Does morphological simplification increase learnability?

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Language change is sometimes hypothesized to be triggered by sociocultural factors (Ladd, Roberts & Dediu, 2015). In particular, one hypothesis that has gained prominence states that large proportion of non-native speakers can trigger morphological simplification (Dahl, 2004; McWhorter, 2007; Trudgill, 2011). Recently, we ran a large-scale iterated learning study (Berdicevskis and Semenuks, submitted) in order to complement the existing typological evidence in favour of this hypothesis (Lupyan & Dale, 2010; Bentz & Winter; 2013). Our results confirm that imperfect language learning facilitates morphological simplification. One unexpected (but clearly present) pattern in the data is that while the languages do simplify, they do not become more learnable. This finding is unexpected in the light of the linguistic niche hypothesis (Lupyan & Dale, 2010), which proposes that morphology simplifies *because* of the pressure to be more learnable by imperfect, non-native learners. This brings the question of whether simplification is adaptive change, and if no, why it can be triggered by imperfect learning.

To address this question, we piloted a simple experiment directly testing whether given the same meaning space languages that express meanings through more morphologically complex structures are harder to learn. In the experiment, native English speakers had to learn an artificial language that expressed meanings of intransitive English sentences with pronoun subjects like "I am walking". We manipulated the structure of the language between participants in a 2x2 design: (1) whether person and number are expressed in separate morphemes that are agglutinated within the pronoun or are fused together in one morpheme unanalyzable into parts and (2) whether the pronoun is agglutinated to the verb. The number of participants per condition is indicated in Figure 1. The experiment finished after the language was learned perfectly by the participant. The number of learning rounds that it took the participant to fully learn the language was measured.

ANOVA revealed no significant effects of either person-number fusion in the pronoun or pronoun-verb agglutination. Bayesian ANOVA suggested that the languages are equally easy to learn regardless of their structure (see Figure 1). Thus, simpler morphology does not necessarily imply higher learnability. This finding is at odds with the theoretical and empirical claims that imperfect learning causes morphological simplification. What drives the decrease in absolute complexity if not pressure towards lower relative complexity (difficulty for non-native learners)? A related question is to what extent experimental findings can be generalized to real human languages. We discuss possible answers to these questions and future studies that can help to test various explanations of our preliminary results.

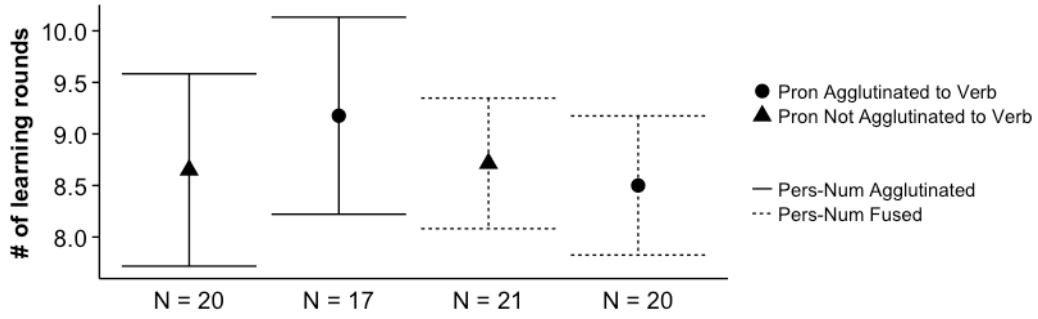

Figure 1: Average number of learning rounds for artificial languages of different structures.

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