

“What can auditory-motor adaptation to formants perturbations teach us about the representations that underlie speech production?”

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Twenty years have passed since the seminal work on adaptation to formants perturbations in whispered speech by Houde & Jordan (1998). This work provided first evidences that speakers change the formant values of their vowels to compensate for a specific real-time alteration of formants in their auditory feedback. The changes remained when the auditory feedback was masked with a noise, suggesting some adaptation process. Compensation and adaptation transferred to some extent to the same vowel in other CVC contexts and to other vowels produced with a masking noise. Since then, several studies have reproduced and extended these results using different procedures and setups; and to address various research topics. In this framework, and at the interface with movement sciences, our work develops the idea already introduced by Houde & Jordan (1998) that transfer of adaptation can “provide a direct probe of the putative hierarchical, segmental control of speech production”. This idea echoes the study of adaptation or learning generalization in arm movement researches, conceived as a “Behavioral window” towards the brain mechanisms that control movement (Shadmehr, 2004). In this talk, I will give a sketch of previous work on formant adaptation with a more specific interest for transfer of adaptation. I will then present the experimental studies that we ran to empirically address the implication of different linguistic units in speech motor control, via the analysis of adaptation transfer.