

The effect of Cued Speech (CS) perception on auditory processing in typically hearing adults

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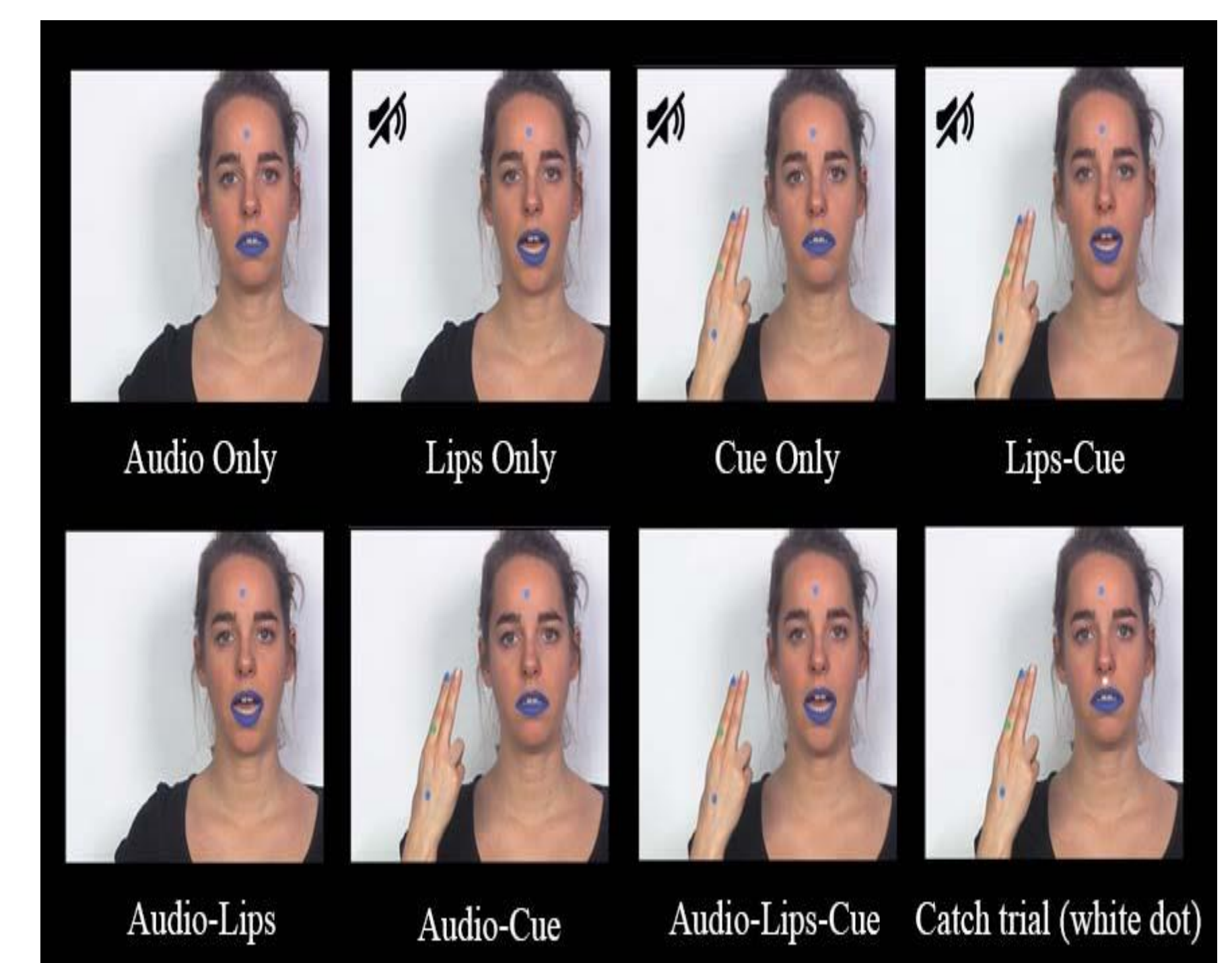
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Introduction

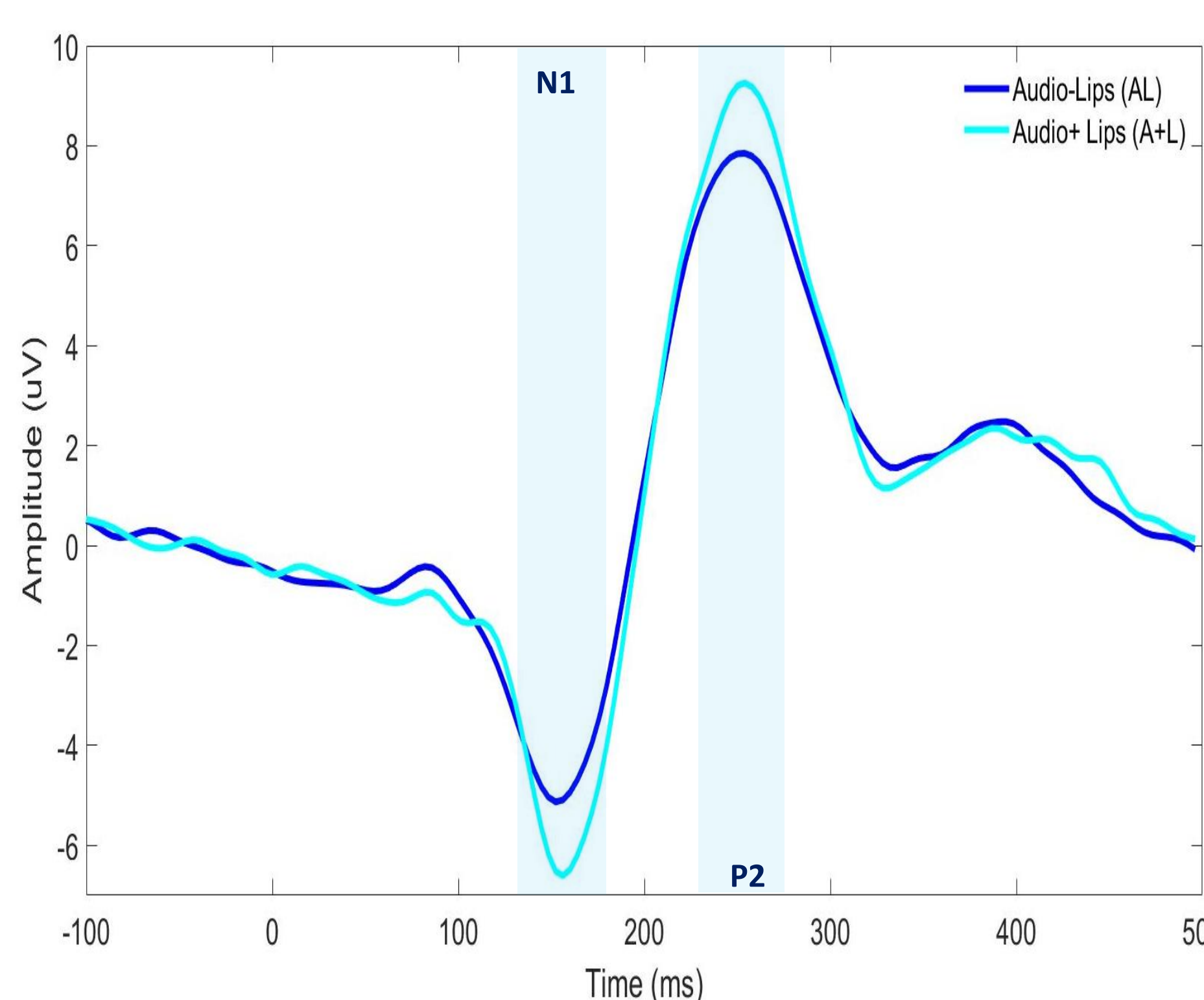
- Visual speech cues facilitates auditory processing in audiovisual speech perception (Van Wassenhove et. al 2005).
- The Cued Speech (CS) is a visual communication system that complements lipreading with manual gestures.
- Manual gestures are presented in advance to lipreading providing predictive information to speech processing.
- We used an Event Related Potential (ERP) paradigm to show the effect of CS perception on auditory processing with typically hearing (TH) adults.

Methods

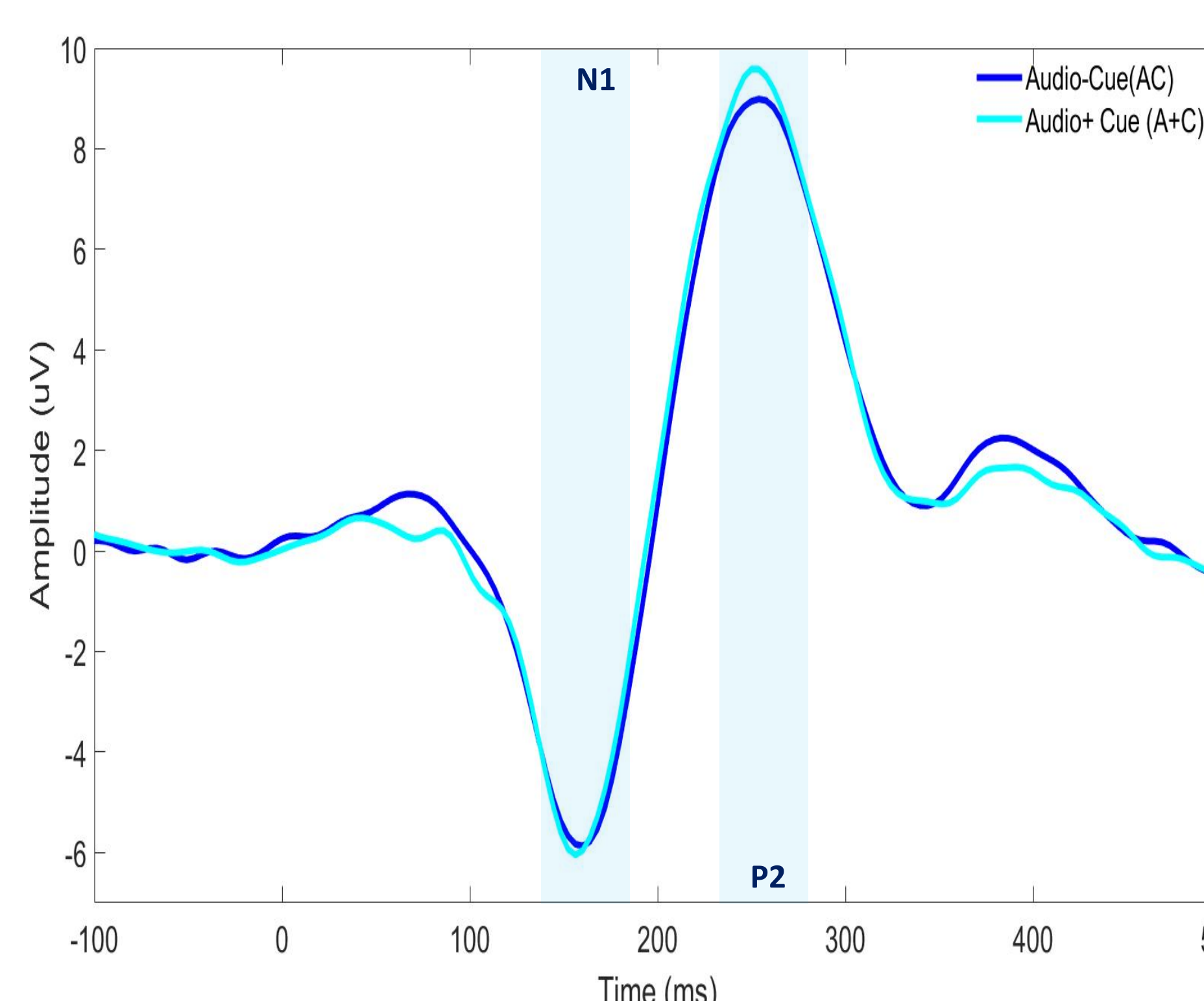
- **Participants:** 30 TH adults (17 F, 13 M, 17-35 years), native French speaker, with no hearing impairment and naive towards the CS were recruited
- **Stimuli and conditions:** videotape of a person producing [pa],[ta],[ka]
 - Unimodal: Audio Only (A); Lips Only (L); Cue Only (C); Lips-Cue (LC)
 - Bimodal: Audio-Lips (AL); Audio-Cue (AC); Audio-Lips-Cue (ALC)
 - Catch trial: Keyboard response to white dot or bip presentation
- Peak amplitude of the auditory N1 and P2 were calculated at Cz.
- We compared bimodal conditions to the sum of unimodal conditions (e.g., Audio-Lips versus Audio+ Lips).



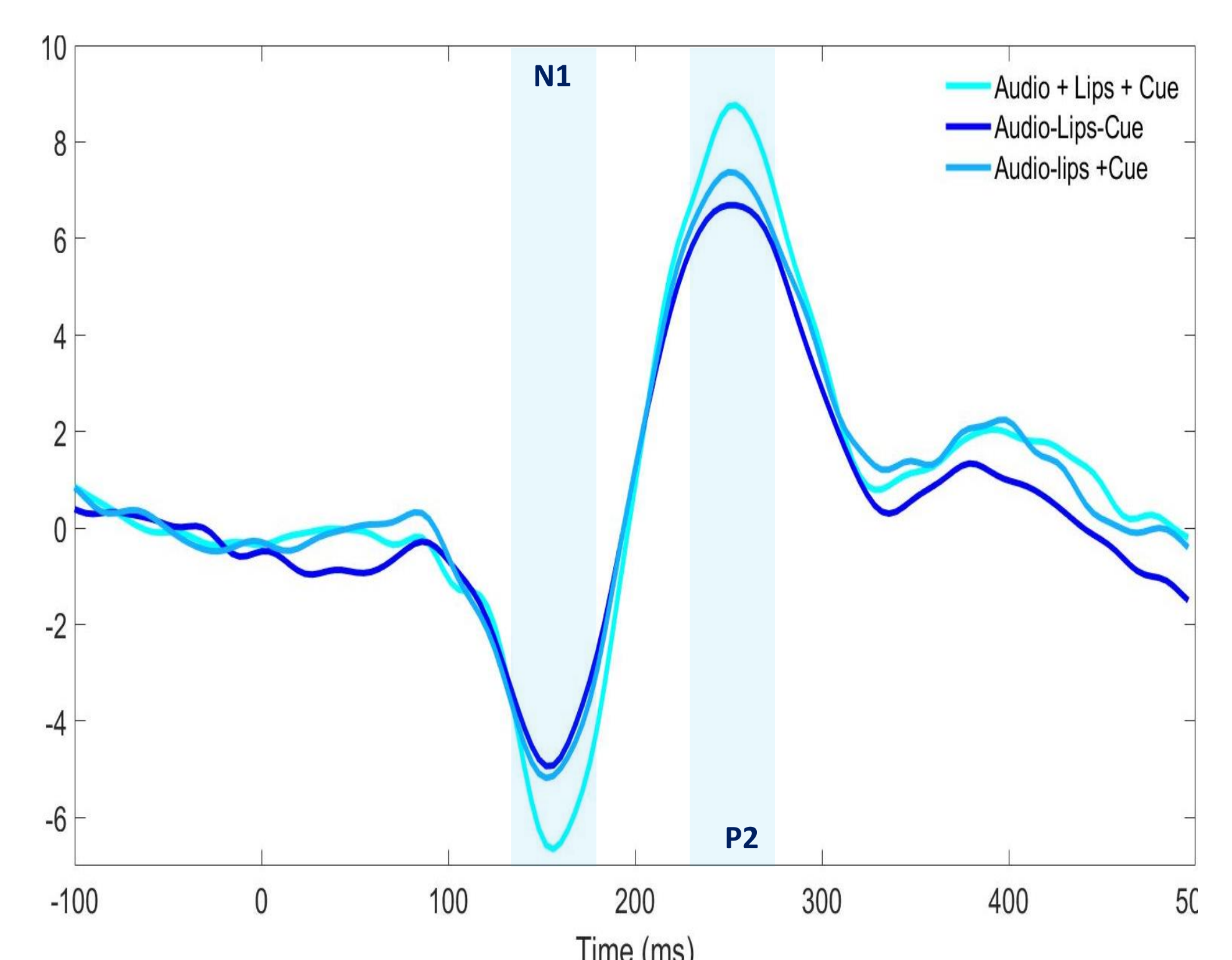
Results



- **Audio-Lips vs Audio + Lips:**
AL < A+L- Amplitude reduction of both N1 (*p>0.001) and P2 (*p=0.003)



- **Audio-Cue vs Audio + Cue:**
AC = A+C- No significant (n.s) effect of condition



- **Audio-Lips-Cue vs Audio + Lips + Cue:**
ALC < A+L+C : Amplitude reduction of both N1 (*p>0.001) and P2 (*p=0.002)
- **Audio-Lips+Cue vs Audio-Lips +Cue:**
AL+C = ALC- n.s effect.

Discussion & conclusions

- We replicated previous findings showing that lipreading facilitates auditory processing.
- CS processing don't modulate auditory processing in adults who are naive towards the system.
- Future studies: The effect of CS perception on auditory processing of experienced CS users (TH and hearing impaired users).

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