Language impairment in Catalan-Spanish bilinguals with Alzheimer’s disease

Isabel Gómez-Ruiz et al. (2011)
What?

- high proficient Catalan-Spanish bilinguals
- 12 subjects with AD + 12 healthy controls
- L1 Catalan at home
- L2 Spanish at school
- AoA: early, before the age of 5
- Early Alzheimer’s disease

Deterioration in L1/L2 at the same pace?
One language lost before the other?
Why?

- Previous literature: focus on the improper use of each language difficulty to keep the two languages separate
- Preference for the use of the L1 and a poorer performance in a late L2
- If L2 is acquired at the same time as L1, the processing of the two languages will be similar
Theoretical background

DECLARATIVE
lexico-semantic
- conscious
- **explicit**
- controlled
- metalinguistic
= L1 vocabulary
= late L2 grammar

PROCEDURAL
automatic aspects
- incidental
- **implicit** linguistic knowledge
= automatically
= L1 grammar
= early L2 grammar

Language impairment bilinguals with AD
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DECLARATIVE
Left temporal areas of the brain (Wernicke’s)

PROCEDURAL
Frontal striatal network (Broca’s) + basal ganglia
Bilingual Aphasia Test (BAT)

- **part A**: evaluation of **language history**
- **part B**: assessment of **language skills** in each language > 32 subtests
- **part C**: assessment of **translation** abilities and **interference** detection in each language pair
- **post-test analysis**: in-depth analysis of the **oral output** of each subject
Results

1) Lexical-semantic system: impaired
2) Automatic aspects of language: positive

- Similar performances
- BUT significant higher scores for L2 Spanish in verbal fluency > sociolinguistic influence
- Representation and processing in the brain: same neuroanatomical substrate
Results

- Translation of **words**: better from L2 to **L1**
  - greater loss of L2 vocabulary?
  - Catalan used more frequently
    > difficulty to access words in Spanish?

- Translation of **sentences**: better from L1 to **L2**
  - sociolinguistic factors or linguistic interference

- Grammatical **judgment**
  - error from **L2** in an L1 sentence: better recognized

- Spontaneous **speech**: high variability
  - more words and sentences in L1 (dominant)
Relevance

- Similar processing of L1 and L2 > same localization for L1 & L2
  - as proficiency increases (Green, 2003)
  - for early AoA (Wartenburger, 2003)
- AD patients: impaired lexico-semantic system
- Regression of the L1 may be more evident as the disease progresses
- Effect of exposure: sociolinguistic factors
- Effect of instruction
Criticism

- BAT administrated by the same person
  > *language mode* is not totally monolingual
- *fMRI* study/*ERP* reaction times
- Minimal significance of the BAT results
- Sociolinguistic environment:
  - More *exposure* to Spanish?
  - *Instruction* in Spanish!
- L1 Spanish L2 Catalan: similar impairment?
- Longitudinal study: more advanced stages AD
Questions?  
Remarks?  
Suggestions?