approximately 50% of all word**
 - the next 50 most frequent words account for a significantly lower proportion of word tokens in children's books
 - **64 most frequent GPCs (out of 461 in English) would enable children to read more than 60% of all word types** in children's books

Most frequently occurring words



Most frequently occurring GPCs



Proportion of monosyllabic word tokens that can be read as a function of the most frequent grapheme-phoneme mappings (Vousden, 2008, p.262)

What is it?

General idea:

- Draw children's attention to the most frequent and important elements for word reading
- Reducing the amount of information to memorize:
 - Should increase the retention of those important elements and lead to an optimal performance in reading, as well as to generalization

Vousden and Solity (2011)

Ranked List of Grapheme-Phoneme Mappings			
"s" = /zz/	ed	oa	ow
sh	ss	dg	ur
ee = /eeee/	th	ou	kn
a_e	o_e	wh	gg
ch	ai	ed	oi
pp	aw	ay	i
ng	ir	or	air
ck	tch	oo	eer
ll	ff	th	ore
i_e	ar	ow	ear
ea = /ee/	igh	qu	etc...

A new Canadian analysis

- We obtained the 500 most frequently borrowed young children's books from all of Toronto district public libraries – summer 2014!
- My team typed them all into a database and Dr Solity's team in the UK analyzed this list to provide a specifically Canadian list of most frequent GPCs, most common words, and their links to the most popular Canadian real books
- We shared these **maximally useful units** with teachers to aid their teaching and we used them in the small group winter interventions too!

Alphabetic Order

Simplicity Order

Motivation



Higher motivation

= ↑ confidence

= desire to read more

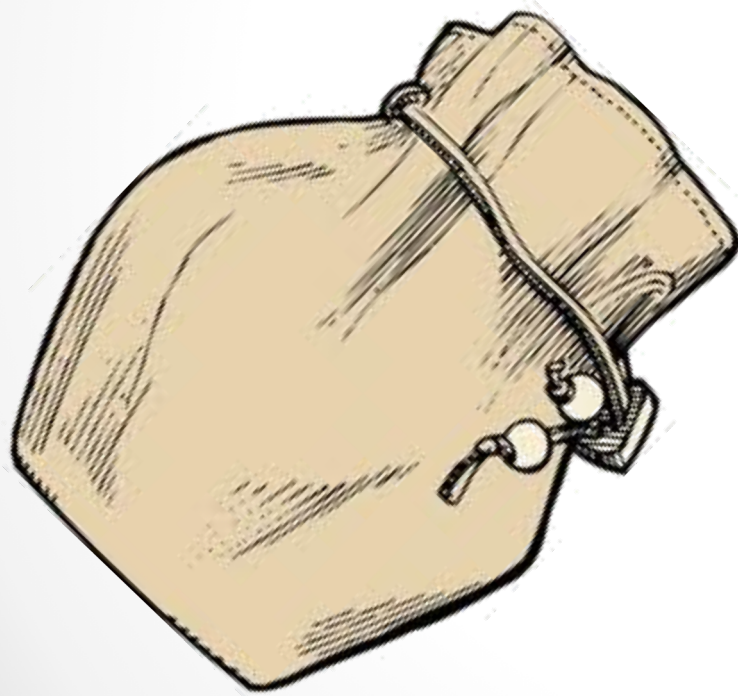
= wider range of books

= improve more rapidly

A pilot study (Chen & Savage, 2014)

- We randomly allocated 38 grade 2 students to a 9-week 30 supplemental small group session programme.
- We taught intervention and taught control conditions.
- Intervention reading programme taught children complex GPCs ordered by their frequency of occurrence in children's texts (a 'simplicity principle').
- The other reading programme taught children word usage.

Part 1 : Build the word



Example: Shared reading and identifying GPCs



Elizabeth grabbed the knocker and banged on the door again.

The dragon stuck his nose out of the door and said, “Go aw^{ay}, I love to eat princesses, but I have already eaten a whole castle tod^{ay}. I am a very busy dragon. Come back tomorrow.”

“Wait,” shouted Elizabeth. “Is it true that you are the smartest and fiercest dragon in the whole world?”

“Yes,” said the dragon.

Example



Elizabeth grab**bed** the **kn**ocker and ban**ged** on the **door** again.

The dragon stuck his nose **se** out of the **door** and **said**,
“Go aw**ay**, I **love** to **eat** princ**esses**, but I have
al**ready** **eaten** a **whole** cast**le** tod**ay**. I am a very
b**usy** dragon. Come back to**mor**row**ow**.”

“Wait,” shout**ed** Elizabeth. “Is it tr**ue** that you are the
smartest and **fier**cest dragon in the **whole** wor**ld**?”

“Yes,” **said** the dragon.

(name) 's



Bank of Words

A pilot study (Chen & Savage, 2014)

- Participants in the **complex GPC group performed significantly better** at post tests
- Generally large *value-added* effect sizes (Cohen's *d*) at both by-participant and by-item for :
 - spelling, $d = 1.85$, $d = 1.16$
 - word recognition with words containing taught GPCs, $d = 0.96$, $d = 0.95$
 - word recognition, $d = 0.79$, $d = 0.61$
 - **reading motivation, $d = 0.34$, $d = 0.56$**

A pilot study (Chen & Savage, 2014)

Take away message(s):

- The Simplicity Principle aids in structuring maximally effective supplemental phonic interventions.
- Teachers were shown these results, and planned to implement aspects of the sessions into their existing lesson plans
- e.g. Teach groups of words according to GPC units instead of by for example by themes
 - a_e = came, cake, same, ng, gg, etc..
 - Instead of: 'Autumn theme word's: bat, Halloween, leaves, candy, 'grapheme of the day linked to all texts'
- e.g. Used real books instead of reading scheme books to increase student engagement

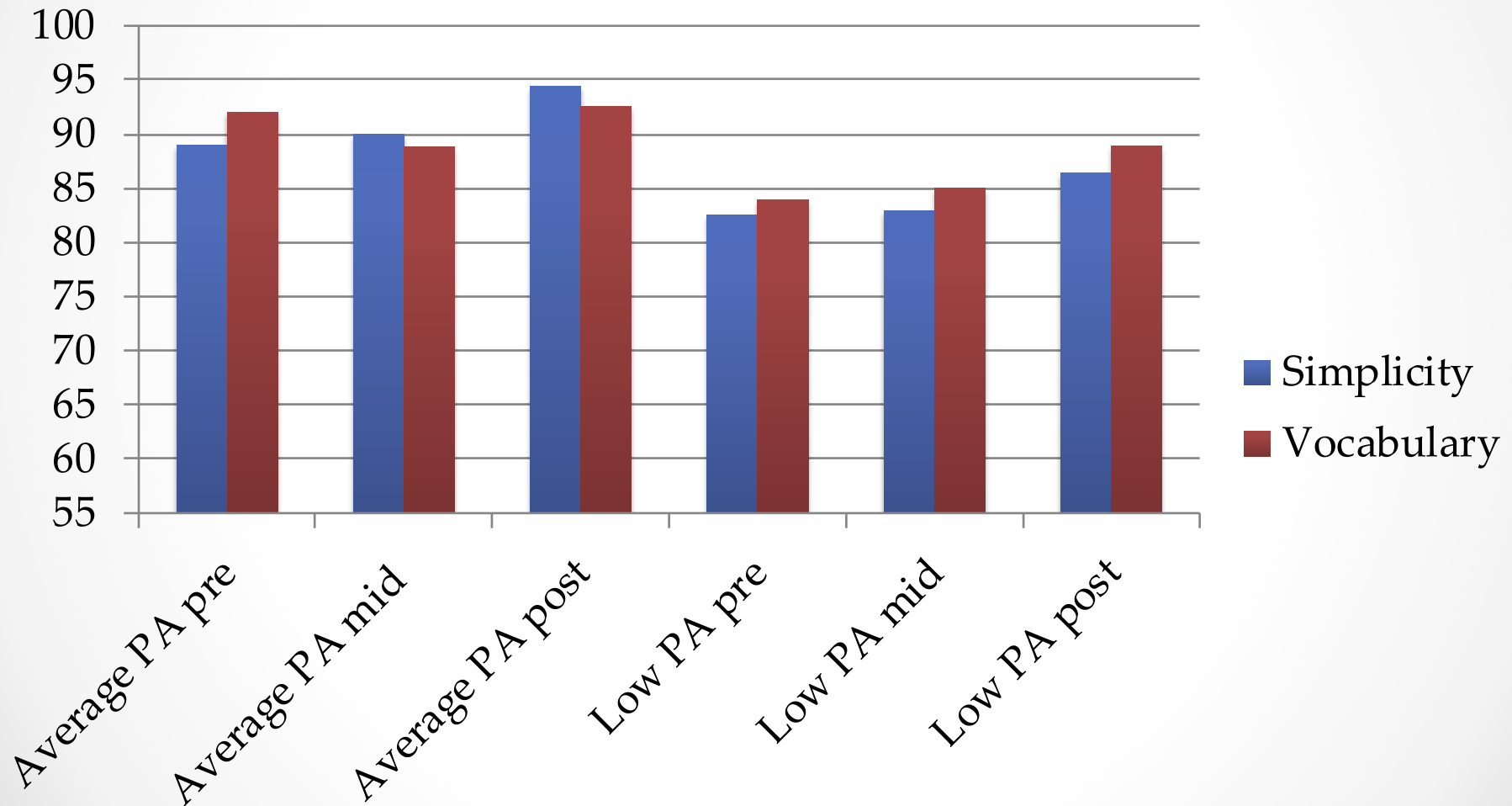
Pan–Canadian replication study

- 2 Provinces in East and West of Canada with around 150 at-risk students screened from 500.
- Well-matched quasi-experimental design with
- School level randomization
- Controls for demographics, regular teaching quality
- Language background, parent reports of difficulty
- Quality of training and delivery of interventions
- Early literacy and language abilities
- School literacy experiences
- Nested analysis of 50 classrooms

Replication study

- We find a significant **interaction**:
- **Word, pseudoword, sentence reading, spelling**
- **Simplicity was effective for those with average or higher phoneme blending skills (high = $SS > 9$ vs < 9 = below grade level)**
- 30+ years of research shows that *both* GPC and phoneme awareness training is essential for improvements.

word reading standard scores



Effect size – practical significance?

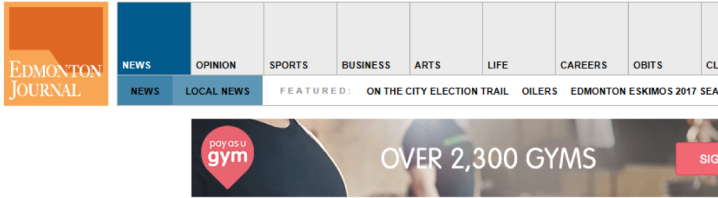
- Analyses show:
- Medium-large Hedges ES for WRAT word (.69), and WJ Pseudo-word (.65) reading and sentence comprehension tests (.63) spelling (.44) at immediate post-test
- Small ($<.1$) ES for transfer into French

Some important caveats

- 2 of 3 in this sample remained below average on phonological awareness at post-test (mean more than 2 SDs below average)
- Little start to end of year progress in spelling pseudoword decoding
- Average comprehension composite was SS = 85 at post-test
- Clear impact on word-level skills but not a 'magic bullet' for comprehension or fluency

Some recent media

- <https://globalnews.ca/video/3836059/alberta-researcher-finds-tool-to-help-students-who-struggle-with-reading>




Extra help by researchers eliminates reading gap for most young students

A research project that offered extra help to struggling young readers in Edmonton schools has prompted teachers and principals to try the new approach more widely.

JANET FRENCH
More from Janet French

Published on: October 30, 2017 | Last Updated: October 30, 2017 6:18 AM MDT



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Program dramatically improves reading of at-risk students at an early age

2 November 2017

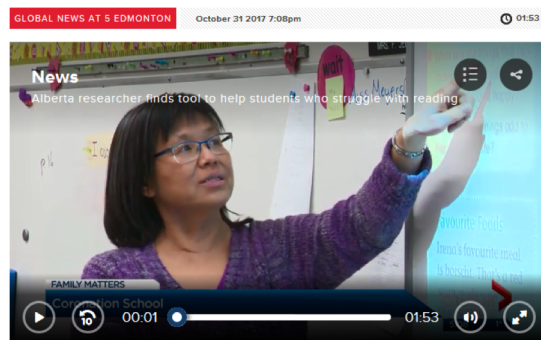
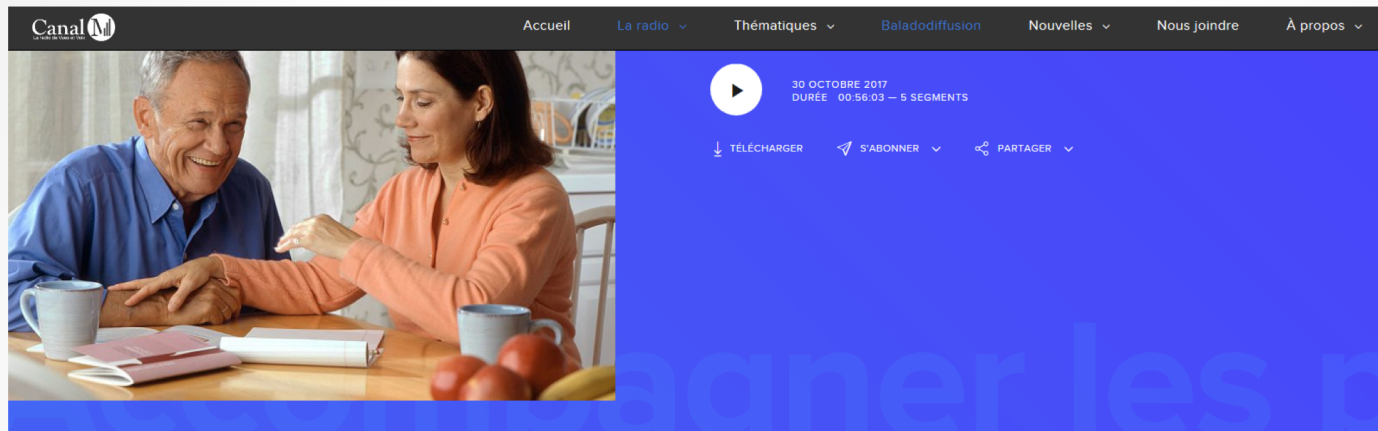


Dr Rob Savage, Professor of Psychology and Head of the Department for Psychology and Human Development at the IOE, is part of a research project with partners at the University of Alberta (Canada) and Macquarie University (Australia) that has seen dramatic reductions in the number of children with reading difficulties.

Media coverage: [Edmonton Journal](#), [Canal M](#), [Global News](#), [Folio.ca](#)

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More media



Alberta researcher finds tool to help students who struggle with reading

It's being called a literacy miracle. A University of Alberta researcher appears to have found the recipe to help students who struggle with reading. As Laurel Gregory explains, his project has teachers, parents and principals from across the country taking note.

Comments Embed Facebook 86 Twitter Google+ ...

Robert Savage, professeur à l'Université McGill au département d'éducation, nous présente un nouveau programme prometteur en alphabétisation. On découvre un programme d'accompagnement des patients qui vivent avec le cancer en compagnie de **Dre Marie-Pascale Pomey**, professeure à l'École de santé publique de l'Université de Montréal et **Mado Desforges**, accompagnatrice auprès des patients.

folio



October 02, 2017

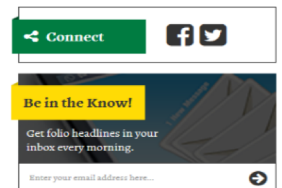
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Program dramatically improves reading of at-risk students at an early age

In only two years, researchers were able to reduce number of Grade 1 children with reading difficulties from 290 to 7.



Education researcher George Georgiou is in the midst of a research project that has seen the number of participants with reading difficulties cut by more than 97 per cent.



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Summary

- We have shown using sustained cross year interventions that a range of theory- and data – driven practices can improve reading in at-risk samples at scale across regions in grades 1 and 2.
- Effects are evident in overlapping samples across years and in grade 2 despite Grade 1 effects
- Effects suggest we learn to map complex GPCs best where we map them to texts and with conceptually-driven SfV strategies for making sense of such *heuristics across all words*.
- In English the complexity of the system in English necessitates extra ‘word level’ work with optimal GPCs in grade 2