Tone of voice helps learning the meaning of novel adjectives

[1]Eva Reinisch, [1]Alexandra Jesse, and [2]Lynne C. Nygaard
[1]Max Planck Institute for Psycholinguistics; [2]Emory University

eva.reinisch@mpi.nl

Listeners vary their **Tone of Voice (ToV)** - a combination of speaking rate, pitch, amplitude, and vocal effort - to express meaning (Nygaard, Herold, & Namy, 2009).

Imagine: *"Look at this tree!"* spoken in a slow, lowered voice compared to a soft, high-pitched voice.

Listeners correctly interpret the utterance as referring to a big vs. a small tree.

Research questions

1. Can listeners use ToV to infer the meaning of novel adjectives?
2. Can listeners then interpret these novel words even in the absence of informative ToV?
3. Can listeners generalize the learned meaning to a set of new referents?

Method
Exposure-test paradigm with adult listeners

Nonword pairs (daxen/ seebow, foppick/ riffel, tillen/ blicket) were assigned meanings expressed by ToV.

Recordings were made first in neutral uninformative ToV (test materials) then in the respective informative ToV (exposure materials) by a native English speaker.

Adjective dimensions

big   small

hot   cold

strong   weak

"Can you find the *blicket* one?"

4 picture pairs per dimension for exposure, 4 additional pairs for generalization at test.

Nonword-meaning pairings were counterbalanced across participants.
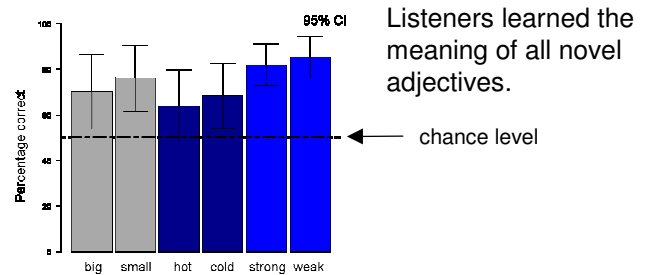
Exposure: informative ToV
task: listen and view pictures, eye tracking
48 experimental trials, 48 real-word fillers (old, new, full, empty, hard, soft)

Test: uninformative/ neutral ToV
2AFC task, eye tracking
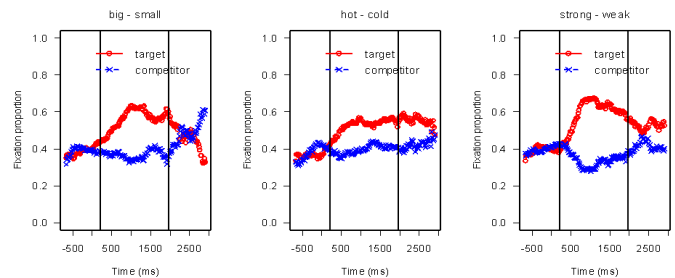48 familiar and 48 unfamiliar picture pairs
experimental trials only

Results
Test: Percentage correct click responses

Listeners learned the meaning of all novel adjectives.

chance level

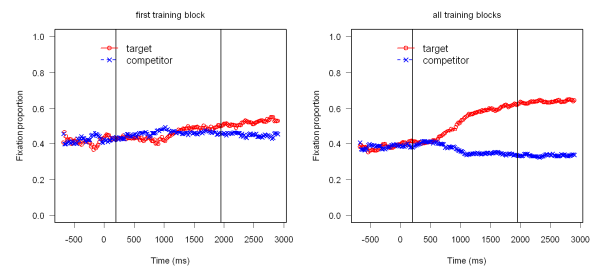### Test: Eye fixations on target and competitor

Time window: 200 ms after target onset up to click response

Generalization of novel word meaning in all categories
• for familiar and unfamiliar picture pairs (pooled in figure)
• in click responses and eye movements

Exposure: Eye fixations

• first encounter of novel word-picture pairs
  -> no target preference
• after only two repetitions per word -> target preference

Conclusions
ToV is used to constrain the meaning of novel words during lexical acquisition

• Listeners use ToV to determine the intended referent and thereby acquire the novel words' meaning.

• Word meaning can then be generalized in the absence of informative ToV and to new picture referents.