

Initiality accent deaccenting

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Abstract

The paper presents the results of a production experiment designed to study when *initiality accents* appear in a sentence. Based on a previous observation (Myrberg, 2010) that focal accents in the clause initial constituent can deaccent initiality accents, the present experiment examines whether the length and information structural status (focused, given) of a clause initial subject affects the rate of initiality accent deaccenting. Results show that initiality accents are more often deaccented in focused and long subjects than in given and short ones.

Introduction: initiality accents

Initiality accents are tonal markers of the left edges of Intonation Phrases in (at least) Stockholm Swedish (Roll, et al., 2009; Myrberg, 2010, 2013). They share their shape and much of their phonological behavior with *focal accents* (Bruce, 1977, 1998). Thus, like focal accents in Stockholm Swedish, initiality accents have the tonal representation H*LH (accent 2) or L*H (accent 1). This makes initiality accents look much like prominences.

Functionally, however, initiality accents are similar to boundary tones. They do not serve as markers of any information structural category. They rather have the function of marking the beginning of a new Intonation Phrase.

Initiality accents appear on the first lexically stressed word in a sentence, i.e. the first *Prosodic Word* (PWd) (Myrberg & Riad 2013, Riad 2014). Thus in (1b), *bruna* ‘brown’ carries an initiality accent.

- (1) a. Var bor den bruna haren?
Where lives the brown hare?

- b. Den bruna haren bor [i parken]_{Focus}.
the brown hare lives in park-the

Initiality accent deaccenting

We know that initiality accents are sensitive to the presence of focal accents in the clause initial constituent. A focal accent in the clause initial constituent can *deaccent* the initiality accent, preventing it from appearing in the clause (Myrberg, 2010). This happens e.g. when there is a narrow focus in the clause initial constituent, as in (2).

- (2) a. Vilket brunt djur bor i parken?
what brown animal lives in park-the
b. Den bruna [haren]_{focus} bor i parken.
the brown hare lives in park-the

In (2b) *haren* must obligatorily carry a focal accent, as it is information structurally focused. The presence of this focal accent prevents the appearance of an initiality accent on *bruna*.

Instead of an initiality accent, *bruna* carries a *word accent*. The tonal representation for word accents is H*L for lexical accent 2, and HL* for lexical accent 1. The word accent is the lowest tonal prominence level in Swedish, and appears on most words that have a lexical stress (Bruce, 1977; Myrberg & Riad, 2013).

This paper presents the results of a production experiment designed to study the interaction of the focal accent and the initiality accent in clause initial subjects.

Two types of focal accents

In the present paper, two different functions of focal accents will be distinguished. These will be shown to interact in different ways with initiality accents when appearing in the clause initial constituent.

First, there are *focusing focal accents*. These are the focal accents that obligatorily appear on information structurally focused constituents (and it is with this function in mind that the focal accents have been named). A focusing focal accent appears on *parken* in (1b), to mark the whole PP *i parken* as information structurally focused. The focal accent on *haren* in (2b) is also a focusing focal accent.

Second, there are *phrasing focal accents*. These focal accents (like the focusing ones) appear on the last word of a constituent. Their function is to group the words of a constituent into one prosodic phrase. The phrasing focal accents do not signal information structural focus, and can even appear on given material, as we will see below. A phrasing focal accent can, optionally, appear on *haren* in (1b) (note that even when a phrasing focal accent appears on *haren*, an additional focusing focal accent must appear on *parken*).

The experiment presented here was designed to answer the questions in (3). In what follows, the experiment design is presented, followed by the results.

(3) Questions:

- a. Does the focal accent have a stronger deaccenting effect the closer it appears to an initiality accent? If yes, initiality will be *more* deaccented in *short* subjects than in long ones.
- b. Do *phrasing* focal accents and *focusing* focal accents deaccent initiality accents equally much?

Material

The production experiment was designed to study deaccenting of initiality accents in information structurally focused and given clause initial subjects of four different lengths. Five native female Stockholm Swedish speakers were asked to read target sentences as in (4a–d).

(4) Target sentences

a. *subject length: 2 PWD (underlined)*

[Den bruna haren]_S
 the brown hare
 [bor i parken]_{VP}
 lives in park-the

b. *subject length: 3 PWD (underlined)*

[Den bruna haren med ungar]_S
 the brown hare with kids
 [bor i parken]_{VP}
 lives in park-the

c. *subject length: 4 PWD (underlined)*

[Den bruna haren
 the brown hare
 med många ungar]_S
 with many kids
 [bor i parken]_{VP}
 lives in park-the

d. *subject length: 5 PWD (underlined)*

[Den bruna haren
 the brown hare
 med många söta ungar]_S
 with many cute kids
 [bor i parken]_{VP}
 lives in park-the

(5) Context questions

a. *subject is given, part of VP is focused*

Var bor [subject of 4a–d]?
 where lives [...]

b. *part of subject is focused, VP is given*

Vilken brun hare/ vilket brunt djur
 Which brown hare/ what brown animal
 bor i parken?
 lives in park-the

There were ten sets of items as in (4a–d). Five sets had accent 1 words in the subject, and the other five sets had accent 2 words. Each sentence was read in the context of the question in (5a) as well as the one in (5b), with three repetitions.

In total, this resulted in a corpus of 1200 read sentences (10 items * 4 length conditions * 2 focus structures * 3 repetitions * 5 speakers = 1200 sentences).

The question-answer pairs were presented to the speakers on a laptop screen.

Annotation procedure

The sentences were annotated semi-manually using Praat (Boersma & Weenink, 2013). Word boundaries were manually annotated, and tonal targets were automatically extracted in the first and last word of each subject (4a: *bruna + haren*, 4b–d: *bruna + ungar*).

An annotation procedure was designed that automatically placed three tonal points (points A, B, C) in each target word, as illustrated in Figure 1. Measurement errors and microprosodic effects were manually corrected.

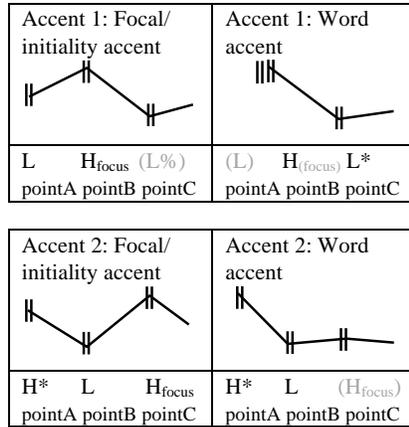


Figure 1. The annotation procedure assigned three measure points in each word (points A, B, C). The upper panels show the distribution of the three tonal measure points in accent 1 words. The lower panels show the distribution of the three tonal points in accent 2 words.

The three points A, B, C were used to identify and distinguish between focal/initiality accents (lexical accent 1: L*H, lexical accent 2: H*LH) and word accents (lexical accent 1: HL*, lexical accent 2: H*LH) (Bruce, 1998; Myrberg, 2010, 2013). A high value for point B indicates the presence of a focal/initiality accent in accent 1. A high value for point C indicates the presence of a focal/initiality accent in accent 2.

Independently of the annotation of the tonal points, the author made a subjective judgment for each target word,

with respect to whether the contour on that word was a focal/initiality accent or a word accent. Together, the tonal annotation procedure and the subjective rating of tonal contours form the base of the analysis presented here.

Results and discussion

The effect of constituent length on initiality accent deaccenting (question 3a)

The length of the focused constituent does affect the shape and distribution of initiality accents.

The length of the subject has a statistically significant effect on the height of the H_{focus} tone (point B in the accent 1 annotation and point C in the accent 2 annotation). This is shown in Figure 2.

The difference between the subject lengths 2 PWd and 5 PWd is highly significant for all speakers (accent 1 and 2 data taken together, 2-sided t-tests, p<0.001).

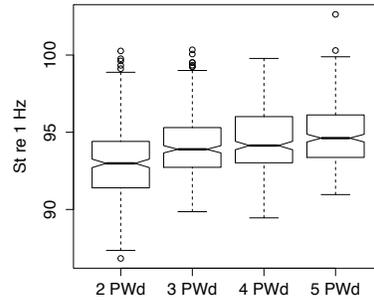


Figure 2. Height of H_{focus} tone in the four different length conditions. The accent 1 data corresponds to point B in the annotation (L*H). The accent 2 data corresponds to point C in the annotation (H*LH). Each box contains data points from all 5 speakers, and accent 1 as well as accent 2.

Between 3 PWd subjects and 5 PWd subjects, speaker 5 has a significant effect in both the accent 1 and 2 conditions, and speaker 1 has a significant effect in the accent 2 condition (p<0,01). Speakers 2, 3, and 4, however, have no significant difference between the 3 PWd and the 5 PWd subjects.

In addition, subject length has a significant effect on the subjective judgments of whether the initial word in each subject carries an initiality accent or a word accent. This is shown in Figure 3 ($\chi^2=54.8168$, $df=6$, $p<0.001$).

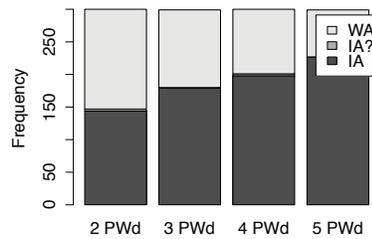


Figure 3. Number of initiality accents (IA), word accents (WA) and unclear cases (IA?) in the four length conditions.

It is worth noting that words rated as initiality accented have higher values for the H_{focus} targets (annotation point B for accent 1, point C for accent 2) than words rated as word accented. This is illustrated in Figure 4.

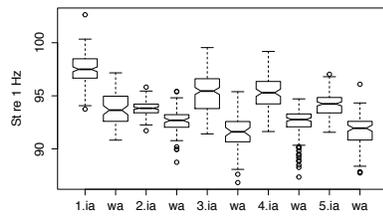


Figure 4. The height of the H_{focus} tone (point B in the accent 1 annotation, point C in the accent 2 annotation), for the five speakers (1–5), in words rated as initiality accented (ia) and word accented (wa) respectively. Accent 1 and 2 data is plotted together.

Initiality accent deaccenting with focusing vs. phrasal big accents (question 3b)

In addition to the effect of subject length, the information structural status of the subject has an effect on the deaccenting of the initiality accent.

Figure 5 illustrates the difference in frequency of initiality accents in the subject when the subject is given as in the answer to (5a), versus focused as in

the answer to (5b) ($\chi^2=159.5346$, $df=2$, $p<0.001$).

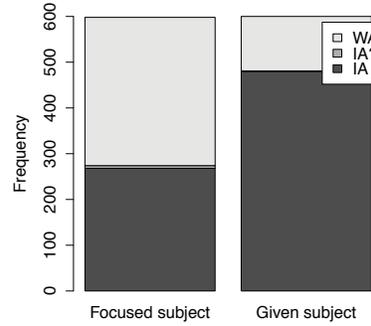


Figure 5. Number of initiality accents (IA), word accents (WA) and unclear cases (IA?) on the first word of information structurally focused versus given subjects.

The effect in Figure 5 is unsurprising, given that deaccenting happens only in subjects that have a focal accent on their last word. When there is no focal accent in the subject, the initiality accent is obligatory (this seems safe to conclude, based on the fact that among the 1198 sentences in the dataset, deaccenting happens only when there is a focal accent in the subject. Subjects without a focal accent on their last word carry initiality accents on their first word.)

In the subject focus condition, all subjects carry a focal accent on the last word. In the given subject condition, however, the focal accent is not obligatory on the last word of the subject. The result in Figure 4, then, could merely be due to the higher frequency of focal accents on the last words of focused subjects than given ones.

Interestingly, however, this does not seem to be the case. The effect remains when all subjects that do not have focal accents are excluded.

Figure 5 shows the distribution of initiality accents in subjects that have focal accents. We see that approximately half of the given subjects carry focal accents. As expected, almost all focused subjects carry focal accents. Among the given subjects with focal

accents on their last word, the vast majority also contain an initiality accent on their first word. Among the focused subjects, however, less than half have an initiality accent in addition to the focal accent.

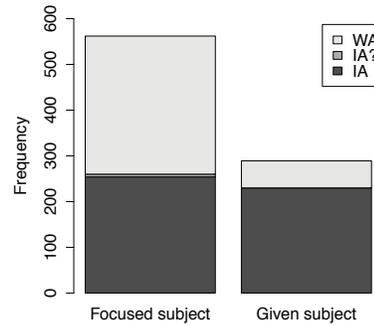


Figure 6. Number of initiality accents (IA), word accents (WA) and unclear cases (IA?) on the first word of subjects that also have a focal accent on their last word. Among given subjects, approximately 50% have a (phrasing) focal accent on their last word. Among focused subjects, (almost) all have a (focusing) focal accent on their last word.

Figure 5 shows that, proportionally, focal accents that appear in information structurally focused subjects are less likely to cooccur with an initiality accent in the subject, compared to focal accents in given subjects.

Put differently, the (obligatory and focusing) focal accents that appear on information structurally focused subjects have a stronger deaccenting effect than the (optional and phrasing) focal accents that appear on given subjects.

We may extend this observation to a claim that in the present dataset, the focusing focal accents are *nuclear accents*, whereas the phrasing focal accents are *prenuclear accents*.

The term nuclear accent has often been used to refer to the rightmost accent of an Intonation Phrase in the literature on Germanic intonation (Pierrehumbert, 1980; Ladd, 2008). In sentences with a single focus, the nuclear accent must correlate with the focus (e.g. Truckenbrodt, 1995, see

discussion in Myrberg & Riad, in press).

In the Swedish intonation research, the relation between the notions focal accent and nuclear accent has not been much discussed. The results of the present experiment however indicate that focal accents are of two types, the focusing ones, with a “strong” deaccenting effect and the phrasing ones with a “weaker” deaccenting effect.

It makes sense to analyze the focusing accents in this dataset as nuclear accents, and the phrasing accents as prenuclear accents.

When the subject is focused in this dataset, the VP that follows it is given. A given constituent that follows a focus generally does not contain any focal accents (Bruce, 1977; Myrberg, 2010). The accents that appear on information structurally focused subjects are thus the rightmost focal accents in their sentences, and we can therefore refer to them as nuclear.

When the subject is given in this dataset, the VP is always focused and must, therefore, carry a focusing focal accent, independent of whether or not the subject has a phrasing focal accent. The accent on a given subject, therefore, is *not* rightmost in its sentence, thus prenuclear.

Accepting that one intonation phrase can contain multiple focal accents, and that the rightmost of these is the nuclear accent (in accordance with common analyses of other Germanic languages), we arrive at the generalization that nuclear accents have a more powerful deaccenting effect than prenuclear accents.

Conclusion

The results of a production experiment were presented, which show how focal accents and initiality accents interact in clause initial subjects. The results show that the closer a focal accent appears to the clause initial word, the less likely it is that an initiality accent is realized.

In addition, focal accents that appear on focused subjects have a strong-

er deaccenting effect than focal accents on given subjects. It was argued that the former can be analyzed as nuclear accents as they are the rightmost focal accents in their sentences, whereas the latter are prenuclear accents. The fact that these accents behave differently in terms of how they interact with initiality accents provides additional support for their different status in the intonational phonology.

Acknowledgements

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