

# Speech Motor Adaptation Using Facial Skin Stretch

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## Abstract

*Our goal was to document somatosensory effects in speech motor adaptation that are related to facial skin deformation. The study assessed the role of somatosensory information in speech learning by focusing on the deformation of the facial skin and the motion of the lip. We found that facial skin*

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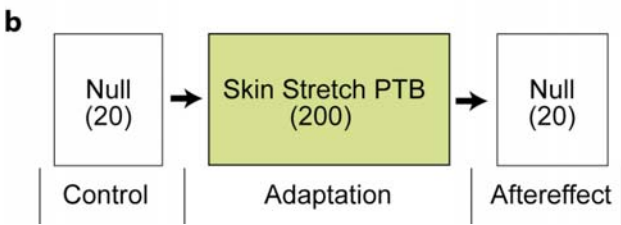
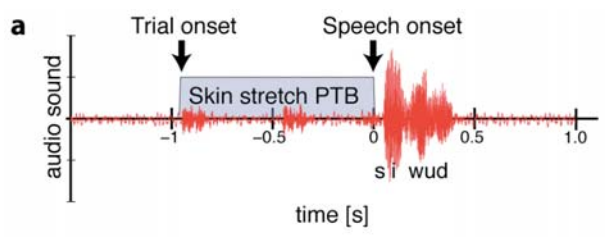
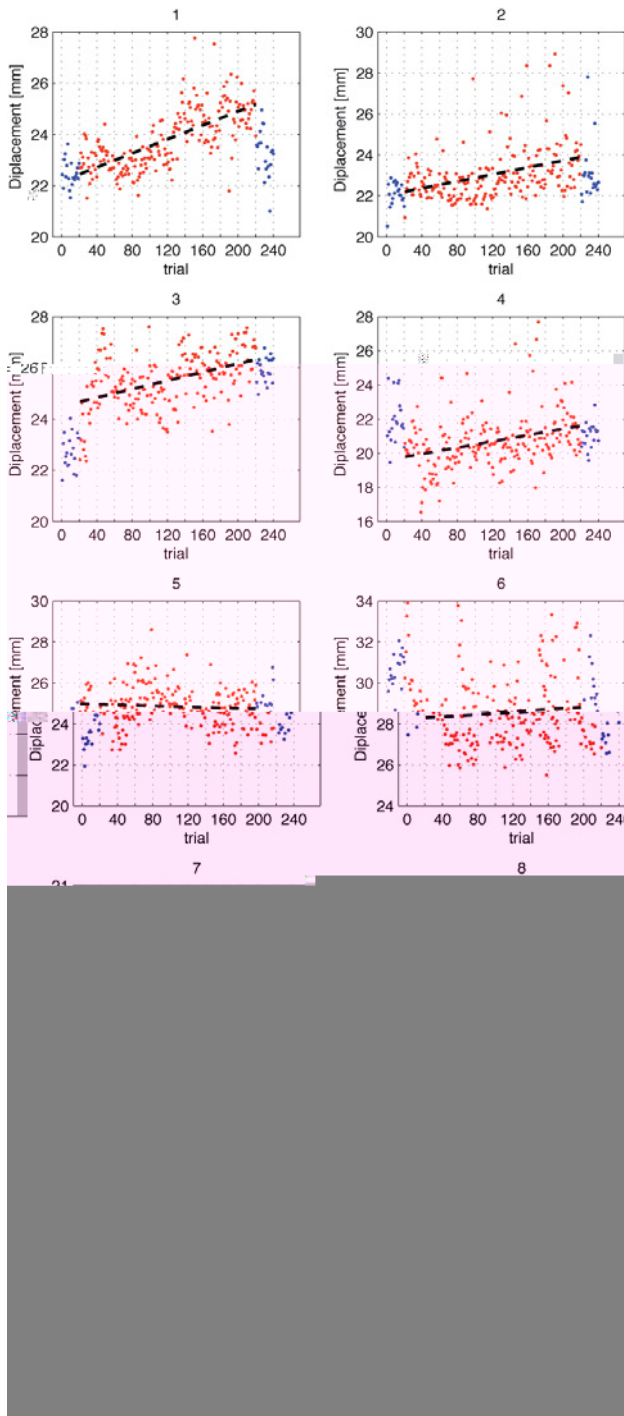


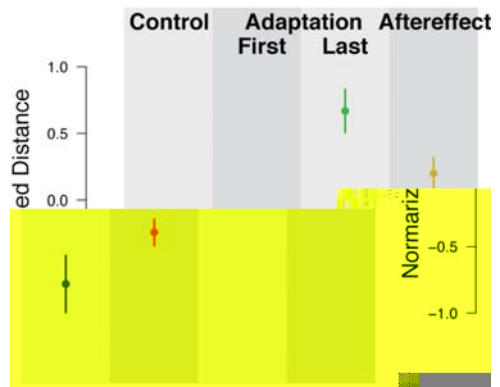
Figure 2 (a) Temporal sequence of one perturbed trial in the adaptation phase (b) Block diagram showing sequence of motor adaptation session

### 3 Results

F 3 o n n d n b n  
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b . b db d n n  
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n d nd d of  
fo nd d d d d  
n n no nd n n o b .  
S n b onfo db fo  
on of o onfo / / ond,  
o n o d o n fo ,  
n d n n . n ond, o  
b d d n on d, o  
db n db fo , f , d o  
, b o n w . d of  
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n on o , n o on  
fo on o d nd fo on ff  
o n n fo .  
o nb nd d o n o  
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n d fo 20 on n  
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b o d n .  
o d n n fo ond on n  
on o , l nd bo of d on nd  
n ond on f ff . ob n  
o n n F o  
nd n d . b o  
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f , dff b on ond on  
( N < 0.01). In o - o  
on on on, b dff n  
b n on o nd f ff ond on ( <



F 3 Maximum vertical aperture between the upper and lower lips across the trials in all subjects.



F Maximum vertical aperture between the upper and lower lips in initial null control phase, 1<sup>st</sup> and the last blocks of the adaptation phase and in the null condition aftereffect phase. The error bars give standard error across the subjects.

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b n ond on n n b on  
n d, n o d, nd d  
fo o n o of o d nd of  
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d o on. o d fo  
d o o n n ff n n  
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nd n o o n n o n n .

### 4 Discussion

The function of the dorsal stream is to provide a phonological representation of the speech sound. This is achieved through the dorsal pathway, which involves the dorsal premotor cortex and the dorsal superior temporal gyrus. The dorsal stream is primarily involved in the production of speech sounds, particularly in the context of phonological processing.

In contrast, the ventral stream is primarily involved in the comprehension of speech sounds. This is achieved through the ventral pathway, which involves the ventral premotor cortex and the ventral superior temporal gyrus. The ventral stream is primarily involved in the comprehension of speech sounds, particularly in the context of phonological processing.

The dorsal stream is primarily involved in the production of speech sounds, particularly in the context of phonological processing. The ventral stream is primarily involved in the comprehension of speech sounds, particularly in the context of phonological processing.

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### 5 Acknowledgements

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### References

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