

Individual differences in Spanish object relative clause comprehension: Effects of statistical learning and print exposure

Julia Boos (julia.boos@fau.de), Panagiotis Kenanidis, Ewa Dąbrowska

RTG Dimensions of Constructional Space, Friedrich-Alexander-University Erlangen-Nürnberg

Studies on relative clause (RC) comprehension have demonstrated that object relative clauses (ORs) pose greater processing difficulty than subject relative clauses (SRs) across right-branching languages [1]. In Spanish, a language with differential object marking (DOM), this asymmetry is particularly pronounced in agent-patient reversible ORs without overt DOM (see Figure 1, caption) [2]. Although structural accounts of this asymmetry are well established, less is known about how individual differences in cognitive and experiential factors jointly shape OR processing. Two factors that may play a key role are print exposure and statistical learning (SL) [3,4]. According to the training wheels hypothesis [5], exposure to written text facilitates acquisition by providing greater structural diversity and by supporting the bootstrapping of morphosyntactic patterns through visual representation. With regard to SL, while many studies test learning of adjacent dependencies, evidence suggests that SL of non-adjacent dependencies is particularly predictive of RC comprehension, given the need to link relations across intervening material [4]. However, it remains unclear how individual differences in those two forms of SL interact with print exposure in shaping the comprehension of ORs.

To address this gap, we are currently conducting a study investigating how SL of adjacent and non-adjacent dependencies and print exposure jointly affect comprehension of ORs in Spanish. To assess OR comprehension, adult native speakers are asked to complete a picture selection task, where auditorily presented RCs need to be matched to one of two reversed-role images (Figure 1). A Spanish author recognition task serves as a measure of participants' print exposure, while auditory SL is measured via a novel task [6,7] adapted for Spanish and designed to capture both adjacent and non-adjacent dependencies simultaneously, both through online (syllable monitoring) and offline (recall and forced choice) measures.

In line with previous findings [2], we predict better comprehension for ORs with DOM (Figure 1, a) due to its salience and a strong formal similarity between SRs and ORs without an overt cue (Figure 1, b). Print exposure should improve comprehension overall, with a stronger effect on overt ORs given their predominance in written contexts, whereas the similarity with SRs likely reduces its effect on unmarked ORs. Additionally, we expect higher SL skills, especially in non-adjacent learning, to compensate for lower print exposure, predicting faster and more accurate OR processing. The findings will provide insight into the role of cognitive and experiential factors in RC processing and contribute to the growing research on individual differences in first language grammatical attainment, challenging traditional views of native speakers converging on the same grammar.

References

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Figures and Tables



Figure 1: Example of a test item in the picture selection task. The OR-stimulus with overt marking (a) corresponding to the image set is *La niña a la que dibuja la abuela*. ('The girl that the grandma is drawing.') while the OR without overt marking (b) is *La niña que dibuja la abuela*. ('The girl that the grandma is drawing.').

Optional Supplemental Information

In Spanish, direct objects that are human and specific obligatorily receive the morphological marker *a* preceding the noun phrase (compare examples 1 and 2).

- (1) La niña dibuja el árbol. ('The girl is drawing the tree.')
- (2) La niña dibuja *a* la abuela. ('The girl is drawing the grandma.')

In subject relative clauses, the DOM marker remains obligatory for human referents (example 3).

- (3) La niña *que* dibuja *a* la abuela. ('The girl that is drawing the grandma.')

In object relative clauses, however, the object marker becomes optional given that the object is the head of the following relative clause and is therefore placed before the verb and subject (example 4).

- (4) La niña *que* dibuja la abuela. ('The girl that the grandma is drawing.')

If a DOM marker is present in ORs, then, unlike in canonical declarative sentences, it is not placed in front of the object. Instead, the marker occurs together with the definite article in front of the relative pronoun, following the object (example 5).

- (5) La niña *a* la *que* dibuja la abuela. ('The girl that the grandma is drawing.')

In contrast to English, the word order of the constituents within the relative clause does not determine clause type. The verb within the relative clause can appear either before the noun phrase or after (compare examples 4 and 6). For SRs, however, the canonical word order (SVO) is strongly preferred.

- (6) La niña *que* la abuela dibuja. ('The girl that the grandma is drawing.')