

THE EFFECT OF INPUT VARIABILITY ON PHONETIC VOWEL TRAINING FOR CHILDREN

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Background

High variability phonetic training (HVPT) is well-established in training L2 speech contrasts following seminal studies by Logan, Lively, & Pisoni (1991; 1993). Key to their success was high variability (HV) input with multiple talkers and contexts, rather than low variability (LV) input. HVPT has since been used effectively in many adult studies (e.g. Nishi & Kewley-Port, 2007), and more recently with children (e.g. Giannakopoulou, Uther, & Ylinen, 2013). However, so far only Giannakopoulou, Brown, Clayards, & Wonnacott (2017) directly investigated the effect of input variability for training children, and they did not find an HV benefit.

Aim: to further investigate the effect of variability on phonetic training for children.

Research Questions

1. Do child participants improve after phonetic training?
2. Does input variability affect their improvement?

Hypothesis: we expect improvement across the board, but expect a possible LV benefit in training, and an HV benefit at post-test.

Methodology

Participants

Tested 109 Dutch children learning English as a second language.

Final sample: 89 children spread over 2 age groups

- 50 7/8 year-olds 27 HV 23 LV
- 39 11/12 year-olds 20 HV 19 LV

Some additional task-specific drop-out due to absence/data loss.

Stimuli

Monosyllabic CVC minimal pairs recorded by 6 SSBE speakers.

Corresponding clip art pictures for each item.

/e/-/æ/	/u/-/ʊ/	/ʌ/-/ɒ/	/i/-/ɔ:/
bed-bad	fool-full	bus-boss	heel-hall
gem-jam	Luke-look	cut-cot	sheet-short
pen-pan	pool-pull	luck-lock	week-walk
vet-vat	suit-soot	shut-shot	wheel-wall

Pre/post-tests included additional novel items not used in training.

Procedure and design

Training

Participants receive either HV (4 talkers) or LV (1 talker) training across 4 blocks.

Training is a minimal pair 2AFC task with trial-by-trial feedback. Participants complete 8 30-minute training sessions with 256 trials.



Pre/post-tests

None of the 3 talkers used in pre/post-test are used in training.

Discrimination

3AFC - 64 trials
Oddity task

Picture identification

2AFC - 128 trials
Identification task

Vocabulary introduction

2 subtasks:
- Familiar (y/n)
- Stimulus translation

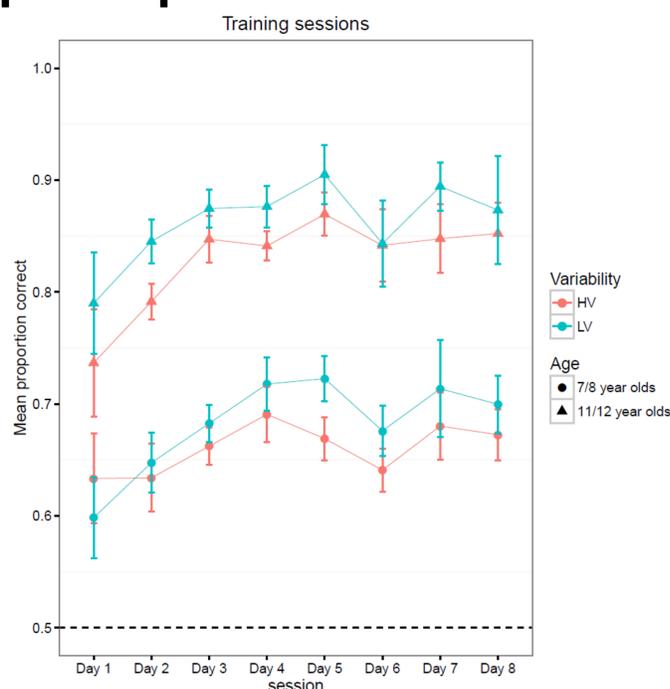
Orthography identification

2AFC - 128 trials
Identification task

Production

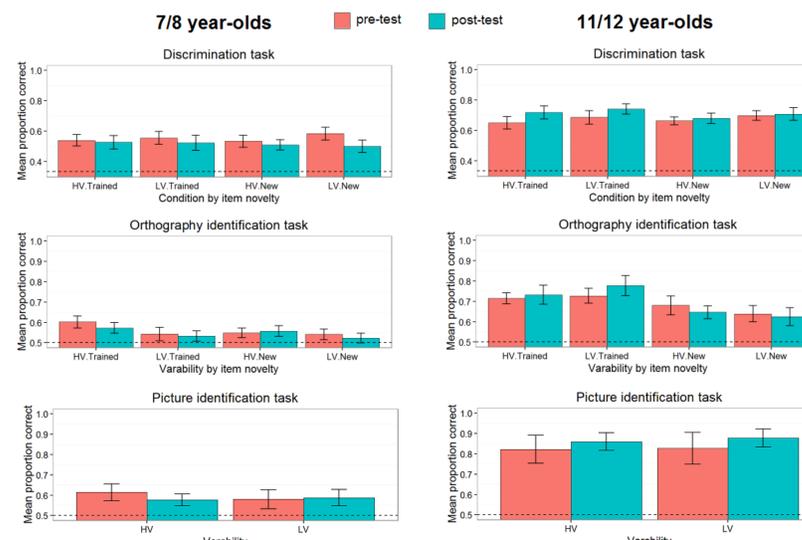
Real-word repetition - 64 trials

Do participants learn over time?



While older children start off higher, both younger and older children improve over sessions.

Does variability affect improvement from pre-test to post-test?



Preliminary analyses show no effect of variability, despite improvement from pre- to post-test in the identification tasks for the older children. In the orthography task, older children only improve on trained items. There is no improvement for either group on the discrimination task.

Summary and discussion

Do child participants improve after phonetic training?

As expected, children improve over time during phonetic training.

Only older children improve on the pre- to post-test identification tasks.

There is no improvement on the discrimination task in either age group, regardless of item novelty (trained vs novel items). This is in line with some of our previous phonetic training studies with children.

Does input variability affect participants' improvement?

Unexpectedly, there is no variability effect on the improvement from pre-test to post-test.

This goes against much of the literature finding an HV training benefit on post-test results in adults (e.g. Lively et al. 1993, Giannakopoulou et al. 2013), but is in line with Giannakopoulou et al. (2017) who found no such benefit either.

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