

## **Pronouns and Degeneration: Differences in Processes and Brain Locations involved in Pronoun Interpretation in Prodromal Alzheimer's Disease and in Healthy Ageing**

### **Results:**

We used event related potentials (ERPs) and sLORETA to determine how the management of processing cost in pronoun interpretation is affected by age (young *vs.* elderly) and by the presence of a cue for pragmatic inferencing. The syntactic relation between an explicit pronoun and its antecedent was manipulated, yielding two types of sentences (Type 1: syntactic (cheap) or discourse (costly) processing routes available; violation of a conversational convention *vs.* Type 2: exclusive availability of the discourse route; conformity to conversational conventions). For the young adults a Late Positivity and selective activation of right BA9 and BA31 emerged in type 1 sentences, indexing the effort required to compute the pragmatic inference cued by the violation of a conversational convention (use of an explicit pronoun in type 1 sentences, where a *null*/silent would be more likely). This effect is absent in older participants, suggesting that, in their case, the processor fails to initially capture the oddity of the explicit pronoun, which is therefore conveniently processed at the cheaper syntactic level, but rendering the identity of its original form unavailable for later pragmatic inferential processing. Thus, older participants, unlike the young, recruit different processing routes for each sentence type, as demonstrated by an N400 and selective activation of right BA18 for type 2 sentences, in which only the discourse route is available. This N400 is absent in younger participants, since the clash between the expected null pronoun and the explicit one occurring in type 1 sentences leads the processor to shift resolution to the discourse level, where the unexpected form will remain accessible to the pragmatic module.

### **Published works:**

Full Papers:

Leitão, J. A., Branco, A., Piñango, M. M., & Pires, L. (2009). Pronoun resolution to commanders and recessors: A view from event-related brain potentials. In S. L. Devi, A. Branco & R. Mitkov (Eds.), *Anaphora Processing and Applications. Lecture Notes in Artificial Intelligence*, 5847, 107-120.

Leitão, J. A., Branco, A., & Piñango, M. M. (2009). Resolving pronouns to antecedents in commanding and non commanding positions: preliminary results from ERP research. *Letras de Hoje*, 44 (3), 7-11.

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**Area(s) of interest:**

Ageing; Language; Anaphor Resolution; Pragmatic Inferences

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