Against an Asymmetry between Initial and Final Extrametricality

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Issue

- **The asymmetry between initial and final extrametricality** (Kager 1995, 2005, Hyde 2011)

1) Distributional evidence (e.g. Hyde 2011)
2) Phonetic motivations (e.g. Liberman 1960, Keating et al. 2003, Lunden 2007)

- **Debate** Final extrametricality has been regarded natural while initial extrametricality unnatural or impossible: "The right edge is the unmarked (and perhaps only) edge where extrametricality may occur" (Kager 1995:380). Buckley (2009), however, opposes to this view, arguing instead that initial extrametricality should be included in the prosodic typology because it is attested in a few languages.

- Is the edge asymmetry is encoded in our grammar or not?

Research Question

In this light, this study examines whether phonological universals favors final extrametricality over initial extrametricality. More specifically, the current study investigates **whether it is easier to learn the Latin stress pattern with final extrametricality than the Kashaya pattern with initial extrametricality.**

The Latin stress pattern (Hayes 1995)

: final syllable extrametrical, stress on heavy penult, else antepenult (right-to-left trochees)

e.g. a ('mi:) <ke> 'friend'

ra ('pi di) <ta:s> 'speed'

The Kashaya stress pattern (Buckley 1994)

: first syllable extrametrical, stress on second, else third (left-to-right imabs)

e.g. <pis> (ku ˈdu) 'bad, ugly'

<kon> (ˈhom) (tʰu:) nu 'mountain lizard'

These two patterns are formally equivalent mirror-images where both ignore outermost syllable, stress the second one in if it's heavy, otherwise the third one in. .

Methods

Artificial language learning paradigm: Participants were exposed to artificial words for a short period of time and then tested on new test words.

Stimuli The stimulus set consisted of three-, four- and five-syllable nonce words made up of 12 different syllables: four different consonants, [p t k s], combined with three different vowels, [i, a, u]. 54 training words and 18 novel words were constructed.

Subjects Twenty two native speakers of Seoul Korean (11) and American English speakers (11) aged between 20 and 35 years participated in the study.

Procedures Subjects were randomly assigned to learn either final extrametricality (Latin) or initial extrametricality (Kashaya). The experiment consisted of three parts:

1) In the **learning session**, subjects listened to nonce words and looked at a picture corresponding to each word.
2) In the **training session**, subjects listened to nonce words and were tested on the words they had just learned. Subjects were presented with two choices of the stimuli, a correct and an incorrect version, and had to choose which version matched the stress pattern they learned **(2AFC)**. Feedback was provided to improve learnability.
3) In the **novel word testing**, subjects were tested on 18 novel words. The new test words repeated the stress pattern they were trained on, so participants demonstrated their understanding of the underlying pattern by scoring well on the novel words.

Data analysis: Mixed Effects Model

[Fixed effects]

1) Language (Latin, Kashaya)
2) Native language of subjects (Korean, American English)
3) Word length (3-, 4- and 5-syllable words)
4) Position of stress within a word (Word-initial, Intermediate, Word-final)
5) Left/Right-edge prominence of the stressed syllable (Left, Right)
6) Syllable weight of stressed syllable(HL, HH, LL, LH)

Heavy – Light: The stressed syllable of the correct choice is heavy while the stressed syllable of the incorrect choice is light.

e.g. Latin [ta.ka.pa.tát.sa] (correct) vs. [ta.ká.pa.tat.sa] (incorrect)

Light – Heavy: The stressed syllable of the correct choice is light while the stressed syllable of the incorrect choice is heavy.

e.g. Latin [kik.pí.ti.si] (correct) vs. [kík.pi.ti.si] (incorrect)

[Random effects] Subject & Test item

Results

Factor	Estimate	SE	Pr(>|z|)
(intercept)	3.1705	0.4444	<0.001
Word Length=5-syllable	-1.2933	0.3673	<0.001
Syllable weight=HH	-1.1705	0.4830	<0.05
Syllable weight=LH	-1.4599	0.4727	<0.01
Syllable weight=LL	-1.4071	0.4149	<0.001

Table1. Estimates for all predictors in the analysis of listener response in the identification task.

i) No significant effect of *Language* (p=0.3596)

The Latin and Kashaya stress patterns were learned equally well in both Korean and American English speaker groups.

ii) No significant effect of *Native language of a speaker* (p=0.52481)

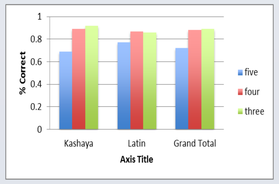
Regardless of their native language, subjects' performance to learn the assigned language (Latin or Kashaya) showed no significant difference.

iii) Significance of *Word Length*

3- and 4- syllable words were learned significantly better than 5-syllable words.

Between 3- & 5-syllable words : t(18)=3.81, p<0.01

Between 4 & 5-Syllable words : t(15)=2.69, p<0.05



iv) No significance of *Position of Stress* (p=0.16722)

It is unlikely that subjects selected a word whose stress falls on a certain position. Words with word-initial, intermediate and word-final stress were learned equally.

v) Significance of *Syllable Weight*

Subjects **performed best** at identifying a word with correct stress pattern when the stressed syllable of a correct choice is heavy while that of an incorrect choice is light. Meanwhile, they had **most difficulty** in identifying the correct stress pattern when the stressed syllable of a correct choice is light while that of an incorrect choice is heavy.

Discussion

1. No asymmetry between typologically marked and unmarked patterns in grammar

- Latin and Kashaya stress patterns were equally learned well.
- Synchronic grammar does not seem to treat final and initial extrametricality differently.
- The findings of this study raises questions about the attempt to encode naturalness or unmarkedness in synchronic grammar.

2. Implication for prosodic typology

- Initial extrametricality is considered unnatural or impossible and excluded in some typological works (e.g. Kager 2005, Hyde 2002, 2012)
- Languages with initial extrametricality exist: Kashaya (Buckley 1994), Azkoitia Basque (Hualde 1998)
- An essential requirement for a typology of possible stress systems is descriptive adequacy (Chomsky 1964).
- I argue that the prosodic typology must include initial extrametricality. It is true inclusion of initial extrametricality overgenerates unattested patterns and yes, it is a problem. Excluding the attested patterns, however, is a more serious problem.

3. Why is final extrametricality more widely attested?

- A series of chronologically ordered natural sound changes can give an 'unnatural' rules which lacks any synchronic phonetic motivation (Kenstowicz & Kisseberth 1997:64f)
- There is no force which keeps rules natural. Rules become unnatural over time (Hyman 1975)

Selected References

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