

## Impaired Responses to Time-shifting Perturbations in Adults Who Stutter during Rhythmic and Non-Rhythmic Speech

S. Frankford, S. Cai, F. Guenther

Persistent developmental stuttering affects 1% of the population, yet its etiology has remained elusive. Prior studies have shown that compensatory responses to altered auditory feedback are reduced in adults who stutter (AWS) compared to adults with normal speech (ANS). Additionally, speech contexts like choral reading, singing, or metronome-paced (rhythmic) speech have been shown to reduce disfluencies in AWS. Here we tested whether compensatory responses to feedback alterations in AWS are similarly reduced in fluency-inducing speech conditions compared to normal conditions. Ten AWS and 16 ANS read sentences in both rhythmic (fluency-inducing) and non-rhythmic conditions while their auditory feedback was either unmodified or perturbed by artificially lengthening the production of the phoneme /s/ early in the utterance. While both groups showed significant compensatory timing adjustments after the perturbation, AWS demonstrated weaker compensatory responses in both rhythmic and non-rhythmic conditions compared to ANS. In addition, ANS showed greater compensation in the rhythmic condition than in the non-rhythmic condition and additional compensation during later syllables in the utterance, while AWS did not. These results demonstrate that even in the fluency-inducing rhythmic condition, AWS still show reduced responses to time-modulated auditory feedback. [Supported by NIH grant R01 DC007683.]