

This finding suggests that appropriate acoustic measures can be developed to provide psychometrically valid measures over the full course of development from initial stages of producing undifferentiated or inappropriate cues to producing the adult community pattern for the contrast. [Work supported by NIDCD grant 02932 and NSF grants BSC-0729306, BSC-0729140, and BCS-0729277.]

9:45

4aSC4. Syllable organization in children's early American English: Acoustic evidence. Jill C. Thorson (Dept. of Cognit., Linguistic Psychol. Sci., Brown Univ., Box 1821, 229 Waterman St., Providence, RI, 02912, Jill_Thorson@brown.edu) and Katherine Demuth (Macquarie Univ., Sydney, NSW 2109, Australia)

Children's early CVC target words are often produced with epenthesis or heavily aspirated release (e.g., cat [kæ^h]). This has led some to suggest that these are actually produced as two-syllables (CVC^(V)) [Goad and Brannen (2003)]. To evaluate this claim, this study conducted an acoustic investigation of syllable timing in American English 2-year-olds' production of CVC words. These were compared with productions of disyllabic CV.CV words. For adults, V₁ duration and C₂-closure duration were expected to be longer in CVC than in CV.CV words [Lehiste (1972); Lisker (1972)]. However, if durations were found to be similar across conditions for children, this might support the claim that children syllabify CVC words as two syllables (CV.C(V)). Participants were three 2-year-olds (mean=2;4) and three adults (mean=23). The stimuli were 4 prerecorded nonce words (/bak/, /bag/, /bakə/, /bagə/). Speech productions were sampled at 44 kHz and four repetitions of each word were acoustically analyzed. As predicted, adults showed significantly longer V₁ and C₂-closure durations in CVC compared to the CV.CV targets ($p < 0.01$). Children showed more variable, non-significant trends ($p = 0.06$). This suggests that 2-year-olds are not treating CVC forms like disyllables, nor are they adult-like in their timing relations. [Work supported by NIH R01HD057606.]

10:10—10:20 Break

10:20

4aSC5. The utility of content-free acoustic analyzes for assessing prosodic disorder in children. Melissa A. Redford (Dept. of Linguist., Univ. of Oregon, Eugene, OR 97403, redford@uoregon.edu) and Jolynn Cornell-Fabiano (César E. Chávez Elementary School, Eugene, OR 97402)

Global rhythm metrics have advanced our understanding of perceptually salient language rhythms and have proved useful for understanding perceptions of foreign accent. The metrics have also helped further the development of automated acoustic analyzes of speech, which are being applied to the clinical problems of early and differential diagnoses of speech and language disorder. This talk will consider the utility of such metrics for the assessment and treatment of children with disordered prosody. Results from an investigation of acoustic factors that contribute to the perception of disordered prosody in 24 school-age children suggest that global, content-free metrics of rhythm and intonation may be relatively poor predictors of experienced listeners' perceptions of disorder in individual children though the metrics correlate with listeners' differentiation of children with typical and atypical language development and of children with different eligibilities for speech and language services. Content-dependent acoustic analyzes more accurately account for the variability in judgments across children within particular groups. These results will be used to advocate for research that is aimed at acoustically characterizing prosodic disorder in individual children and at discovering the perceptual weightings and social significance of the acoustic correlates of disordered prosody. [Work supported by NICHD/NIH.]

Contributed Papers

10:45

4aSC6. Automatic acoustic-phonetic analyzes of thousands of hours of conversational speech in hard of hearing children. Mark VanDam (Ctr. for Childhood Deafness, Boys Town Natl. Res. Hosp., 555 N. 30th St., Omaha, NE 68131, mark.vandam@boystown.org)

The current longitudinal project examines speech and language development in 40 preschool children with mild- to severe-hearing loss (and a cohort of typically developing peers) as part of large, multicenter project on outcomes of children with hearing loss. Whole-day recordings are collected once monthly for 1 year and subjected to detailed acoustic-phonetic analyzes. To date, we have collected several hundred whole-day recordings using a commercially available, body-worn recorder and software (the LENA Foundation). The software performs unsupervised, offline analysis of the audio and produces (1) a time-aligned, XML-coded output including the talker labels adult-female, adult-male, target-child, and other-child and (2) the PCM wave file of the entire day. Audio segments of specific talkers are then extracted with custom software designed for detailed acoustic-phonetic analyzes of speech. For example, fundamental frequency was extracted for target-child utterances and compared in varied conversational exchanges with different interlocutors. This technology is suited to examine large-scale natural speech and language corpora. Developmental changes can be examined in domains ranging from prosody to conversational use of speech. Details of this research project, including advantages and challenges, will be discussed as well as theoretical implications for phonology and phonetics of child speech development. [Work supported by: NIH/NIDCD 5R01-DC009560-01S1.]

11:00

4aSC7. Emerging lexical representations in early infancy. Francisco Lacerda (Dept. of Linguist., BabyLab, Phonet. Lab, Stockholm Univ., SE-106 91 Stockholm, Sweden, frasse@ling.su.se)

This presentation proposes the view that typical early infant-directed speech (IDS) in the infant's ecological setting provides enough multisensory information to trigger the emergence of lexical representations, a theoretical view inspired by analyzes of the care-givers' speech toward infants at different developmental stages. It will be argued that the adult's speaking style in early IDS within the context of the infants' immediate ecological setting provides enough correlated sensory information to derive potentially relevant lexical items from the stream of speech sounds and objects to which the infant is exposed. The proposed theoretical model of early language development [ecological theory of language acquisition (ETLA)] is supported both by experimental results indicating that 40 Swedish infants, in the age ranges 8–10 and 14–16 months, could infer object names from looking at 1-min video materials where objects were shown and described by natural utterances produced in languages unknown to the infants, and by mathematical simulations of how early lexical items can be derived from typical infant-directed speech handled by the infant's general-purpose multisensory (audio-visual) representation capabilities. [Work supported by grant from The Bank of Sweden Tercentenary Foundation (Grant No. K2003:0867, MILLE), EU-NEST (Project No. 5010, CONTACT), Knut and Alice Wallenberg Foundation (Grant No. KAW2005.0115), and Stockholm University.