

A Tablet For Play Can Improve PA... and Vocab:

Training pre-literacy skills in pre-school children with hearing impairment



Aims

What we know:

Average reading development for children with hearing loss is consistently poorer than for children with normal hearing. At 5 years, children's (poor) PA performance is significantly associated with their early reading skills.

What we don't know:

Can children with hearing loss benefit from explicit PA intervention?

(What influences their PA development?)

Design



Vocabulary Control

Introduction of matched vocabulary items through shared reading and extended instruction.

Explicit PA Instruction

Focussing on teaching Rhyme, Initial sound, Final sound, and Blending (Onset-Rime; C-V-C)

PROTOCOL

All participants received weekly one-on-one sessions using specifically developed tablet games. Homework activities were also provided

Measures

Standardised

Non Verbal IQ: Weschler (WNV)
Working Memory: Digit Span
Phon. Processing: PIPA
Vocabulary: PPVT
Letter Knowledge (Name, Sound)
Audiological History

Experimental

Vocabulary: Receptive test of 20 CVC items used in intervention. (12 items likely to be unfamiliar to pre-schoolers)

PA: Matching tasks examining the five taught PA skills.

Participants

Measures	Explicit PA	Vocabulary
Average Age (months)	4;9	4;8
Males : Females	5 : 9	6 : 4
Hearing LOSS (Better Ear - 2kHz)	59db	73db
Device Worn (CICI:CIHA:HAHA)	1 : 4 : 8 (1-HA)	2 : 1 : 7
WNV Percentile	49	69
Digit Span	3	3.8
PPVT Percentile	38	51

Take Home Messages



Children with hearing loss CAN benefit from PA training



Explicit PA Training participants started the intervention with generally poorer cognitive and vocabulary skills. However, they showed equivalent vocabulary, and significantly higher PA learning following intervention than Vocabulary-controls



PA learning appears associated with hearing level

Planned inclusion of speech-based measures – speech reading/perception/production



Pre-schoolers with hearing loss, regardless of group, generally performed better on blending tasks than for phoneme matching (Initial/Final).

Plans for PA training to be modified to make use of earlier emerging blending skills

Comparison study of pre-schoolers with normal hearing currently underway



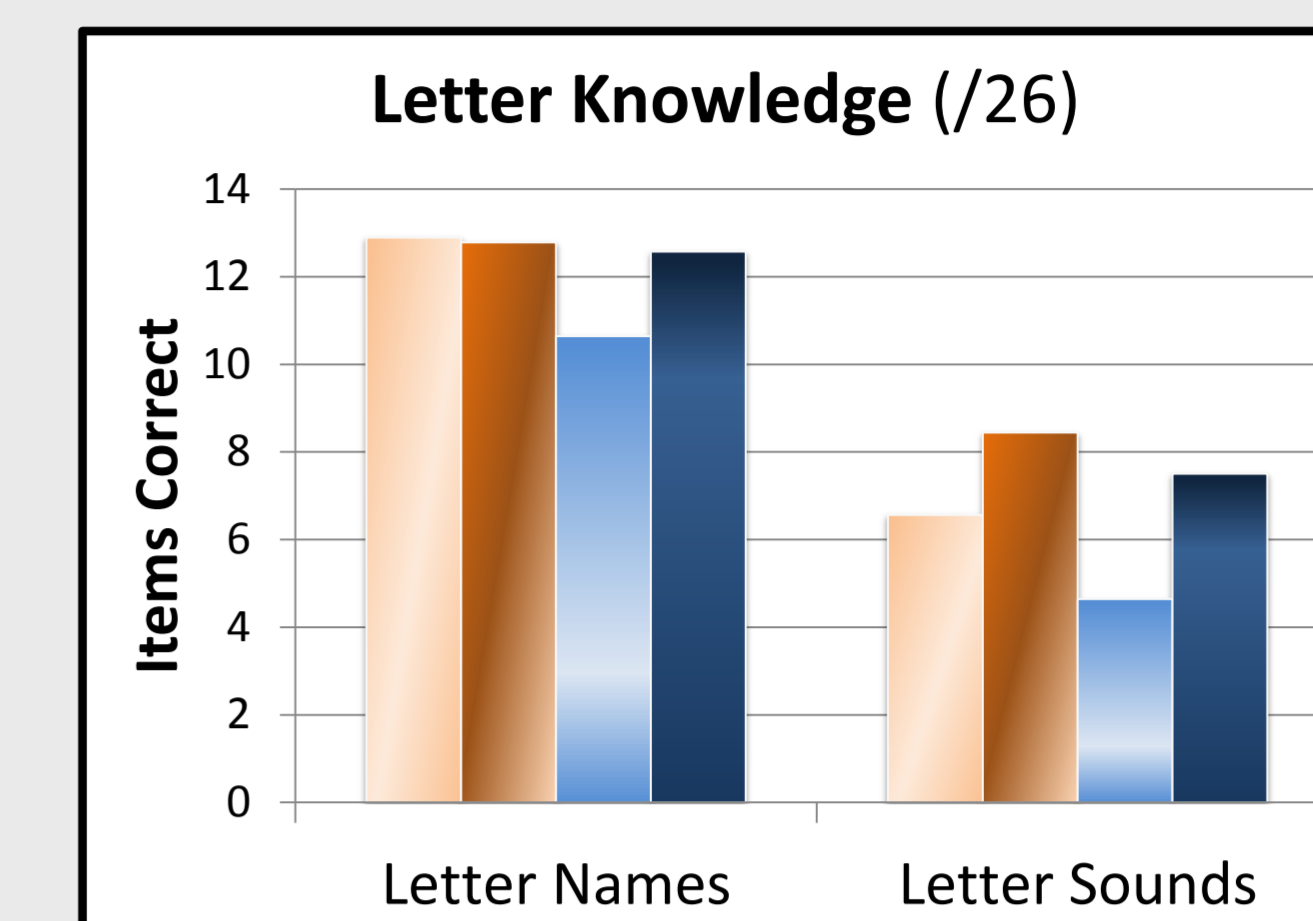
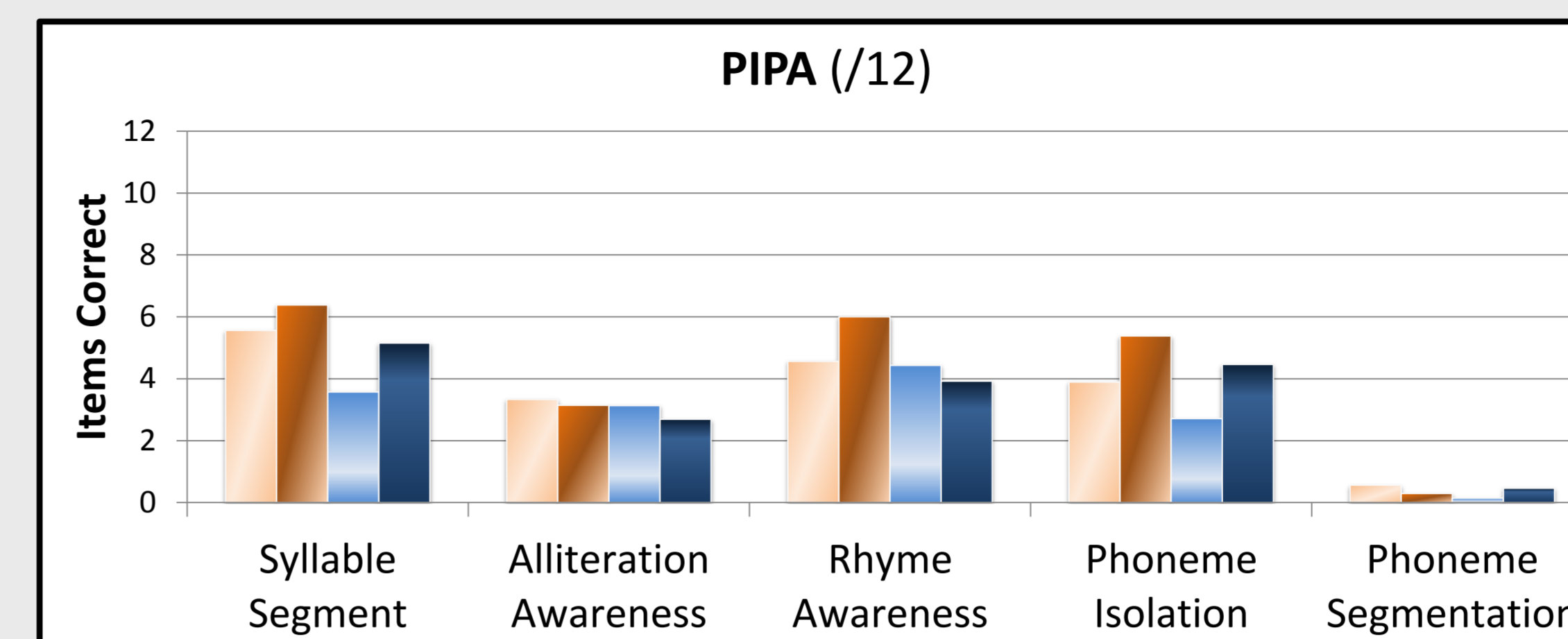
The Vocabulary-control group were the only participants to receive specific semantic instruction for “unfamiliar” items. However, both groups showed significant levels of improvement on the Experimental Vocabulary measure.



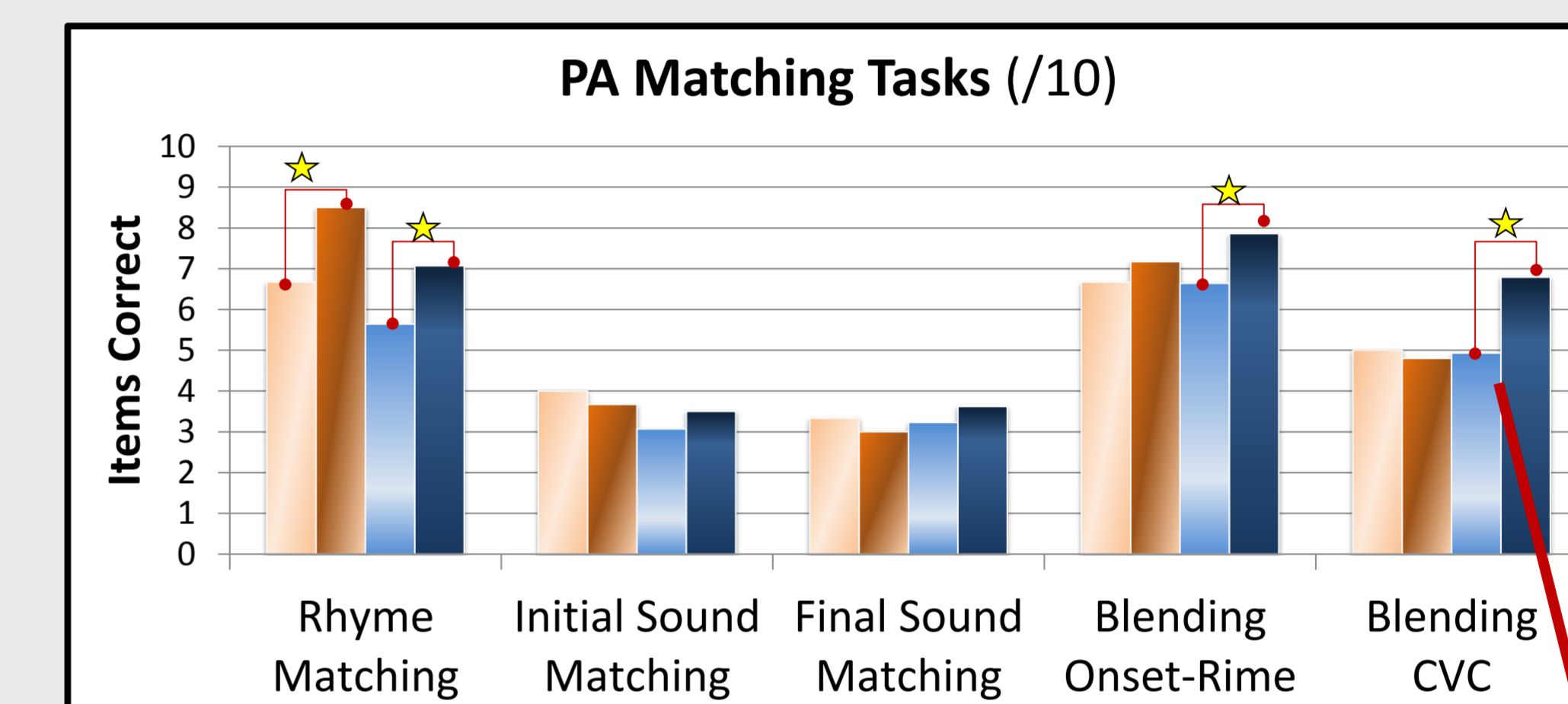
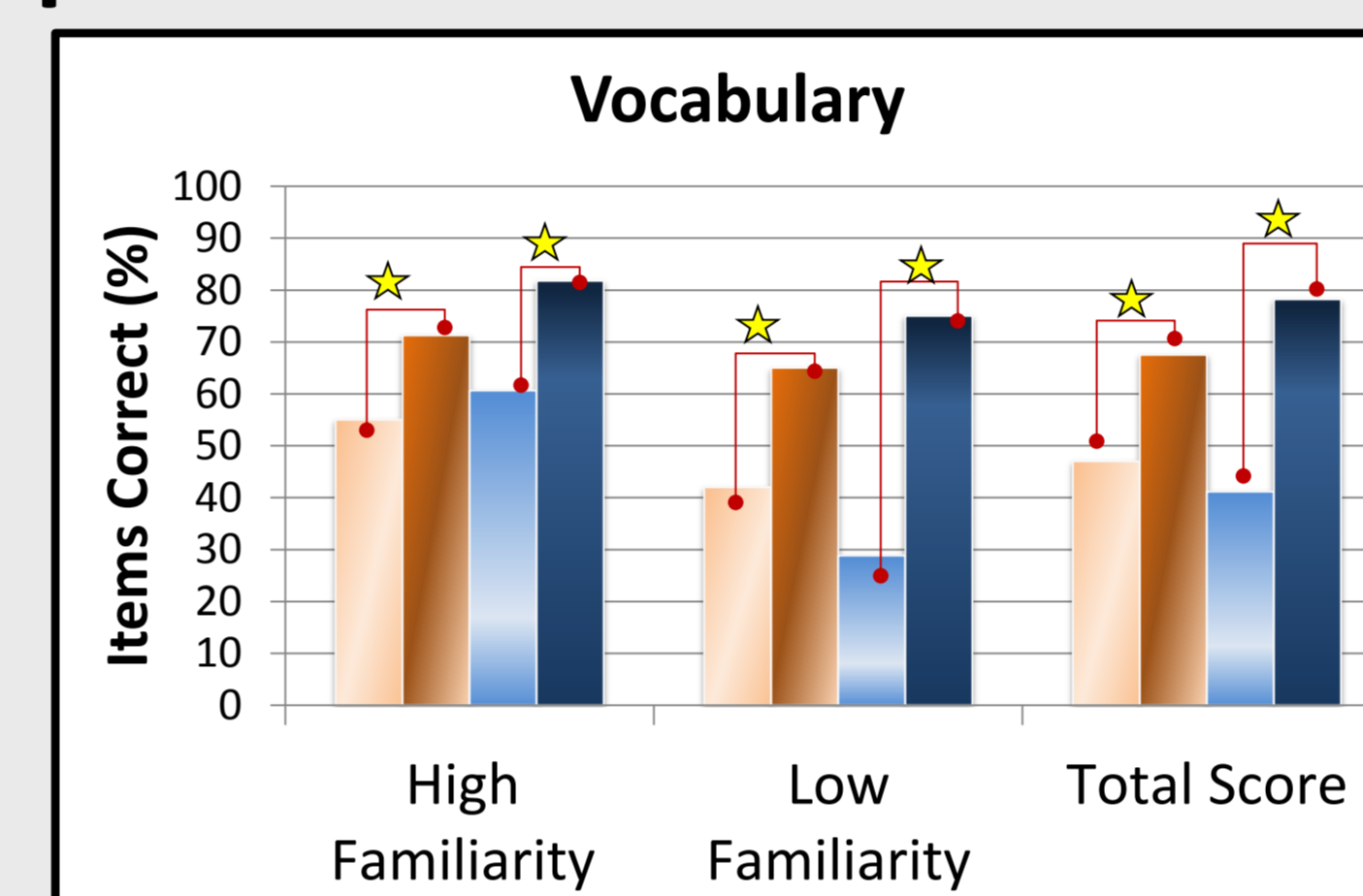
Results

Mean Scores: Pre- & Post- Intervention, by Group

Standardised Measures



Experimental Measures



Legend:

Vocabulary Control

Pre-Intervention

Post-Intervention

Explicit PA Training

★ Significant difference, $p < 0.05$

Additionally, for the PA training group: Improvement in Blending CVC was correlated with hearing loss, $r_s(11) = -.696, p = 0.008$

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