Are the different variants of an optional structure processed differently?

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When two grammatical structures convey the same meaning, do they show different real-time processing signatures? Optionality has been widely investigated in speech production [1–3], but less is known about its consequences for comprehension. We addressed this question by testing dative clitic doubling in Spanish. In most varieties of Spanish, a dative object can be optionally doubled by a pre-verbal dative clitic agreeing in number: *Antonio <u>les$_i$</u> entregó una bebida <u>a las princesas$_i$</u>* (Antonio CL.$_{DAT.PL}$ gave a drink to the princesses). Both clitic-doubled and non-doubled variants share the same meaning and are highly acceptable [4]. However, we hypothesized that the clitic-doubled variant might elicit a processing advantage when the clitic number was useful to predict the upcoming object. Further, given that the singular clitic *le* is extending to plural referents [5], we expected the prediction effect to be weaker with singular than plural clitics (*le* vs. *les*). Finally, we examined the role of language-induced variation by testing whether the prediction effect was stronger in varieties where doubling was more vs. less widespread: Rioplatense vs. European Spanish, respectively.

Method. Two adult Spanish speaker groups (94 Rioplatense and 98 European) performed a picture selection task using visual world eye-tracking. There were three experimental conditions (Table 1). Two of them had a clitic-doubled dative object but differed in their visual display. In the "doubled-competitor" condition, the target and competitor picture showed the same number of referents for the dative object, such that clitic number could not be used predictively (Figure 1a). In the "doubled-distractor" condition, the two pictures differed in the number of referents, such that the clitic number could be used predictively (Figure 1b). Finally, the "non-doubled" condition had the same display as the "doubled-competitor" condition but no clitic. This allowed directly comparing between clitic-doubled and non-doubled variants while excluding the possibility of prediction. This way we could directly diagnose the effect of optionality: for example, coreference at the dative object may be harder due to the effort of processing additional linguistic material (the clitic) in the doubled-competitor vs. non-doubled condition.

Results and discussion. The two speaker groups showed similar processing profiles across conditions. There was clear evidence of prediction: prior to hearing the indirect object, participants looked more at the target image in the "doubled-distractor" vs. "doubled-competitor" condition ($\beta = 0.48$, SE = 0.06, $p = .001$; Figure 2). This clitic-triggered predictive effect spanned until the referent was heard and facilitated coreference in the dative object time-window. Further, there was evidence of the extension of the singular clitic *le* to plural referents: the predictive effect was stronger with plural than singular clitics (clitic number×condition: $\beta = 0.57$, SE = 0.02, $p = .001$). In the time-window of the dative object, there was no evidence of a difference between the "doubled-competitor" and "non-doubled" condition, suggesting similar processing of distinct syntactic variants in the presence of the same visual context. Overall, our results demonstrate that the processing of optional variants only differed when the number of the clitic could be used to predict a referent. This shows that in cases of optionality, one of the variants can have a processing advantage, either in terms of avoiding temporary ambiguity like in [6], or in facilitating coreference, as in our study.

Table 1. Sample item in the three conditions (6 items/condition, the clitic always matched the indirect object number). Participants listened to descriptions of scenes during a theater play. In this set-up, two characters (Antonio and Julieta) handed objects (e.g., a drink) to actors around a theatre.

Condition	Display type	Sample sentence
non-doubled	competitor	Antonio entregó una bebida a las princesas en el pasillo *Antonio gave a drink to the princesses in the hallway*
doubled-competitor	competitor	Antonio les$_i$ entregó una bebida a las princesas$_i$ en el pasillo *Antonio* CL.$_{DAT.PL}$ *gave a drink to the princesses in the hallway*
doubled-distractor	distractor	Antonio les$_i$ entregó una bebida a las princesas$_i$ en el pasillo *Antonio* CL.$_{DAT.PL}$ *gave a drink to the princesses in the hallway*

Figure 1. Experimental displays. The target image is frames with dashes.

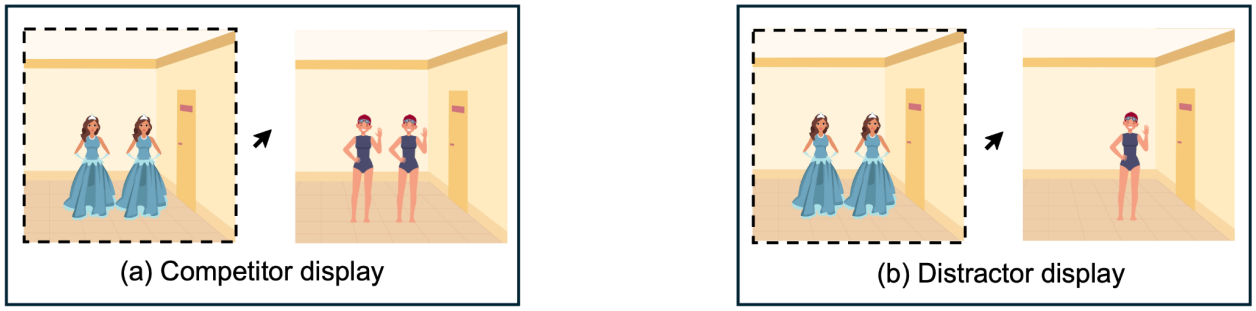
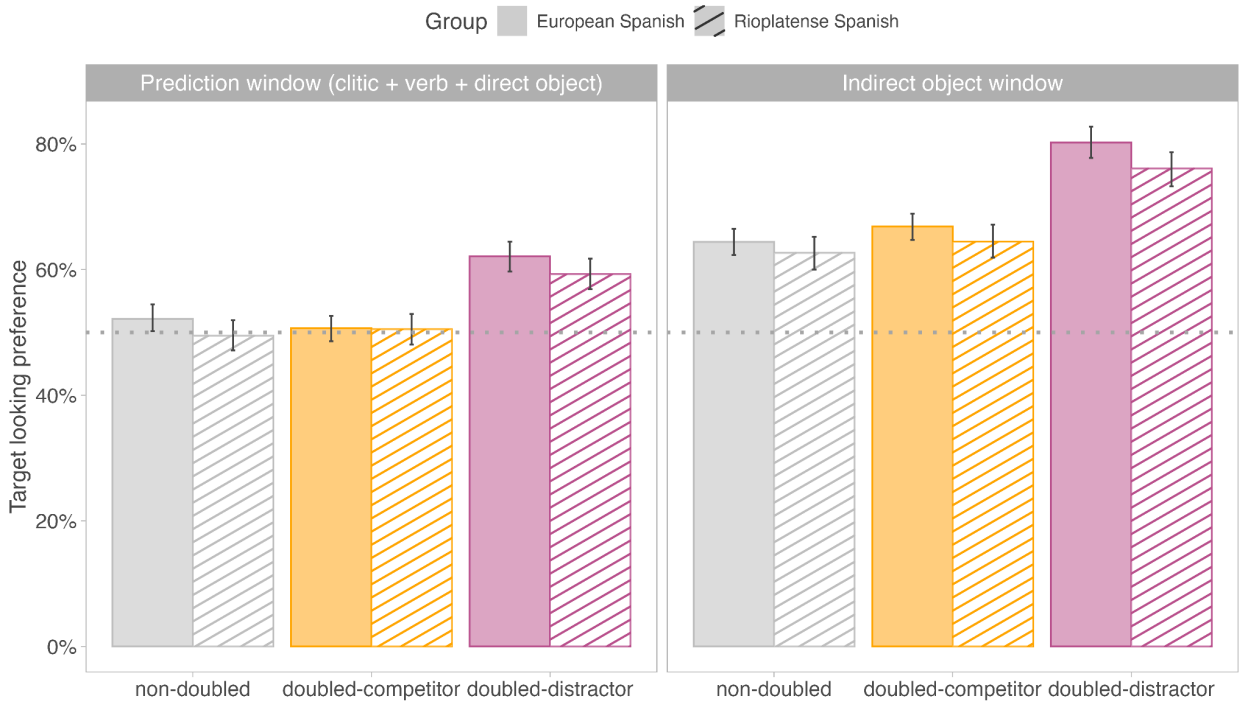


Figure 2. Target looking preference for the two time windows: the prediction window and the indirect object window. We show the plural and singular clitic trials together.



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