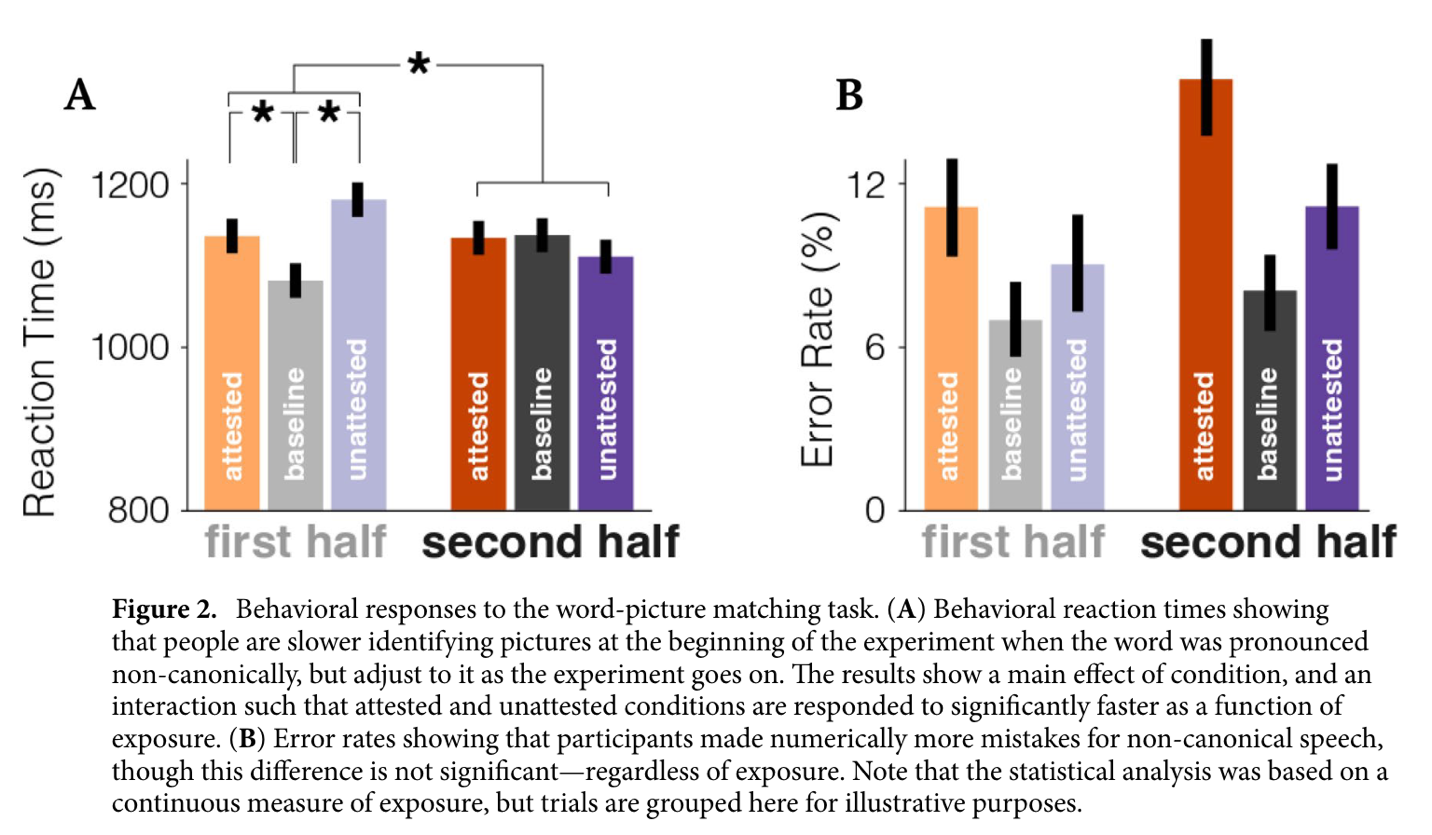
**Recent work that I might want to cite:**

1) Blanco-Elorrieta, E., Gwilliams, L., Marantz, A. *et al.* Adaptation to mis-pronounced speech: evidence for a prefrontal-cortex repair mechanism. *Sci Rep* **11,**97 (2021). https://doi.org/10.1038/s41598-020-79640-0

* Neurobiological basis of attunment
* MEG
* 24 native English participants listened to words spoken by a “canonical” American speaker and 2 non‑canonical speakers, and performed a word‑picture matching task
* Non‑canonical speech was created by including systematic phonological substitutions within the word (e.g. [s] → [sh]).
* Activity in the auditory cortex (superior temporal gyrus) was greater in response to substituted phonemes, and, critically, this was not attenuated by exposure.
* By contrast, prefrontal regions showed an interaction between the presence of a substitution and the amount of exposure: activity decreased for canonical speech over time, whereas responses to non‑canonical speech remained consistently elevated.
* Grainger causality analyses further revealed that prefrontal responses serve to modulate activity in auditory regions, suggesting the recruitment of top‑down processing to decode non‑canonical pronunciations. In sum, our results suggest that the behavioural deficit in processing mispronounced phonemes may be due to a disruption to the typical exchange of information between the prefrontal and auditory cortices as observed for canonical speech



* But note that the stimuli here include a full-scale “phoneme switch” rather than acoustic/phonetic shifts. So it’s entirely possible that the task biased the regions that can be activated.

2) Guediche, S., Holt, L. L., Laurent, P., Lim, S. J., & Fiez, J. A. (2015). Evidence for Cerebellar Contributions to Adaptive Plasticity in Speech Perception. *Cerebral cortex (New York, N.Y. : 1991)*, *25*(7), 1867–1877. https://doi.org/10.1093/cercor/bht428

* Any involvement of cerebrum?
* The fMRI study investigated whether adaptation in speech perception also involves the cerebellum. Acoustic stimuli were distorted using a vocoding plus spectral-shift manipulation and presented in a word recognition task.
* the right Crus I region of the cerebellum in adaptive changes in speech perception.
* The results provided evidence of a functional network between the cerebellum and language-related regions in the temporal and parietal lobes of the cerebral cortex.
* “Since adaptive changes in speech perception generalize to new items, it is thought that the locus of adaptive change must be relatively early within the speech processing pathway”.
* The temporal area that emerged in our functional correlation analysis may be a target area that represents sensory prediction error signals. This interpretation is based on neurobiological models of speech perception, which typically posit engagement of primary auditory cortex and a belt of surrounding auditory association areas located along the superior temporal gyrus in prelexical speech processing (Rauschecker and Tian 2000; Rauschecker and Scott 2009;Okada et al. 2010;Peelle et al.2010). Consistent with this interpretation, recent studies have shown modulation of activity in the superior temporal cortex as a function of predictive contexts (e.g., Davis 2011;Sohogluet al. 2012;Wild et al. 2012) as well as the predictability of a sensory consequence associated with motor planning during speech production (Chang et al. 2013)

Timeline

Description automatically generated with medium confidence

Chart

Description automatically generated with low confidence