Abstraction and Phonetic Detail in the Acquisition of Gradient Phonotactics

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The distribution of possible sound sequences within a language exhibits highly structured variation. A large body of evidence suggests that the probabilistic or gradient phonotactic constraints that capture these systematic patterns form a key part of our phonological knowledge. In this talk, I'll review recent work illustrating that, similar to many other aspects of our phonological competence, gradient phonotactics reflect an interaction of abstract phonological and detailed phonetic aspects of sound structure.

We used an implicit learning paradigm (Bernard, Onishi, & Seidl, 2009; Seidl, Cristià, Bernard,& Onishi, 2009) to examine the role of type frequency, token frequency, and phonetic variation in the acquisition of probabilistic phonotactics. Participants were presented with probabilistic phonotactic constraints distributed over syllable types (e.g., /f/ appeared in the coda of a wider range of syllables than/s/) or repeated tokens of the same syllables (e.g., syllables ending in /f/ were repeated more frequently than syllables ending in /s/). When the repeated tokens were acoustically identical, participants showed a preference for generalizing phonotactic patterns that occurred across many syllable types vs. purely over syllable tokens. However, when repeated tokens varied in (non-contrastive) duration, participants showed no preference for patterns based on type vs. token frequency.

These results suggests that while learners extract abstract phonological structure when acquiring phonotactics, the nature of learning and generalization is sensitive to phonetic variation. This supports theories of phonotactic learning integrating the processing of abstract and phonetically detailed representations.

References

Bernard, A., Onishi, K. H. & Seidl, A. (2009). *Learning of sound patterns in adulthood: The role of allophonic status*. Unpublished manuscript, McGill University and Purdue University.

Seidl, A., Cristià, A., Bernard, A., & Onishi, K. H. (2009). Allophonic and phonemic contrasts in infants' learning of sound patterns. *Language Learning and Development, 5*, 191-202.