Linguistic distance and L2 processing: ERP evidence from Spanish / Basque bilinguals
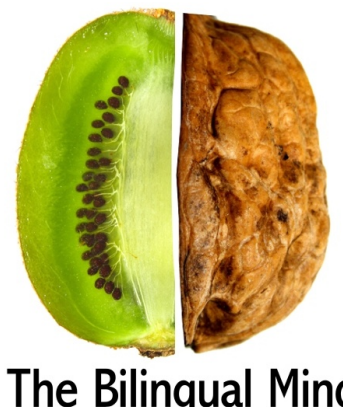
Adam Zawiszewski, Kepa Erdocia & Itziar Laka

University of the Basque Country, Vitoria-Gasteiz, Spain

adam.zawiszewski@ehu.es

Introduction

Age of acquisition (AoA) and proficiency, together with structural similarities and dissimilarities between bilinguals' first (L1) and second (L2) languages are crucial factors in the research of the neural basis of bilingualism [1,2,3]. In order to investigate these issues, we conducted a series of experments in Basque language with native Basque speakers and highly proficient Spanish / Basque bilinguals (AoA = 3 years). These bilingual populations constitute an ideal environment to study the impact of these factors on non-native language processing because the two languages share some grammatical properties while they significantly differ in others.

Materials

VERB AGREEMENT

1a. Zu-k   ni   hondartza-ra eramaten **na-u-zu**   batzuetan.
    you-Subj   me   beach-to   take   me-have-you   sometimes
    'Sometimes you take me to the beach'

1b. Zu-k   ni   hondartza-ra eramaten ***d-u-zu***   batzuetan.
    you-Subj   me   beach-to   take   3person-have-you   sometimes

WORD ORDERS

2a. **Emakume-ek   gizon-a**   ikusi   dute.   (SOV)
    Women-Subj   man-Obj   see   3person-have-they

2b. **Gizon-a   emakume-ek**   ikusi   dute.   (OSV)
    Man-Obj   women-Subj   see   3person-have-they

2c. **Emakume-ek** ikusi dute   **gizona**.   (SVO)
    Women-Subj   see 3person-have-they   man-Obj

2d. **Gizon-a** ikusi dute   **emakume-ek**.   (OVS)
    Man-Obj   see 3person-have-they   women-Subj
    'The women saw the man'.
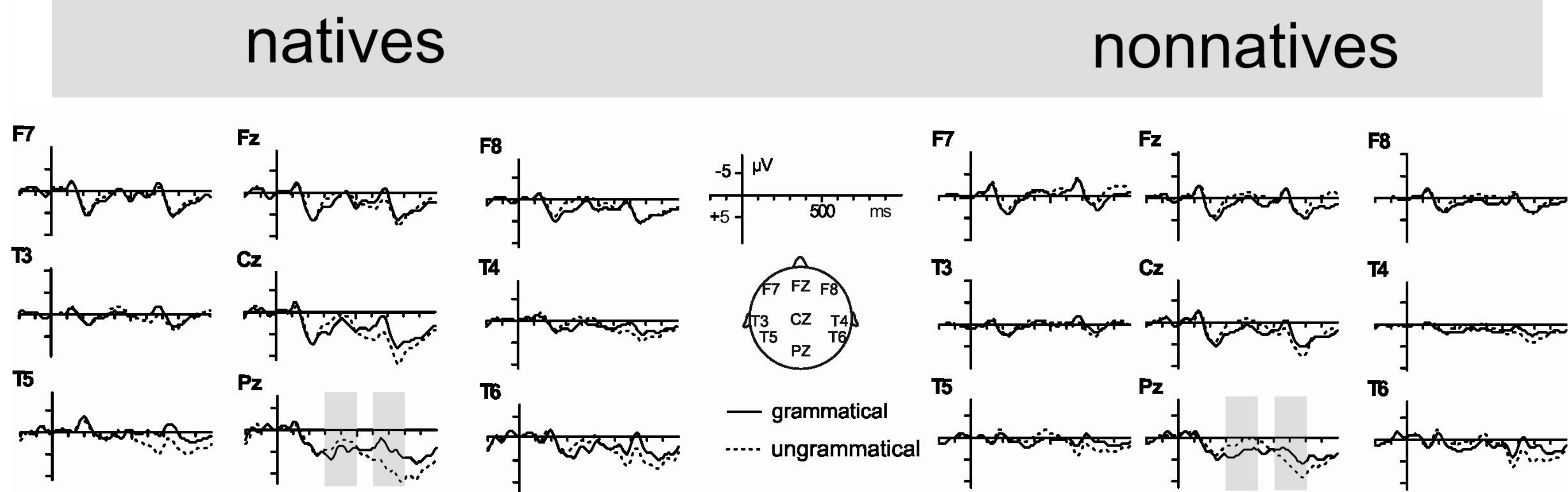
CASE MORPHOLOGY

3a. Goiz-ean   ogia   erosi   dut   **ni-k**   denda-n.
    morning-in bread   bought   have   I-Subj   shop-in
    'This morning I bought bread in the shop'

3b. Goiz-ean   ogia   erosi   dut   ***ni***   denda-n.
    morning-in bread   bought   have   *I   shop-in
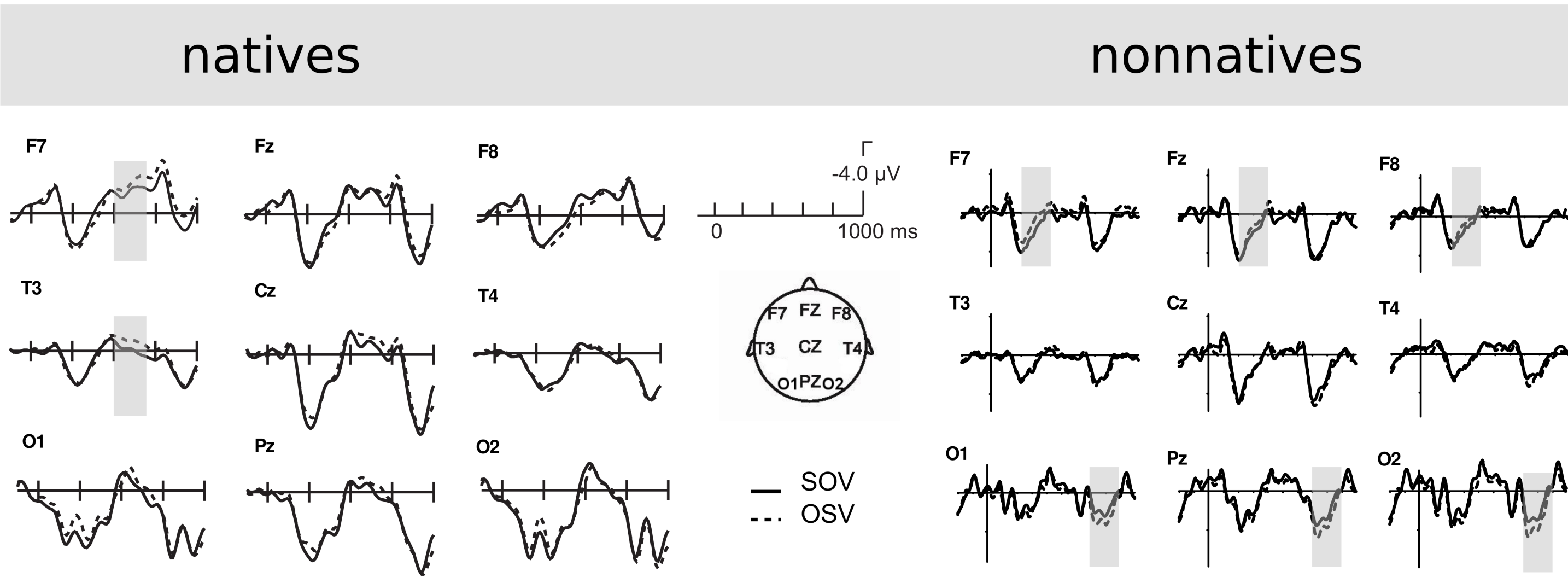
Basque and Spanish

	verb agreement		word order		case morphology	
	with S	*with O*	*VO*	*OV*	*nominative*	*ergative*
Basque	+	+	-	+	-	+
Spanish	+	-	+	-	+	-

Results

OV AGREEMENT

ERGATIVITY

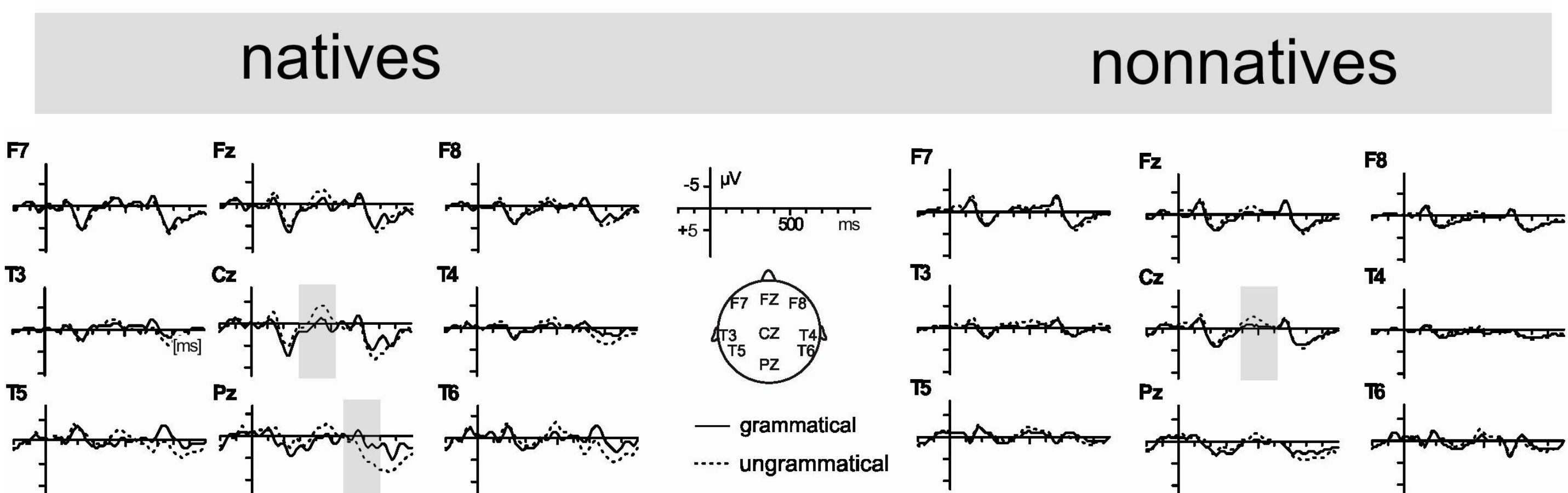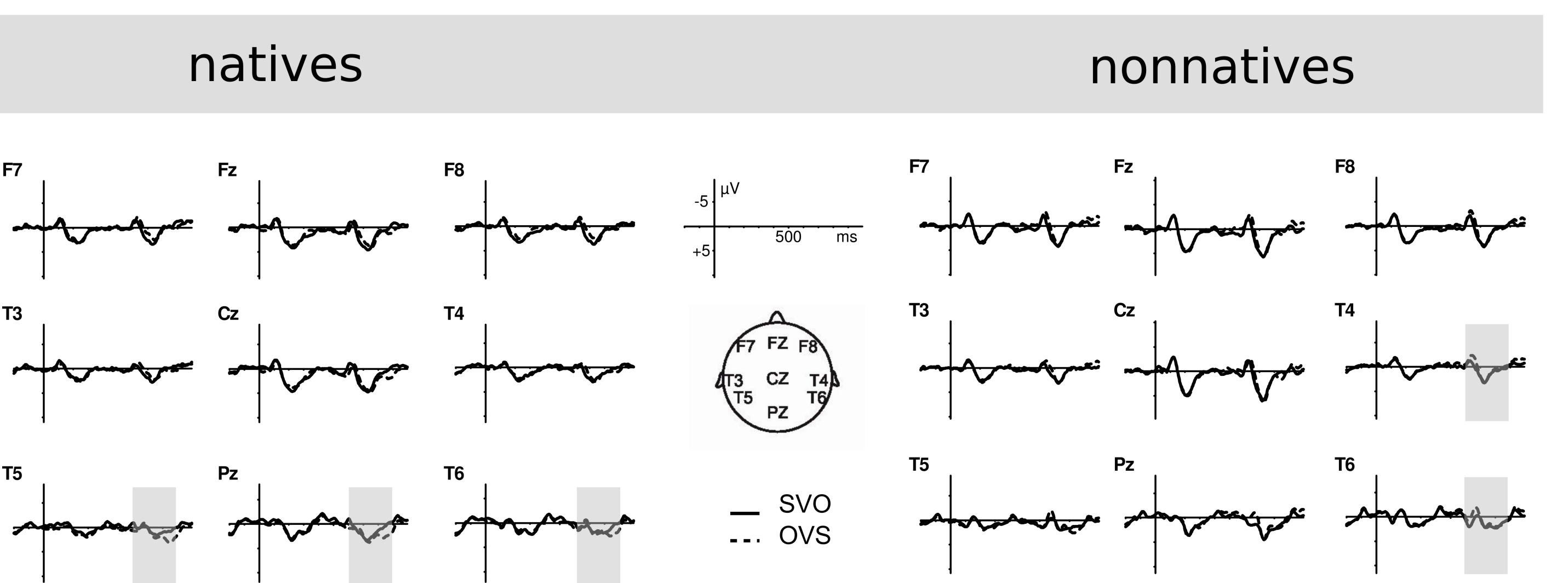### SOV vs. OSV: DP2 POSITION

SVO vs. OVS: VERB POSITION

Discussion & Conclusions

According to our data, verb agreement processing does not reveal differences between native and non-native speakers, given a native language that has verb-agreement in its grammar [4].

Only linguistic phenomena that involve the ergative alignment of Basque reveal a native/non-native contrast, possibly due to a linguistic transfer from the nominative setting of their native language, Spanish.

As for the head parameter (word order), similarly to natives, L2 Basque speakers revealed behavioural patterns that favoured SOV over OSV and SVO over OVS as most economical word orders [5]. However, some subtle differences in the ERP components emerged between both groups indicating that non-natives might use different strategies from natives when dealing with non-canonical word orders.

In sum, our results suggest that some but (maybe) not all linguistic parameters that diverge between L1 and L2's settings yield age effects in early and highly proficient bilinguals.

References

[1] Rossi, S., Gugler, M., Friederici, A.D. and Hahne, A. (2006). The impact of proficiency on second language processing of German and Italian: evidence from Event-Related Potentials. *Journal of Cognitive Neuroscience 18:2,* 2030-2048.

[2] Weber-Fox, Ch., Neville, H. (1996). Maturational Constraints on Functional Specializations for Language Processing: ERP and Behavioural Evidence in Bilingual Speakers. *Journal of Cognitive Neuroscience 8:3,* 231-256.

[3] Kotz, S. (2009). A critical review of ERP and fMRI evidence on L2 syntactic processing. *Brain and Language, 109 Issues 2-3,* 68-74.

[4] Zawiszewski, A., Gutiérrez, E., Fernández, B. and Laka, I. Age effects in nonnative language processing. Evidence from event-related potentials. *Bilingualism: Language and Cognition.* Available on CJO 15 Nov 2010.

[5] Erdocia, K., Laka, I., Mestres-Missé, A. and Rodriguez-Fornells, A. (2009). Syntactic complexity and ambiguity resolution in a free word order language: Behavioral and electrophysiological evidences from Basque. *Brain and Language 109 (1),* 1-17.