

Deaccentuation in Hungarian and its logical background

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Abstract

New information in a sentence is expressed by prosodic prominence in many languages. However, the reverse is less obvious: *given* information and the lack of emphasis do not necessarily go hand in hand. This is especially true of languages that are not flexible with respect to their sentence-internal accentuation patterns, i.e. in which a nucleus shift is not (always) possible. Based on predictions in the literature, we investigated whether deaccentuation is obligatory in Hungarian in certain sentence positions. A production and a perception experiment, the latter based on naturalness judgements, showed that the deaccentuation of the verb is obligatory if a focus other than the verb is present in the sentence. Sentence-initial content words were always accented, no matter whether they expressed *given* information or not, and mismatching patterns did not elicit low naturalness scores in the perception experiment. Our results show that Hungarian utilises deaccentuation in a different way from Indo-European languages: it serves as an expression of logical structure rather than of information structure.

Index Terms: deaccentuation, Hungarian, speech prosody, accent, syntax

1. Introduction

Context-based human communication usually contains a chain of more and less important bits of information. Important information is often realised as the focus of the sentence, either in terms of prosodic emphasis, or of syntactical position, or both. Less important information that is already known or redundant for the communication usually receives less or no prosodic emphasis. The interaction of information structure, syntax, and prosody has been subject to a high number of investigations in the past few decades.

While *new* information that has a heavy informational weight is usually accompanied by prosodic emphasis, the reverse is less obvious: *given* information and low informational weight do not necessarily go hand in hand with deaccentuation, i.e. with the lack of prosodic emphasis.

The flexibility for words or constituents to be deaccented seems to be coupled to the fact whether the language uses word order to express information structure. This aspect has been introduced by [1]. Languages that are called *plastic* signalise information structure primarily by accent shift. English that has a fixed word order is a typical example: depending on the context, any content word of the sentence *Marianna made the marmalade* can have stronger prominence than the other units. This variability of prosodic patterns is called plasticity.

On the other hand, there are languages in which prosodic patterns are less flexible such as Romance languages or Czech [2] and Slovak, in which sentence-final words usually bear the strongest prominence. Since languages in this group have usually a more or less free word order, lexical units that are to be

emphasised are moved into sentence locations that are typically associated with more prominence – being the sentence-final position in these languages. The means of syntactic reordering can be scrambling (word order shift) or marked syntactic structures (right dislocation, clefting, fronting etc.). [3] show that plasticity is continuous: while Catalan is an example of a very strict sentence-final nuclear accent pattern, Italian, and to some extent also Spanish, can deviate from the default pattern. In some cases, sentence-final prominence can even override information structure, i.e. a new element can be deaccented if it cannot be shifted to the sentence-final position due to syntactic reasons, such as in Rumanian [4].

However, high prominence can also be associated with other sentence positions than the final one. Languages such as Georgian [5], Finnish [6] or Hungarian [7] define the most prominent position with respect to the verb. The interrelationship of information structure and syntax is consequently more complex in these languages. It is not quite clear how variable prosodic patterns in these languages are, especially whether deaccentuation due to informational weight (e.g. givenness) can take place irrespective of syntactic position.

This question will be explored by the example of Hungarian in more depth. It is claimed that in this language, word order is based on logical functions rather than syntax or information structure. According to [7], Hungarian sentences can be divided into a topic and a predicate part. The topic position includes units about which a prediction is made in the predicate part of the sentence, i.e. it serves as the *logical* subject of the sentence – whether it is the grammatical subject or not. The topic is not necessarily identical with the first constituent of the sentence – a sentence can start with the predicate that includes the focus and the verb (if they are not identical) and contain no topic. The topic–predicate structure will be demonstrated by the following sentence *Dávid találkozott Góliáttal* (David meet.Past Goliath.WITH), ‘David met Goliath.’

	TOPIC	PREDICATE
(a)	Dávid	találkozott Góliáttal.
(b)	Góliáttal	Dávid találkozott.
(c)		Dávid találkozott Góliáttal.

According to [7], the nuclear accent falls onto the first constituent of the predicate in Hungarian (indicated by bold letters in the above example). It is important to note that while the word order is the same in example (a) and (c), the logical structures of the sentences are different: in (a), it is said about David that he met Goliath, in (c) there is no logical subject, and David is the focus of the sentence. The difference between the logical structures is expressed by the accentuation of the verb, as in (a), or its deaccentuation, as in (c).

This view is also expressed by [8] and [9] according to whom the verb is always deaccented if the sentence has a focus or if the verb is preceded by a verbal modifier such as a bare

noun – this is also referred to as eradicating accent. At the same time, [10] and [11] do not regard the deaccentuation of the verb as obligatory.

A second case for potential deaccentuation is the topic that does not carry new information as a default. Consequently, [7] regards the topic as deaccented. Others, such as [10] and [11] claim that the sentence-initial content word is always accented, even if it has a topic function.

The third area of our investigation was whether *given* information is deaccented if syntactic reordering is not possible for grammatical reasons.

In the following, we will present a perception experiment based on naturalness judgements of the presence or absence of deaccentuation in Hungarian sentences. We will seek answer to the following questions:

- Is the deaccentuation of the verb obligatory if it is preceded by a focus?
- Is the accentuation or deaccentuation of the topic systematic?
- Are the observed patterns dependent on sentence complexity?

2. Production experiment

2.1. Material and methods

The production study was based on a sentence containing a noun phrase (NP) preceded by a definite article and a verb. This structure theoretically provides the possibility to put the emphasis on the noun phrase (then it is focus), on the verb, or on both (in both cases, the NP functions as a topic), depending on context:

av
 a MANikűröst MEnesztették.
 The manicurist was fired.

bav
 a MOnoki MANikűröst MEnesztették.
 The manicurist from Monok was fired.

cbav
 a NÉma MOnoki MANikűröst MEnesztették.
 The silent manicurist from Monok was fired.

Sentences were of the type **av**, **bav**, or **cbav**. 7 participants read small dialogues. The goal was to elicit the complete permutation of possible accentuation patterns (**CBAV**, **CBAv**, **CBav**, etc., where capitals signalise expected accentuation, minuscels deaccentuation). This was done by varying *given* and *new* information depending on the previous question, e.g. *Did you say that the talkative manicurist from Szeged was fired?* for an expected pattern **CBav**.

Subjects were 7 native Hungarian experienced female readers who were recorded in pairs, apart from speaker 7 who read the entire dialogue alone (for reasons to be explained below). 26 target sentences were embedded in 12 small dialogues. Participants were familiarised with the text prior to recording. They read dialogues with two repetitions: the first one according to the context, whereas for the second reading they received a copy in which words that were to be accented were underlined.

364 sentence realisations were recorded in a sound-proof room at the Institute of Phonetics, University of Munich, using head-mounted microphones. Prominence strength was labelled

manually based on f0 detection in Praat. A large f0 range and/or a steep f0 slope were regarded as a strong accent, a movement with a small f0 extension as a weak one. If no f0 movement was present on the stressed syllable and pitch did not differ from that of the surrounding syllables, the word was categorised as deaccented.

2.2. Results

There was an overall tendency to accent each unit regardless of the preceding question. Deaccentuation occurred only in 21% of all cases, although contexts were created so that 50% of the content words were *given* information in the target sentences.

2.2.1. Deaccentuation of the verb

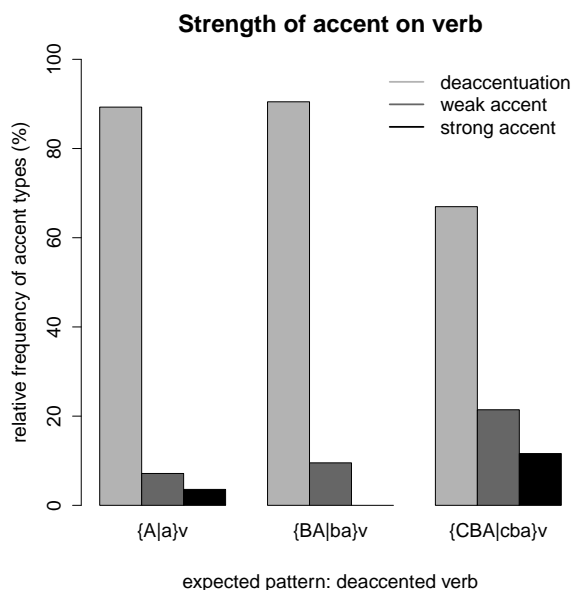


Figure 1: *Strength of accent on verb if deaccentuation due to preceding focus is expected.*

As was said in the Introduction, it is generally claimed that the verb has to be deaccented if the preceding element is emphasised, i.e. if it functions as a focus. In the sentences used in the present experiments, the deaccentuation of the verb serves as an indirect marker that the preceding element is a focus.

This assumption is confirmed by the production data: in sentences in which the noun phrase is in focus, the deaccentuation of the verb is systematic. However, the deaccentuation of the verb becomes less frequent with increasing complexity of the preceding syntactic phrase (the **cbav** structure), see Figure 1.

2.2.2. Deaccentuation of the initial content word

The first content word was never deaccented in the production of the first four speakers. For this reason, the author and another speech scientist were also recorded in order to see whether the production of deaccented topics is possible in Hungarian. The few cases of deaccentuation shown in Figure 2 were produced by the author who had spent several years in a non-Hungarian speaking environment. All other speakers, including the second speech scientist, produced the first content word with a weak or even with a strong accent.

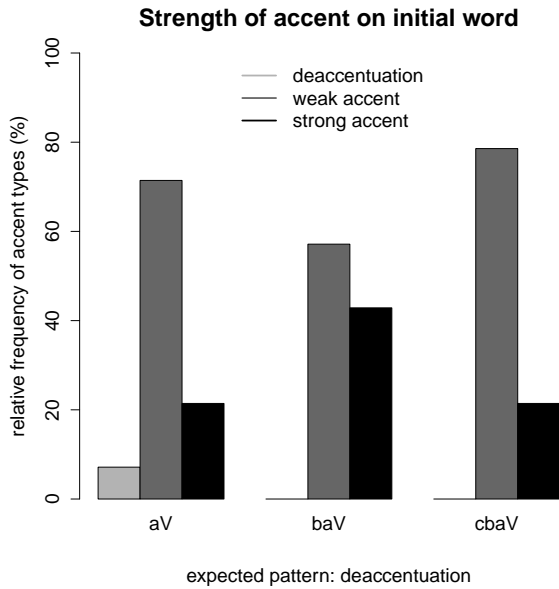


Figure 2: Strength of accent on the first content word of the sentence if it carries given information.

Sentence complexity did not have an impact on the accentuation vs. deaccentuation of the topic.

3. Perception experiment

3.1. Experimental design

Material for the perception experiment was created on the basis of the production data. The material included 18 question and answer pairs with 5 repetitions in randomised order. Answers contained matching and mismatching answers to the question. Reasons for mismatch were (1) the accentuation of the verb where context required deaccentuation, (2) accentuation of the sentence-initial content word although it was *given* information, and (3) the accentuation of a content word within the noun phrase although it was *given* information based on the preceding sentence.

20 native speakers with no known hearing impairment participated in the experiment. They were asked to score how natural the answer sounded to the preceding question, 1 meaning 'very unnatural', 5 'absolutely natural'. Stimuli could be listened to twice as a maximum. Praat's experimental modul was used for presentation.

3.2. Results

3.2.1. Deaccentuation of the verb

In this part of the experiment, the noun phrase in the sentence was focussed and thus, the verb was expected to be deaccented. This expectation was stated by the results, see Figure 3: matching answers in which the verb was deaccented received the maximum score of 5 in terms of their medians, whereas mismatching answers with an accented verb received rather low naturalness scores around 2. These results are in line with the findings of the production experiment according to which speakers consequently deaccented the verb if the preceding unit was focussed.

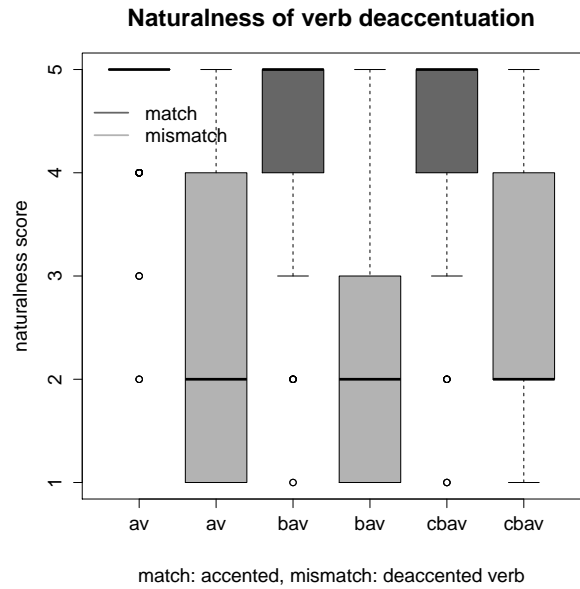


Figure 3: Naturalness scores for verb deaccentuation: matching pattern: deaccentuation, mismatch: accentuation.

3.2.2. Deaccentuation of the initial content word

Naturalness of initial deaccentuation

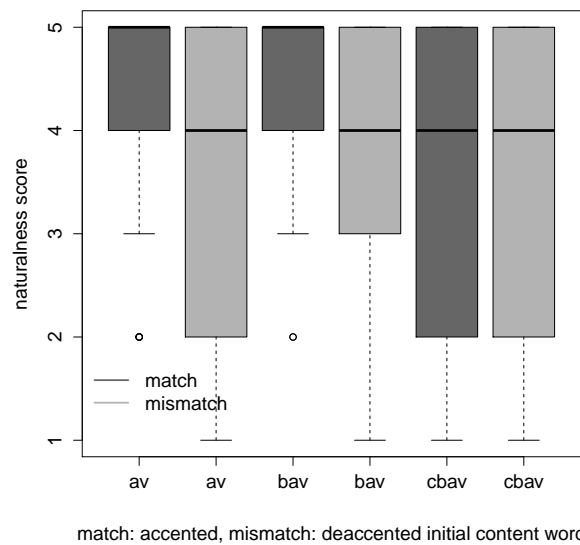


Figure 4: Naturalness scores for the deaccentuation of the sentence-initial content word: matching pattern: deaccentuation, mismatch: accentuation.

Naturalness judgements for answers in which the initial content word had a matching or mismatching pattern did not differ substantially: all answers received high naturalness scores, see Figure 4. This again is in line with the results reported in the production experiment: the initial content word is always accented, no matter whether the information it expresses is given or new. It is interesting that even matching answers get some-

what lower scores when sentence complexity increases.

3.2.3. Complexity of the noun phrase

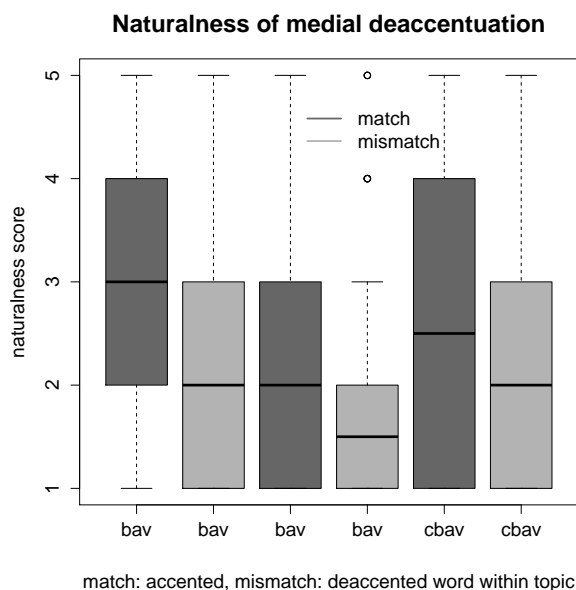


Figure 5: *Naturalness scores for the deaccentuation of the sentence-initial content word: matching pattern: deaccentuation, mismatch: accentuation. N.B. Since the structure av cannot be used for this task, two tasks were based on the bav structure.*

This part of the experiment focussed on the question whether it is possible to emphasise some words within a noun phrase while other words are deaccented. The low naturalness scores both for matching and unmatching answers (Figure 5) show that it is not only an unusual pattern in Hungarian that is hard to produce for speakers, but that this kind of dialogues are unnatural altogether. Thus, instead of a dialogue like *Was it the hairdresser from Monok who was fired? No. The manicurist from Monok was fired.* one would expect that only the focussed or mismatching part of the sentence is repeated.

4. Discussion

As was said in the Introduction, the deaccentuation of the verb in Hungarian is an indirect way to express focus. A simple sentence such as *av* in the present experiments can either contain a topic and a predicate or an empty topic and a predicate of which the first element is the focus. In the first case, both the topic and the verb are accented, in the second, the topic is accented, while the verb is deaccented. Thus, the presence or absence of an accent on the verb is used to manifest the logical structure of the sentence rather than express *given* or *new* information.

This is presumably the reason why the verb is consequently deaccented in production when the preceding element is focussed, and why mismatch leads to low naturalness judgements. In this case deaccentuation is not a mean of emphasis, but indirectly a mean of expressing logical structure.

It might be surprising at the first sight that the presence or absence of an accent on the initial content is non-distinctive in perception – listeners are more or less “deaf” for accentuation in this position – and redundant in production. Since the topic

position is not used to express new information, the presence or absence of an accent is irrelevant with respect to the logical structure of the sentence. These findings can also explain why current research disagrees on the accentuation of the topic. It might well be that the frequent accentuation of the topic by speakers goes back to the prosodic phrase structure: as [10] and [11] argue, Hungarian prosody is left-headed, hence the left edge of the phrase has a stronger prominence as a default.

Varying accentuation and deaccentuation does not seem to be a natural way of expressing information structure in Hungarian. This was also observed in the production experiment where speakers tended to emphasise each content word of the noun phrase if at least one had heavy informational weight. Thus it seems that accentuation patterns cannot be used flexibly in this language.

The present paper concentrated only on the preverbal part of sentences, since only these are relevant for the logical structure of the sentence. Postverbal units are said to have a larger flexibility both with regard to word order and to accentuation patterns. Their behaviour will be explored in future experiments.

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6. References

- [1] E. Vallduví, “The role of plasticity in the association of focus and prominence,” in *Proc. ESCOL 7*, 1991, pp. 295–306.
- [2] T. Duběda and K. Mády, “Nucleus position within the intonation phrase: a typological study of English, Czech and Hungarian,” in *Proc. Interspeech*, Makuhari, Japan, 2010, pp. 126–129.
- [3] T. L. Face and M. D’Imperio, “Reconsidering a focal typology: evidence from Spanish and Italian,” *Italian Journal of Linguistics*, vol. 17, no. 2, p. 271–289, 2005.
- [4] D. R. Ladd, *Intonational phonology*. Cambridge: Cambridge University Press, 1996.
- [5] S. Skopeteas and C. Féry, “Effect of narrow focus on tonal realization in georgian,” in *Speech Prosody Conference, Chicago*, 2010, pp. 100237:1–4.
- [6] M. Vilkkuna, *Free word order in Finnish: its syntax and discourse functions*. Helsinki: Suomalaisen Kirjallisuuden Seura, 1989.
- [7] K. É. Kiss, *The syntax of Hungarian*. Cambridge: Cambridge University Press, 2002.
- [8] L. Kálmán and A. Nádasdy, *Strukturális magyar nyelvtan: fonológia [A structural grammar of Hungarian: phonology]*. Akadémiai, 1994, ch. A hangsúly [Stress].
- [9] P. Siptár and M. Törkenczy, *The Phonology of Hungarian*. Oxford: University Press, 2000.
- [10] L. Varga, *Intonation and stress: evidence from Hungarian*. Hampshire & New York: Palgrave Macmillan, 2002.
- [11] L. Hunyadi, *Hungarian sentence prosody and universal grammar: on the phonology–syntax interface*. Frankfurt/Main: Lang, 2002.