

mar of a language and should be explicitly taught to learners of a second language, especially where their grammatical (or pragmatic) import differs.

4pSC16. Production and perception of authentic and feigned Spanish accent. Rebecca Hill (Prog. in Linguist., Univ. of Florida, P.O. Box 115454, Gainesville, FL 32611-5454)

This experiment will be undertaken in order to examine the ability of native English speakers to distinguish between authentic and feigned Spanish accent. To that end, 50 English CVC words produced by 6 native Spanish speakers and 6 native English speakers will be recorded. The same six native English speakers will also be asked to produce the same words using self-determined Spanish-accented English. The English consonants chosen for analysis are [p/b, t/d, k/g] and the vowels chosen are [i,e,æ,u] and their lax counterparts. These consonants and vowels were chosen because they have been shown to be problematic for native speakers of Spanish learning English. The production experiment included the acoustic measurement of VOT and closure duration for the stop consonants and $F1$, $F2$, and duration for the vowels. The perception experiment will be conducted using ten native English speakers, five of whom are familiar with Spanish and five who are naïve. Listeners will hear the three types of speech (authentic Spanish accent, authentic American English accent, and feigned Spanish accent) and rate the degree of accentedness using a five-point scale. Results of the perception experiment will be examined and discussed in relation to the production data.

4pSC17. Lexical tone contrast effects related to linguistic experience. Alexander L. Francis and Valter Ciocca (Dept. of Speech and Hearing Sci., Univ. of Hong Kong, Hong Kong)

Listeners' auditory discrimination of vowel sounds depends in part on the order in which stimuli are presented (Cowan and Morse, 1986). Such contrast effects have been argued to be language-independent (Polka and Bohn, 1996), and to result from psychophysical (not speech- or language-specific) order-of-presentation effects such as decay of memory traces over time or increased weighting of later-occurring stimuli (Macmillan, Braida, and Goldberg, 1992; Repp and Crowder, 1990). In the present study, native Cantonese speakers' discrimination of a linguistic tone continuum is shown to exhibit contrast effects similar to those shown for vowels in previous studies. When presented with two syllables differing in $F0$ by approximately 4 Hz, listeners were significantly more sensitive to this difference when the first syllable was higher in frequency than the second. However, American English-speaking listeners with no experience listening to Cantonese showed no such contrast effect when tested in the same manner using the same stimuli. Neither English nor Cantonese listeners showed any contrast effects in the discrimination of a nonspeech continuum with the same frequency properties. These results suggest that tone contrast effects, unlike vowel effects, may be language-specific and not merely the consequence of general properties of auditory processing.

4pSC18. A cross-linguistic study on discourse and syntactic boundary cues in speech. Janice Fon and Keith Johnson (Dept. of Linguist., The Ohio State Univ., 1712 Neil Ave., Rm. 222, Columbus, OH 43210, jfon@ling.ohio-state.edu)

Online segmentation is a formidable task for any speech parser. Yet, human beings seem to handle this task with ease. This study focuses on the relationship between discourse/syntactic boundaries and prosodic cues in divergent languages—English, Japanese, and two varieties of Mandarin (Guoyu and Putonghua). Speech was elicited by having talkers describe the events in a film [W. L. Chafe (unpublished)]. Recorded data were

transcribed, digitized, and will be segmented into discourse and syntactic units while measurements of $F0$, syllable duration, and rms amplitude will be taken on the digitized data. Prosody will be partially labeled following ToBI (Tones and Break Indices) conventions of each language. A comparison of different dimensions of data-discourse/syntax, acoustics, and intonation, will be made in order to examine boundary cues in speech. Our previous work using a smaller set of Mandarin (Guoyu) data has shown that syllable onset interval isochrony is generally preserved until the pre-boundary syllable. Pre-boundary syllables are characterized by a significant lengthening effect, which differs by boundary types. Lengthening before discourse units is longer than that before syntactic units such as clauses or phrases. [Work supported by NIDCD.]

4pSC19. Language-specific knowledge and the perception of tonal contrasts in Italian and English. Mariapaola D'Imperio (LORIA, Univ. of Nancy, France, dimperio@loria.fr)

Intonation, including details of tonal alignment [i.e., the synchronization of tones and segments (D'Imperio, 2000)], has been claimed to be part of the phonological knowledge of native speakers. This linguistic knowledge can be assumed to influence the perception of tonal contrasts. Both American English and Neapolitan Italian have two rising pitch accents (L+H* and L*+H) whose alignment is contrastive, although details of their implementation differ. The accents also cue different pragmatic functions (e.g., cuing the question/statement contrast only in Neapolitan) and are subject to different syntagmatic constraints in the two languages. This study tested the hypotheses that the American listeners would be able to perceive the contrast between the two Neapolitan accents, despite the aforementioned differences, and that they would respond similarly to a linguistic (question/statement) and a psychoacoustic (early/late peak) identification task. The stimuli were constructed by manipulating the alignment of a Neapolitan utterance through PSOLA. These stimuli were employed in a linguistic task for both language groups and a psychoacoustic task for the Americans only. Although the Americans could perform the linguistic task, scoring similarly to the Neapolitans, they could not perform the categorization in the psychoacoustic task. The results bear upon the "universality" of tonal perception.

4pSC20. Modality salience in multimodal speech perception under degraded presentation conditions. Janet M. Weisenberger, Sandra M. Kreidler, Katherine L. York, and Michelle A. Yeary (Speech and Hearing Sci., Ohio State Univ., Columbus, OH 43210)

Studies of the McGurk effect in auditory-visual speech perception have demonstrated that both modalities contribute to the overall percept, even when both modalities are perfectly rendered. Initial studies in our laboratory found that a McGurk-type effect can also be observed with tactile-visual presentation, employing a tactile speech perception device. The present study investigated the question of whether subjects' relative reliance on a particular sensory modality could be shifted when presentation via one modality was degraded. Subjects were tested with a McGurk paradigm in unimodal (visual, auditory, or tactile) and multimodal presentations, in both nondegraded and degraded presentation conditions. Auditory degradation was achieved by low-pass filtering with cutoffs at 400 or 1000 Hz, and visual degradation was achieved by use of a diffusing screen placed in front of a video monitor. Tactile stimuli were not degraded. Results showed that subjects quickly shifted response patterns when one modality was degraded to show increased reliance on the nondegraded modality. However, increased reliance on the nondegraded tactile input was not found, possibly because the initial training with the tactile device was limited. Nonetheless, tactile-visual McGurk effects were replicated. [Portions of this work were supported by NIH.]