

## Session 5aSC

**Speech Communication: Speech Perception and Production in Noise and Related to Disorders of Speech, Language or Hearing (Poster Session)**

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Posters will be on display from 8:00 a.m. to 12:00 noon. To allow contributors an opportunity to view other posters, contributors of odd-numbered papers will be at their posters from 8:15 a.m. to 9:45 a.m., and contributors of even-numbered papers will be at their posters from 10:00 a.m. to 11:30 a.m. There will be a 15-minute break from 9:45 a.m. to 10:00 a.m.

*Contributed Papers*

**5aSC1. Affective prosody production in autistic and typically developed adult males.** Daniel J. Hubbard, Daniel J. Faso, Noah J. Sasson, and Peter F. Assmann (School of Behavioral and Brain Sci., GR4.1, Univ. of Texas at Dallas, P.O. Box 830688, Richardson, TX 75083, dhubbard@utdallas.edu)

This study examined differences in production of affective prosody in adult males with autism spectrum disorder (ASD) and typically developed (TD) controls. Previous studies of children with ASD have reported increased variability in fundamental frequency ( $f_0$ ) in spontaneous and semi-spontaneous speech compared to TD children. A controlled set of expressive speech recordings was collected from 30 talkers (15 ASD) to measure differences between the two groups using the same lexical content. Isolated vowels, vowel-consonant-vowel (VCV) syllables, words and short phrases were elicited in five emotion contexts: angry, happy, interested, sad, and neutral. The recordings were obtained using evoked and portrayed elicitation techniques: talkers were asked to recall past emotional episodes (evoked) and role-play scripted scenarios (portrayed) specific to each emotion context. Consistent with previous work and extending the findings to adults producing the same lexical content, talkers with ASD showed increased  $f_0$  variability in each emotion context except for neutral. In addition, systematic group differences were found in acoustic properties other than  $f_0$  used to convey affective prosody—including harmonics-to-noise ratio and intensity—which were higher in each emotion context for talkers with ASD compared to TD talkers.

**5aSC2. Production of contrastive focus in children with autistic spectrum disorder.** Lucile Rapin, Pâméla Trudeau-Fisette, Marie Bellavance-Courtemanche, and Lucie Ménard (Linguist, UQAM, C.P. 8888, Succursale Centre-Ville, Montreal, Quebec H3C 3P8, Canada, lucilerapin@gmail.com)

Contrastive focus serves to emphasize the importance of a semantic unit in the language string. Children with autistic spectrum disorder (ASD) appear to show difficulties in producing this prosodic marker. This study aimed to identify acoustic correlates related to contrastive focus in children with ASD. Nine francophone children with ASD and nine francophone typically developing (TYP) children produced simple four-word sentences (for example, «C'est une chaise.»: «it is a chair.») in a neutral condition and then in a contrastive focus condition. Ninety-six speech productions were recorded using a system that synchronized acoustic signals with lingual and labial movements. Maximum pitch, mean pitch, and pitch range, as well as maximum and mean sound intensity and duration were investigated. Values for pitch range, maximum and mean sound intensity, and duration were greater in the focus condition than in the neutral condition. Moreover, the differences were significantly greater in TYP children than in ASD children, who did not have increased speech values when switching to the focus mode. This suggests that pitch range, and intensity and duration of sound

correlate most with contrastive focus marking in both groups. Yet, it appears that ASD children show less contrastive focus marking than TYP children.

**5aSC3. Fundamental frequency of speech directed to children who have hearing loss.** Mark VanDam, Paul De Palma, and William E. Strong (Speech & Hearing Sci., Washington State Univ., PO Box 1495, Spokane, WA 99202, mark.vandam@wsu.edu)

Studies of child-directed speech (CDS) have shown that when talking to children, parents systematically use (among other strategies) increased fundamental frequency ( $F_0$ ). Lombard effects such as increased  $F_0$  have also been documented when addressing a listener who is hard-of-hearing (HH). Here, we examine  $F_0$  of mothers and fathers in families with HH versus typically developing (TD) children in CDS and adult-directed speech (ADS) contexts. Whole-day audio recordings were collected by a child-worn audio recorder and analyzed by automatic speech recognition (ASR) software to identify segments of vocal activity by children and their parents (LENA Research Foundation, Boulder, CO). Custom software extracted  $F_0$  values in all conditions. We found that (1) mothers are much more systematic in their use of CDS than fathers, (2) parents do not appear to be sensitive to the hearing status of their children, and (3) parents of HH children may have higher overall  $F_0$  irrespective of CDS or ADS. Results suggest that mothers and fathers do not use  $F_0$  with their children in the same way, and parents of children with hearing loss may have certain global  $F_0$  characteristics not shared by parents of TD children.

**5aSC4. Action verb processing correlates with motor asymmetry in Parkinson's disease.** Emily Wang, Lee K. Walters (Commun. Disord. and Sci., Rush Univ. Medical Ctr., 1611 West Harrison St., Ste. 530, Chicago, IL 60612, emily\_wang@rush.edu), and Leo A. Verhagen Metman (Neurology, Rush Univ. Medical Ctr., Chicago, IL)

Onset of motor symptoms in PD is asymmetrical, and symptoms affect the side of onset more severely throughout the progression of the disease, which is known as "motor asymmetry." Previous studies revealed that PD patients with right-motor asymmetry (more severe symptoms on the right side of body) exhibited more speech impairment than those with left-motor asymmetry (Wang *et al.*, 2003; 2006). Patients with active deep brain stimulation (DBS) exhibited more severe speech deficits when they received either bilateral or left-only stimulation of the subthalamic nucleus (STN) than receiving right-only STN stimulation (Santens *et al.*, 2003). These findings lead to the current hypothesis that there is correlation between the motor asymmetry and linguistic processing of action verbs. Using a novel action verbal processing paradigm, 24 PD patients (12 right- and 12 left-motor asymmetry) and 11 age- gender-matched healthy controls were tested. The results showed that when the motor asymmetry was sufficiently different, i.e., when the difference of the UPDRS scores between the two sides of the body is greater than 2 (points), the right-motor asymmetry patients took