

**Influence of linguistic and paralinguistic speech
features on speech-in-noise perception: a MEG study**

Master's Thesis

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Abstract

In a cocktail party setup, auditory cortical activity specifically entrains to the amplitude modulations of the speaker's voice in the δ (<4-Hz) and θ (4–8-Hz) frequency bands. However, little is known about how linguistic (i.e. foreign vs. native language) and paralinguistic (i.e. familiar vs. unfamiliar speaker) speech features modulate this low-frequency speech entrainment.

Using magnetoencephalography (MEG), this study investigates speech entrainment sensitivity to these two features. We recorded neuromagnetic signals in 15 healthy right-handed adults who listened to a French speaker's voice in one noiseless and four speech-in-noise (SiN) conditions: native language and unknown foreign language backgrounds for the language intelligibility evaluation; familiar (the subject's partner) and unfamiliar voices, as target-speakers, in talker familiarity assessment.

Speech entrainment was higher in native- than in foreign-language background by on average ~35% in δ and θ bands alike ($p < 0.05$). No advantage of talker familiarity was found in both frequency bands ($p > 0.07$).

These findings suggest that, in SiN conditions, speech entrainment is sensitive to the linguistic properties of the interfering background noise, while there is no clear impact of paralinguistic speech features.