laughter in isolation experienced positive emotion in response to voiced laughs, but showed neutral or negative reactions to unvoiced versions—even though all sounds had originally been recorded in positive circumstances. Current work compared ratings of open- versus closed-mouth voiced laughter, again from positive circumstances. Participants were 28 university students (14 female) hearing a total of 48 different laughter bouts presented in two randomized blocks (96 total trials). Listeners rated how positive each bout sounded using a 4-point scale ranging from "neutral" to "very positive." Laughter included 24 open-mouth and 24 closed-mouth bouts, with 12 of each type from males and females. Mean ratings did not differ by listener-sex or stimulus-block. However, female laughter was rated significantly higher than male laughter, replicating previous results. Furthermore, ratings for open-mouth laughter were significantly higher than for closed-mouth sounds, both across and within laugher sex. Results suggest that a higher positive arousal in vocalizers is associated with a greater likelihood of laughing with the mouth open, and that listeners hearing this laughter experience more positive emotion than for closed-mouth versions.

5aSC12. The role of perceptual learning in emotional vocalizations. D. A. Sauter (Max Planck Inst. for Psycholinguistics, P.O. Box 310, 6500 AH Nijmegen, The Netherlands, disa.sauter@mpi.nl), O. A. Crasborn (Radboud Univ. Nijmegen, NL-6500 HD Nijmegen, The Netherlands), and D. B. M. Haun (Max Planck Inst. for Evolutionary Anthropology, D-04103 Leipzig, Germany)

Vocalizations like screams and laughs are used to communicate affective states, but what acoustic cues in these signals require vocal learning and which ones are innate? This study investigated the role of auditory learning in the production of non-verbal emotional vocalizations by examining the vocalizations produced by people born deaf. Recordings were made of congenitally deaf Dutch individuals and matched hearing controls, who produced non-verbal vocalizations of a range of negative and positive emotions. Perception was examined in a forced-choice task with hearing Dutch listeners ($n = 25$), and judgments were analyzed together with acoustic cues, including envelope, pitch, and spectral measures. Considerable variability was found across emotions and acoustic cues, and the two types of information were related for a sub-set of the emotion categories. These results suggest that auditory learning is less important for the acquisition of certain types of vocalizations than for others (particularly amusement and relief), and they also point to a less central role for auditory learning of some acoustic features in affective non-verbal vocalizations. The implications of these results for models of vocal emotional communication are discussed.

5aSC13. Jitter, shimmer, physiological and behavioral responses to emotional auditory stimuli. Shanna White, Dunn Aericka, Boland Molly, and Yonovitz Al (Dept. of Communicative Sci. and Disord., Univ. of Montana, Missoula, MT 59812, al.yonovitz@umontana.edu)

Analysis of the voice as a response to emotional auditory stimuli can be applied to forensics, diagnosis of psychopathological states, digital speech processing, and the theoretical bases of speech production. This experiment used 12 subjects. Each subject heard 60 emotive auditory stimuli. These stimuli were taken from the International Affective Digitized Sounds. The paradigm consisted of 10 s of pre-baseline, 10 s where upon the auditory stimulus was presented, and 10 s of post-baseline. Two seconds prior to the initiation of the auditory stimulus, subjects were informed via a message on a screen to phonate "ah" and to sustain the phonation until an emotive auditory stimulus stopped. Measures of heart rate and skin conductance were obtained for each 10 s interval and were compared to behavioral self-report of valence and arousal. The results of this study indicated that physiological responses (heart rate and skin conductance) were correlated with behavioral self-report. In addition, dependent upon whether the stimuli were pleasant, neutral, or unpleasant (valence) and high or low arousal, differential jitter and shimmer values were obtained. Jitter and shimmer values were different for pleasant, neutral, and unpleasant stimuli.

5aSC14. Tone recognition of the two checked tones in Taiwanese. Grace Kuo (Phonet. Lab., Dept. of Linguist., UCLA, Los Angeles, CA 90095, gracekuo@humnet.ucla.edu)

The present study uses the gating paradigm to investigate the processing of the checked tones in Taiwanese. Taiwanese checked tones are the tones in syllables ending in stops /p, t, k, ?/. In terms of tone value, there are two