

## Evolution of cognitive representations: The case of Spanish object relatives

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This study investigates native speakers' mental representations for Spanish object relative (OR) sentences and explores the relative role of frequency and transparency. Spanish ORs can appear with an optional direct object marker, 'a' + article (henceforth a-variant) or without it (henceforth plain-variant; e.g., *la niña a la que la abuela dibuja* vs. *la niña que la abuela dibuja* 'the girl that the grandma is painting'). Previous experimental data showed that, for 7-8-year-old children, comprehension was consistently better for the plain variant, which is more frequent in speech (Reali, 2014) but arguably less transparent. Furthermore, after receiving training on one of the variants, there was transfer of learning to the other variant, although this was only limited. The results thus provide insights about the early stages of acquisition: they highlight the role of frequency over transparency and suggest that the plain-variant and a-variant of OR sentences are not represented as the same construction but as two distinct yet related constructions. In contrast, adults' representations of this structure could be expected to differ. Firstly, transparency might prove more important in later stages of acquisition. As the more transparent variant is much less frequent, this could lead to a delayed acquisition (as seen in children's consistent preference for the plain variant) and thus any possible processing advantage driven by transparency might be delayed. Secondly, the representation of the two variants might evolve into one general, more schematic representation. This is argued based on adults' increased experience of token and type frequency (Bybee & Thompson, 1997; Goldberg, 2019), and abstraction abilities (Boyd & Goldberg, 2012).

In the present study, we examined adult speakers' comprehension of ORs in order to explore how the influences of frequency and transparency evolve after optimal acquisition. Twenty adult native speakers of Spanish were tested using the same picture selection task and the same sentences as the children in the previous study. Results showed that the adults were similarly accurate for the two variants (a-variant accuracy = 87.18%, SD = 18.06%; plain-variant accuracy = 89.94%, SD = 12.18%). This finding suggests that there may be an exposure threshold after which frequency and transparency achieve similar retrieval effects, suggesting that the frequency advantages observed during acquisition eventually reach a 'plateau'. On the one hand, transparency could be more helpful for adults, especially in more complex structures that are acquired relatively late. Nonetheless, the similar comprehension rates could equally be explained by the establishment of only one schematic OR construction in adults encompassing both variants. The findings provide insights into the process of entrenchment and the relative role of frequency and transparency after acquisition. Further research, perhaps introducing insights from artificial language learning to increase control over the input presented, will be needed to tease apart the effects that specific factors play on the acquisition and representation of highly similar syntactic structures.

### References

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