PLACING HEADS IN PHRASES: WHEN BILINGUAL PARAMETERS CLASH

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INTRODUCTION
Age of acquisition (AoA), proficiency and linguistic distance are crucial factors in the research of the neural basis of bilingualism [1]. Basque-Spanish bilinguals constitute an ideal population to study the impact of these factors because there are bilinguals of all types along those three dimensions, and because Basque and Spanish resemble each other regarding some grammatical properties while they differ regarding others. Both languages have verb agreement, they have different case systems (ergative-absolutive in Basque; nominative-accusative in Spanish) and opposite values of the head-directionality parameter that determines whether heads are placed at the end of phrases (as Japanese, Subject-Object-Verb type language) or at the beginning of phrases (as English, SVO type).

Zawiszewski et al. (2011) [2] show that highly proficient and early Spanish-Basque bilinguals (AoA-3 y.o.) process verb agreement violations like natives (N400 and P600), whereas the two groups differ when processing ergative case violations (natives showed N400 and P600, non-natives only N400). We aim to further determine the impact of structural distance between native and non-native grammars in bilingual syntactic processing. To this end, we focus on the opposite value of the head-directionality parameter (word order: VO vs. OV) is processed by Spanish-Basque bilinguals.

METHODS & MATERIALS
We tested how early (AoA = 3 y.o.) and proficient Spanish-Basque bilinguals process canonical (SOV) and non-canonical (OSV) word orders in Basque.

Experiment 1: Subject-Object-Verb
SUBJECT-OBJECT-VERB
Emakume-ek gizon-ak ikusi dute. Women-5 man-O seen have The women saw the man

OBJECT-SUBJECT-VERB
Gizon-ak Emakume-ek ikusi dute. Man-? Women-5 seen have The men saw the woman

FULLY AMBIGUOUS
Emakume-ak gizon-ak ikusi dute. Women-Subj man-Oct seen have The women saw the man’ or ‘The men saw the woman

Experiment 2: Subject-Object-Verb
SUBJECT-OBJECT-VERB
Otso-ak ardi-ak jan dute. Wolves-Sheep-O eat have The wolves eat the sheep(pl)

OBJECT-SUBJECT-VERB
Ardi-a Otso-ek jan dute. Sheep-O wolves-S eat have The wolf eat the sheep(pl)

FULLY AMBIGUOUS
Otso-ak ardi-ak jan dute. Wolf-? Sheep-? eat have The wolf eat the sheep(pl)

RESULTS
The behavioral results showed that (i) nearly native speakers required longer reading time when encounter S before O, and (ii) the ambiguous sequences are processed as SOV. ERPs showed anterior negativities at non-canonical DP positions, and a posterior positivity at DP2 position. At verb position late positivities were observed. Temporarily ambiguous sequences which were disambiguated to non-canonical OSV word order showed frontal positivity.

Ambiguous Conditions: AMB/soV-AMB/osV

DISCUSSION
Given the results previously obtained from a variety of studies on non-native processing (e.g. [1]) and some of our own previous research, our working hypothesis was that native/non-native differences would obtain in proficient bilinguals when tested materials involved different parametric specifications for the native and the non-native language. In this particular case, since head-directionality parameter that governs word order within the phrase has opposite settings in the native language and in the non-native language, we predicted that detectable differences would emerge in the way in which word order was processed by natives and non-natives.

Our findings indicate that proficient non-native speakers do not employ the same neural resources as natives when processing linguistic phenomena that differ from those in their native language. We found that a clash in the values of the head-parameter in the two languages of the bilingual leads to a distinct word order processing pattern in non-natives as compared to natives.

Reference