

Computerized phonetic training study with adult and child (7-8 years) second language learners

What this research was about and why it is important

The majority of research in instructed second language (L2) learning has focused on adult learners, yet children also learn L2s in instructed contexts. One important topic is learning to hear the differences between new speech sounds (e.g. “ship” and “sheep” or “lip” and “leap” for speakers whose first language doesn’t differentiate those vowels). Studies have shown that adult learners can improve via phonetic training programs, which allow them to practice differentiating particular speech sounds. However, there is only limited evidence for this in children. In addition, for adults, there is evidence that the effectiveness of phonetic training depends on hearing different voices speak the example words (compared with a single voice). This is particularly important for *generalization*, i.e. being able to differentiate the trained speech contrasts even in voices that have not been encountered during the training. It has not been tested whether children also benefit from hearing multiple voices during training. The current study compared the benefits of phonetic training in adults and 7-8 year olds. Both groups were found to benefit from the training, however, contrary to expectations, the researchers did *not* find evidence that multiple-voice training led to better generalization for either of the two groups. In fact, for children, there was some evidence for a benefit of exposure to a single voice.

What the researchers did

- 42 adults and 52 7-8 year old native-Greek learners of English spent approximately 20 minutes a day for 10 sessions playing a computerized phonetic training game (sessions were scheduled one per day over 12-15 days).
- The game trained learners to differentiate and identify the English vowels “ee” (as in *sheep*) versus “i” (as in *ship*).
- Training used a game with 320 trials per session: In each trial, the learner heard a word produced by a native English speaker (e.g. “sheep”) and had to choose between two pictures depicting the target word (e.g. a sheep) and a distractor word, which was identical in all but the vowel (e.g. a ship), and were given instant feedback.
- Half of the participants always heard the same voice (i.e. single voice for every trial - low-variability condition).
- Half of the participants heard four different voices (i.e. voices vary trial-by-trial - high-variability condition).
- Participants’ accuracy in playing the game was measured in each session.
- Generalization was tested using tests with an **untrained voice** (i.e. not used in the training game). This was administered both *before* and *after* the 10 training sessions, thus measuring improvement due to training.

What the researchers found

- Both age groups improved during training and showed improved generalization at the post-training test.
- For both age groups, the learners who used the game with a single voice improved more from session to session as they played the training game (this is expected, as no adaptation to a new voice is required during this version of the task). Critically, for the generalization tests with the untrained voice:
 - for adults, contrary to previous research, there was no statistical evidence that they showed greater improvements with the multiple voice (high-variability) training.
 - for children, they improved more with *single* voice input (low-variability).

Things to consider

- The study provides evidence that computerized phonetic training is beneficial for 7-8 year old learners.
- For adults, the lack of difference between conditions was surprising, however this could be due to ceiling effects – i.e. adult performance in the test was overall very high, even prior to training.
- This was the first study to investigate whether phonetic training with children should use multiple voices.
- In fact, there was some evidence that training with a *single* voice was beneficial for child learners. A possible explanation is that younger learners have difficulty in attuning to different voices when they change trial-by-trial.
- Future work could try “blocking” different voices during the training (e.g. one voice each day) to see if this is beneficial for child learners.
- It is important to be cautious in interpreting the findings of a single study, however this work highlights that we cannot assume that findings from studies with adults will necessarily be true for younger learners.

Data available from <https://osf.io/8anzk/>

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