

## Resolving a mistaken interpretation:

### Differences between L1 and L2 text comprehension in bilinguals

Elifcan Öztekin (inv.elifcanoz@ugr.es)<sup>1</sup>, Ana I. Pérez Muñoz (anaipe@ugr.es)<sup>1</sup>

<sup>1</sup>Mind, Brain and Behavior Research Center, University of Granada, Spain

**Background:** Situation model construction involves high-level comprehension processes, especially when inconsistent information is detected in the text (comprehension monitoring) and must be replaced with alternative information (revision). These processes can involve literal or inferential processing during native language (L1) or second language (L2) comprehension. A recent study [1] assessed these high-level processes in bilingual children and adolescents during both L1 and L2 text comprehension, where both age groups had less efficient comprehension monitoring in L2, especially at the inferential level (reading times-RTs), whereas revision (N400 and post-N400 positivity or PNP) caused difficulties for adolescents in L2, and for children in both languages. The present study tries to elucidate the effect of the same processes by comparing L1 and L2 comprehension in bilingual young adults, aiming a developmental understanding of high-level comprehension processes.

**Method:** L1-Spanish and L2-English bilingual young adults ( $N=30$ ) were presented with 150 short narrative texts (75 in L1 and 75 in L2; see Table 1) counterbalanced for language and condition. The initial sentences always primed an inference (e.g., “*umbrella*”). Sentence 3 involved one of three conditions: a) *consistent*, aligned with the context-generated inference, b) *literal inconsistent*, explicitly (“*raincoat*”), and c) *inferential inconsistent*, implicitly (“*left it by her hood*”) contradicting the interpretation. RTs in this sentence were recorded to assess comprehension monitoring. The final and fourth sentence was presented word by word and it contained the disambiguating word (e.g., “*raincoat*”), where ERPs (N400 and PNP) were recorded, with one of three conditions: a) *unexpected*, following the *consistent* (keeping the idea of “*umbrella*”), b) *literal expected*, following the *literal inconsistent* (explicitly contradicting *umbrella*), and c) *inferential expected*, following the *inferential inconsistent* (implicitly contradicting *umbrella*). A multiple-choice comprehension question tested the readers’ situation model, probing whether they keep the no-longer relevant interpretation (i.e., *umbrella*) or efficiently integrated the new alternative interpretation (i.e., *raincoat*).

**Results and Discussion:** The significant main effect of condition in RTs indicated efficient monitoring in both languages, with more difficulty in inferential processing (Fig. 1). Two-way interactions of language and condition manifested more efficient semantic integration (N400) and semantic reanalysis (PNP) in the L1 than L2 in the more demanding conditions (unexpected and inferential) as well as more effortful inferential processing within L2 (Fig 2). Finally, the main effect of condition in the comprehension accuracy indicated more intrusive errors in the unexpected condition while literal and inferential expected conditions did not differ, pointing to efficient inferential processing in both languages at behavioral level (Fig. 3).

## References

[1] Pérez, A. I., Montoro, N., Ortega, A., Aguirre, C., Togato, G., & Bajo, M. T. (2025). Developmental differences in L1 and L2 text comprehension: An ERP study. *Brain and Language*, 271, 105644.

## Figures

Figure 1: RT Index (Comprehension monitoring)

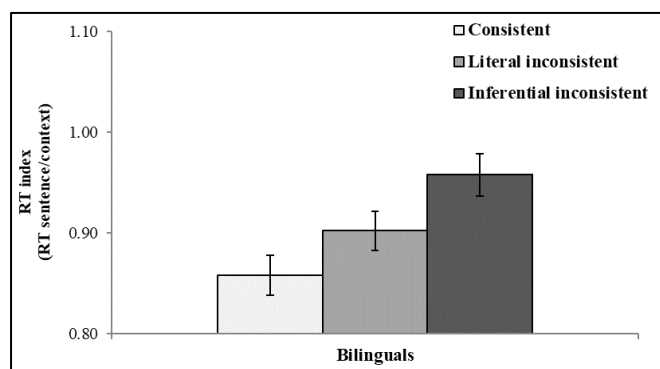


Figure 2: N400 and PNP (Revision) in L1 Spanish and L2 English

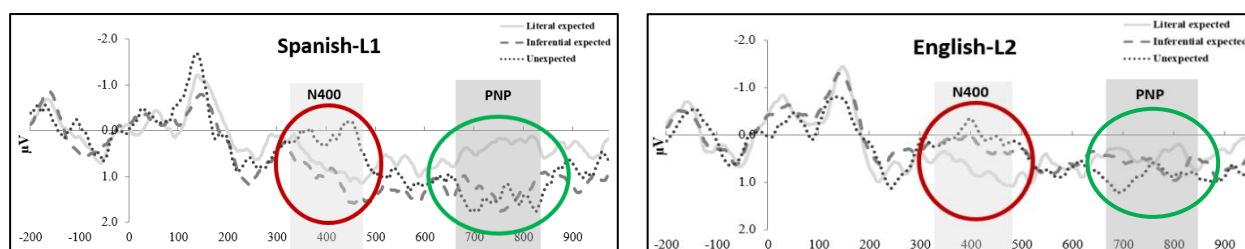
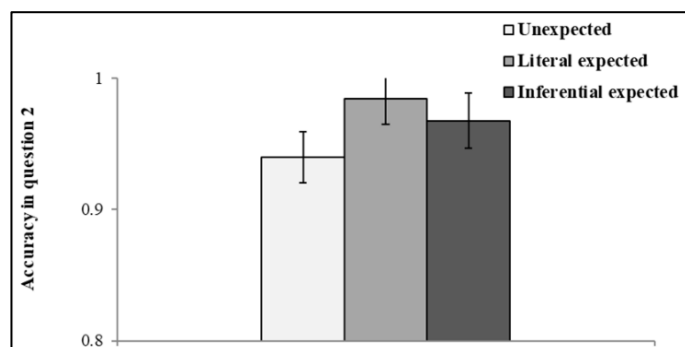


Figure 3: Accuracy proportion to the comprehension question



## Optional Supplemental Information

Table 1. Sample item of the situation model revision task

| Story context                                                                                         |                 | Condition                       | Process (D.V.)                         |
|-------------------------------------------------------------------------------------------------------|-----------------|---------------------------------|----------------------------------------|
| Sentence 1: It was raining outside, but Noelle had to go out to buy some books.                       |                 | (bias <i>umbrella</i> )         | <b>Inferencing</b>                     |
| Sentence 2: She did not want her hair to get wet, so she took something to protect her from the rain. |                 |                                 |                                        |
| <b>Sentence 3: RT sentence</b>                                                                        |                 |                                 |                                        |
| She took it from the <u>entrance hall</u> where she had left it to dry overnight.                     |                 | <i>Consistent</i>               | <b>Monitoring (RTs)</b>                |
| She took her <u>raincoat</u> from the coat stand where she had left it hanging.                       |                 | <i>Literal inconsistent</i>     |                                        |
| She took it from the coat stand where she had left it <u>hanging by</u> her hood.                     |                 | <i>Inferential inconsistent</i> |                                        |
| <b>Sentence 4: Disambiguating (ERP) word</b>                                                          | Coming from...  |                                 |                                        |
| On her walk to the bookshop, Noelle was glad that she had taken her <u>raincoat</u> .                 | “entrance hall” | <i>Unexpected</i>               | <b>Integration-Revision (N400-PNP)</b> |
|                                                                                                       | “raincoat”      | <i>Literal expected</i>         |                                        |
|                                                                                                       | “hood”          | <i>Inferential expected</i>     |                                        |
| <b>Comprehension questions</b>                                                                        |                 |                                 |                                        |
| 1) Noelle had to go out to buy some ____ .                                                            | a) food         | <i>Incorrect</i>                | <b>Filler question</b>                 |
|                                                                                                       | b) films        | <i>Incorrect</i>                |                                        |
|                                                                                                       | c) books        | <i>Correct</i>                  |                                        |
| 2) Noelle took ____ to not get her hair wet.                                                          | a) a scarf      | <i>Distractor error</i>         | <b>Comprehension (Accuracy)</b>        |
|                                                                                                       | b) an umbrella  | <i>Intrusive error</i>          |                                        |
|                                                                                                       | c) a raincoat   | <i>Revised</i>                  |                                        |