Backing vacillating stems
Hungarian vowel harmony in fast speech

A number of Hungarian stems display "vacillation" in vowel harmony. Thus, the dative of *fotel* ('armchair') can be either *fotelnak* or *fotelnek*, allowing both allomorphs of the case suffix *-nAk*. These stems are usually composed of back vowels followed by front neutral vowels. Numerous factors influence the vowel of the suffix, including phonological, morphological, lexical, but probably also syntactic, semantic and stylistic ones. In our research, we have focused on the effect of a less examined parameter: speech rate.

Speech rate might influence vowel harmony for a number of reasons. Certain markedness constraints related to articulatory ease could become more prominent as speech is speeded up. For instance, a colleague has suggested that an increasing role of local effects, and a demotion of distant harmony, would augment the proportion of the front allomorph, harmonizing with the last vowel of the vacillating stems. An opposite effect can also be argued for: the shortened time elapsing between the (stressed) back vowel and the suffix could strengthen that back vowel's influence on the suffix.

A further argument for studying fast speech is provided by theories of mental computation in Optimality Theory (Smolensky & Legendre, 2006; Bíró, 2006). They suggest that "performance errors" are the result of imperfect mental computation, and faster computation—less time at the disposal of the algorithm—would result in more erroneous outputs. In such an OT account of Hungarian vowel harmony, the two suffixed variants of a vacillating stem would each be locally optimal, that is, more harmonic than their neighbours. The winner of the traditional OT competition, the globally optimal form should be the candidate whose frequency decreases in fast speech, even if this frequency remains above 50%. Therefore, studying slight changes in the frequencies of the alternative forms will also contribute to a proper OT analysis of Hungarian vowel harmony.

Our experiment adopts the idea of Schreuder and Gilbers (2004) and Schreuder (2006). To elicit fast speech data, subjects had to answer multiple choice questions orally as if they were participating in a quiz (we reported their reaction time). Subsequently, they also responded the same questions—presented in the same order, with the same fillers—by typing their answers. No time pressure and familiar questions, this time.

The obviously correct answer to each quiz question was a vacillating word. One of the wrong answers took back suffixes, and the other front suffixes. The three words, semantically related and composed of equal number of syllables, were presented in a randomized order and in a non-suffixed form (in the nominative case). As the quiz questions required an answer in the dative or inessive case, subjects were emphatically instructed to provide suffixed answers.

The experiment was run with $N = 26$ subjects (11 male and 15 female, in the age range of 20 to 57, with the median being 25). In this matched-pair design, one observation

pair was one subject's responses in the oral modality and written modality. In total, we collected 221 valuable pairs. The written responses were automatically evaluated by the software we developed, whereas the oral responses were judged by the two authors independently (inter-rater agreement $> 98\%$, Cohen's kappa index $= 97\%$).

We employed ten target words, half of which was tested with the dative (*-nAk*) suffix, and the other half with the inessive (*-bAn*) suffix. We distinguished between the two meanings of *farmer* ('1. jeans pants; 2. farm operator'); we also included words that phonologically could, but did not, or hardly did vacillate, and the antiharmonic word *férfi* ('man'). The following table summarizes our results: the absolute frequencies of each stem followed by a back or front allomorph in the Hungarian National Corpus (`http://mnsz.nytud.hu`, for the sake of comparison) and in our experiments (including unmatched data), along with observation pair *(fast oral,* matched to *normal typed)* frequencies:

			Corpus		fast		normal		*(fast, normal) pairs*			
	allomorph chosen:		B	F	B	F	B	F	BB	BF	FB	FF
hamburger	'hamburger'	.Iness	1	11	1	24	0	25	0	1	0	23
sláger	'hit'	.Dat	1	127	0	21	1	24	0	0	1	19
dzsungel	'jungle'	.Iness	30	569	0	25	1	25	0	0	1	24
hotel	'hotel'	.Iness	236	1419	6	19	1	24	1	5	0	18
farmer	'jeans'	.Dat	4	4	7	17	5	17	3	2	2	14
farmer	'farmer'	.Dat	13	30	10	15	6	17	6	4	0	12
fotel	'armchair'	.Dat	12	3	6	19	4	21	3	3	1	17
férfi	'[male] man'	.Dat	3908	928	12	2	16	7	9	2	1	1
Athén	'Athens'	.Iness	2717	359	22	4	23	2	20	1	3	1
balhé	'roughhouse'	.Iness	24	0	24	0	26	0	24	0	0	0

Among the non-alternating words, the single case of *hamburgerban* emerged in the stressed, fast speech condition. Slightly alternating words displayed some cases of fast speech errors and written modality hyper-corrections. Most interestingly, collapsing the four really vacillating words ('hotel', 'jeans', 'farmer' and 'armchair'), we obtain a significant result: the probability of the back suffix is increased in fast speech (using McNemar's Chi-squared test with continuity correction, $\chi^2 = 5.8824$, df $= 1$, $p = 0.0153$).

In conclusion we propose, based on a restricted set of words, that vacillating Hungarian stems "primarily" prefer front suffixes due to local harmony. Back suffixes are results of additional factors promoting the influence of a distant back vowel earlier in the stem; and a faster production rate is exactly such a factor. Yet, we have not gathered sufficient evidence to posit the same phenomenon for (almost) categorically behaving stems.

References

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