Flexible speech perception in response to multiple learning objectives

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Introduction – Perceptual Learning & Word Learning

- Striking a balance between perceptual learning and word learning is essential for understanding non-canonical speech.
- How well can listeners simultaneously engage in both learning processes?
- Does reliance on each process vary by type versus token frequency?

Methods: Training Phase

- Online participants read sentence stem pairs followed by spoken presentation of either a pseudoword or predicted word.
- Spoken items were pronounced by a canonical or accented talker.
- Participants were asked to judge reasonability of each spoken item.
- Group 1 (n = 22) heard 120 unique sentence pairs (i.e., types), while group 2 (n = 12) heard 60 unique sentence pairs presented twice (i.e., twice as many tokens).

Methods: Test Phase

- Participants heard 120 old and new word forms, either from a consistent speaker and accent condition or a different speaker and accent condition.
- They then completed word report, item memory, and (for pseudowords) meaning inference tasks. Meaning inference results not reported presently.

Results – Training Phase

- Good perceptual learning
- Poor perceptual learning
- Good word learning
- Poor word learning
- Adaptable speech perception
- Inflexible speech perception

- Proportion of participants’ judgements of spoken items as consistent

Results – Test Phase

- Higher rates of canonical phoneme report for trained versus untrained accents (ps<0.05). Participants compensate more readily for a trained accent than an unfamiliar one.

Conclusion & Next Steps

- Listeners can flexibly engage in both perceptual and word learning in the same set of trials.
- Increasing the number of unique types during training may facilitate better perceptual learning.
- In contrast, increasing token count seems to improve word learning outcomes.
- Further behavioural work aims to replicate pilot results in a larger sample.
- A multi-day MEG study will assess the impact of overnight consolidation on perceptual learning, word learning, and their interaction.