

Ling 229: Phonology Seminar, Spring 09
McGuire (gmcguir1@ucsc.edu)
Mondays 11-2:30 in the Cave
Office Hours: Tuesdays 1:30-2:30, Fridays 1-2

Overview

A fundamental finding in phonetics research is that speech sounds are not discrete auditory events but continuous, highly variable ones. However there is abundant evidence that speech is quite categorical at higher cognitive levels, such that linguists describe languages as symbolic systems that can be defined formally. This gap, from the continuous to discrete has been of special interest in recent decades and is not unique to speech research. This course examines category learning (concept formation) in speech with a goal of examining how research in cognitive psychology can inform speech perception models and account for larger phonological facts.

Basic structure

The class meets once a week for an intense 3 ½ hour session (don't worry, we'll take breaks). Feel free to bring lunches along, I want this to be an informal but productive discussion. Our goal will be to discuss two primary papers and up to two secondary papers each week. Everyone is expected to read and be able to fully discuss the primary papers (see below for more info). The secondary papers should be at least skimmed by everyone, but will be presented to the class by a volunteer who will also lead discussion. Many of these papers will not be speech-related; in those cases our goal is to draw parallels to phonetics and phonological theory. Keep this in mind when writing up questions for discussion!

Requirements

1. Paper Summaries and questions: Before each class, every student should prepare a brief summary of each article and at least three questions about each (e.g. methodology, conclusions, big picture etc.) Each week one student will be tasked with collating the responses and questions into a single document comprising a summary-of-summaries and the collected research questions.
2. At some point during the quarter, each student should present and lead discussion on one of the secondary papers.
3. Paper: Each student must participate in designing an experiment in perceptual learning. These experiments can be done individually or in collaboration with classmates. Each individual or group should present and submit an introduction and methodology for their experiment, it need not be run.

Topics and Papers

I haven't assigned dates to these topics as I'm not sure how long discussion will take. So we will get to what we can! Everyone should read and be prepared to discuss primary papers; the others will be assigned to individuals though everyone should at least skim them.

Introduction to perceptual learning

Goldstone, R.L. (1998). Perceptual Learning. *Annu. Rev. Psychol.* 1998. 49:585-612.

Logan, J.S., S.E. Lively, & D.B. Pisoni (1991). Training Japanese listeners to identify English /r/ and /l/: a first report. *The Journal of the Acoustical Society of America.* 89, 1242-1255.

Supplemental paper:

part 2: S.E. Lively, Logan, J.S., & D.B. Pisoni (1992). Training Japanese listeners to identify English /r/ and /l/ II: The role of phonetic environment and talker variability in learning new perceptual categories. *The Journal of the Acoustical Society of America.* 94, 1242-1255.

part 3: SE Lively, DB Pisoni, RA Yamada, Y Tohkura, T (1994). Training Japanese listeners to identify English /r/

and /l/. III. Long-term retention of new phonetic categories. *The Journal of the Acoustical Society of America*, Volume 96, Issue 4, pp. 2076-2087.
part 4: Bradlow, Pisoni, Akahane-Yamada, and Tohkura, (1997). Training Japanese listeners to identify English /r/ and /l/: IV. Some effects of perceptual learning on speech production *J. Acoust. Soc. Am.* 101 (4).

Biederman, I. and Shiffrin, M. (1987). Sexing day-old chicks: A case study and expert systems analysis of a difficult perceptual-learning task. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. Vol. 13, No. 4. 640-645.

Goldstone (1994). Influences of categorization on perceptual discrimination. *Journal of Experimental Psychology: General*. 123 (2): 178-200.

Livingston, K.R., Andrews, J., & Harnad, S. (1998). Categorical perception effects induced by category learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. 24:3, 732-753.

Supplemental paper:

Goldstone, R. L., Lippa, Y., & Shiffrin, R. M. (2001). Altering object representations through category learning. *Cognition*, 78, 27-43.

Guenther F., Husain F., Cohen M, and Shinn-Cunningham B (1999). Effects of categorization and discrimination training on auditory perceptual space. *J. Acoust. Soc. Am.* 106 (5).

Francis, A. L., Baldwin, K., and Nusbaum, H. C. (2000). "Effects of training on attention to acoustic cues," *Percept. Psychophys.* 62, 1668–1680.

Supplemental paper:

Francis, A. L., and Nusbaum, H. C. (2002) "Selective attention and the acquisition of new phonetic categories," *J. Exp. Psychol. Hum. Percept. Perform.* 28, 349–366.

Cues and features in learning

Iverson, P., Kuhl, P.K., Akahane-Yamada, R., Diesch, E., Tohkura, Y., Kettermann, A., Siebert, C. (2003). A perceptual interference account of acquisition difficulties for non-native phonemes. *Cognition* 87, B47-B57.

Schyns PG, Rodet L. 1997. Categorization creates functional features. *J. Exp. Psychol.: Learn. Mem. Cogn.* 23:681-96

Supplemental papers:

Schyns P.G., Goldstone R.L. & Thibaut J.P. (1998) The development of features in object concepts. *Behavioral & Brain Sciences* 21(1) pp 1-17 discussion 17-54.

Lively, S.E. and Pisoni, D.B. (1997). On prototypes and phonetic categories: A critical assessment of the perceptual magnet effect in speech perception. *Journal of Experimental Psychology: Human Perception and Performance*, 23, 1665-1679.

Jacobson, R., Fant, G. & Halle, M. (1952). Preliminaries to speech analysis: The distinctive features and their correlates. MIT Press.

Mielke, J. (2005). Ambivalence and ambiguity in laterals and nasals. *Phonology* 22.2: 169-203.

Supplemental papers:

Cohn, A. (2007) "The Source of Universals: Features, Segments, and the Nature of Phonological Primitives," *Where Do Features Come From?*, Paris France, October 2007.

Biederman, I. (1987). Recognition-by-Components: A Theory of Human Image Understanding. *Psychological Review*, 94, 115-147.

Mareschal, D., Powell, D., & Volein, A. (2003). Basic-level category discriminations by 7- and 9-month-olds in an object examination task. *Journal of Experimental Child Psychology*, 86, 87-107.

Cristià, A., Seidl, A., and Francis, A. (in revision). Phonological features in infancy. In G.N. Clements and R. Ridouane (eds.) *Where do phonological contrasts come from?* *Cognitive*,

physical and developmental bases of phonological features. John Benjamins.

Supplemental papers:

French, R. M., Mareschal, D., Mermillod, M., & Quinn, P. C. (2004). The role of bottom-up processing in perceptual categorization by 3- to 4-month-old infants: Simulations and data. *Journal of Experimental Psychology: General*, 133(3), 382–397.

Distributions and Frequency in Categorization

Homa D., Dunbar S., Nohre L. (1991). Instance frequency, categorization, and the modulating effect of experience. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 17, 444-458.

Maye, Jessica, Janet Werker, & LouAnn Gerken (2002). Infant sensitivity to distributional information can affect phonetic discrimination. *Cognition*, 82 (3), B101-B111.

Holt, L. L. & Lotto, A. J. (2006). Cue weighting in auditory categorization: Implications for first and second language acquisition. *Journal of the Acoustical Society of America*, 119, 3059-3071.

Feature Integration

Kingston, John, Randy L. Diehl, Cecilia J. Kirk, and Wendy A. Castleman (2007). On the internal perceptual structure of distinctive features: The [voice] contrast. *JPhon*.

Triesman and Gelade (1980). A feature integration theory of attention. *Cognitive Psychology* 12, 97-136.

Blair and Homa 2005. Integrating novel dimensions to eliminate category exceptions: When more is less. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 2005, Vol. 31, No. 2, 258–271