Variability and Strength in Gradient Phonotactic Generalization

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BACKGROUND
Gradient phonotactics are gradient restrictions over sequences and positions of speech sounds.
- Segment sequences can appear in more contexts (unique words/syllables) and more frequently (more instances).

Continuous recognition memory task
- Stimuli presented auditorily, one at a time.
- Prompt after each stimulus: “Have you heard this syllable before?”
- Participants respond YES or NO

Materials
- 64 total CVC nonsense syllables.
- Syllables divided into two patterns based on basic phonotactic constraint.
- Coda pattern: /n,f/ vs. /s,b/

METHODS
Design
- Familiarization phase
  - 2 repetitions of set of familiarization syllables
- Generalization phase
  - 4 additional repetitions of familiarization set
  - Intermixed with novel generalization syllables (½ follow each coda pattern)

Measures
- How often participants incorrectly respond yes on novel generalization syllables.
- Measures pattern generalization

RESULTS

DISCUSSION

Why does variability enhance generalization?
- Variability in the context surrounding the pattern allows learners to home in on invariant features of the input.
- Consistent with evidence from visual pattern learning for adults1 and toddlers2, acquisition of non-native phonemes3, words for infants4, stress patterns4, morphemes10, and syntactic dependencies14.

Why doesn’t strength modulate generalization?
- High strength items may become exceptional.
  - Learners attribute features as idiosyncratic to particular item, not generalizable to novel items.
  - e.g. high token frequency morphemes often exceptional12 (e.g. go/went).

SELECTED REFERENCES