

Literacy development in children with speech and language difficulties

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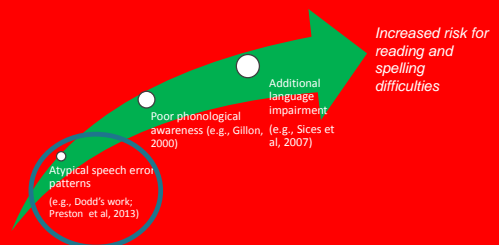


Outline

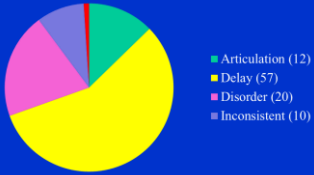
- Background regarding children with speech difficulties
 - Risk and protective factors for literacy development
 - Case study examples of individual intervention
 - Response to classroom-based PA teaching
- Preliminary analysis
 - Children with speech difficulty in the Better Start Cohort
- Future Directions

The literacy development of children with speech difficulty

Young children with speech difficulty



Not all speech errors are created equally!



Broomfield & Dodd, 2004 (n = 320)

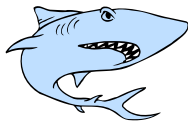


Male, aged 7;6, McNeill, Wolter & Gillon, 2017

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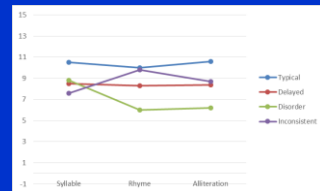
Male, aged 7;6, McNeill, Wolter & Gillon, 2017

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Phonological Awareness: Standard Scores



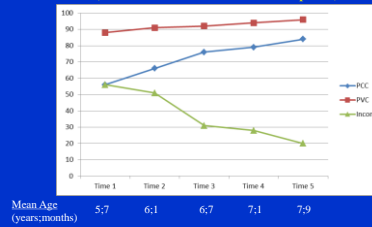
Holm et al., 2009

Literacy: Inconsistent Speech Errors

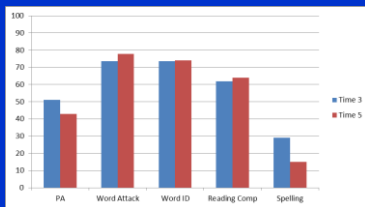


Speech Over Time

(n=39; children with inconsistent speech)



Literacy over time (% within expected range)

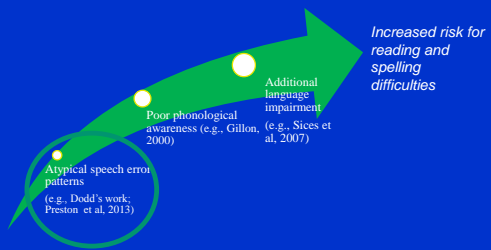


Arthur; 8 years 8 months

Item	Spoken attempt	Written attempt
Kangaroo	/dæŋəru/	<i>kelno</i> (welmn)
Girl	/dæl/	<i>Irnal</i> (lmal)
Shark	/zak/	<i>amk</i> (amkl)
Bridge	/wedʒ/	<i>Wltmo</i> (wltmo)
Cake	/deik/	<i>kmko</i> (Kmkko)

* Spelling items from the inconsistency subtest of the DEAP (Dodd et al., 2002)

Young children with speech difficulty

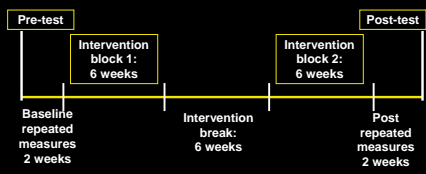


Case Study Intervention Examples

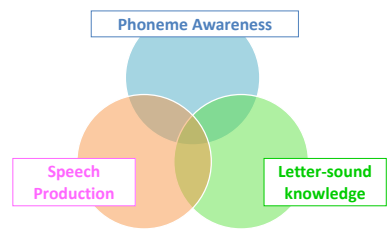
Children with multiple risk factors for literacy difficulty

Intervention for Childhood Apraxia of Speech (n=12)

- Multiple single-subject and comparative group design



Integrated Phonological Awareness Intervention



Case Study 1: Logan

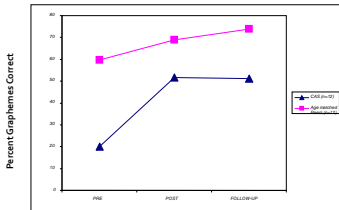
Age	6;6
Burt Age Equivalence Band	<5;10-6;4
Non-word Reading (PPC)	0%
Spelling (PGC)	15%
TOPA-2 (standard score)	78
Letter knowledge (/32)	8

Note: PPC = percent phonemes correct; PGC = percent graphemes correct, TOPA-2 = Test of Phonological Awareness – second edition (Torgesen and Bryant, 2004).

Spoken (Pre)	Spell Pre (6;6)	Spell Post (6;11)
Rain /wen/	r	ran
Kangaroo /kæŋgəru:/	cau	kangaroo kangwoo
Girl /di/	jo	gol
Shark /ka/	c	shak
Dinosaur /da/	danc	dinshor
Teeth /di/	tc	tef
Fish /bi/	fohpne	fish
Chips /toup/	thedhcl	tis
Bridge /bæ/	qanenc	bish
Cake /kei/	ddence	kak

*Items not rehearsed in specialist teaching

Spelling



Case Study 2: Liam and Theo

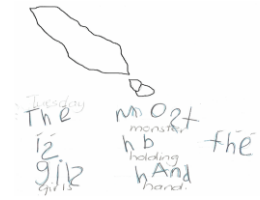
- Aged 4;6
 - Significant speech difficulty
 - Mild receptive language difficulty
 - Rhyme awareness and initial phoneme identity knowledge yet to emerge
- Integrated PA therapy from 4;7-4;11
 - Significant growth in speech, phonological awareness and letter-sound knowledge
- Followed for a year following the completion of therapy
 - School entry assessment
 - Teacher interview



Liam: First term at school (5;2)

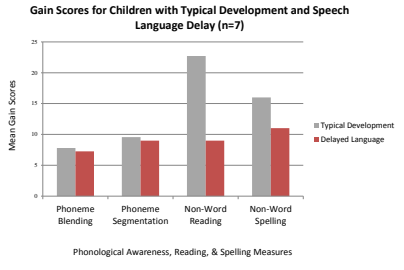


Theo: First term at school (5;2)



Response of children with speech difficulty to classwide PA teaching

Responsiveness to Classroom Based PA Teaching (Carson, Gillon & Boustead, 2013)



A Better Start

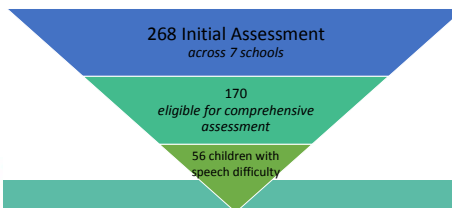
E Tipu E Rea
Literacy and Learning Theme

Early literacy intervention: Focus on children with speech production difficulties



Participants

Year 1 students (Aged 5;0 – 5;11)



Children with speech difficulty (n=56/143)

	% consonants correct	Inconsistent errors?	Inconsistency %	Unusual errors?	CELF Total Language Score*	Initial Phoneme Identity
Strand A (n=27)	82.7% (12.5)	N = 6	29.4% (15.8)	N = 4	80.6 (13.3)	5.1 (2.0)
Strand B (n=29)	82.2% (12.8)	N = 5	27.1% (17.2)	N = 5	82.5 (14.6)	4.7 (2.4)

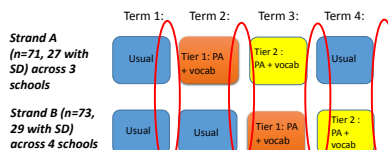
Inconsistent errors = 40% or greater inconsistency

* expected performance on the CELF Total Language Score is 85-115

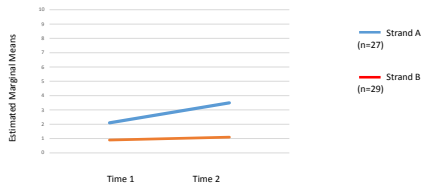
No difference across strands in speech accuracy, inconsistency, phoneme awareness, oral language ability



Reminder - Study Design (E Tipu e Rea)

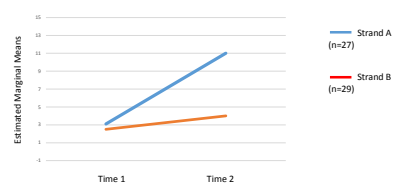


Phoneme segmentation



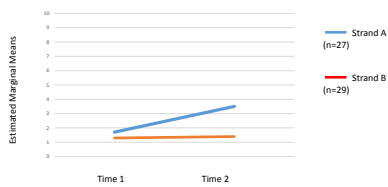
Repeated measures ANOVA: Statistically significant effects of time ($p < .001$) and group*time ($p = 0.011$)

Non-Word Reading (graphemes correct)



Repeated measures ANOVA: Statistically significant effects of time ($p < .001$) and group*time ($p < .001$)

Expressive Vocabulary (Elaborated)



Repeated measures ANOVA: Statistically significant effects of time ($p < .001$) and group*time ($p < .001$)

Conclusions, Implications and Next Steps

- Preliminary data (phase 1) show positive impact of the intervention for children with speech difficulty
- Important to examine the impact for Strand B and for the tier 2 support
 - Literacy and speech outcomes
- Opportunities for tier 3 support?

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Acknowledgements

This research forms part of the National Science Challenge: A Better Start, funded by the Ministry of Business, Innovation and Employment (MBIE) [Grant number 15-02688]

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