

### UNIVERSITE CLAUDE BERNARD LYON 1 – UCBL LABORATOIRE LANGAGE, CERVEAU ET COGNITION – L2C2



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Different frequency effects of French verbs for native and non-native speakers

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# **Morphological Processing**



- Morpheme Access: words are represented in the morphemic level (Taft, 1979).
- Dual-route: whole-word access and/or morpheme activation. AAM (Caramazza, Laudanna & Romani, 1988), Race Model (Baayen, Dijkstra & Schreuder, 1997), Words and Rules (Pinker, 1999).
- Connectionism: semantic, orthographic and phonological associations (Rumelhart & McClelland, 1986).



# **Bilingual Word Processing**





**Bilingual Interactive Activation** 



- Late L2 learners rely firstly in the declarative memory and after in the procedural memory (Ullman, 2001).
- Chinese and German speakers of English as L2 rely inflection more on lexical storage than combinatorial processing (Silva & Clahsen, 2008).
- Differences in L1 and L2 representations are related in the computational demands according to the age of acquisition, proficiency and exposure (Perani & Abutalebi, 2005).

### CONTEXTUAL INFLUENCES

- Context
- Interlocutor
- Suppression
- Language activation
- Phonological, morphological and syntax
- Word formation

# **Thesis Project**

## OBJECTIVE

To investigate the verbal morphological processing and representation in L1 and L2 in bilinguals with different proficiency levels

### QUESTIONS

- a. How the verbal inflection morphology is processed and represented in L2?
- b. Which are the behavioral and neurophysiologic similarities and differences between beginners and advanced speakers of an L2?







# Frequency Effects: French as L1

### METHOD

Subjects: 32 subjects, 16 women, mean age 20, right hand, French as L1 Experience: visual lexical decision task Study: 5 conditions

1) 20 regular pairs

2) 20 morphophonological  $[e]/[\epsilon]$ 

3) 20 morphophonological [o]/[ɔ]

4) 20 irregulars

5) 20 operations

Variables: SF, CF, O

Error: RE 8%, ME 7%, MO 9%, IR 9%

500ms			+CF		-CF	
			+SF	-SF	+SF	-SF
Т	2000ms	Regular	entr-ai-t	entr-ez	chant-ai-s	chant-ez
Т		Morpho. /eɛ/	répét-ai-t	répét-i-ons	répèt-e	répèt-es
	[ITEM]	Morpho. /00/	ador-ai-s	ador-i-ez	ador-ent	ador-es
		Irregular	buv-ai-ent	buv-i-ez	boiv-ent	boiv-es
→ ls it a word?			+P		-P	
	NO YES		+0	-0	+0	-0
		Operation	re-touch-ai-s	re-touch-ons	touch-i-ez	touch-ez

### DISCUSSION

Regular verbs are influenced by the CF, morphophonological verbs have an abstract underling representation and irregular verbs have different allomorph representations. The morphological operations influence the time recognition. Decomposition in French verbs depends on their decomposability (Meunier, Alario & Fabre, 2009).







## Frequency Effects: French as L2

#### METHOD

Subjects: 12 subjects, 5 women, mean age 24, right hand, Brazilian Portuguese as L1 and late French as L2 Mean time in formal French study: 2.7 years Mean time living in France: 1.6 years Experience: the same as controls Error: RE 10%, ME 12%, MO 18%, IR 17%



#### DISCUSSION

- ✓ Non-native speakers are less accurate, slower and have a different behavior than native ones.
- They did not present a consistent SF effect. They present an inverse CF. They do not have the same frequency lexical organization than native speakers.
- Interestingly, non-native speakers presented a consistent effect in the number of morphological operations, suggesting that they decompose the verbs to access their meanings. This finding supports the idea that decomposition depends on the language decomposability.



## Decomposition: L1 and L2

PSEUDOVERBS (Caramazza et al., 1988)
Experience: visual lexical decision task in French
Study: 4 conditions
1) 50 morphological legal (ML) – RECUPEREUR (récuper-eur)
2) 50 affix only (AO) – FAURTENT (faurt-ent)
3) 50 stem only (SO) – PORTAD (port-ad)
4) 50 morphological illegal (MI) – OTERAUT (oteraut)

### PREDICTIONS

Word Access Model (WAM) (Manelis & Tharp, 1977):ML = AO = SO = MIMorpheme Access Model (MAM) (Taft, 1979):ML > AO > SO = MIAugmented Addressed Model (AAM) (Caramazza et al., 1988):ML > SO = AO > MI



### DISCUSSION

We obtained ML > AO > SO = MI, which is the exactly prediction of the MAM. While ML spend a long time to be rejected because it cannot be recombined, SO and MI do not allow affix stripping and are promptly rejected. Differently, AO can be stripped but the lexical search fails.

## Next Experiences

### A1. Frequency Effects: BP

 To construct a new experience Frequency Effects: BP based in the Frequency effects: French to compare the behavior in L1 in both languages regarding the verbal irregularity.

#### **A2. Priming French Verbs**

To reconstruct the experience Priming French Verbs based in Meunier & Marslen-Wilson (2004) and apply in BP speakers of French as L2.

### A3. Analysis

Compare both Frequency Effects experiences, Priming French Verbs and Priming Portuguese Verbs (Verissimo & Clahsen, 2009) in a bilingual and cross-language perspective to better understand verbal decomposition and representation.

### **B1. ERP Verbal Inflection: L1 and L2**

To construct two new experiences in a ERP time-course perspective in BP as L1 and French as L2 for silent and open production based on (Budd, Paulmann, Barry & Clahsen, 2013).





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