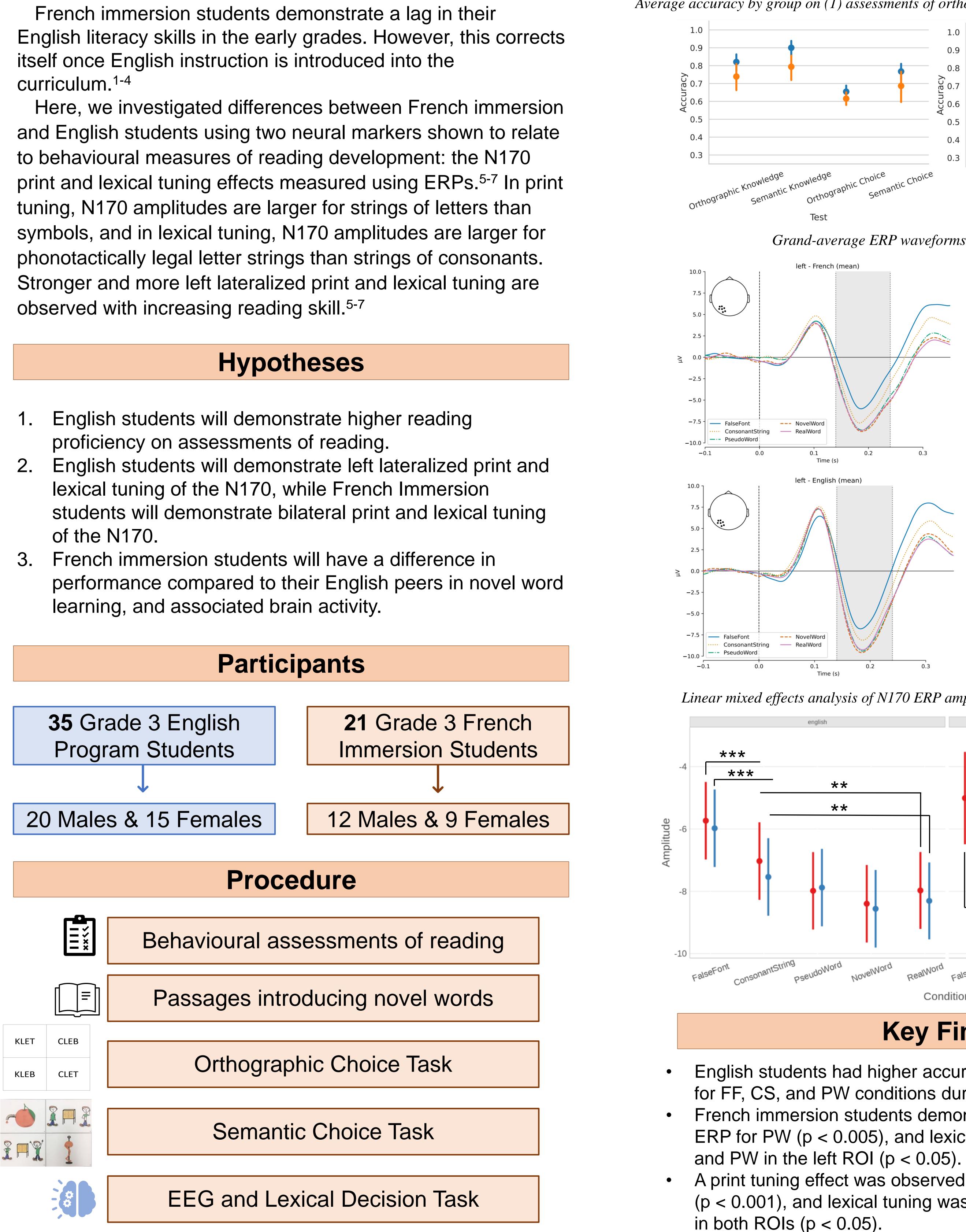


Lexical Decisions in Ortho-Semantic Learning: An ERP Study of Grade 3 Children in English and French Immersion Laura Elliott¹, Alena Galilee², Lisa Beck¹, Clara Lownie¹, Jennika Veinot¹, Catherine Mimeau¹, S. Hélène Deacon¹, & Aaron Newman¹ [1] Department of Psychology & Neuroscience, Dalhousie University [2] Department of Psychology, Queen Mary University of London

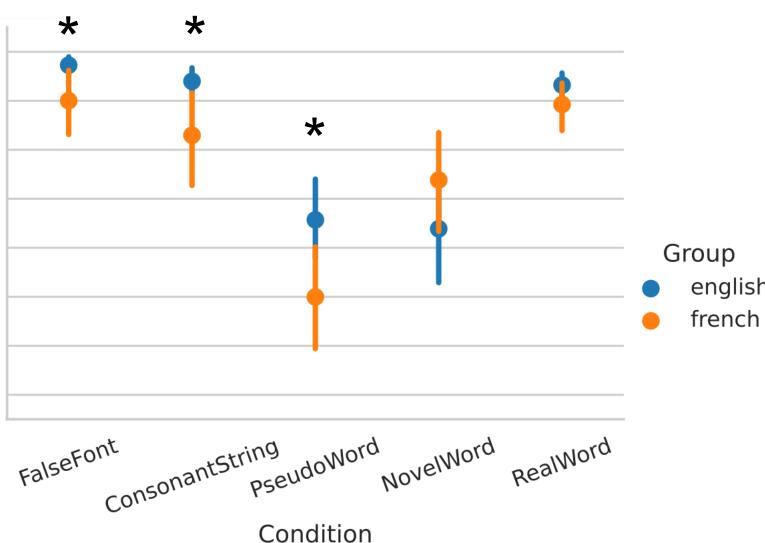
Background

- proficiency on assessments of reading.
- of the N170.
- learning, and associated brain activity.

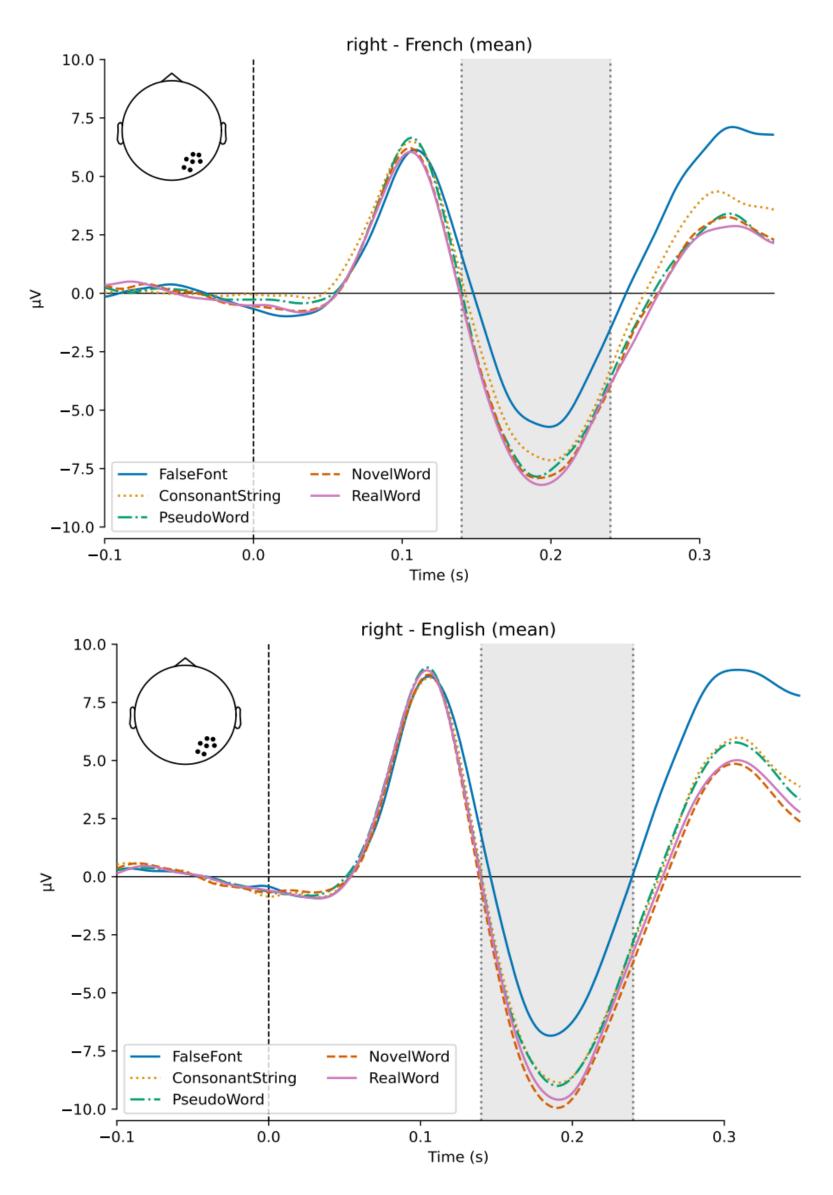


Results

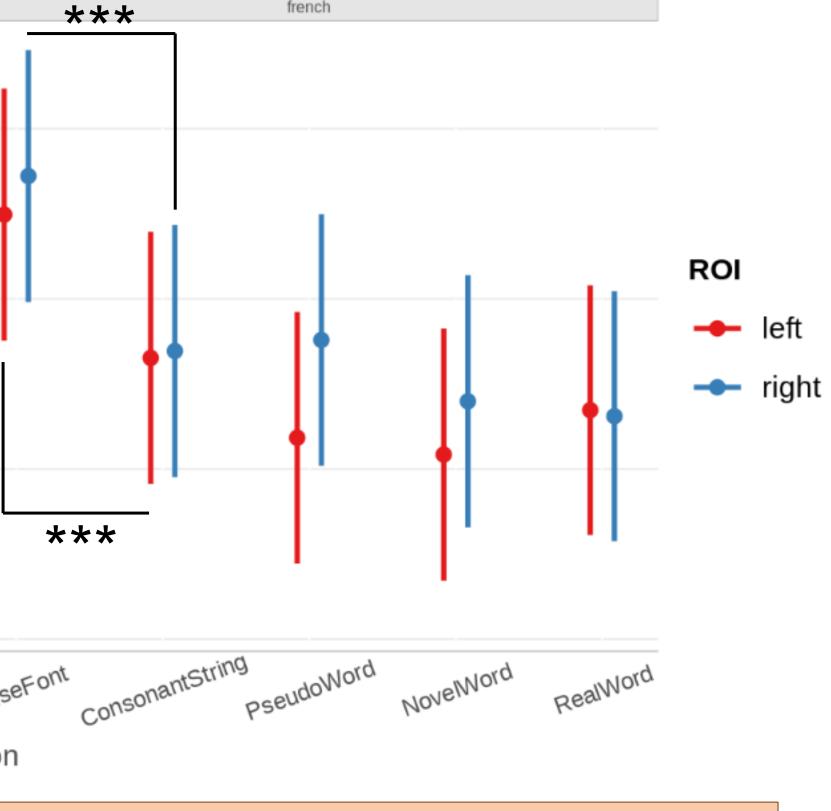




Grand-average ERP waveforms by group, for each condition.



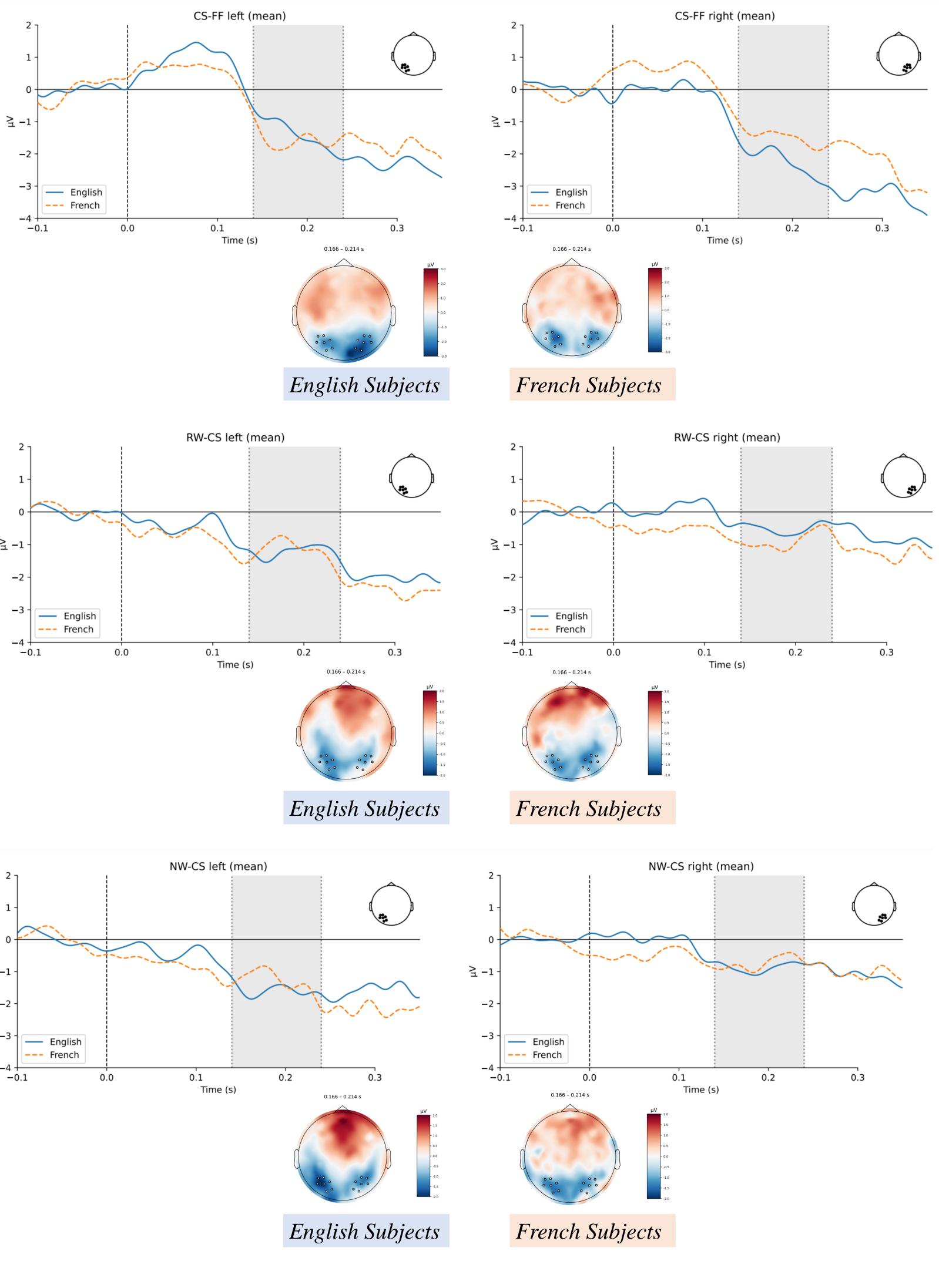
Linear mixed effects analysis of N170 ERP amplitude and laterality, by condition and group.

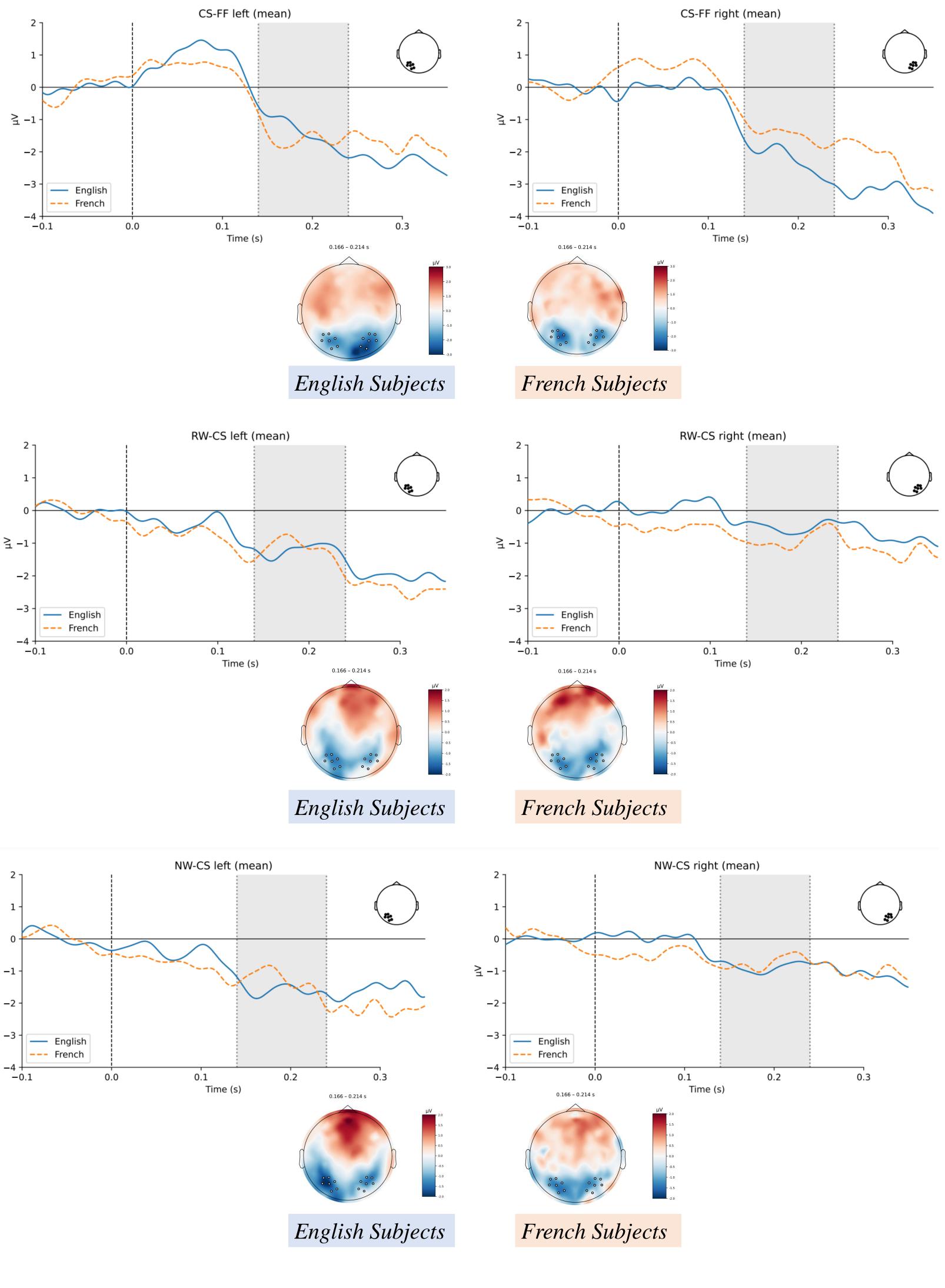


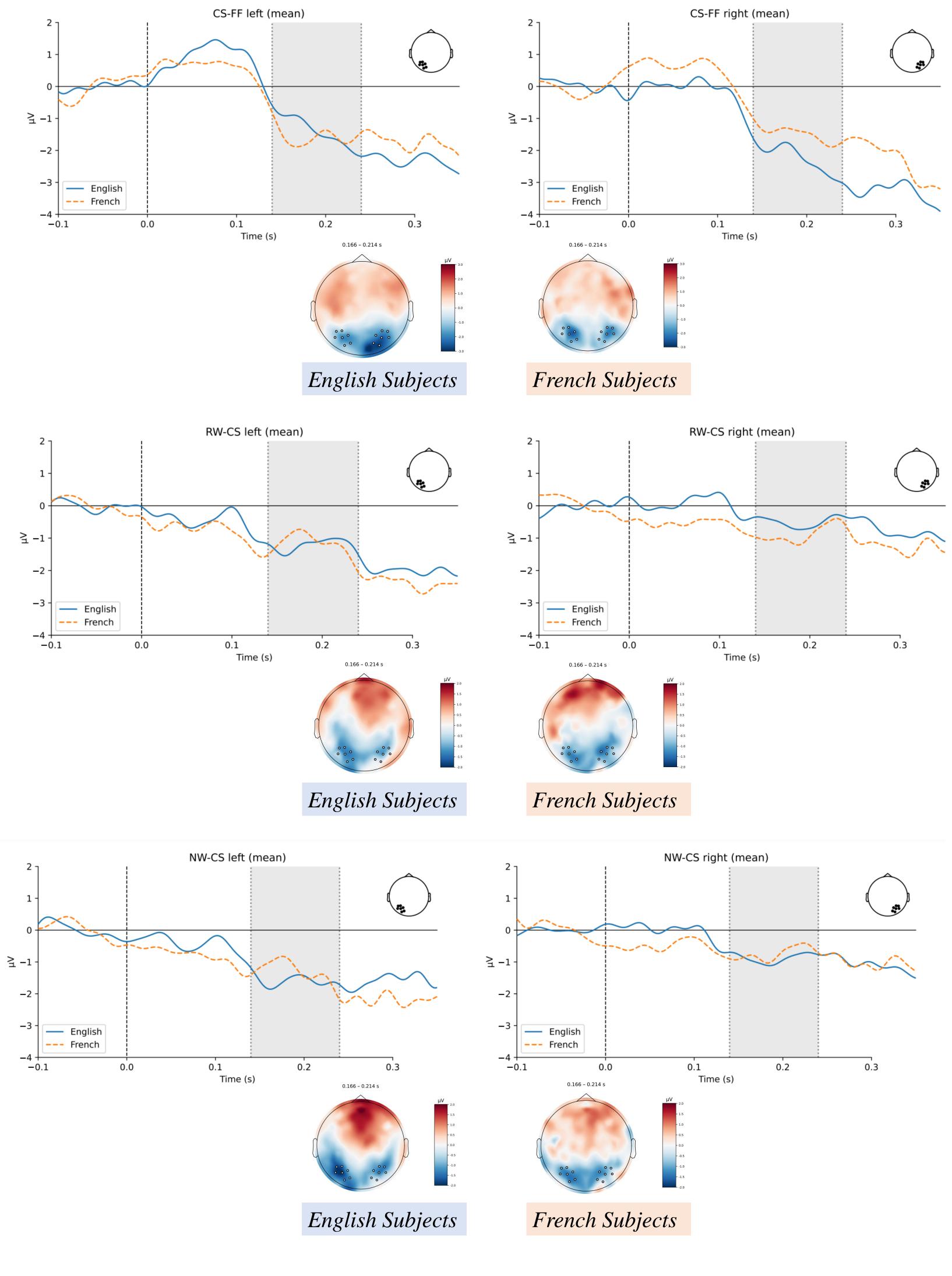
Key Findings

English students had higher accuracy than French immersion students for FF, CS, and PW conditions during lexical decision (p < 0.05). French immersion students demonstrated left lateralization of the N170 ERP for PW (p < 0.005), and lexical tuning of the N170 ERP for NW

A print tuning effect was observed for both groups, in both ROIs (p < 0.001), and lexical tuning was observed for English students only







No significant differences were observed between English and French immersion students on behavioural assessments of reading or ortho-semantic learning. However, while both groups demonstrated bilateral print tuning of the N170 ERP component, lexical tuning was only identified for English students. The presence of this result in the absence of behavioural differences between the groups may be a result of English students' increased experience with reading English text.

[1] Genesee, F., & Jared, D. (2008). Canadian Psychology, 49(2), 140-147. [2] Hansen, L.B., Morales, J., Macizo, P., Dunabeitia, J.A., Saldana, D., Carreiras, M., Fuentes, L.J., & Bajo, T. (2017). Developmental Science, 20(1), e12454. [3] Kendall, J.R., Lajeunesse, G., Chmilar, P., Shapson, L.R., & Shapson, S.M. (1987). International Literacy Association, 22(2), 135-159. [4] Turnbull, M., Hart, D., & Lapkin, S. (2003). The Alberta Journal of Educational Research, 1(1), 6-23. [5] Fraga-González, G., Pleisch, G., Di Pietro, S.V., Neuenschwander, J., Walitza, S., Brandeis, D., Karipidis, I., & Brem, S. (2021). Developmental Cognitive Neuroscience, 49, 100958. [6] Maurer, U., Brem, S., Kranz, F., Bucher, K., Benz, R., Halder, P., Steinhausen, H.C., & Brandeis, D. (2006). NeuroImage, 33(2), 749-758. [7] Maurer, U., Schulz, E., Brem, S., van der Mark, S., Bucher, K., Martin, E., & Brandeis, D. (2011). NeuroImage, 57(3), 714-722.

Contrasts

Difference waveforms and topoplots for the contrasts of interest between groups.

Conclusions

References