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Do processing resource limitations shape heritage language grammars?

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Commentary

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Understanding the mechanisms that contribute to shaping heritage language grammars is crucial for developing a model that is well grounded both empirically and theoretically, and from which testable predictions can be derived. Polinsky and Scontras (Polinsky & Scontras, 2019) deserve praise for moving the field closer to developing such a model by identifying two possible triggers for heritage language grammars' divergence from their baseline varieties: reduced input and economy of online resources. In this brief commentary I will focus on the latter of these.

The hypothesis that grammars are shaped by processing economy constraints or computational resource limitations is increasingly gaining support (e.g., Christiansen & Chater, 2008; Gibson, Futrell, Piantadosi, Dautriche, Mahowald, Bergen & Levy, 2019; Hawkins, 2004; Fedzechkina, Chu & Jaeger, 2018). Extending this hypothesis to heritage language grammars, Polinsky and Scontras discuss how online resource limitations might be partly responsible for three typical features of heritage language grammars: the avoidance of ambiguity, resistance to irregularity, and structural reduction. Although considering how computational resource limitations might shape heritage language speakers' competence grammars is undoubtedly intriguing, empirical evidence from processing studies that supports the assumptions underlying the authors' hypothesis is currently lacking.

First, there is at present little evidence for the authors' assumption that producing or comprehending a heritage language is computationally more costly than processing a non-heritage native language. Although heritage language speakers may be less fluent readers than monolingual speakers due to reduced exposure to written heritage language input, limited literacy instruction or a smaller vocabulary, even speakers with intermediate heritage language proficiency do not necessarily show a general slow-down in reading-based experiments, or otherwise divergent processing patterns (e.g., Jegerski, 2018). We need more evidence from real-time processing studies to see whether the above assumption does indeed hold true. Individual differences in cognitive capacities (such as working memory) might be expected to affect heritage language speakers' performance such that high-capacity heritage language speakers should be less likely to show evidence of an economy-driven reduction in grammatical variability compared to low-capacity speakers.

Neither do we know whether heritage language speakers process their dominant language more efficiently than their non-dominant heritage language. To find out whether this is the case, heritage language speakers would need to be tested in parallel processing tasks in both of their languages. As Polinsky and Scontras point out in their article, doing so would also allow researchers to test whether divergent performance in a heritage language results from transfer from the dominant language. Using online processing measures can furthermore help reveal divergence that is undetectable in offline tasks, as has previously been demonstrated in second language processing research (e.g., Boxell & Felser, 2017; Felser & Cunnings, 2012).


There is likewise no evidence that maintaining two grammars in parallel should create a particular challenge for heritage language speakers. Across the globe, bilingualism or multilingualism is extremely common, and there is no reason to think that maintaining two or more grammars threatens to exhaust an individuals' representational capacities or processing resources. Even if it did, it is not transparent why heritage language speakers should resort to restructuring their native language grammar so as to free up processing resources; rather than to restructuring the dominant language grammar to the same end, or indeed restructuring both grammars. Again, testing heritage language speakers in both of their languages can be useful as it might reveal not only parallel acquisition or maintenance (Kupisch, Belikova, Özçelik, Stangen & White, 2017) but also parallel restructuring effects (Felser & Arslan, 2019).

Finally, considering the reduction of ambiguity in heritage language grammars, it is not obvious why online resource limitations should lead to a grammatical system that avoids ambiguity. Ambiguity has been argued to aid processing efficiency by allowing speakers to re-use the same linguistic forms for different communicative purposes (Piantadosi, Tily & Gibson, 2012). Research on real-time language comprehension has shown that comprehenders usually disambiguate ambiguous input within a matter of milliseconds and without any measurable effort or conscious deliberation. There is often a clear preference for one of the available form-to-interpretation mappings, and this preference may be subject to cross-linguistic variation. Results from processing studies show that heritage-language-specific ambiguity resolution

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preferences can be maintained even if the dominant language shows different resolution biases (Jegerski, 2018, Knospe, 2019). Dispreferred mappings – such as inverse scope readings – may indeed be more difficult to compute than preferred mappings, but they will also be less frequently attested in heritage language learners' input and so may be more likely to be lost.

To conclude, Polinsky and Scontras's hypothesis about heritage language grammars being partly shaped by online resource limitations should encourage more researchers to include real-time processing measures in their repertoire of test instruments. One challenge for future research will be to tease apart the roles of processing economy constraints and linguistic experience in triggering the restructuring of heritage language grammars.

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