Sensorimotor adaptation to gradual perturbations in the fundamental frequency of auditory feedback in Parkinson's disease

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Individuals with Parkinson's disease (PD) have been previously shown to display reduced sensorimotor adaptation to manipulation of their auditory feedback during speech. However, this effect has only been shown in relation to acoustic parameters related to articulation (vowel formants), despite the well-documented changes in voice in PD. Here we examine adaptive responses to a gradual auditory perturbation of fundamental frequency (F0) over the course of 160 trials. Results show qualitative differences between individuals with PD and age-matched controls: control speakers demonstrate clear compensations to perturbations whereas the response of speakers with PD is reduced. However on an individual subject level, PD speakers have highly variable responses, including small compensations, no response, or even 'following' responses in the direction of the perturbation. Adaptive responses will be analyzed between the groups, and also as a function of PD severity via clinical ratings, F0 acuity just-noticeable-differences, and acoustic measurements of F0 contours during typical speech production.