The Role of Variability in Children’s Phonological Learning
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Motivation
Infants are sensitive to statistical distributions on dimensions relevant to word or sound-category learning (Ref. 1).
Infants learn words better when multiple talkers produce them during training, introducing variability on irrelevant acoustic dimensions (Ref. 2).
Will infants’ attention be drawn to dimensions with interesting variation, even if these dimensions are irrelevant for word learning?

Participants
Preschoolers: 50 3- to 5-year-olds
Infants: 30 14-month-olds

Predictions
All variability is not equal: Bimodally distributed talker gender will compete with the relevant dimension (consonant voice-onset time; VOT), impairing word learning.
However, a partial correlation between gender and word might facilitate learning without impairing it.

Age groups may differ: Talker gender carries social information for preschoolers (Ref. 3), whereas infants might not differentiate between the functions of talker voice and VOT (Ref. 4).

Preschoolers: Familiarization Paradigm
Three Training Distributions of Talker Gender

Unimodal & Uncorrelated (Ref. 2)
Bimodal & Perfectly Correlated
Bimodal & Partially Correlated

Test
Same pairing “buk” “puk”
Switched pairing “puk” “buk”

Results

“Was that right or wrong?”

Infants: Looking-Time Habituation Paradigm

When children are exposed to the correlation between talker-gender and word, do they interpret talker gender as important to the word’s sound? A model of associative word learning (Ref. 4) predicts talker gender should help pull apart the words, improving learning.

New condition: maintain talker gender-word pairing in test.
If children detect the Switch, suggests they are learning talker gender is an important component of the word. If not, suggests talker gender is just interfering with their word learning.

Conclusions
Preschoolers are tracking distributions on a dimension—talker’s voice—that is not directly relevant to the word-learning task. This distribution tracking is actually impairing their learning and recognition of similar-sounding words. Infants may be showing similar patterns. These findings support a model of associative word learning (Ref. 4), but ongoing work will speak to generalization beyond the trained acoustic information, which the prior model had not addressed.

References

Contact
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