Temporal Dynamics in Speech & Hearing
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Temporal relationship between a syllable /ba/ and the elicited ABR for NH adults

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1. Background

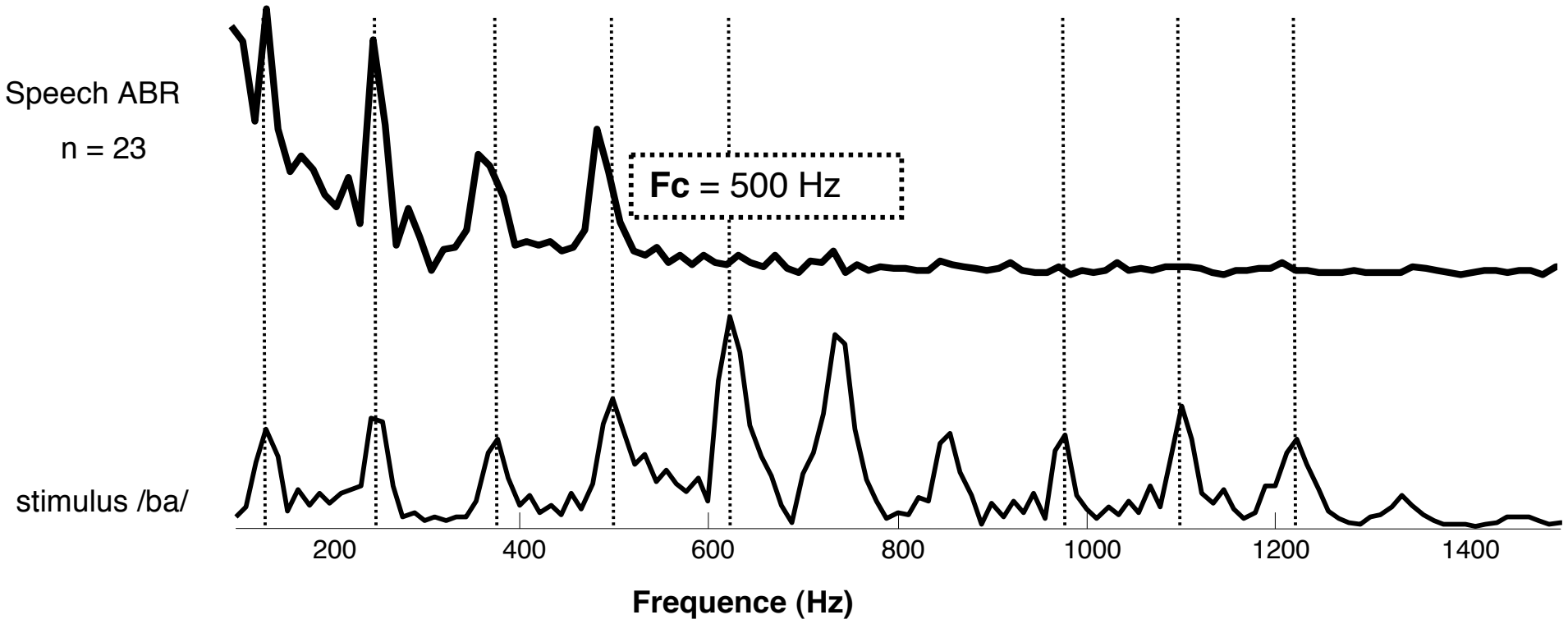
Hyp:

- Speech ABR = Reflect of **temporal coding** (*phase-locking*) of speech in the **brainstem**.
- *Physiological* temporal coding has links with *psychoacoustical* temporal acuity.
- > Potential useful clinical tool for cochlear implants fitting

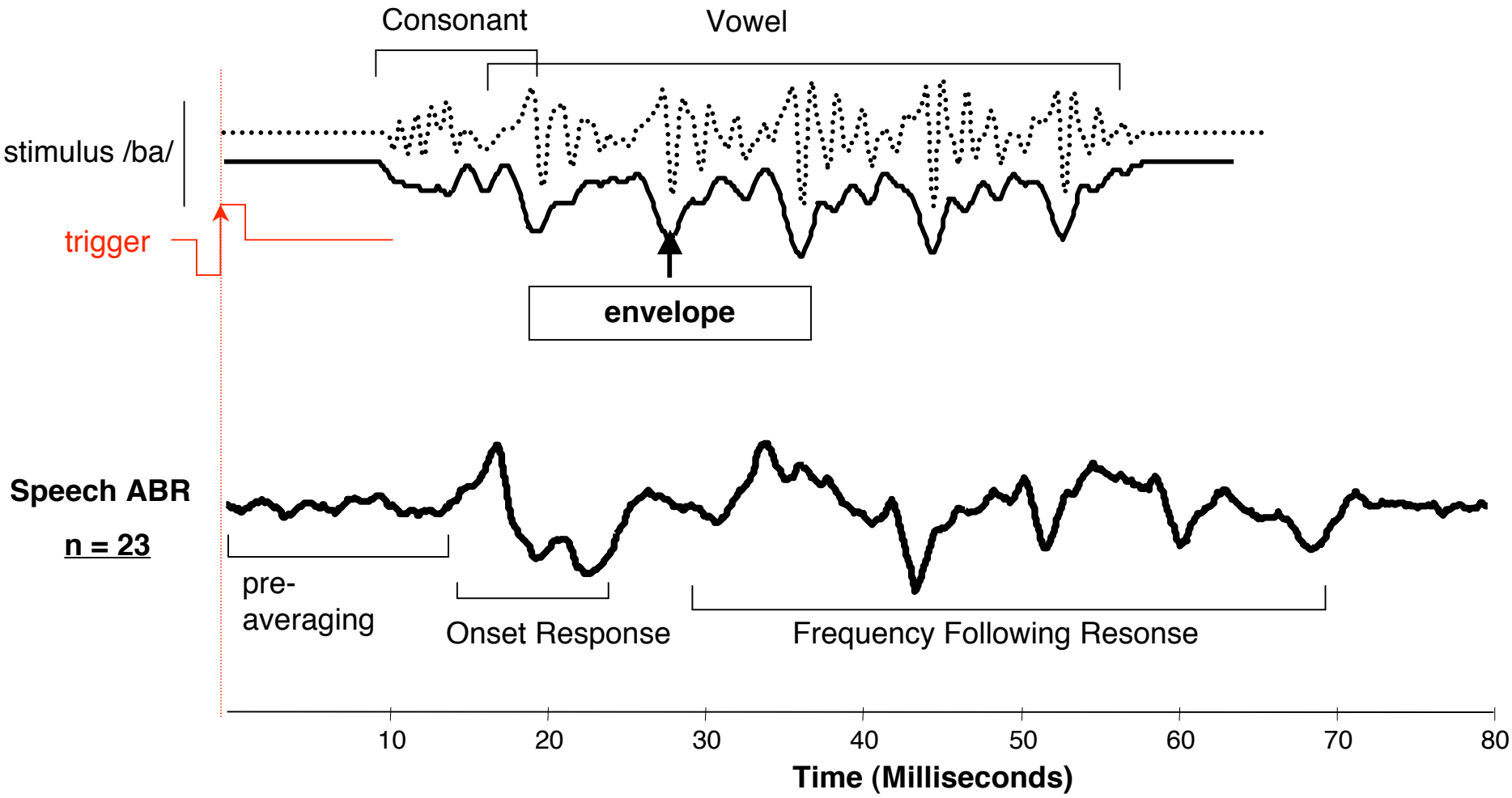
2. Results

- Speech – ABR has a **cutoff** frequency at **500 Hz**
  - 500 Hz has been reported as the limit of temporal acuity & limit of phase locking in Inferior Colliculus.
- Speech – ABR **mimics** the **envelope** of the /ba/ very faithfully with a delay of **15.6 ms**.
- 2 different latencies measured for OR and FFR.
- Speech ABR is dependant of **pitch**.

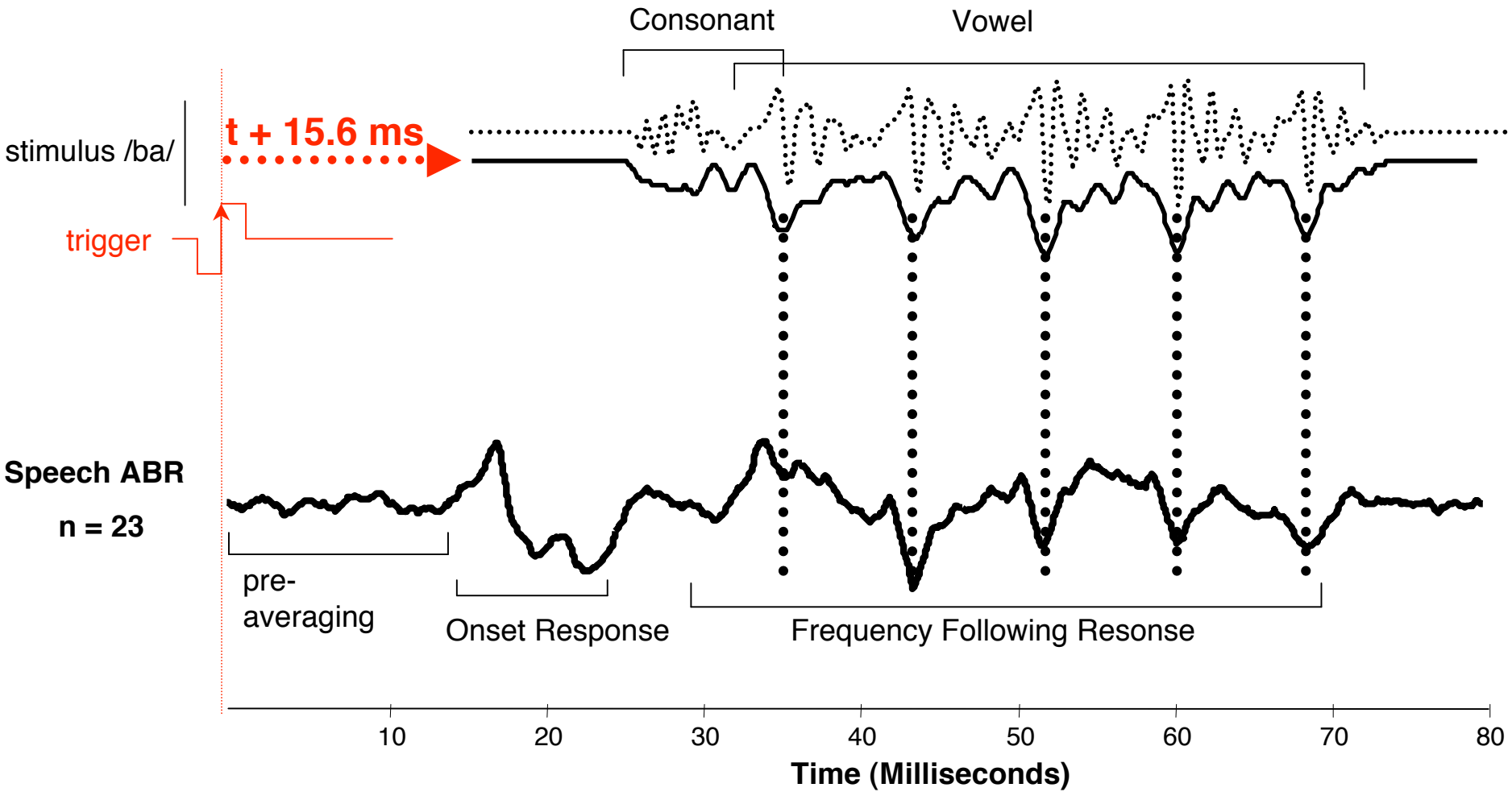
Spectra /ba/ & Speech ABR



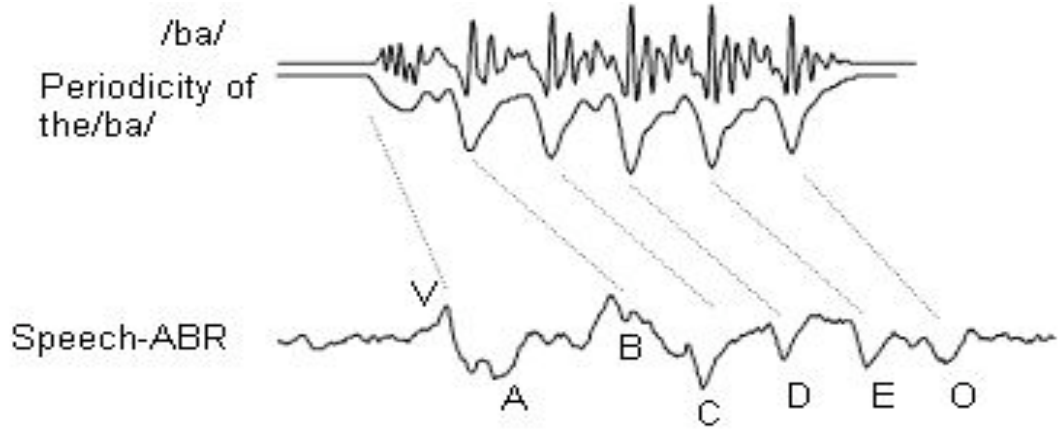
/ba/ => Speech ABR

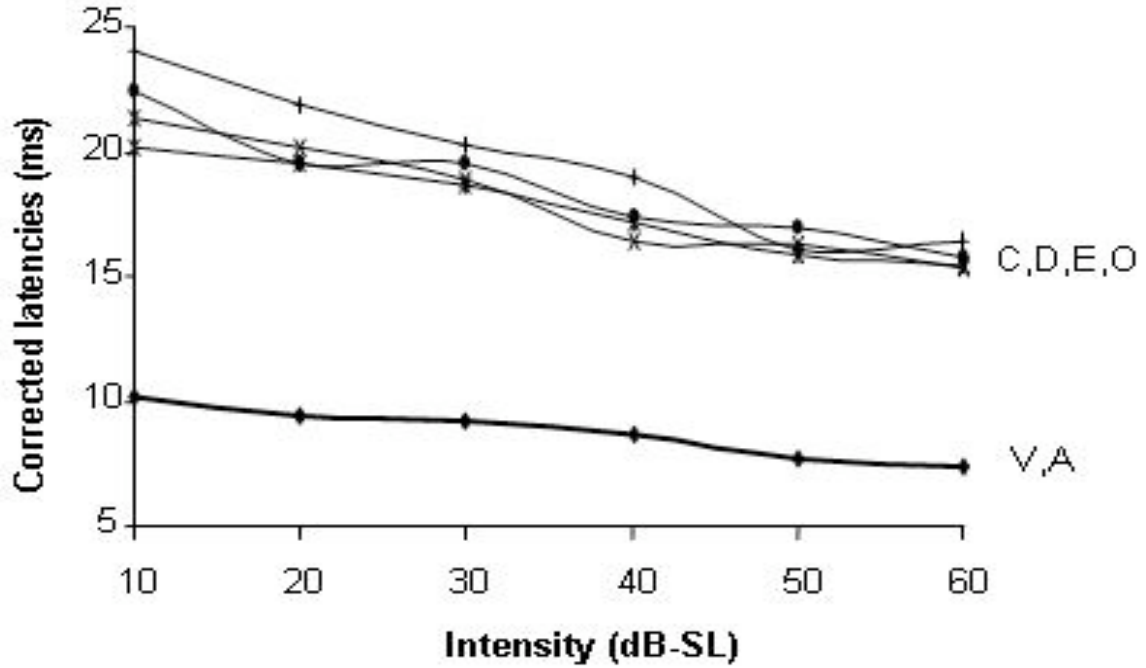


Speech ABR mimics /ba/ periodicity, with a latency of 15.6ms



Effect of stimulus intensity on Speech ABR latencies

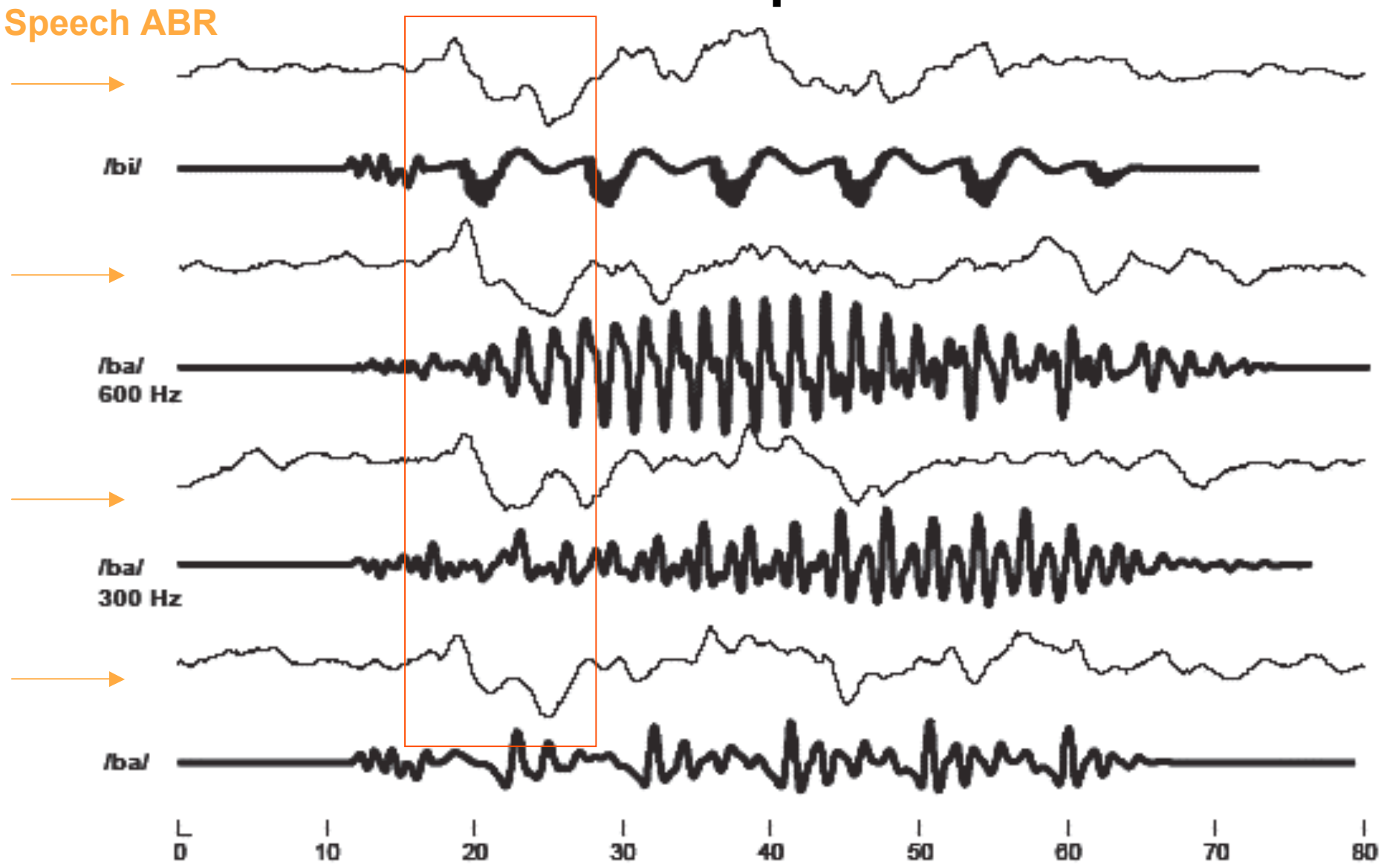




2 different corrected latencies for

OR & **FFR**

Effect of pitch

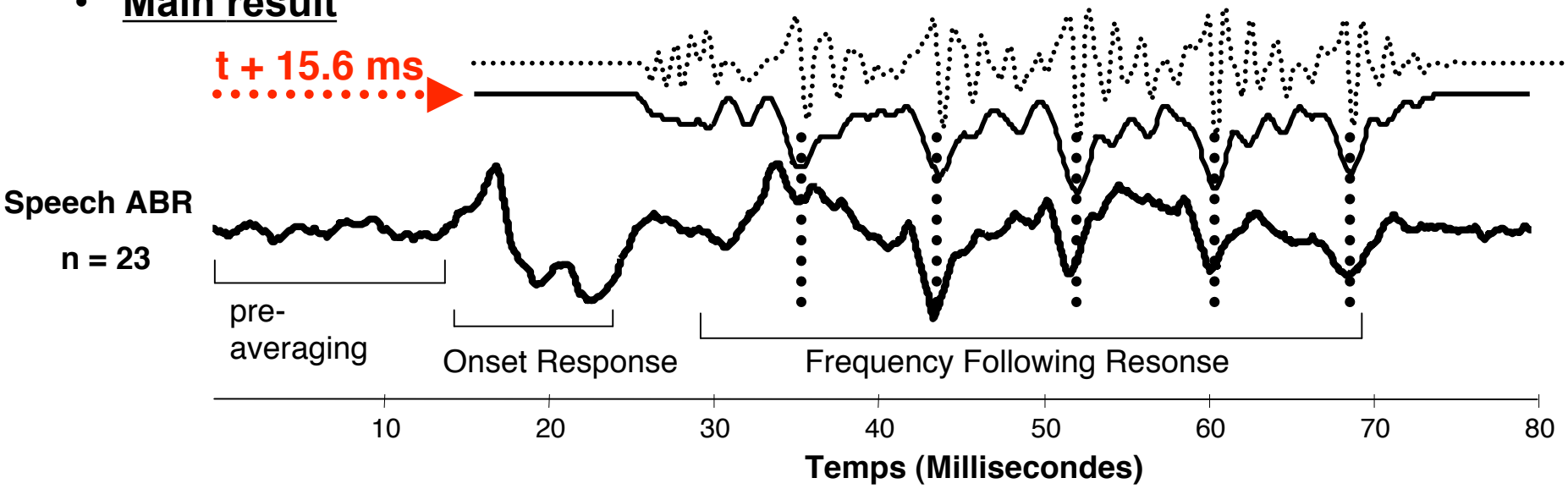


Discussion:

- Useful Speech ABR cues:
  - Fc
  - Intercorrelation coefficient and latency
  - Advanced Signal Processing tool?
- Effect of hearing loss?
- Electrophysiology & Psychoacoustics ?
  - (Speech ABR vs. temporal acuity)

Thank you!

- **Main result**



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