2aSC5. Fundamental frequency movements in one-word imperatives. Sergio Robles-Puente (World Lang., Literatures and Linguist, West Virginia Univ., Chitwood Hall, P.O. Box 6298, Morgantown, WV, Morgantown, WV 26506-6298, seroblespuente@mail.wvu.edu)

F0 contours in Spanish declarative and imperative sentences have traditionally been described as identical and it has not been until recently that several phonetic variables have been identified as markers of imperativity. These include higher overall F0s, early peak alignments in pre-nuclear pitch-accents, upstepped nuclear pitch-accents and marginal use of high boundary tones. Since previous analyses have concentrated on utterances with multiple pitch-accents, not much is know about productions with just one word. This study focuses on one-word utterances given the tendency of imperatives to be short and taking into account that some of the aforementioned phonetic markers cannot be used with a sole pitch-accent. The analysis of 117 declarative sentences and 256 imperatives produced by eight Spanish speakers demonstrated that in cases where declaratives and imperatives share the same contour (L+>H*L%), the latter tend to have higher F0 peaks (Wilcoxon signed-rank test; $p<0.000$). Besides, 32.4% of the imperatives showed F0 contours ending in high boundary tones, a marker not used in declaratives and only marginally found in imperatives with multiple pitch-accents. Current findings suggest that when segmental material limits F0 movements, speakers look for alternative phonetic strategies to distinguish between declaratives and imperatives.

2aSC6. Indirect evidence of perturbation leads to changes in production of voice amplitude and fundamental frequency. Elizabeth D. Casserly (Psych., Trinity College, 300 Summit St., Life Sci. Ctr., Hartford, CT 06106, elizabeth.casserly@trincoll.edu), Lily Talesnick (Neurosci., Trinity College, Hartford, CT), and Nicholas Celestin (Psych., Trinity College, Hartford, CT)

In this study, we explore the juncture of real-time feedback-based changes in speech production and those initiated by top-down knowledge of external factors such as audience characteristics or audience listening conditions. Twenty-four speakers were asked to solve interactive puzzles via remote auditory connection with an experimenter under five signal transmission conditions: normal/baseline, increased signal amplitude, decreased amplitude, + 100 cents shift in pitch, and −100 cents shift in pitch. Evidence of these changes was available to talkers only through the speech of the experimenter; no sidetone was introduced in the connection and listening conditions for talkers were otherwise normal. In response to hearing amplitude shifts in their partner's speech, 19/24 talkers significantly altered their mean voice amplitude, while 6/24 altered f0 in response to shifted experimenter vocal pitch (RM-ANOVA, all corrected p's < 0.05). Approximately 30% of responses countered the signal manipulation (e.g., f0 increase in response to low experimenter f0), while the remainder imitated the observed change. This combination of perturbation-like compensation and imitation/accommodation suggests that speakers can interpret transmission circumstances differently, or pursue different speech-related goals, during even very simple, constrained tasks.

2aSC7. Effect of "only" on prosodic focus marking. Elizabeth Chalmers and Jonathan Howell (Linguist, Montclair State Univ., 1 Normal Ave., Montclair, NJ 07043, chalmerse1@mail.montclair.edu)

This study seeks to determine how the inclusion of the focus-sensitive word "only" affects the focus-marking prosody of a sentence. Twenty-one native English speaking adults read 8 question-answer pairs. The questions were written to elicit focus on an object NP (e.g., Who did you see?). In one condition, the answer contained only (e.g., I only saw Mary); in the other condition, "only" was omitted (e.g., I saw Mary.). The recordings were annotated in Praat using forced alignment. We performed linear residualization of F0, amplitude and duration (cf. Breen *et al*. 2009) to remove effects of item and participant. Statistical models of residual pitch and duration on object-NP and verb failed to show any significant differences between the sentences that contain "only" and those not containing "only". These results fail to support theories of utterance-level prominence, which posit a categorical distinction between presentational and contrastive focus (e.g., Katz and Selkirk 2011).

2aSC8. Fathers' use of fundamental frequency in motherese. 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 motherese or child-directed speech (CDS) have paid scant attention to fathers' speech when talking to children. This study compares mothers' and fathers' use of CDS in terms of fundamental frequency (F_0) production, examining natural speech from a very large database of hundreds of hours of family speech including mothers, fathers, and preschool children. The day-long recordings are collected with specialized recording software and body-worn hardware, then analyzed with automatic speech recognition (ASR) technology (LENA Research Foundation, Boulder, CO). CDS is defined here as speech in a conversational exchange between the parent and child, and adult-directed speech (ADS) is speech between adults or speech in which the child is not a (vocal) participant. Results confirm many reports in the literature of mothers' increased F_0 during CDS. Results fail to show a difference in the F_0 characteristics between fathers' CDS and ADS speech. This shows that children's linguistic experience with fathers is different than with mothers. This result could be useful to improve ASR techniques and better understand the role of usage in natural language acquisition and the role fathers play in the language acquisition process.

2aSC9. Acoustic correlates of creaky voice in English. Sameer ud Dowla Khan, Kara Becker (Linguist, Reed College, 3203 SE Woodstock Boulevard, Portland, OR 97202, skhan@reed.edu), and Lal Zimman (Linguist, Stanford Univ., Stanford, CA)

We compared auditory impressions of creaky voice in English to acoustic measures identified as correlates of contrastive voice qualities in other languages (e.g., Khmer, Chong, Zapotec, Gujarati, Hmong, Trique, and Yi). Sixteen trained linguistics undergraduates listened to the IP-final word "bows" produced five times each by five American English speakers reading the Rainbow Passage, and gave a rating from 0 (no creak) to 5 (very creaky). Results show that stronger auditory impressions of creak are significantly correlated with lower f0, lower cepstral peak prominence (CPP), lower harmonics-to-noise ratios (HNR), and higher subharmonics-to-harmonics ratio (SHR). This suggests that listeners perceive greater creakiness as the voice becomes lower pitched, less periodic, and more audibly interspersed with subharmonic frequencies (i.e., diplophonia). Notably, none of the spectral amplitude measures proposed as acoustic correlates of glottal configurations for creaky voice in other languages (e.g., lower H1-H2 for smaller open quotient, lower H1-A1 for smaller posterior aperture, lower H1-A3 for more abrupt closure, etc.) was significantly correlated with these judgments in any expected direction. Taken together, these results suggest that while listeners consistently use pitch and periodicity as cues to creak, speakers might be varying in their articulatory strategies to achieve those acoustic effects.

2aSC10. Detecting palatalization in spontaneous spoken English. Margaret E. Renwick (Linguist Program, Univ. of Georgia, University of Georgia, 240 Gilbert Hall, Athens, GA 30602, mrenwick@uga.edu) and Caitlin N. Cassidy (Inst. for Artificial Intelligence, Univ. of Georgia, Athens, GA)

We present an analysis of palatalization from /s/ to [ʃ] at word boundaries in UK English. Previous work has considered the effect of lexical frequency (LF) on this phenomenon, but without combining acoustics and spontaneous speech in one study, which we undertake using data gathered from the Audio BNC (http://www.phon.ox.ac.uk/AudioBNC). We analyze 5,259 word pairs in five phonological contexts, comparing the acoustics of test tokens subject to palatalization (e.g., /s/ in *miss you*), to control tokens containing non-alternating [s] (*miss it*) or [ʃ] (*mission, wish it, wish you*). Word and segment boundaries were obtained via forced alignment, but hand-checked. We measured the spectral moments and duration of each fricative; following vowel duration and formant values were also extracted. LF was calculated using the Audio BNC. We find that the spectral center of gravity (CoG) of [s] before [j] (*miss you*) is intermediate ($p<0.01$) between those of [s] and [ʃ]. Furthermore, CoG of test tokens correlates negatively with LF, indicating increased palatalization in high-frequency contexts; no control pair exhibits such correlations. LF predicts CoG even considering speaker gender and other phonetic co-predictors. This supports the view of palatalization as gestural overlap, which increases with LF in casual or fast speech.