

Learning second language lexical tone discrimination: how is incremental cue training modulated by task difficulty?



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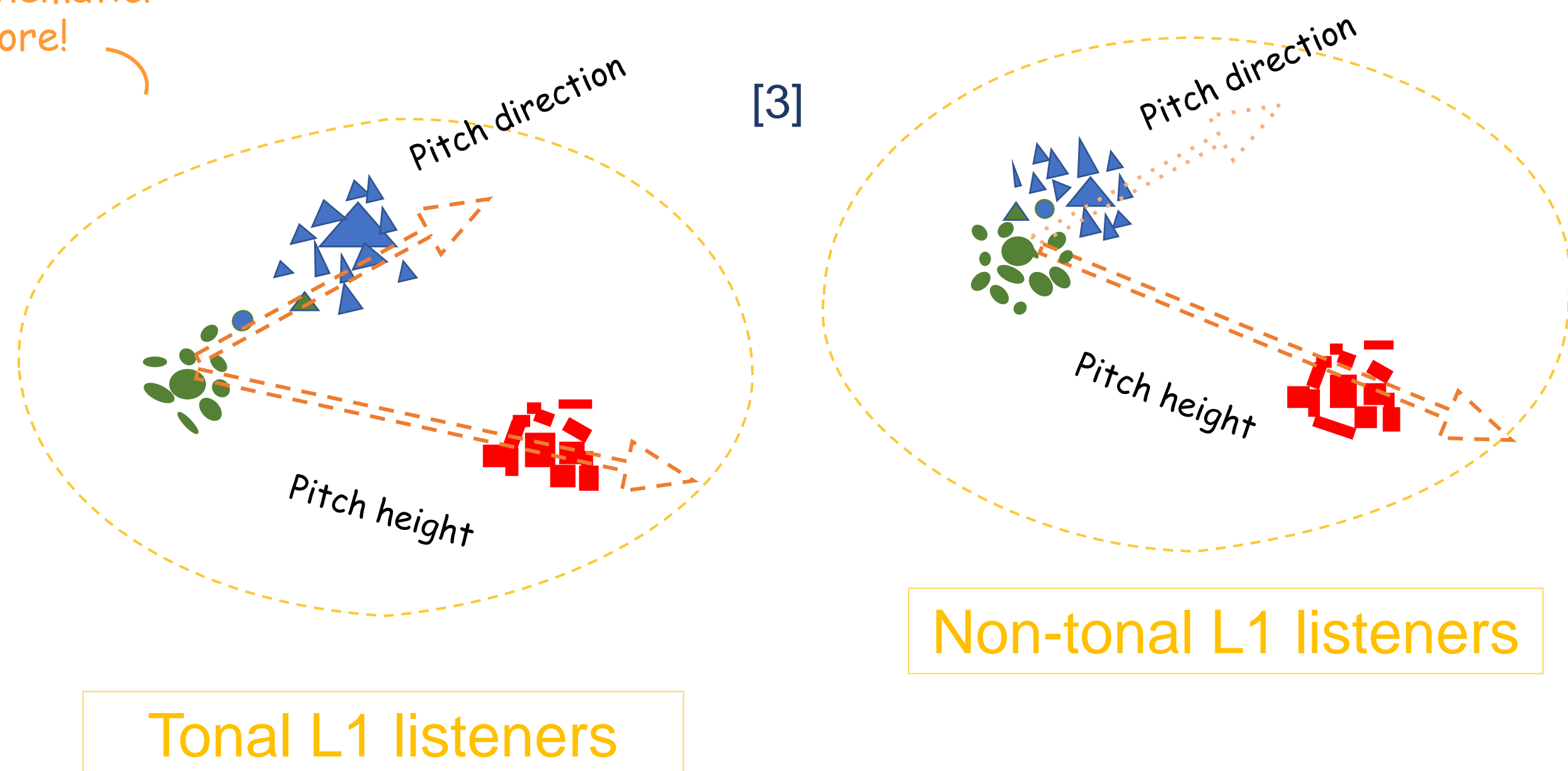
Background

First language (L1) affects perceptual **cue weighting** in L2 [1].

- Phonetic contrasts on **less-attended** acoustic dimensions are **more difficult** to discriminate [2].
- Incremental cue training aims to **redirect weighting** to previously less-attended dimensions.

Attention-to-dimension models [4]

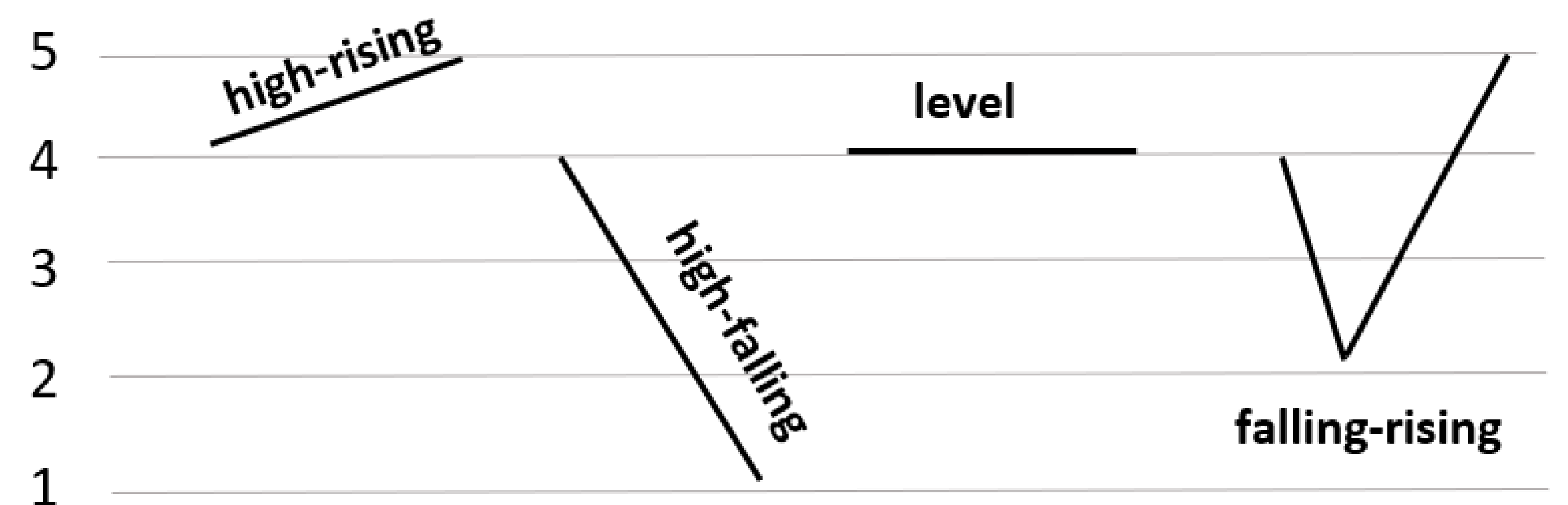
This is schematic! Ask me more!



Research Questions

- 1) Does **cue enhancement** assist L2 lexical tone perception?
- 2) Is training effect affected by tonal **F0 height variability**?

Pseudo-tonal system



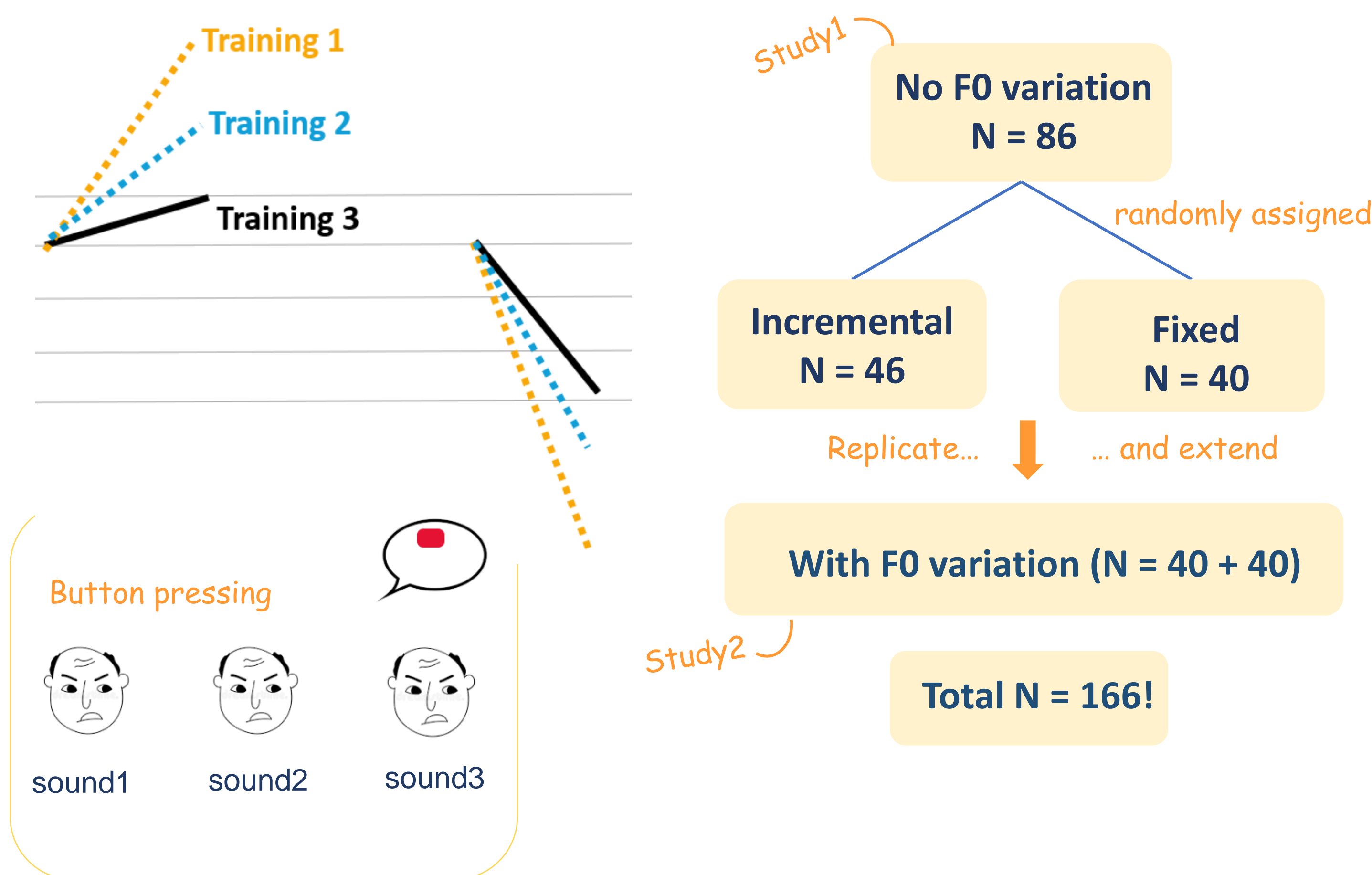
- **Cue enhancement:** exaggerated *pitch direction* (incrementally decreased), i.e., **Incremental cue training**.
- **Participants:** L1 English listeners (no tonal experience).

key finding

“kà” or “ká”

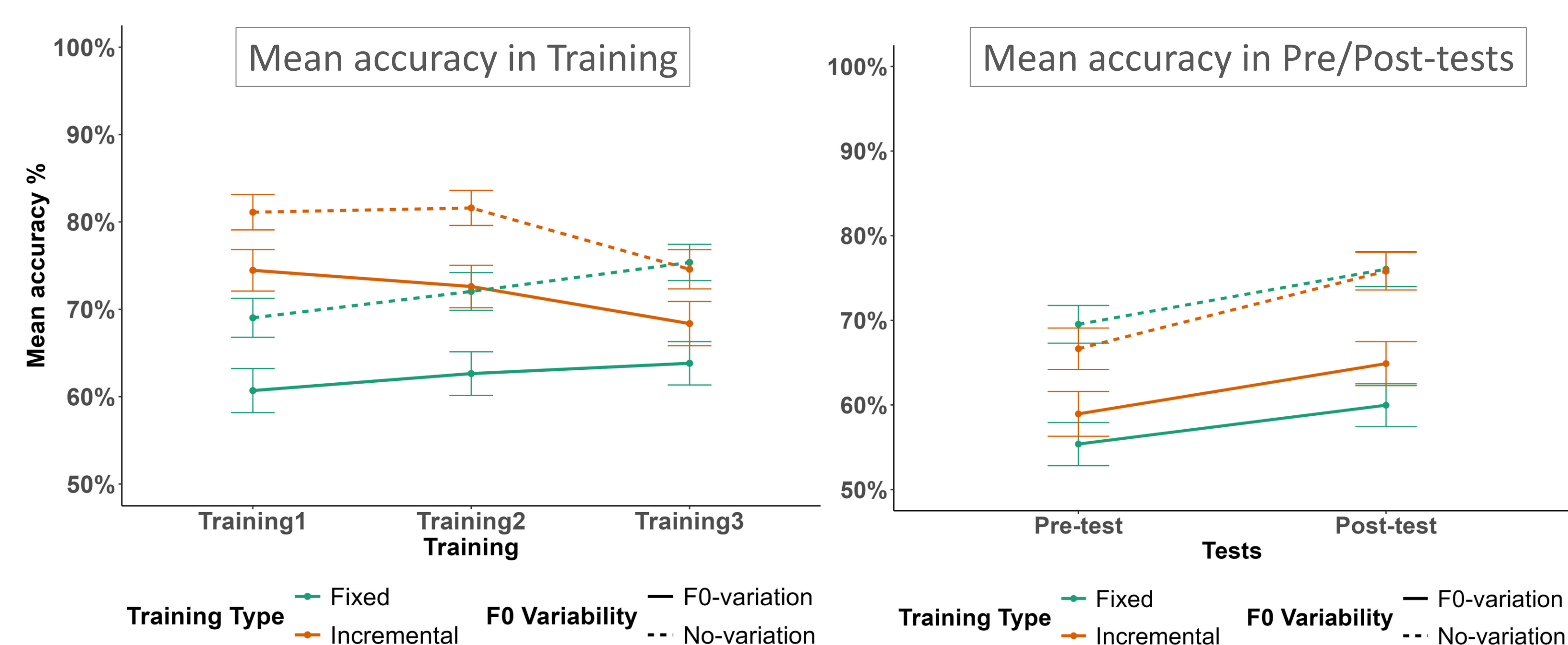
Cue enhancement facilitates lexical pitch discrimination (but only temporarily)

Experiment Design



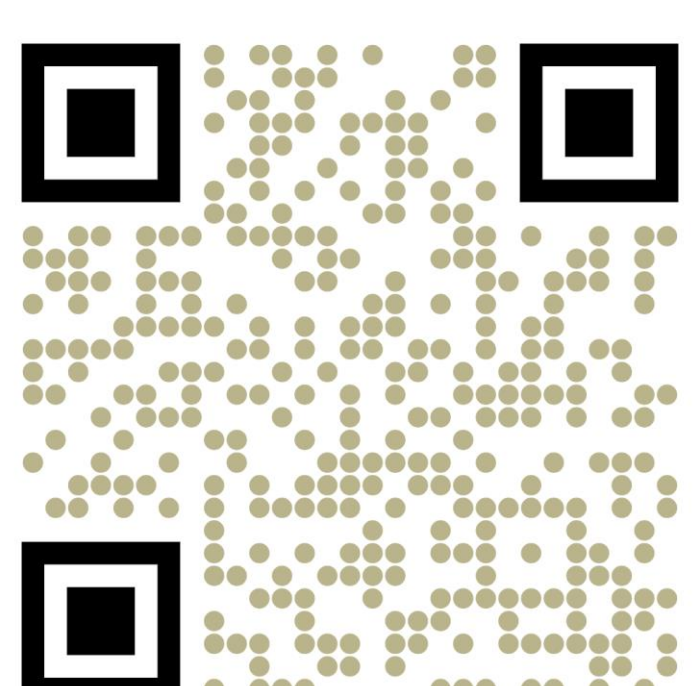
Results

- Training 1 to 3 accuracy: Incremental ↓, Fixed ↑
- Incremental = Fixed at Training 3.
- Increased F0 variation lowered average accuracy.



Take-away

Enhancing contrast on *pitch direction* boosted lexical tone discrimination regardless of F0 height variability. However, the perceptual boost **did not sustain** when exaggeration was removed.



Take a picture to check out our PaPE 2025 poster!

[1] P. Iverson, V. Hazan, & K. Bannister, 'Phonetic training with acoustic cue manipulations: A comparison of methods for teaching English/r-/l/to Japanese adults', J. Acoust. Soc. Am., vol. 118, no. 5, pp. 3267–3278, 2005. [2] P. K. Kuhl & P. Iverson, 'Linguistic experience and the “perceptual magnet effect”', Speech Percept. Linguist. Exp. Issues Cross-Lang. Res., pp. 121–154, 1995. [3] B. Chandrasekaran, P. D. Sampath, & P. C. M. Wong, 'Individual variability in cue-weighting and lexical tone learning', J. Acoust. Soc. Am., vol. 128, no. 1, pp. 456–465, Jul. 2010. [4] A. L. Francis & H. C. Nusbaum, 'Selective attention and the acquisition of new phonetic categories', J. Exp. Psychol. Hum. Percept. Perform., vol. 28, no. 2, pp. 349–366, 2002.

