

Developing PA Interventions for Children with Hearing Loss

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Background and Aim of Study

Children with hearing loss consistently show poorer average reading development than their peers with normal hearing, and this gap continues to widen as children age. Further, results from a large scale longitudinal study (Longitudinal Outcomes of Children with Hearing Impairment; LOCHI) have shown that 5 year olds' (generally poor) PA performance is significantly associated with their early-reading skills.

To date, there has been limited research examining the relationship between PA and reading skills for children with hearing loss, or the impact of pre-reading intervention on subsequent PA and literacy development.

The aim of this study is to compare the relative efficacy of two intervention techniques (explicit PA instruction and vocabulary instruction) for enhancing the development of PA and literacy skills in children with hearing loss.

Methodology

Recruitment

A total of 60-80 children will be recruited within Sydney, Melbourne, and Brisbane and allocated to one of two intervention groups. Recruitment focusses on children with any level of bilateral hearing loss, in the year prior to commencing school (age 4-5 years).

Interventions

- Weekly one-on-one sessions of approximately 20-30 minutes.
- Take-home worksheets provided to families to support sessions.
- Activities for each week (see note opposite) presented via a tablet computer using specifically developed apps based on the item set. Feedback is provided through the app design and by the researcher.
- Intervention activities designed to be able to be comparable across the PA and vocabulary conditions.

A Note on Item Selection

A complex set of selection criteria has led to the selection of 32 CVC items for the PA intervention. These include one set of 16 items selected to share one of 4 rimes and 4 initial sounds (See Figure 1, shaded columns) and an additional set of 16 that utilises the same initial and final sounds but with a change in medial vowel (Fig. 1, unshaded columns).

Items for the vocabulary condition are drawn from those words used in the PA condition that are likely to be unfamiliar to children. (Fig. 1, italicised)

	-ug	-g						
b-	Bug	<i>Bog</i>	beak	<i>buck</i>	<i>bop</i>	beep	bone	bin
	Mug							
	<i>Lug</i>							
	<i>Tug</i>							

Figure 1. A subset of word items, showing initial, rhyme and final sound categories.



Intervention Conditions

1. Explicit PA Instruction

More information is needed about the development of PA in children with hearing loss; including whether improved PA in pre-readers facilitates subsequent reading development.

- ◆ Aim: To investigate if children with hearing loss can benefit from explicit training in skills such as sound matching and blending.
- ◆ Interventions focus each week on a specific PA skill using items drawn from the full item set.

2. Vocabulary Instruction

More information is needed about whether a vocabulary teaching intervention can be effective in leading to improved PA and reading development in children with hearing loss.

- ◆ Aim: To investigate if the quality of phonological representations, and thus PA, can be improved by promoting vocabulary growth.
- ◆ Interventions introduce vocabulary items through a shared reading task and activities designed to increase semantic knowledge of unfamiliar items.

Both groups of children are assessed for: Developing PA skills for taught words, taught sounds, and untaught sounds. Knowledge of unfamiliar and familiar vocabulary items introduced in interventions

Intervention Applications

The research team has developed apps to include matching tasks and selection tasks similar to the selected examples below. Both intervention conditions include a mix of each task style

A Rhyme Matching Task
E.g. Does *bop* rhyme with *hop* or *peek*?

An Initial Sound Matching Task
E.g. Does **B**one start with the same sound as *B*ear or *M*ouse?

A C-V-C Blending Task
e.g. What word do these sounds make? l-e-g *leg* or *lug*?

A Vocabulary Selection Task
E.G Drag the pictures of people having a *bop* to the base section.

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