**The influence of vowel identity, vowel production variability and consonant environment on envelope following responses**

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**Objectives:** To evaluate (i) the influence of vowel identity and consonant context on vowel-evoked envelope following response (EFR) amplitude, and (ii) the effect of variations in repeated productions on EFR amplitude.

**Background:** The EFR is a useful tool for studying brainstem processing of speech in natural consonant-vowel productions. Previous work, however, demonstrates that amplitude of EFRs is highly variable across vowels.

**Methods:** In Experiment 1, EFRs were recorded in response to seven vowels (/ij/, /ɪ/, /ej/, /ɛ/, /æ/, /u/ and /ɔ/) embedded in each of four consonant contexts (/hVd/, /sVt/, /zVf/, and /ʒVv/). In Experiment 2, EFRs were recorded in response to four different variants of one of four possible English vowels (/ij/, /ɛ/, /æ/, or /ɔ/), embedded in the same CVC environments used in Experiment 1. EFRs were recorded from 16 young adults with normal hearing per stimulus using a single-channel electrode montage between the vertex and nape of the neck while stimuli were presented monaurally.

**Results:** In Experiment 1, vowel identity had a significant effect on EFR amplitude. The consonant context surrounding each vowel stimulus had no statistically significant effect on EFR amplitude. Experiment 2 had the same conclusions as well as finding significant, albeit small, differences in EFR amplitude between some vowel variants.

**Conclusions:** Based on a comprehensive set of naturally produced vowel samples in carefully controlled consonant contexts, the present study provides additional evidence for the sensitivity of EFRs to vowel identity and variations in vowel production. The surrounding consonant context has no measurable impact on EFRs, irrespective of vowel identity and variant. The sensitivity of EFRs to nuances in vowel acoustics emphasizes the need for adequate control and evaluation of stimuli proposed for clinical and research purposes.