

**5aSC3. VOT of American English stops with prosodic correlates.** Mark Van Dam (Dept. of Linguist., Indiana Univ., Bloomington, IN 47405)

It is known that in a word-medial bisyllabic sequence, a stop beginning a stressed syllable (e.g., /p/ in *póodle*) has a much longer voice-onset time (VOT) than following an unstressed syllable (e.g., /p/ in *stripper*). The current study investigates VOT of stops in unstressed syllables not immediately following the primary stressed syllable in the word, e.g., before the primary word stress (the /p/ in *Winnepegósis*, the /k/ in *baccaláureate*), and after the primary word stress (the /p/ in *Óedipus*, the /k/ in *américan*). A set of 42 test words were recorded in carrier phrases spoken by 4 native speakers of American English. In bisyllabic words, word initial or stressed-syllable initial stops (e.g., *póodle*, *appéal*) averaged 63 ms while following unstressed stops (e.g., *stripper*) averaged 25 ms. Stops in unstressed syllables preceding the primary stressed syllable (e.g., *Winnepegósis*) averaged 32 ms while those stops in following unstressed syllables (e.g., *Óedipus*) averaged 41 ms. To account for these results, we need at least four VOT levels. Also interesting is the interaction between stop place /p/ vs /k/ and position: *Óedipus* has the same VOT as *américan* while *Winnepegósis* and *baccaláureate* differ significantly.

**5aSC4. The influence of phonetic context and formant measurement location on acoustic vowel space.** Greg S. Turner, David T. Hutchings, Betsy Sylvester (Dept. of Commun. Disord., Central Missouri State Univ., Warrensburg, MO 64093, turner@cmsu1.cmsu.edu), and Gary Weismer (Univ. of Wisconsin–Madison, Madison, WI 53705-2280)

One way of depicting vowel production is by describing vowels within an  $F1/F2$  acoustic vowel space. This acoustic measure illustrates the dispersion of  $F1$  and  $F2$  values at a specific moment in time (e.g., the temporal midpoint of a vowel) for the vowels of a given language. This measure has recently been used to portray vowel production in individuals with communication disorders such as dysarthria and is moderately related to the severity of the speech disorder. Studies aimed at identifying influential factors effecting measurement stability of vowel space have yet to be completed. The focus of the present study is to evaluate the influence of phonetic context and spectral measurement location on vowel space in a group of neurologically normal American English speakers. For this study, vowel space was defined in terms of the dispersion of the four corner vowels produced within a CVC syllable frame, where C includes six stop consonants in all possible combinations with each vowel. Spectral measures were made at the midpoint and formant extremes of the vowels. A discussion will focus on individual and group variation in vowel space as a function of phonetic context and temporal measurement location.

**5aSC5. On the relation of apparent naturalness to phonetic perceptual identification.** Robert E. Remez, Cynthia Y. Yang (Dept. of Psych., Barnard College, 3009 Broadway, New York, NY 10027), Rebecca L. Piorowski (Johns Hopkins Univ., Baltimore, MD 21218), Stephanie Wissig, Abigail Batchelder, Hedy Nam (Barnard College, 3009 Broadway, New York, NY 10027), and Anne E. Timberlake (Oberlin College, Oberlin, OH 44074)

A set of synthetic test syllables was created varying in the attributes of apparent naturalness and phonetic place-of-articulation. These acoustic items were used in a new test of the relation of naturalness to phonetic perceptual resolution. An earlier study had found that variation in the form of the excitation of a formant pattern greatly affected impressions of naturalness while minimally affecting the resolution of the phonetic place. The present study assessed the relation of naturalness and intelligibility when the bandwidths of formant centers were varied. We conducted a naturalness tournament composed of items drawn from the test series; and, we assayed the sensitivity of perceivers to place contrasts by estimating the cumulative  $d'$  across the series in identification tests. Unlike our prior observations, these new outcomes reveal both a narrower range of naturalness variation and a close relation in findings of the naturalness tournament and the measures of phonetic sensitivity. Together, this pair of stud-

ies shows that intelligibility and naturalness can be either orthogonal or contingent aspects of speech perception. These measures offer a tool to understand rule-based and exemplar-based components of phonetic perception. [Research supported by NIDCD.]

**5aSC6. Difference limens for vocal aperiodicities.** Jody Kreiman and Bruce R. Gerratt (Div. of Head/Neck Surgery, UCLA School of Medicine, 31-24 Rehab. Ctr., 1000 Veteran, Los Angeles, CA 90095-1794, jkreiman@ucla.edu)

Although jitter, shimmer, and noise characterize all voice signals, recent data from a method of adjustment task suggest that these acoustic attributes do not all have equal perceptual importance. Listeners did not agree well with one another when asked to match the amounts of jitter or shimmer in a voice, although they did agree well in their matching responses to noise. Several explanations for this finding are possible. Listeners may be insensitive to differences in amounts of jitter and shimmer in a voice, so that difference limens are large relative to customary measurement resolution; or listeners may have difficulty separating jitter and shimmer perceptually from the composite noise component. To investigate these issues, we synthesized several series of stimuli with and without noise, and differing by steps in the amounts of jitter or shimmer present. Listeners heard pairs of these stimuli and were asked to respond whether stimuli were the same or different. Receiver operating characteristic analysis was applied to determine how listener sensitivity to jitter and shimmer varies. [Research supported by NIDCD.]

**5aSC7. Perceptual differences in source–filter characteristics of racially affiliated dialects of American English.** Thomas Purnell and Laura Kopplin (Dept. of Linguist., Univ. of Wisconsin, Madison, 1168 Van Hise, 1220 Linden Dr., Madison, WI 53706, tpurnell@facstaff.wisc.edu)

Three forced-choice experiments are described investigating perceptual cues of tokens simulating three racially-affiliated varieties of American English, namely African American English (AE), Chicano English (CE), and General American English (GE). These experiments test whether the locus of the conceptual assignment of pseudo-tokens to specific socially constructed groups resides primarily in either source or filter characteristics of the tokens. In the first experiment, responses to real tokens matched the implied dialect better than chance. The subsequent experiments used synthetic versions of the token with the greatest percent match for each group. For the second experiment the source and filter were separated using LPC filtering, then swapped across groups. Two mirror sets of tokens were produced where  $F0$  was fixed and  $F0$  was absent (whispered). Findings provide evidence that cues for token identification are primarily filter oriented, although for CE and GE source cues also play a minor perceptual role. To test the finding that the filter plays a greater perceptual role than the source, the same three sets of tokens were pass band masked by noise. Tokens pass band filtered for the 400 Hz to 2,000 Hz frequency range were perceived less well than other filtered tokens.

**5aSC8. Appalachia meets the mid-south in Tennessee.** Richard S. McGowan and Michel T-T. Jackson (CRess LLC, 1 Seaborn Pl., Lexington, MA 02420, rsmcgowan@earthlink.net)

The father of bluegrass and long-time member of the Opry in Nashville, Bill Monroe, had a number of musical influences, including blues, gospel, and the American versions of Anglo-Scots-Irish folk music endemic to Appalachia. (Although Bill Monroe was from western Kentucky, the Appalachian influence is apparent.) In 1946 he recorded a song for Columbia Records that he had written. This song was recorded again in 1954 at Sun Studios as a “B side” by the future king of rock and roll, Elvis Presley. Raised in East Tupelo, MS and Memphis, Elvis’ music derived from the mid-south’s blues and gospel music, but with a peculiar