

**Auditory feedback control in adults who stutter during
metronome-paced speech I. Timing Perturbation**

Frankford et al.

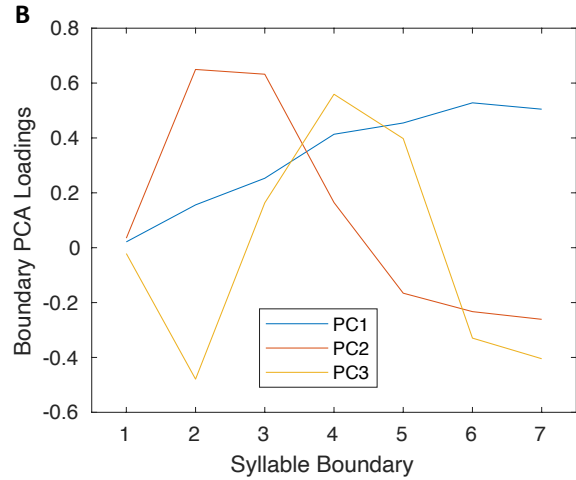
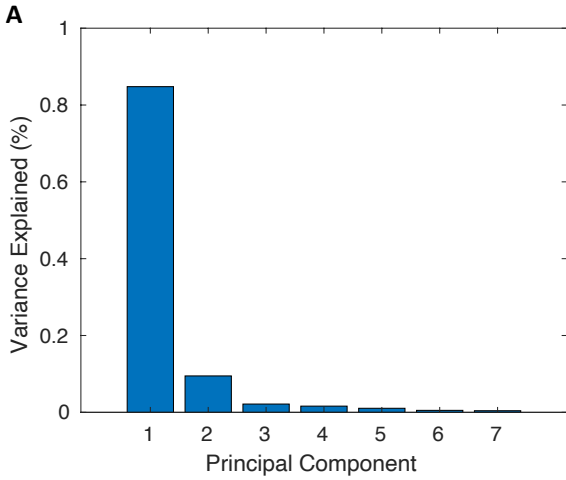
Supplementary Materials

Measure	ANS		AWS	
	Normal (M/F)	Paced (M/F)	Normal (M/F)	Paced (M/F)
Speaking rate (ISD/sec)	4.1 ± 0.2 / 3.9 ± 0.3	3.7 ± 0.1 / 3.6 ± 0.2	3.9 ± 0.2 / 3.9 ± 0.1	3.7 ± 0.1 / 3.6 ± 0.1
CV-ISD	0.27 ± 0.06 / 0.29 ± 0.03	0.09 ± 0.02 / 0.11 ± 0.03	0.26 ± 0.05 / 0.25 ± 0.05	0.10 ± 0.02 / 0.09 ± 0.02

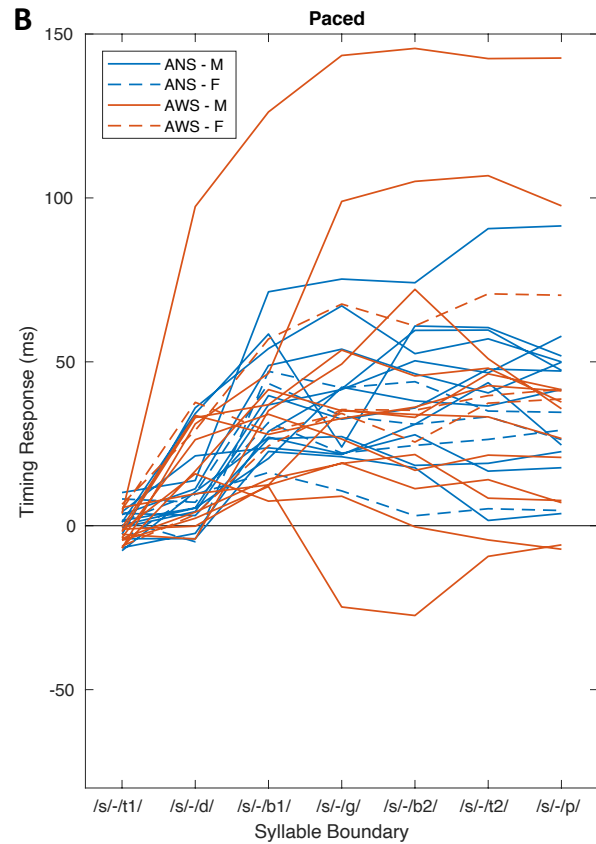
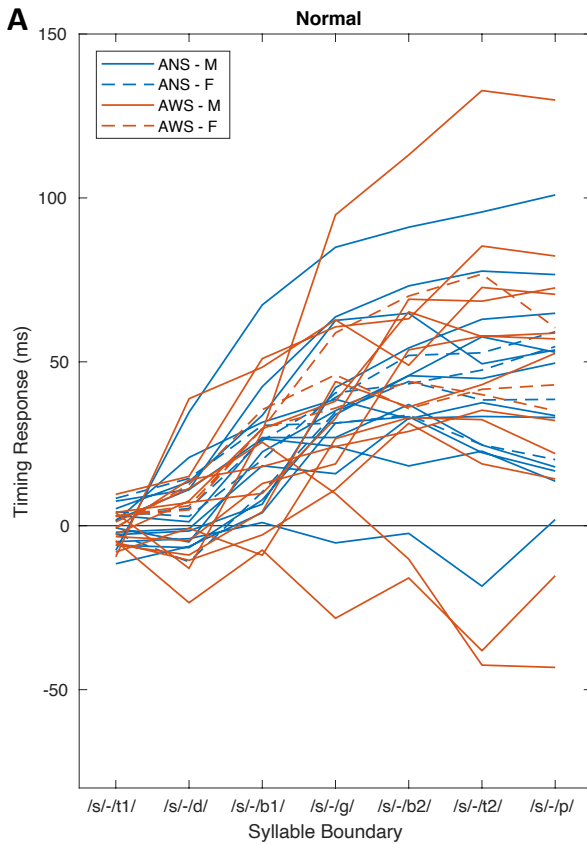
Supplementary Table 1. Descriptive statistics for speaking rate and CV-ISD, disaggregated by gender. Error estimates indicate standard deviations. ANS = adults who do not stutter, AWS = adults who stutter, M = male, F = female, ISD = intersyllable duration, CV-ISD = coefficient of variation of the ISD within a trial.

Predictor	<i>df</i>	<i>F</i>	<i>p</i>
Group	3, 24	0.44	0.73
Perturbation Magnitude	3, 24	2.07	0.13
Mean Speaking Rate	3, 24	0.89	0.46
Disfluency Rate	3, 24	5.22	0.006**
Condition	3, 24	5.88	0.004**
Group x Condition	3, 24	0.79	0.51
Disfluency Rate x Condition	3, 24	3.48	0.03*

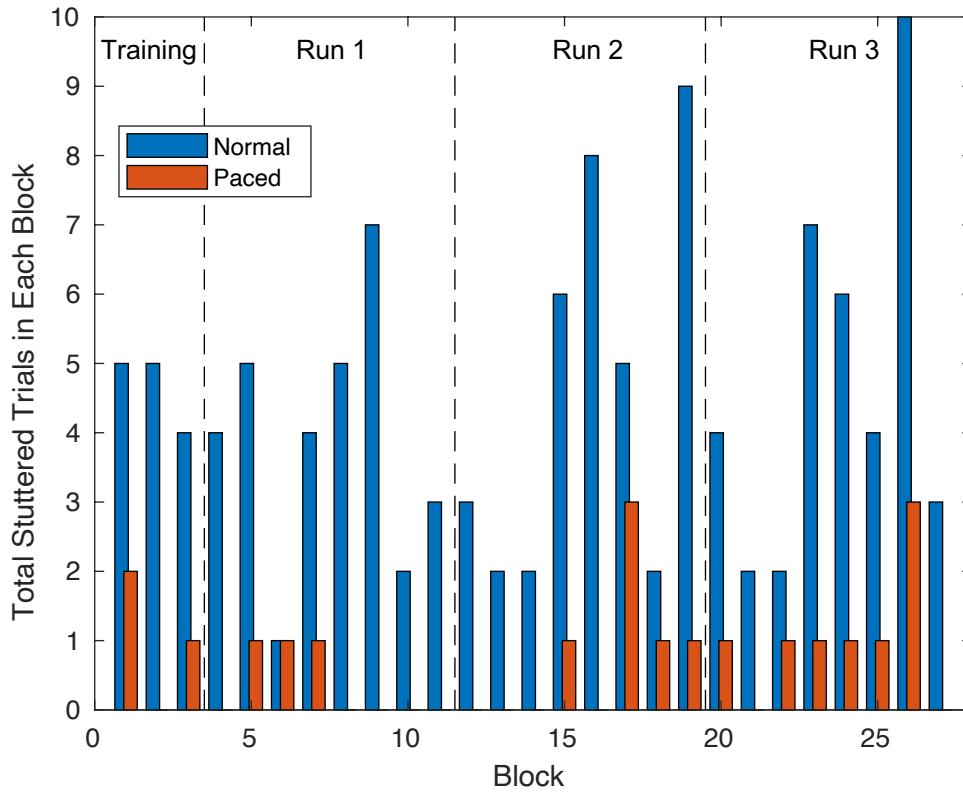
Supplementary Table 2. Results from an alternative model for predicting timing perturbation response magnitudes, substituting Disfluency Rate for SSI-mod. *df* = degrees of freedom, * = $p < 0.05$, ** = $p < 0.01$



Supplementary Figure 1. Details of the principal component analysis. A) The percent of the variance in the data explained by each principal component. B) The relative amount that each syllable boundary loaded onto the first three principal components. PC = principal component, PCA = principal component analysis.



Supplementary Figure 2. Cumulative timing delay between the perturbed and non-perturbed conditions for individual participants during A) normal and B) metronome-paced speaking conditions. Syllable boundary labels correspond with Table 2 and Figure 4 in the main text. ANS = adults who do not stutter, AWS = adults who stutter, M = male, F = female.



Supplementary Figure 3. Total stuttered trials for AWS across the duration of the experiment grouped by blocks of 8 trials. There were no clear patterns of reduced stuttering indicative of the adaptation effect in either condition.