Referent Modification is Affected by Cross-Linguistic Transfer in Bilingual Older Adults

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The historical discourse context influences the way the referring expressions are produced: speakers use a modifier when the two contrasting objects are separated in time ('the box' and 'the closed box', Fig.1). Although a bare noun (e.g., the box) is informative in the local context, modifications occur due to prior context, i.e., *lexical differentiation*[1, 2]. It can take various forms, such as a pre-noun (e.g., the closed box) and a post-noun modifier (e.g., the box closed). However, Shekleton et al. (2022)[3] reported that differentiation was observed only in pre-noun, but not in post-noun modifiers in English-speaking older adults. This finding opened the possibility of cross-linguistic differences in lexical differentiation: How would bilingual speakers of two languages with different modification systems (i.e., pre-noun vs. post-noun) would produce lexical differentiation in each language? The cross-linguistic transfer hypothesis (CLT) predicts that the form of lexical differentiation in a dominant language may influence the form of differentiation in a less dominant language. Alternatively, the form of lexical differentiation in one language may be independent of the modification system in the other language and is less affected by it. The present study aims to test this hypothesis with bilingual heritage Russian speakers in Brazil. Brazilian Portuguese (BP) uses post-noun modifiers (default), whereas Russian (RUS) uses both pre-noun (default) and post-noun (specific) modifiers. We predict that (H1) lexical differentiation will be accomplished with post-noun modification in BP, but with both pre- and post-noun modification in RUS, and (H2) post-noun modification in BP will affect the post-noun lexical differentiation in RUS, consistent with the CLT.

Method. 30 older adults (M_{age} = 75.7 years), dominant in BP but moderately proficient in heritage Russian who have lived all their lives in Brazil, completed a referential communication task twice, first in RUS and then a week later in BP (blocked-within subject design). In the task, 4 images in the 3X5 grid were uncovered on each trial (Fig. 1), and the participant described the target image in the red box. The task consisted of 24 critical sets, each of which includes: an entrainment trial, a test trial, and six fillers. The target images in the entrainment and test trials were either of the same category (e.g., the open box vs. the closed box; Differentiation condition) or a different category (e.g., the eye vs. the box; Non-differentiation condition). The target in the test trial was the same across conditions (e.g., the closed box).

Results. Participants' descriptions were coded for whether a modifier was produced on test trials and whether it was a pre-noun (e.g., the closed box) or post-noun modifier (e.g., the box closed). Trials with both pre-noun and post-noun modifiers produced were excluded from the analysis. As predicted by H1, the proportions of pre-noun vs. post-noun modifiers were different in each language (Fig. 2). The data were analyzed in log-link mixed effects models with language (RUS vs. BP) and condition (Differentiation vs. Non-differentiation) as fixed effects. The R package "buildmer" estimated a parsimonious random effects structure for the model[4]. The model including a binary measure of whether the target on the test trial was modified or not revealed significant main effects of language (b = -1.08, z = -3.39, p = .001) and condition (b = -1.38, z = -8.09, p <.001), but no interaction (p = .24). Like English speakers, our participants produced more modifiers in the Differentiation than in the Non-differentiation condition (76% vs. 58%), and in BP vs. RUS. Further, the modifier type (e.g., pre- vs. post-noun) modulated lexical differentiation in each language. In BP, speakers rarely produced pre-noun modifiers, but lexical differentiation was well observed in post-noun modifiers (79% vs. 63%, b = 1.35, z = 5.76, p < 0.001). In RUS, contrary to the findings in English[3], lexical differentiation was observed with both types, e.g., pre-noun (25% vs. 15%; b = 0.97, z = 2.76, p = 0.01) and post-noun modifiers (H2) (37% vs. 31%; b = 0.45, z = 2.05, p = .04).

Conclusion. Bilingual older adults exhibited lexical differentiation in referring expressions in both languages, but we found the cross-linguistic transfer in the production of lexical differentiation. This suggests that although bilingual speakers are equally sensitive to historical discourse context in both languages, the dominant language (BP) modification affected the post-noun modification, the more specific form of modification, in the weaker language (RUS).

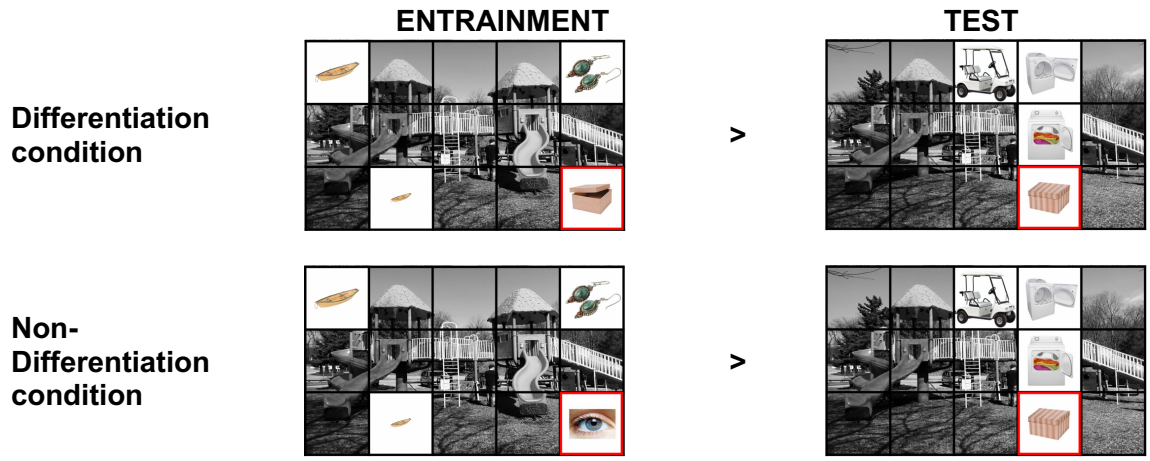

Figure 1. Example entrainment (left) and test (right) trials in the Differentiation and Non-differentiation condition.

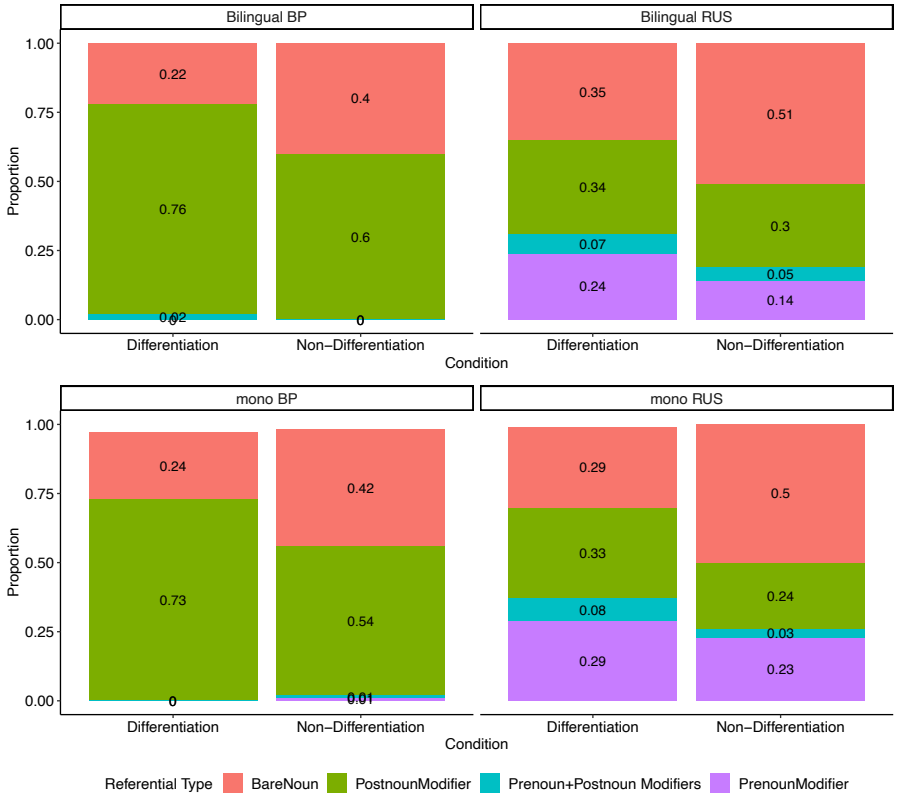

Figure 2. Proportion of modified referring expressions at test trials across various referential types in bilingual speakers (within-subjects) and monolingual speakers (between-subjects) : bare noun (e.g., the box), pre-noun modifier (e.g., the closed box), post-noun modifier (e.g., the box that is closed), and pre-noun+post-noun modifiers (e.g., the closed box that is striped).

REFERENCES 1. van der Wege, M. M. (2009). Lexical entrainment and lexical differentiation in reference phrase choice. *Journal of Memory and Language*, 60, 448-463.
2. Yoon, S. O., & Brown-Schmidt, S. (2013). Lexical differentiation effects in language production and comprehension. *Journal of Memory and Language*, 69, 397-416.
3. Shekleton, A., Heller, D., & Yoon, S. O. (2022) *Sensitivity to prior context in referring expressions across the lifespan*. A talk presented at the Annual HSP Conference. March 26.
4. Voeten, C. C. (2023). *buildmer: Stepwise elimination and term reordering for mixed-effects regression.* https://cran.r-project.org/web/packages/buildmer/buildmer.pdf