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Current Research Areas

- Factors affecting acoustic cue weighting
 - Experience
 - Laboratory training
 - Consonant contrasts (NIH-NIDCD R03 Selective attention & perceptual learning of speech)
 - Synthetic speech
 - Native language
 - Tonal vs. non-tonal languages (Cantonese, Mandarin, English)
 - Spanish, Russian, Mandarin learners of English (Vowels)
 - Task
 - Talker identification
 - Vowel/consonant identification
 - Context
 - Extrinsic/intrinsic to target signal

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Methodologies

- Behavioral
 - Learning
 - Pretest-training-posttest paradigm
 - Identification training, usually with feedback
 - Categorization
 - Identification & discrimination between and within categories
 - Confusion matrices (accuracy, response time)
 - Multidimensional Scaling (similarity ratings, confusion matrices)
 - Selective attention
 - Garner paradigm
 - Signal detection theory
- Neural
 - Electrophysiology
 - Cortical evoked potentials (with R. Melara)
 - Frequency following response (with A. Krishnan)

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Recent Results

- Laboratory Training
 - Learning acoustic cues involves enhancement of trained and inhibition of untrained cue
- Native Language
 - Tonal and intonational categories provide equivalent kind of experience for learning new lexical tone categories
 - Native language allophony does not explain all L2 learning
- Task
 - Attending to vowel quality and talker identity interfere symmetrically with one another (contra Pisoni & Mullenix)
 - Differentiation of processing begins early (sensory)
 - Hemispheric lateralization of talker identification vs. consonant voicing determined by task, not stimulus acoustics
- Context
 - Contextual normalization of lexical tones derives from a combination of language-specific and universal (psychoacoustic) processes

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Future Directions

- Laboratory Training
 - Effectiveness of training methods
 - Enhancement of non-native cues vs. inhibition of inappropriate native cues
 - Influence of perceptual training on production
 - Can successful perceptual training influence production?
- Role of Selective Attention
 - Capacity limitations
 - Does shifting attentional weighting of cues influence processing demands?
 - Develop further neuroimaging paradigms (ERP, fMRI)
 - In collaboration with Steve Small, Howard Nusbaum, University of Chicago
 - Extend to include clinical populations
 - Cochlear implant users (including simulations)
 - Brain injury patients (long-term attentional deficits)

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