Sensorimotor Learning and Transfer During English and French Sentence Production in Bilinguals

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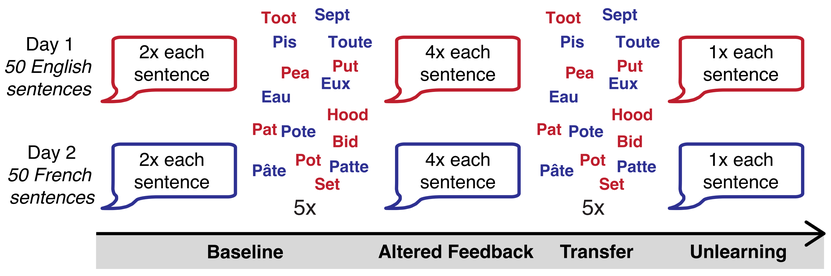
Introduction

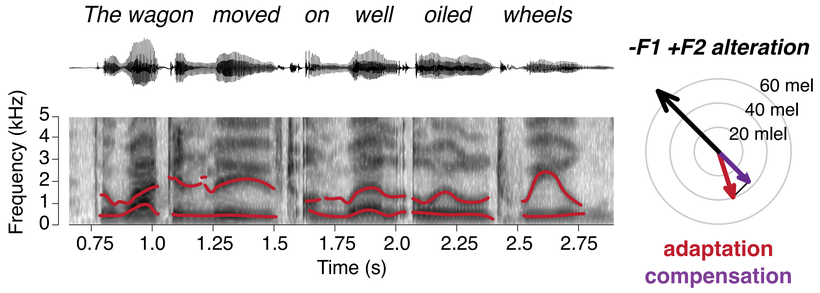
We recently demonstrated that sensorimotor adaptation can be observed during sentence-level speech (Lametti et al., 2018). Participants produced fifty different sentences and the formant structure of all vowel sounds was altered. Robust feedforward compensation in sentence production was observed

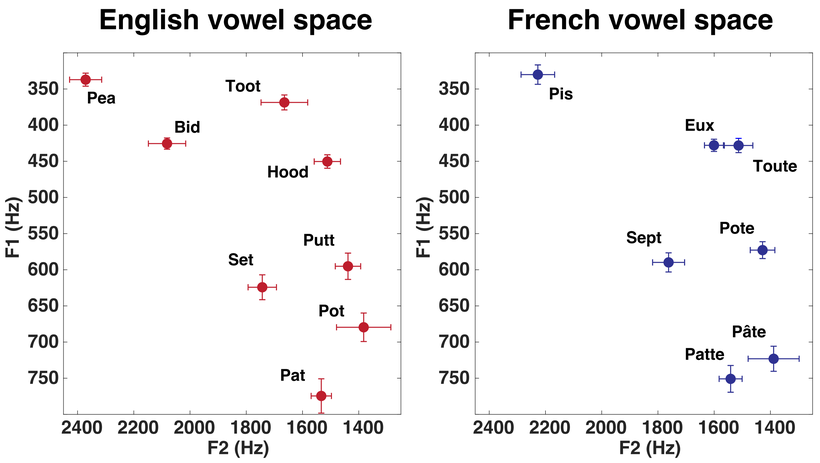
Here we present pilot work in which we use the rich linguistic environment afforded by sentence production to examine the relationship between language and sensorimotor control in speech. In a group of L1 French / L2 English bilinguals, we test whether sensorimotor adaptation acquired during French sentence production can be applied to vowel production in English, and vice versa.

Methods

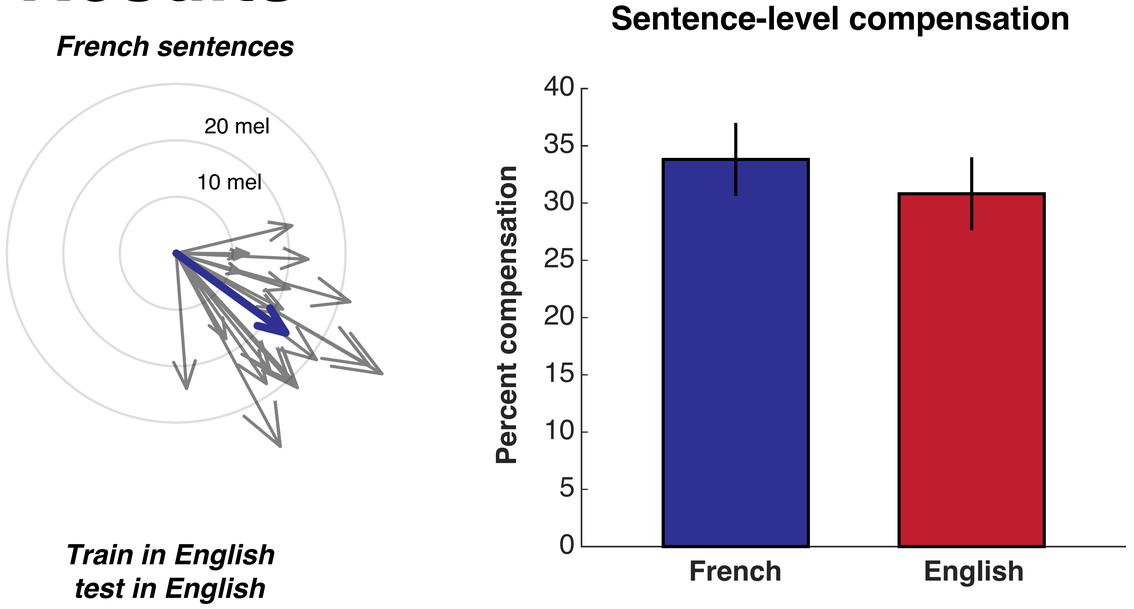
Twenty French (L1) English (L2, moderate to high proficiency) bilinguals were tested in two sessions seperatared by a week (order counterbalanced). In each session, participants experienced altered auditory feedback during the production of sentences in one language (either French or English). We examined the amount of compensation and the amount of transfer to isolated words produced in each language.







Results



Sensorimotor maps acquired in one language are readily transferred to a second language.

Discussion

These early results suggest that, in speakers of more than one language, newly acquired sensorimotor transformations in speech may not be language specific, but rather are applied to vowels across language contexts.

Although language does not appear to constrain sensorimotor learning in speech, it remains unclear whether speakers can use linguistic context to acquire multiple sensorimotor transformations simultaneously.

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