Session 3pSC

Speech Communication: Lexical Effects and Perceptual Processing in Speech (Poster Session)

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All posters will be on display from 1:00 p.m. to 3:20 p.m. To allow contributors an opportunity to see other posters, all contributors of odd-numbered papers will be at their posters from 1:00 p.m. to 2:10 p.m. and contributors of even-numbered papers will be at their posters from 2:10 p.m. to 3:20 p.m.

Contributed Papers

3pSC1. Phonetic experience with specific words affects categorical perception of those words. Mark VanDam (Boys Town Natl Research Hospital, 555 N. 30 St., Omaha, NE 68131, vandamm@boystown.org) and Robert F. Port (Indiana Univ., Bloomington, IN 47405)

How does experience with specific words influence linguistic-phonetic categories? Listeners were trained over a five-session, listen-and-repeat task on a set of target words embedded in continuous speech and altered so that the initial stop consonant voice-onset time (VOT) was 80% longer than natural. Voicing boundaries were estimated before and after training using a two-alternative, forced-choice perceptual task on an eight-step VOT continuum. Stimuli were highly natural tokens by two stimulus talkers. Part 1 of the experiment asked whether exposure to lengthened forms would influence location of the voicing boundary, and, if so, whether that effect would generalize to similar forms. Results showed longer boundaries after exposure to lengthened VOTs for the trained forms, but lengthening did not generalize to new forms. Part 2 investigated voicing boundary locations as a function of lexical status (word, nonword) and usage frequency (high, low). Boundary locations indicated expanded VOT regions both for nonwords over words (opposite to the Ganong effect) and for high-frequency words over low-frequency words; neither lexical status nor usage frequency interacted with training. Results suggest a lexical sensitivity to low-level speech cues, thus offering support for a rich memory language model.

3pSC2. Were we or are we? Perception of reduced function words in spontaneous conversations. Natasha Warner, Dan Brenner, Anna Woods (Box 210028, Univ. of Arizona Dept. of Linguist., Tucson, AZ 85721-0028), Bejamin V. Tucker (Univ. of Alberta, Edmonton, AB, Canada T6G 2E7), and Mirjam Ernestus (Univ. Nijmegen, Nijmegen AH6500, the Netherlands)

Spontaneous, reduced pronunciations diverge greatly from citation forms. The quality of a single segment can change, e.g., /b/ in "about" surfacing as an approximant. But sounds, syllables, and entire words can also be deleted (e.g., "do you have time?" as [djutEm] with no acoustic trace of "have"). This work investigates the perception of reduced function words such as "he was" or "we were." Twenty-two young American English speakers' spontaneous conversations with close acquaintances were recorded. From these, we selected utterances containing items such as "he's/he was, we're/we were, got him/got them." When hearing an entire utterance, native listeners may clearly perceive "we were," but on hearing just the "we were" portion, they perceive an unambiguous "we're." The portion of the signal presented to listeners is manipulated to determine the contributions of local acoustic cues, speech rate and coarticulation, semantic and syntactic information, and overall bias toward present vs past tense. An auditory and a written task are also compared to separate the contribution of intonation from that of syntax/semantics. These results begin to elucidate the interplay of information sources listeners draw upon when parsing spontaneous speech. Future work will compare to non-native listeners' perceptions.

3pSC3. The roles of tone and syllable structure in Mandarin spoken word recognition. Yuwen Lai (Dept. of Linguist., Univ. of British Columbia, 2613 West Mall, Vancouver, BC V6T 1Z4, Canada) and Jie Zhang (Univ. of Kansas, Lawrence, KS 66044-3177)

The present study adopts the gating paradigm to investigate the roles of tone, onset sonorancy, and nasal coda in Mandarin spoken word recognition. Duration-blocked gates generated from eight monosyllabic quadruplets with matching frequencies of occurrence were used as stimuli. The initial consonant of each syllable formed the first gate, with later gates formed by 40 ms increments. Twenty-eight native Mandarin speakers from Beijing were asked to identify each gated stimulus by writing down the Chinese characters. Isolation point (IP) based on correct tone identification as well as overall correct word identification (correct onset, rhyme, and tone) were collected. Results from both conditions showed that tone 1 has an earlier IP than tone 4, which has an earlier IP than tones 2 and 3. Sonorant-initial syllables have an earlier IP than obstruent-initial syllables, but further analyses of covariance indicated that this is due to the fact that IP covariates with the duration of the initial consonant. Syllables without a nasal coda have an earlier IP than syllables with a nasal coda. This effect might be due to the interference of nasalization on tone perception or the delayed tonal contour realization due to the nasal coda [Xu, (1998)].

3pSC4. Duration and context speech rate as cues to lexical perception and word segmentation. Molly J. Henry, Laura C. Dilley, Louis N. Vinke, and Christopher J. Weinland (Dept. of Psychol., Bowling Green State Univ., Bowling Green, OH 43403, mjhenry@bgsu.edu)

Duration and speech rate are traditionally assumed to be filtered out before lexical lookup takes place, although these factors are known to influence phoneme perception. Here, the hypothesis was investigated that duration can affect both perceived lexical identity, as well as the perceived number and implied locations of word boundaries relative to the speech signal. Experiment 1 was a production study which investigated durations of vocalic portions of phonetically similar versions of target word strings which differed in their number of syllables (e.g., cease versus see us); these target word strings were spoken in semantically neutral context sentences. As expected, vocalic durations in target strings with fewer syllables were shorter than those with more syllables. In Experiment 2, the relative durations of vocalic portions of target strings in sentences from Experiment 1, as well as sentential context speech rate, were manipulated using speech resynthesis. Relative duration and context speech rate both affected the words that participants heard, as well as the implied number of phonemes and imputed locations of word boundaries. These findings indicate that duration plays a significant and underinvestigated role in spoken word recognition and word segmentation.

3pSC5. The spread and density of the phonological neighborhood can strongly influence the verbal transformation illusion. James A. Bashford, Jr., Richard M. Warren, and Peter W. Lenz (Dept. of Psychol., Univ. of Wisconsin-Milwaukee, P.O. Box 413, Milwaukee, WI 53201)

When a recorded verbal stimulus repeats over and over, adaptation occurs and listeners hear competing forms. Reports of these "verbal transformations" (VTs) were obtained for 36 consonant-vowel (CV) syllables that varied both in frequency-weighted neighborhood density (ranging from 12.73 to 90.42) and in neighborhood spread [i.e., for 18 CVs, changes at either phoneme position could yield real words (spread = 2) while for the remaining 18 CVs, changes at only one position could yield words (spread