Further Results on the Development of Voicing in Stop Consonants in Young Children

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consonants under all three amplification conditions was similar [$F(22.2)=0.03$], but consonant discrimination for pairs employing the vowel /ɛ/ was better with both conventional amplification and with transposition. In only three instances were specific pairs judged more accurately under one condition than another. These were /h–ə/, /v–k/ and /θ–p/, and in each case conventional amplification yielded superior scores to transposition.

4:15

7K10. Measurement and Operant Conditioning of the Vocalization of Preschool Deaf Children. CARL W. ASP AND CONNIE LAWRENCE, *Department of Audiology and Speech Pathology, University of Tennessee, Knoxville, Tennessee 37916.*—A voice-operated relay, a throat microphone, and an electromechanical counter were utilized to record automatically the rate of vocalization of 20 deaf and 28 normal hearing, preschool children. The mean rate of vocalization of each child served as the criterion measure. The results of a *t* test indicated a significant difference between the groups with regard to vocalization. For the operant conditioning of 13 deaf children, the eyes and nameplate of a stuffed animal were modified and electrically connected to the apparatus to illuminate when the child vocalized. To avoid extinction, candy, peanuts, and charms were utilized as secondary reinforcers. In addition, each vocalization was picked up by a concealed microphone, amplified and presented to the child via a set of earphones. At the outset, a continuous reinforcement schedule was employed, but a variable schedule with increasing mean values of 2.5, 3.5, and 4.5 was implemented to strengthen the reinforcement. The mean vocalization increased 25/mm during conditioning. After an extinction period, spontaneous recovery was observed. [Supported by NIH Biomedical Sciences Support Grant.]

11:45

4D10. Further Results on the Development of Voicing in Stop Consonants in Young Children. MALCOLM S. PRESTON, *Department of Pediatrics, The Johns Hopkins University School of Medicine, Baltimore, Maryland, 21205* AND DIANE K. PORT, *Haskins Laboratories, New York, New York 10017.*—This paper reports further results on a research project that was designed to examine the development of stop consonants occurring in initial position in the vocalizations of children primarily during the second year of life. A previous paper [M. Preston, G. Yeni-Komshian, R. Stark, and D. Port, "Certain Aspects of the Development of Speech Production and Perception in Children," J. Acoust. Soc. Amer. **46**, 102(A) (1969)] presented results for apical stops. This report deals with the results for labial and velar stops over the same time period. The principal measure employed in the analysis is voice onset time (VOT), a perceptually and productively relevant measure, which can be easily obtained from spectrograms. In addition, a more complete analysis of apical stops comparing VOT distributions of adults with children between 2 and 2½ yr is presented. [Research supported in part by the National Institute of Child Health and Human Development.] (***Abstract rescheduled to Session 4D, paper 10, p. 12.***)

FRIDAY, 7 NOVEMBER 1969 COTILLION ROOM 2, 2:00 P.M.

Session 7L. Binaural Phenomena

J. P. EGAN, *Chairman*

Contributed Papers (12 minutes)

7L1. ***Abstract withdrawn.***

2:00

7L2. Dichotic Detection of Correlation between Pulsed and Continuous White Noise. C. DOUGLAS CREELMAN AND BRUCE E. TWINING, *University of Toronto, Ontario, Canada.*—Human observers were presented trains of noise pulses in one earphone while continuous white noise was presented to the contralateral ear. Signals were varied in frequency, duration, and duty cycle. Contralateral continuous noise was drawn either from the same white-noise generator that provided the pulse trains, or from a separate independent generator. In a two-alternative temporal forced-choice experiment, the observers discriminated between correlated and independent continuous noise. Discrimination improved with increases in pulse frequency and pulse-train duration. Under most conditions, discrimination was possible with pulse durations of less than 1 msec. Implications of the data for models of binaural cross correlation are considered.

2:15

7L3. Effects of Intensity on Critical Bands. WALTER T. BOURBON, *Department of Psychology, Stephen F. Austin State University, Nacogdoches, Texas 75961,* AND CARL J. HEHMSOTH, *TRACOR, Inc., Austin, Texas 78721.*—Critical bands (CB) for antiphasic tonal stimuli (noise zero phase, signal out of phase—N0Sπ) were determined in a band limiting, two-alternative forced-choice paradigm. Signals were 100-msec tone bursts at either 500 or 2000 Hz. Masking noise was at sound pressure spectrum levels of 15 or 45 dB. For each combination of signal frequency and noise intensity, a signal level was determined, which produced average probability correct of 0.54 for the three observers. Band limiting of the noise disclosed the characteristics of the critical band for each stimulus condition. CB for N0Sπ were wider for a noise spectrum level of 45 dB than for a spectrum level of 15 dB. For any given conditions, the CB for N0Sπ was from 18% to 30% wider than