

The competitive relationship between linguistic perception and production when learning a new sound contrast



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Introduction

- Second language learners must perceive (listen and recognize) and produce (say) unfamiliar sounds in their second language for successful communication.
- It is commonly assumed that humans use the same neural mechanisms for perceiving and producing sounds, thus the relationship between these two modalities should be cooperative and develop in parallel.
- However, recent research indicates that the relationship between perception and production is complex, and possibly competitive. (Baese-Berk, M. M., & Samuel, A. G., 2016)
- Studies suggest that producing new sounds while learning to distinguish these sounds disrupts perceptual learning. In other words, repeating the sound after hearing it hinders learning and recognition of these sounds.

Research Question

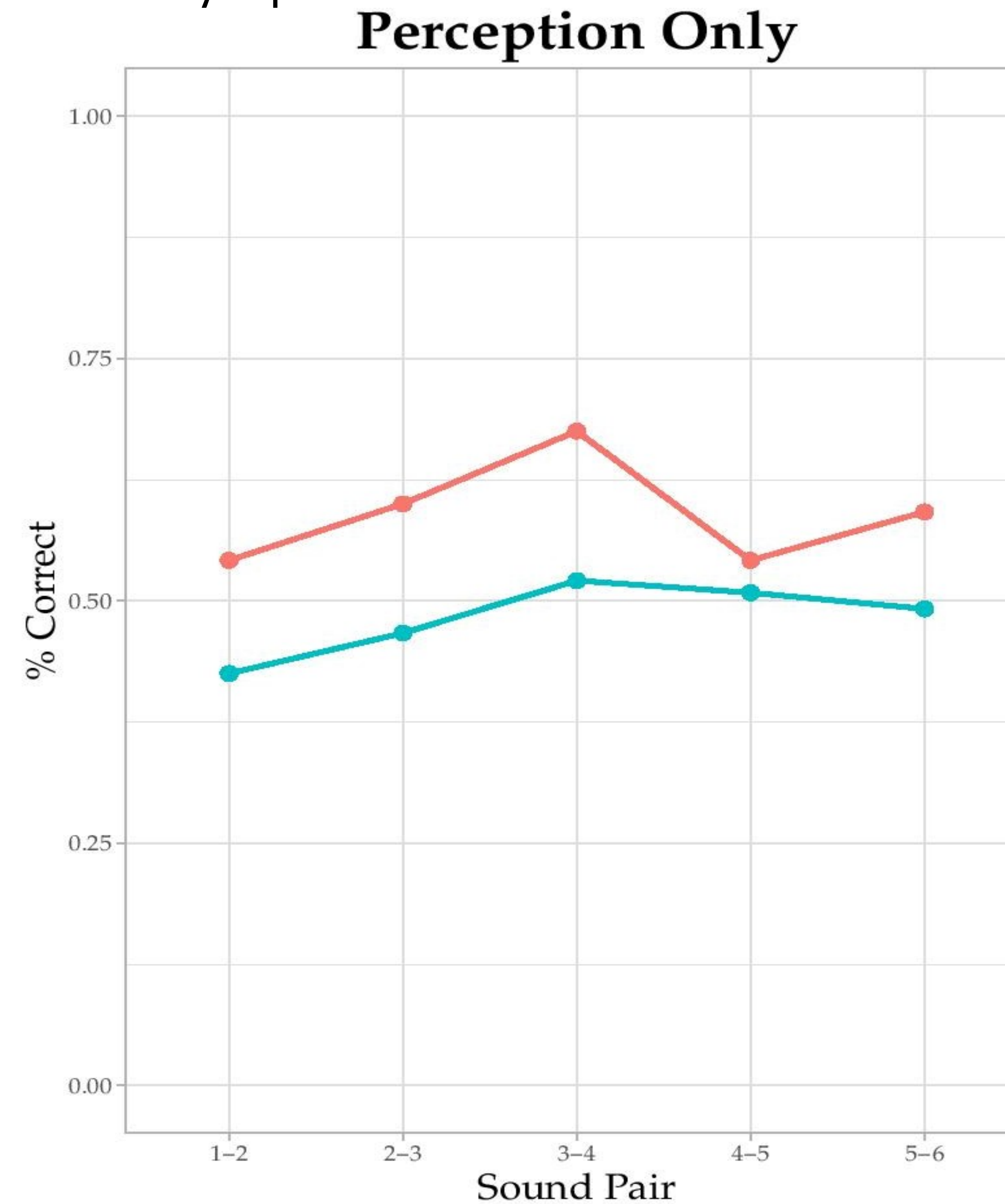
1. Do linguistic perception and production utilize the same neural processes?
2. Does one get better at perceiving the difference between two sounds by producing them?

We hope to uncover the neural underpinnings of linguistic perception and production.

Methods

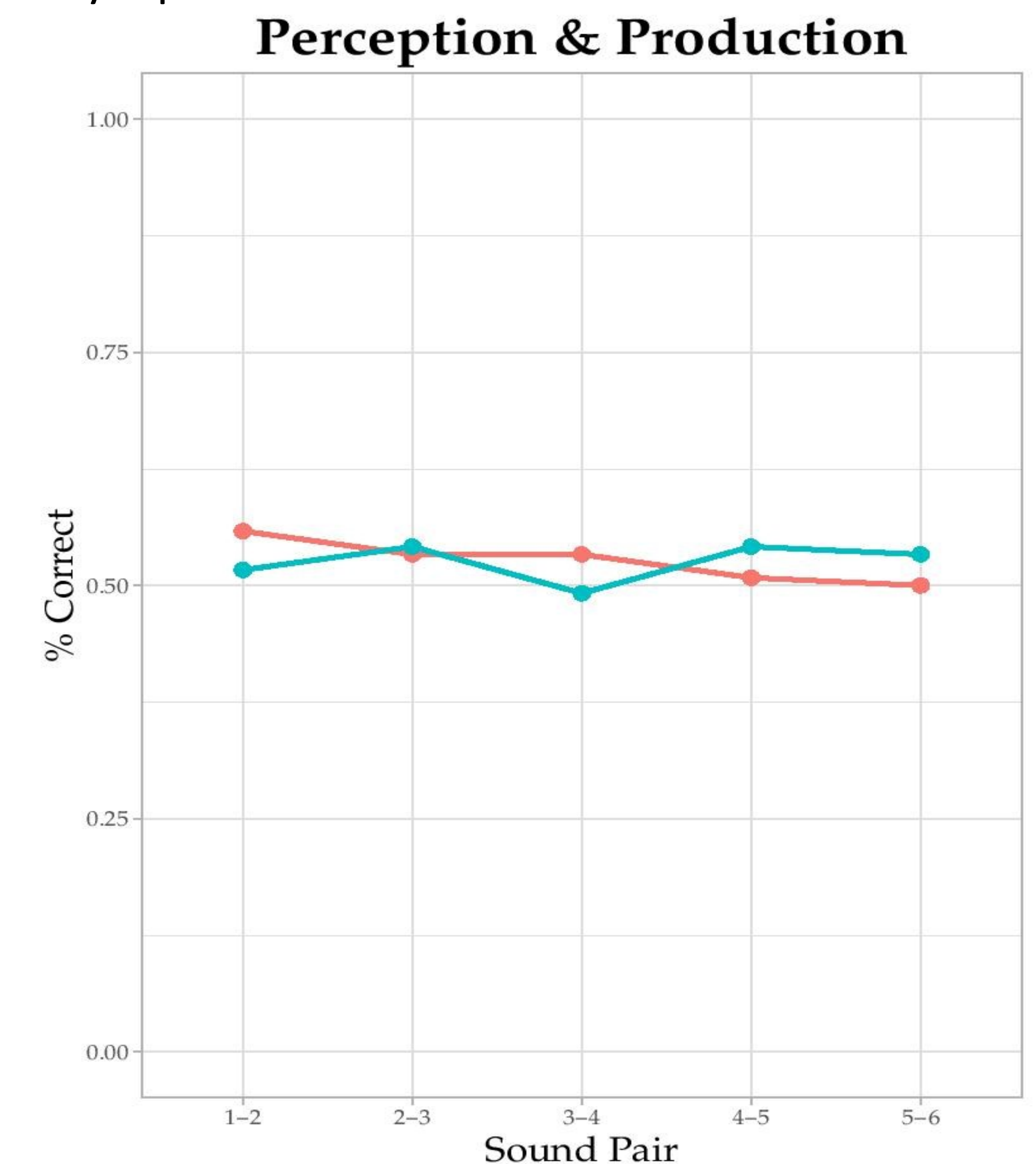
- Participants were 20 native English speakers
- Participants were trained on a dental-retroflex sound contrast similar to a sound contrast found in Hindi
- Experiment administered over 2 days, with three phases each day: pre-test, training, and post-test
- Training consisted of ABX tasks
- 2 conditions: 1) **perception only** and 2) **perception and production**
- In the **perception and production** condition, participants produced sounds during training
- In the **perception only** condition, participants did not produce sounds during training

Fig. 1: Percent correct ABX tasks for **perception only** participants in day 1 pretest and day 2 posttest



Results

Fig. 2: Percent correct ABX tasks for **perception and production** participants in day 1 pretest and day 2 posttest



- **Perception only** participants learned the novel sound contrast
- **Perception and production** participants did not learn the novel sound contrast nearly as well

Discussion and Conclusion

Results show that

- The relationship between linguistic perception and production is competitive
- Producing new sounds while learning to discriminate between those sounds hinders perceptual learning

Neurolinguistic implications

- Linguistic perception and production may not utilize the same neural mechanisms

Language teaching implications

- Incorporate curriculum that allows students to take breaks between learning to perceive and produce words and sounds

References

Baese-Berk, M. M., & Samuel, A. G. (2016). Listeners beware: Speech production may be bad for learning speech sounds. *Journal of Memory and Language*, 89, 23–36.

Acknowledgments

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