Morphotactically indicative sound shapes are learnt more easily in artificial language learning experiments

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We present an artificial language learning experiment investigating the hypothesis that speakers prefer to learn and use words whose phonotactic shapes indicate their morphological structure as unambiguously as possible.

Extant research suggest that speakers are sensitive to the occurrence frequencies of phonotactic patterns in the lexicon and in use. Words whose phonotactic shapes conform to frequent and probable patterns are learnt, retrieved and produced more quickly and accurately (Storkel 2001, Goldrick and Larson 2008, Kelley and Tucker 2017). Moreover, complex word forms whose phonotactic shapes predict their morphotactic structures based on distribution frequencies (e.g., /-gz/ occurs only in complex forms like *egg+s*) are processed faster (Korecky-Kröll et al. 2014, Post et al. 2008). This suggests that speakers learn words better if their sound shapes are unambiguous – or at least highly probable – indicators of their morphotactic structure.

To explore this hypothesis, we conduct an artificial language learning experiment (cf., Hudson Kam and Newport 2005, Culbertson 2012). Participants are asked to learn a miniature artificial language and subsequently reproduce it from memory. This language comprises phrases (e.g., *matk tmit* 'green thing') that consist of morphologically simple modifiers (e.g., *matk* 'green') and nouns that can occur in unmarked singulars and suffixed plurals (e.g., *tmit* 'thing' – *tmit+k* 'things'). In one experimental condition (A), the same coda types (e.g. /tk/) can occur in both simple and complex word forms. In the other (B), some coda types indicate complexity unambiguously (see Table 1).

	Condition A (ambiguous)		Condition B (indicative)	
	SG	PL	SG	PL
Visual meaning				
Phon. pattern	matk tmɪt	matk tmɪt+k	mat tmɪt	mat tmɪt+k

Table 1: Exemplary artificial phrases in the ambiguous vs. the morphotactically indicative condition.

Our goal is to compare the learnability of word forms in the two conditions to identify possible effects of the morphotactic ambiguity of phonotactic patterns. We hypothesize that participants learn word forms whose sound shapes are unambiguous exponents of morphological complexity (condition B) more accurately than those with morphotactically ambiguous shapes (condition A). Further, we expect that speakers in condition A will systematically modify the ambiguous shapes in a way that makes them increasingly indicative of their morphological structure.

In our talk, we describe our methods and findings in detail and relate them to research on phonological preferences, morphonotactics (Dressler and Dziubalska-Kołaczyk 2006, Baumann and Kaźmierski 2018), and sound change (Wedel 2006, Blevins 2009, Matzinger and Ritt 2022).

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