

“The trouble with clusters”: Child heritage speakers’ perception of Russian consonant sequences with /j/

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Some phonological contrasts are systematically harder to acquire in a second language even beyond the effects of first-language transfer [1]. A well-known challenge in learning several Slavic languages are the contrasts involving palatalization. In Russian, CV syllables with a prevocalic palatalized consonant additionally contrast with CCV sequences of a palatalized consonant followed by /j/, yielding a three-way opposition of the type Ca vs. C^ja vs. C^jja (e.g. /'kola/ ‘Coke’ vs. /'kol^ja/ ‘diminutive of the name Nikolaj’ and /'kol^jja/ ‘poles in the fence’).

Compared to adult L2 learners, heritage speakers (HSs) are often more successful acquirers and users of their heritage language phonology, due to them being exposed to rich input in early childhood. Despite influence from the societal language, their production and perception can approach monolingual baselines [2]. In particular, target-like or close-to-target perception that is stronger than production, a pattern considered characteristic of heritage phonetics and phonology [3, 4].

This study presents data from an ABX phoneme discrimination task using pseudowords to test perception of the opposition between Russian syllables with (1) plain (velarized) vs. palatalized consonants, as well as (2) palatalized consonants vs. clusters containing /j/. The pseudowords were introduced in ABX sequences as names of imaginary animals (Fig. 1). We report preliminary results from two groups of children aged 6–12 (N = 48, 24 per group): monolingual children in Russia and HSs of Russian whose dominant societal language is Italian.

Accuracy on target trials was analyzed in *R* [5] using a generalized linear mixed-effects model. The analysis revealed a significant interaction between Group and Type of Contrast predictors, indicating that HSs performed close to monolingual peers on CV velarized/palatalized pairs but struggled significantly more on C^ja vs. C^jja distinctions. Monolinguals, by contrast, made occasional errors but did not face additional difficulty with CCV clusters containing [j]. These group differences are illustrated in Fig. 2. Other significant predictors of accuracy include age (older children were more accurate) and trial structure (accuracy was higher when the second item in the ABX was the correct answer).

The differences found in HSs are unlikely to reflect direct influence from the societal language, since neither contrast exists in Italian. We consider several possible explanations for the core finding. One is limited opportunities for perceptual mapping of Russian’s three-way opposition onto categories available in Italian (which arguably provides only two relevant categories, e.g. CV in *vado* vs. the CCV palatal glides in *viaggio*). Whether the Italian palatals /k/ and /ɲ/ could provide a third mapping route remains unclear, given that we found no significant effect of consonant type. Second, C^jja clusters are less frequent in Russian than C^ja, and the functional load of the C^ja vs. C^jja distinction in naturalistic input may be relatively low. Finally, consistent exposure to Russian Cyrillic orthography, typically limited for HSs, may be necessary to scaffold the acquisition of these clusters.

This study advances our understanding of early heritage bilinguals’ phonological grammars and introduces a previously unexamined language pair to the heritage phonetics and phonology literature. Although HSs’ success rates exceed those reported for adult L2 learners [6, 7], they diverge from monolingual peers in their perception of clusters with /j/. The results converge with orthography-based findings [8], suggesting that widely reported spelling difficulties among HSs may have deeper perceptual roots. At the same time, the findings challenge the assumption that fluent heritage speakers’ listening abilities are uniformly close to monolingual baselines: while heritage-language speech is generally intelligible to them, their underlying phonological representations may differ. Further work on these differences may help explain persistent difficulties in heritage literacy development.

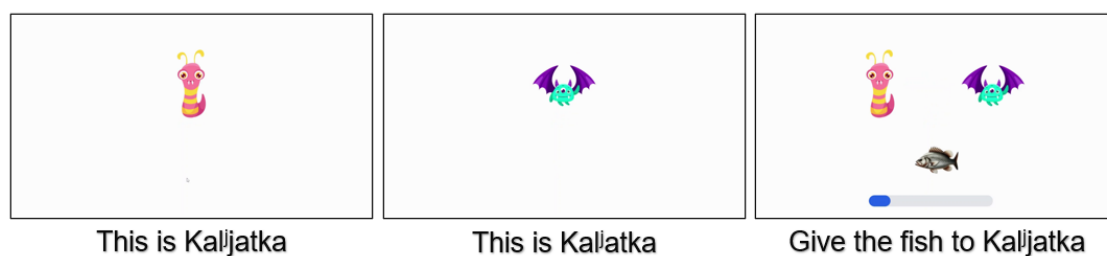


Fig. 1. Visual interface for the ABX task (written input is shown here for presentation purposes only and was presented as audio instructions in the actual task).

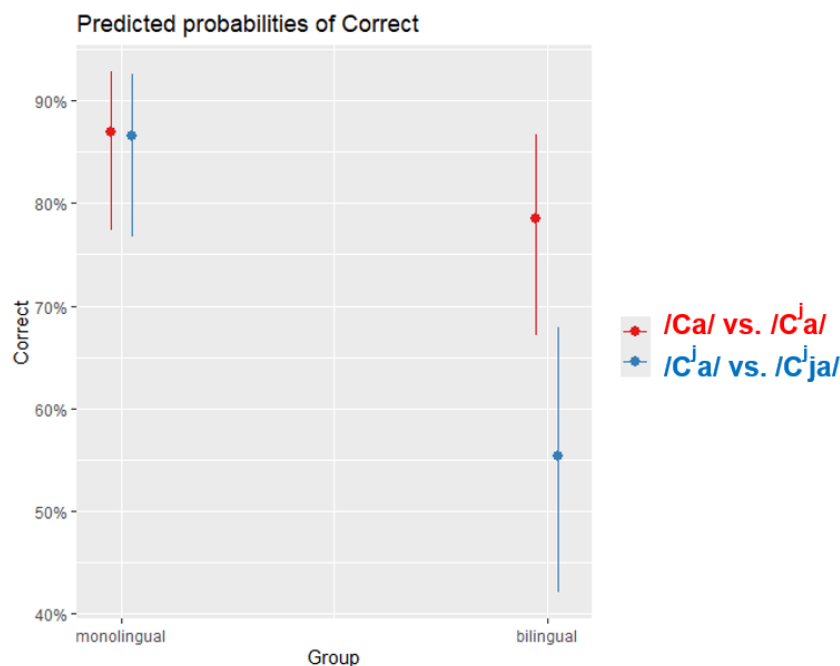


Fig. 2. Predicted probabilities of correct responses by group, illustrating group differences captured by the mixed-effects model. Error bars represent 95% confidence intervals.

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