

On the interdependency of prosodic phrasing and prosodic prominence in Hungarian

Introduction and aims: It is generally believed that intonational phrases (IP) and prosodic words (PW) are universal prosodic units. At the same time, languages might also make use of units located hierarchically between IPs and PWs such as the intermediate phrase (ip) and the accentual phrase (AP) [2]. The distribution of these units is heterogeneous across languages both in terms of their availability (both, one or neither) and their realization [4]. The goal of this paper is to investigate whether these units are present in Hungarian prosody.

Background: It is generally assumed that ip-s are characterized by a medium degree of phrase-final lengthening and by a pitch reset at the left edge of the phrase. They can contain more than one pitch accent [5]. According to [1], ip-final boundary tones are associated with smaller pitch movements than IP-final ones, and the following pause, if present, is short. At the same time, APs are preceded by a small degree of lengthening, they contain only one pitch accent, and their boundary tones are typically uniform [4]. If two adjacent content words are closely related syntactically or semantically in a language with APs, they tend to form one AP, whereas in longer or more complex syntactic phrases more pitch accents and thus more APs are expected. Previous research on Hungarian [7] has suggested the presence of a prosodic unit which always begins with a pitch accent and is sometimes preceded by a pause. [3] also argues for a basic unit of prosodic structure that has a falling contour and a tail which is arbitrarily long, depending on the phonological length of the corresponding constituents. Although there are some terminological differences between these proposals, based on their characterizations they are closest to the concept of AP in the classification above.

Although the interface between prosody and syntax is difficult to define [5], [6] claims that there is a constituency correspondence between the two structures [6]. In the present study, the analysis of prosodic phrases is therefore based on AdjPs and PPs, since these syntactic structures can vary in their complexity and are thus potential candidates to form an ip and to contain one or more APs.

Materials and methods: 47 instances of AdjPs and PPs were examined in a semi-spontaneous maptask dialogue. Each syntactic phrase contained 2 or 3 content words. Syntactic phrases which were interrupted by hesitation or were not preceded by at least one accented word were excluded from the data set. The analysis took into consideration: i) the number of pitch accents on content words within the syntactic phrases as well as the tonal patterns of these accents, ii) boundary tones preceding and following the phrases, iii) potential boundary tones within the syntactic phrase, as well as iv) the presence of pitch resets and downsteps at the edges or within the syntactic phrase. Pitch accents were categorized as H(igh), L(ow), HL (falling), LH (rising), or x (no accent), and a potential presence of pitch reset and downstep was noted. Boundary tones were given as H, M(id), L or 0 (no boundary). Each phrase was annotated by 3 labellers, and an agreement on non-uniform labels was sought prior to analysis.

Results: The most frequent pitch accent was HL (58%), followed by H (27%). Deaccentuation was rare on phrase-initial content words (9%), but relatively frequent on the second content word (57%), both in 2- and 3-word-phrases. In phrases with 3 content words, the last word was less often deaccented (38%).

Syntactic phrases were usually preceded and nearly always followed by a prosodic boundary (83% and 96%, respectively). Phrase-medial boundaries were relatively rare

(28% before the 2nd content word and 38% before the potential 3rd one), and they were nearly always followed by an accented word (92%). Deaccented phrase-medial words hardly ever occurred together with a preceding boundary (only in 4% of all cases). Phrase-initial content words were nearly always accented and preceded by a boundary (in 84% of all cases).

The distribution of boundary tones show no uniform pattern. This is probably due to the fact that they were located in different sentence positions (final vs. non-final), and that spontaneous utterances often end with a H boundary tone instead of L.

Discussion: The prevalence of HL-type accents show a homogeneous pattern and are in accordance with [3]’s observations. In our study, accent distribution was indeed sensitive to phrase complexity: non-initial content words were more often deaccented in shorter than in longer phrases. Another important finding is the co-occurrence of accents and preceding boundaries: since Hungarian prosody is left-headed, it might well be that emphasis is further enhanced by a preceding boundary. These findings can be interpreted as preliminary evidence for the presence of accentual phrases in Hungarian. This is also in line with [7]’s and [3]’s model.

According to [1], pitch movements in ip-final boundary tones have a smaller range than IP-final ones. Such boundary tones (usually labelled as M) did occur in our material, but they were often followed by a relatively long break. If these boundaries were assumed to be ip boundaries, a following pitch reset should be present. However, the material did not contain cases of pitch reset. These facts suggest that ip-s might not be relevant for Hungarian prosody.

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References

- [1] Amalia Arvaniti and Mary Baltazani. Intonational analysis and prosodic annotation of spoken greek corpora. In Sun-Ah Jun, editor, *Prosodic typology*, pages 84–117. Oxford University Press, Oxford, 2005.
- [2] Mary Beckman and Janet Pierrehumbert. Intonational structure in Japanese and English. *Phonology*, pages 255–309, 1986.
- [3] László Hunyadi. *Hungarian sentence prosody and universal grammar: on the phonology–syntax interface*. Lang, Frankfurt/Main, 2002.
- [4] Sun-Ah Jun and Janet Fletcher. Methodology of studying intonation: From data collection to data analysis. In *Prosodic typology II: the new development in the phonology of intonation and phrasing*. University Press, Oxford, in press.
- [5] D. Robert Ladd. *Intonational phonology, 2nd ed.* Cambridge University Press, Cambridge, 2008.
- [6] Elizabeth Selkirk. The syntax-phonology interface. In *The handbook of phonological theory*. Blackwell Publishing, Oxford, 2011.
- [7] László Varga. *Intonation and stress: evidence from Hungarian*. Palgrave Macmillan, Basingstoke & New York, 2002.