Deaccented Verb as an Element in the Utterance Information Structure

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Abstract

The chief objective of the present study is to investigate actual manifestation of the potential lexical stress in Czech verbs. Putatively, lexical stress is expected to materialize in all autosemantic words of an utterance. However, due to contextual givenness and stress-clash rule effects, some of the words can be deaccented. To map the situation, continuous spoken texts rather than isolated sentences need to be examined.

Narratives produced by 16 professional speakers were annotated in terms of manifest accent-groups. In the recordings, 3709 verbs were identified and sorted into 5 grammatical classes. These were first inspected in a binary fashion: the structural stress either materializes or not (i.e., the verb is deaccented). Further descriptors of the verb status in the accent-groups configurations were extracted in order to find out how often the produced forms can be explained with reference to the context and how often various other factors were in force. Complementary questions concerned accent placement on auxiliary and modal verbs. The results offer an insight into a rich pool of pragmatic relations of verbs with other constituents, and provide a quantitative base for further experiments in the field of the information structure of utterances.

Index Terms: contextual ties, deaccenting, givenness, information structure, lexical stress, prominence, verb.

1. Introduction

Among many other things, prosody may reflect the information structure (IS) of an utterance by increasing or decreasing prominence of individual lexical constituents. Some of the general tendencies have already become part of the shared elementary knowledge: autosemantic words tend to be relatively prominent in an utterance, whereas synsemantic words are backgrounded (e.g., [1, p. 271], [2, p. 89], [3]). It is to be expected though, that various features of prominence marking or backgrounding will require further specification (e.g., [4], [5]). Also, specifics of these general tendencies within information structure cueing might be at least partially language dependent [6].

A relatively long research tradition in IS of Czech has produced large numbers of valuable accounts. Already in 1911, the founder of the Prague Linguistic Circle initiated a debate over the information weight of utterance constituents [7] (See also his later paper [8]]. A large body of inspiring studies and monographs over the decades (e.g., [9], [10], [11], [12], [13]), was, however, based on written texts with only occasional impressionistic remarks concerning speech prosody. Although the authors were excellent scholars, they were not phoneticians, let alone ones with access to speech corpora. Empirical research based on realistic samples of Czech speech has been initiated only recently (e.g., [14]). The present study wishes to contribute to this commendable development.

Quite noteworthy, or even perhaps puzzling, is the role of the verb in the information structure. As the core of the predicate, the verb is generally accepted as a central element of sentence syntax and even of sentence semantics (esp. [15], but also [16], [17], [18], [19, p. 235]) However, the verb is at times observed to exhibit relatively low prosodic prominence ([20], [21], [22], [23, p. 157]). Additionally, the latter says: "It is certainly significant that the FSP (which means IS) functions performed by the verb in the spoken sentence tallies with the degrees of PP it carries." [23, p. 205].

In the present study, our research questions based on spoken narratives can be stipulated as follows:

- Can autosemantic verbs occur without being accented?
- If yes, how often does that happen?
- Can motivations for such deaccenting be captured?

Before we present the method of our investigation, a few terminological notes must be made. First, we use the term *stress* for a *prominence potential* ascribed in the lexicon, whereas *accent* for *materialization* of the stress. If a word surfaces as *unaccented*, we may use the term *deaccented* in cases where accentuation is prescribed by rule. Presently, we will speak about deaccenting in connection with autosemantic words only.

Apart from the information structure, which we see here as the degree of givenness, we will also consider the size or length of the verb, expressed in the number of syllables. Various accounts generally suggest that monosyllabic words are less likely to be prosodically independent and the probability of a word forming an accent unit on its own increases with the number of syllables in the word. Moreover, the Stress Clash Rule (SCR) operates in Czech and can be used to explain deaccenting of monosyllabic words [19], [24]. Finally, it may be useful to note that Czech finite verbs contain morphemes indicating the grammatical person. It is often just a vowel added to the stem, but an extra vowel means an extra syllable.

2. Method

2.1. Material

All the material used in this study represents the genre of read narratives. It was produced by experienced speakers in studios manufacturing audiobooks. There were 16 speakers (8 male + 8 female), all of them theatre or film actors by profession. The narratives were written by established authors. Given the purpose of the recordings, great care can be assumed in the preparation of the narratives. Therefore, they represent acceptable, or perhaps even model speech performances. The extent of the sample is quantified in Table 1. We required a text of at least 1,000 words per speaker, which meant about 200 to 300 prosodic phrases. Numbers of verbs thenselves found in the texts varied a bit more due to the authors' syntactic 'style'.

Table 1: *The extent of the analyzed sample of narratives given in numbers of words, verbs and prosodic phrases.*

Speaker	n Words	n Verbs	n Phrases
F01	1,071	282	208
F02	1,030	213	220
F03	1,006	199	229
F04	1,127	255	228
F05	1,104	231	249
F06	1,033	226	235
F07	1,045	248	209
F08	1,065	235	241
M01	1,085	240	233
M02	1,041	150	209
M03	1,143	253	307
M04	1,026	229	221
M05	1,049	238	265
M06	1,004	230	234
M07	1,011	228	272
M08	1,099	251	262
All	**16,939**	**3,708**	**3,822**

2.2. Corpus annotation

The corpus of narratives was annotated independently of this study. That is, the annotators, all experienced phoneticians, were unaware of the purpose or research questions raised here. They established the identities and exact locations of phones, prosodic phrases, as well as sentence boundaries semi-automatically with manual corrections. Identification of accent groups was done auditorily. The accent status of each syllable, which is the most pertinent to our current objectives, was always ascertained independently by at least two of the experts. Conflicting annotations (below 3% of the cases) were discussed until agreement was found.

The authors of this study then detected all the verbs in the texts and classified them following the criteria presented below.

2.3. Verb taxonomy

For the purpose of the present study, a division of verbs into autosemantic and synsemantic ones was primarily used. Even though this might be truly challenging to establish for an entire lexicon [6], there are various leads for the verbs themselves. Synsemantic verbs (also labelled as grammatical, function or structural) comprise copulas, auxiliary verbs and modal verbs. Their role is chiefly to specify grammatical relations among words, to participate in conveying verbal tenses or to add modality to autosemantic verbs. If a synsemantic word occurs in isolation, its meaning is quite vague, whereas the meaning of autosemantics is more tangible. There might be a problem with the verbs *být* (*to be*), and *mít* (*to have*) since they can act as full verbs with the meaning of *exist* and *possess*, respectively, or they can function as copulas or auxiliaries. In a communicative context, however, they can be relatively easily parsed.

Even though the present study is focused on deaccented autosemantic verbs, a secondary sorting of synsemantics to copulas, auxiliaries and modals was introduced, and, for autosemantics, we differentiated between finite (or semi-finite) verbs and infinitives. It might seem that considering infinitives separately mixes morphological considerations with semantic ones, but since we are interested in the utterance semantics, and we know that infinitives seldom form predicates on their own, this secondary division might be of interest.

2.4. Information structure considerations

One of the goals of this study was to explore the possibilities of classifying various pragmatic motivations for the deaccenting of autosemantic verbs. Apart from the potential lesser importance of the verb in the IS, other factors could be perhaps identified as contributing to the backgrounding of the verb. During the preliminary scanning of the corpus while annotating the verbs, we created a list of such contributing factors (see Table 2). Illustrations taken from our corpus follow. (Caution: English translations of Czech examples do not adhere to standard syntax – they preserve the Czech word order.)

Table 2: *Categories of possible motivations for de-accenting autosemantic verbs in the analyzed sample.*

Category	Description
REPETITION	the verb was already used in the preceding co-text
ANAPHORA	the verb stands for an action or state that was described immediately beforehand
EVOKING	the semantic content of the verb is present in the preceding text
INFERRING	the semantic content of the verb is cued by the factual context
MERGER	the verb forms a semantic unit with another verb, usually modal or auxiliary
ATTENUATION	the verb is semantically vague and can be replaced with *be*, *have*, *get*, *go* or *say*
SENSE SHIFT	the verb is interpreted differently from its primary meaning, a cue of this is available
STRESS CLASH RULE	preceding and/or following monosyllable blocks the stress potential of the verb

REPETITION is the most straightforward motivation for deaccenting since it has been repeatedly demonstrated that if the same word is reused in the same text, it may become reduced in prominence (e.g., [5], [25]. ANAPHORA is different in that although a reference to the same action as previously described is done, it is achieved through a general verb that has the capacity to stand for a specific action (similarly to pronoun standing for a previously mentioned noun). For instance, a mother is doing something as a punishment of her naughty children. The phrase *když to udělala poprvé* (*when this she did for the first time*) has deaccented *udělala* (*she did*) that clearly refers to the previously described action.

EVOKING bears similarity with the repetition and anaphora, but this time it is a specific (not general) verb that is used to refer to action described previously. To put it in other words, the deaccented verb is evoked by another verb or deverbative expression of similar meaning from the previous co-text. For instance, an angry father is portrayed cursing, swearing and trying to arrange something without success. Then he calms down for a brief moment, yet something happens and he gets infuriated again: *otec se znovu rozčílil* (*father self again infuriated*). The words *otec* (*father*) and *znovu* (*again*) were accented, whereas the verb was not.

INFERRING is a category quite similar to evoking, but it does not build on the surface semantics of the lexical items directly present in the co-text. Instead, it derives from the factual context. For instance, the expression *pošta přichází* (*mail arrives*) is produced with a deaccented verb after the discussion of postal services and various reforms at post-offices.

The category of MERGER was assigned to deaccented verbs that formed one semantic unit with another (preceding) verb. Given the syntax of Czech, this can be expected if an infinitive follows after a modal verb. Since synsemantic words in Czech may easily attract stress from the following autosemantics (and stress-groups are exclusively left-headed), this category is no oddity. An example is *musel uznat* (*had to acknowledge*) under just one initial accent.

The category of ATTENUATION is reserved for verbs with generally weakened semantic content. Such verbs are or can be easily replaced with *to be*, *have*, *get*, *go* or *say* in the given context. Also, there is always an informationally more important lexical item in their vicinity. In the case of the verb *to say* and its equivalents, it is usually ***who*** *said* ***what***. Similarly, for the verb *to go*, it is commonly more important to inform ***who*** *went* ***where***, etc.

The category of SENSE SHIFT also builds on weakening of the semantic content, but this time it is triggered by local contextual effects, rather than a general trend. For instance, the verb *myslíte* (*you think*) is deaccented in the phrase *Vy myslíte tohle?* because it conveys the sense *Is it* ***this*** *that you are after?* A reference to *considering*, *contemplating*, or a similar cerebral activity would be misleading in the given context. Another example is the accent group *jak se jmenuje* (*how is called*) with an accent on the interrogative *jak* (*how*) and deaccented *jmenuje* (*called*) since it stands for *who is it*.

The last category that was planned to be taken into account concerned the effects of the STRESS-CLASH RULE (SCR). For instance, in standard Czech pronunciation even prepositions block accenting of the following noun or adjective. Although we do not find prepositions before verbs, certain conjunctions or pronouns can do the same. The phrase *je po mně* (*it is after me*, meaning *I'm dead*) had accented preposition *po* (*after*) which blocked the accent on *je* (*it is*). This rule seems purely prosodic, but certain semantic superiority is also involved.

3. Results

3.1. General descriptive facts

As stated above, the whole sample of narratives provided 3,709 verbs. A question central to our analyses is that of materialized stress (accent) on the first syllable. It was found in 2,641 of them, that is in 71.2% of the cases. More than a quarter of all the verbs (more precisely 28.8 %) were realized without an accent on their first syllable. The actual counts by verb class are presented in Table 3, while the ratios within the conceived verb classes are displayed in Figure 1.

Table 3: *Counts of accented and unaccented verbs in five classes: Finit = finite autosem. verbs, Infin = infinitives of autosem., Mod = modals, Cop = copulas, Aux = auxiliaries.*

Verb Status:	**Autosemantic**		**Synsemantic**		
	Finit	Infin	Mod	Cop	Aux
n Accented	1980	300	169	146	46
n Unaccented	214	43	68	331	412

These results suggest that the rule prescribing accentuation to autosemantic words and no accent to synsemantic words is far from absolute. About 11.3% of the autosemantics were found deaccented (9.8% in finite verbs alone and slightly more, 12.5%, in infinitives).

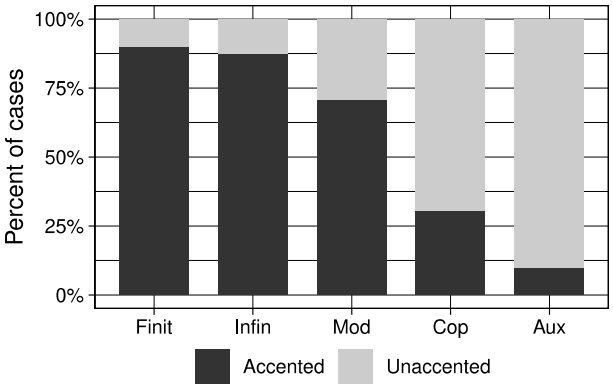

Figure 1: *Ratios (in percentages) of accented and unaccented verbs in five analyzed classes. For abbreviations see caption to Table 3.*

Although the information status of verbs is our primary concern, before we direct our attention to it, two other issues should be mentioned. Fig. 1 invites consideration of the status of the modal verbs as they attracted accents quite frequently: in more than 70% of their occurrences. That brings into play the second powerful factor of accentuation: the size of the word (i.e., length in syllables). Its influence is displayed in Figure 2.

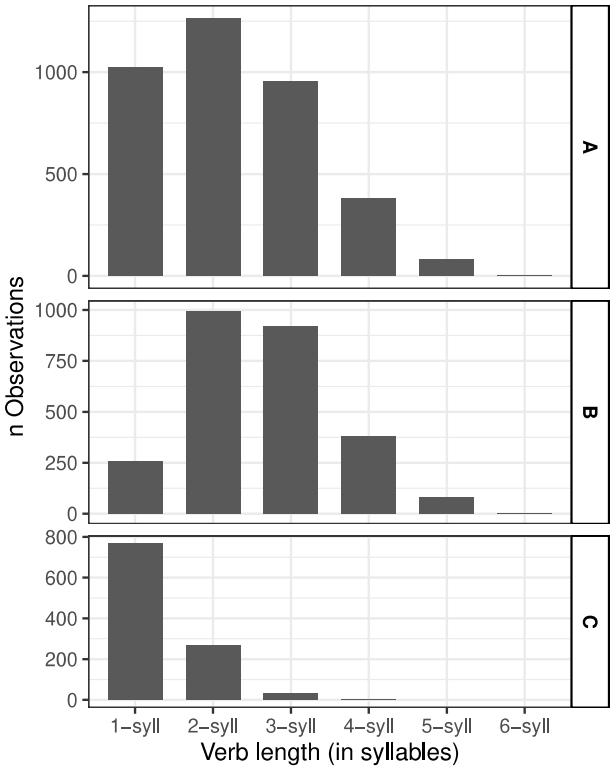

Figure 2: *Distribution of various verb lengths (in syllables) in the whole sample (panel A), in accented verbs (panel B), and in unaccented verbs (panel C).*

The top of Fig. 2 (panel A) shows that two-syllable verbs are the most numerous. Occurrences of one- and three-syllable verbs are similar, but there is a substantial drop in the incidence of four-syllable verbs. Five-syllable verbs made only about 2% of the sample ($n = 80$), and we found four verbs of six syllables.

Panels B and C in Fig. 2 break these counts according to the accent status. In comparison with panel A, there is a massive drop in the number of monosyllables in accented verbs (panel B), while in unaccented verbs (panel C) the monosyllables dominate. The numbers of unaccented disyllables are still not negligible, but longer verbs are quite seldom unaccented. Nevertheless, exactly those verbs may considerably enrich the pool of deaccented autosemantic verbs that are of primary interest in this study. It is because they allow for clearer assignment to the analytical categories since there are fewer interferences by the verb length and the stress-clash rule, so the effects of the information structure might be easier to observe.

3.2. Deaccented autosemantic verbs

As hinted in the previous section, our corpus provided 257 autosemantic verbs that did not receive accentuation in the spoken texts. Since the morphological split of autosemantics into infinitives and finite forms did not lead to any profound difference, we will consider them one class. With respect to the rule that assigns accent to autosemantic words, we will term these verbs as 'deaccented'. Table 4 reveals that two-syllable verbs were most numerous, followed by monosyllables. Longer verbs were less common, but they still made more than 10% of the set.

Table 4: *Counts of deaccented autosemantic verbs according to their length in syllables.*

Length in syllables	**1-syll**	**2-syll**	**3-syll**	**4-syll**
Number of cases	105	125	25	2

Assigning the deaccented autosemantic verbs to one of the eight categories introduced in the Method (Section 2) was relatively successful. Only 8 of the 257 verbs (3.1%) did not fit without too much speculation, so we left them out. The remaining items were allocated to classes and the results are displayed in Fig. 3.

It is clear that semantic attenuation is by far most frequent: the verbs that refer to the meaning of *be*, *get*, *go*, *have* and *say* were often found in the vicinity of words with greater informational load. Within this group, the verbs equivalent to *be* occurred 32 times, while equivalents of *get* 6 times, *go* 16 times, *have* 29 times and of *say* 14 times.

The anaphoric verb (i.e., a general one that can stand for another verb with a more specific meaning), on the other hand, occurred only five times in the corpus. Similarly, repetitions of the same verb were not very frequent ($n = 11$).

Table 5 breaks these results by word size (length in syllables). It suggests, for instance, that semantic merger as a motivation for deaccenting is typical of monosyllables rather than longer words. Contrary to that, anaphora, repetition or inference seldom occurred in monosyllabic verbs, but that might have been an artefact of the low frequency of occurrence of these categories in the sample.

Table 5: *Counts of deaccented autosemantic verbs according to analytical category (see Method) broken by their length in syllables*

	Atte	SCR	SnS	Mer	Evo	Inf	Rep	Ana
1-syll	42	26	6	20	7	1	-	-
2-syll	52	11	19	9	12	8	6	3
3-syll	3	2	5	1	4	4	5	1
4-syll	-	-	1	-	-	-	-	1
Total	97	39	31	30	23	13	11	5

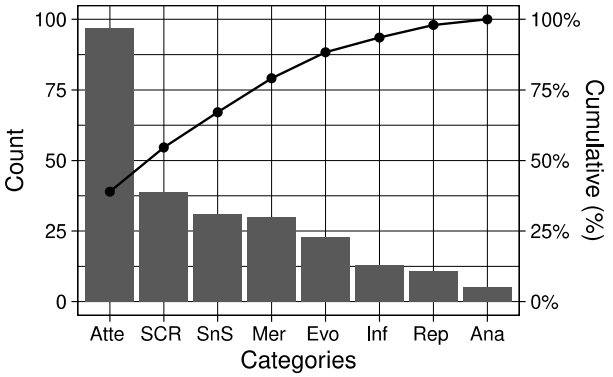

Figure 3: *Incidence of deaccenting types (cf. Tab. 2). Atte = Attenuation, SCR = Stress Clash Rule effects, SnS = Sense shift, Mer = Merger, Evo = Evoking, Inf = Inferrence, Rep = Repetition, Ana = Anaphora.*

4. Discussion

The primary goal of this study was to find out if (and possibly how often) autosemantic verbs can be deaccented in Czech narratives produced outside laboratory. Recordings of speech with communicative intent have not been analyzed before in the Czech research scene. Two facts may speak against verb deaccenting: first, autosemantic words are expected to be prominent in the prosodic composition of utterances, and second, the verb is widely considered the central element in the syntactic/semantic structure of sentences. However, our study found 11.3% of autosemantic verbs in the sample deaccented.

In terms of the IS of utterances, one general motivation for deaccenting can be recognized: it is weakening of the semantic contribution of the given lexical item. Even though this common denominator explains the phenomenon acceptably, we tried to specify several types of its functioning. Eight categories were devised (Tab. 2), whose usefulness needs to be tested in future research. There are no clear dividing lines between them, just as there are unclear edges among many semantic concepts. We expect that if they are used as analytical tools, they may be redesigned, renamed or even abandoned entirely. We still believe that they are worth considering and testing in research.

The eight deaccented autosemantic verbs that could not be put into any of the analytical categories will also deserve some attention in our future work. These items sounded neither mispronounced nor communicatively inadequate, yet our impression was that their accentuation at the expense of their lexical neighbours would result in a more typical prominence arrangement. It remains to be seen how these marked patterns affect speech comprehension or speaker acceptance. Perception tests are necessary to find out.

We believe that our study provides data that could be used in designing experiments aiming at disentangling the effects of prosodic, especially rhythmic requirements from purely semantic or informational ones. The design of such experiments should reflect what is possible and natural in narratives. It follows that studies similar to ours but focused on other communicative genres might be also useful and/or interesting.

5. Acknowledgements

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