Optional accentuation of pronouns in German

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Abstract

Prosodic weak elements generally tend to be unaccented in intonation languages. Pronouns usually count as prosodic weak elements. Given that a pitch accent usually serves as an indicator of a head of a prosodic phrase, this paper tackles the question if pronouns in German are weak prosodic elements in general, or whether pronouns may carry an accent, and if so, how pronouns in German are prosodically phrased. We investigate structural, phonological and pragmatic effects on the accentuation of pronouns. The presence or absence of a pitch accent is taken to be an indicator of phrasing. The data on carefully controlled read sentences show that pronouns in German may be accented, which corroborates findings on accent pronouns in conversational speech. In focus contexts, pronouns are almost exclusively accented. A clear tendency for a pronoun to be accented is (i) when it is disyllabic as opposed to a monosyllabic one, and (ii) when it occurs within a syntactic position before the finite verb as opposed to a right-exposed occurrence. We analyse this as optional accentuation and model this in terms of minor phrase stress [1]. If associated with a pitch accent, pronouns usually bear less prominent accents than obligatory sentence accents.

Index Terms: German intonation, sentence accent, pronouns, prosodic phrasing, minor phrase stress

1. Introduction

Syntactically, pronouns are function words, and are commonly viewed as weak elements in prosodic constituency [2, 3]. From an information structural point of view, pronouns are usually given as they refer to some discourse referent in the previous discourse. Under the widely held assumption that given elements are unaccented, pronouns appear as inherently unaccented.

However, pronouns may receive a pitch accent under certain conditions. For instance, the referential status ‘givenness’ does not automatically entail ‘absence of pitch accent’ [4, 5]. A focus, in particular a contrastive focus can be viewed as orthogonal to the information status of a discourse referent [6], and can thus require the presence of an accent, cf. (1); presence of pitch accent is expressed by capital letters.

Von wem ist die Intendantin beeindruckt? (1a)
‘By whom is the artistic director impressed?’

Die Intendantin ist von ihm beeindruckt. (1b)
‘The artistic director is impressed by him.’

The presence of an accent on a pronoun in a focus context as in (1) is thus required. Yet, a pronoun may carry an optional pitch accent in broad focus contexts. This study explores the optional status of accents on pronouns in German, and discusses the consequences for prosodic phrasing of pronouns.

1.1. Pronouns as prosodically weak elements

As a function word, a pronoun is usually a prosodic weak element. A pronoun constitutes a functional head without any complement, and thus it usually does not project a mapping constraint from syntactic to higher prosodic structure [3, 7]. For instance, compared to a full subject NP, which maps to a phonological phrase (φ-phrase), it is assumed that a pronoun does not project a φ-phrase boundary (cf. e.g. [8] for Xiamen Chinese; [9]). Selkirk [2, p. 188] lists two options of prosodic phrasing of function words: (i) either as a prosodic word (ω), or (ii) as a prosodic clitic. The fact that function words may be phrased as a ω opens however the possibility of pronouns to receive prominence by pitch accent assignment since only a full prosodic word (within a φ-phrase) may be associated with a pitch accent. In languages such as English or German, the head of a φ-phrase is realized as a pitch accent (e.g. [10]). Given this fact, a pronoun phrased as ω and associated with a pitch accent may function as a head of a φ-phrase. Increasing evidence arises that function words, such as pronouns, have both weak and strong versions, and that strong functional elements are treated similar to lexical words in terms of prosodic phrasing. They may thus receive a pitch accent [7].

Syntactically, there is a fundamental division between lexical words and function words. Prosodic characteristics of function words compared to lexical words in English are a stressless “weak” form, or a stressed “strong” form; lexical words show always up in a stress and unreduced form [2]. For other languages similar effects are reported. Croatian, for instance, exhibits a word accent distinction on lexical words, with some words being associated with a lexical high tone. Function words never show a high tone accent [2].

According to [2], the type of prosodic representation of a function word in a given language depends on the interaction of (well-attested) constraints on prosodic structure formation. Thus, whether a function word appears as a ω or as a clitic to a φ is language specific. In Serbian for instance, [11] claims that disyllabic function words receive ω-status while monosyllabic ones do not. Hence, the pure phonological size of a word affects its prosodic status and may thus create a strong version of a pronoun.

1.2. Prosodic structure formation in German

It is generally assumed that the formation of prosodic phrases (φ-phrase and ω-phrase) is based on universal syntax-phonology interface constraints (e.g. [9]). As a prosodic correlate of a φ-phrase the “presence of pitch accents reflects patterns of phrase stress” [1, p. 94, 12–14].
In German, sentence accent assignment applies within prosodic phrases (φ-phrase and ι-phrase), and the formation of prosodic phrases depends on syntax [13, 15, 16]. A pitch accent is assigned to the head of a φ-phrase. As a minimal phonological requirement, at least one (nuclear) accent occurs within an ι-phrase (main accent of the sentence). A syntactic phrase is matched to a corresponding prosodic phrase as (2) illustrates.

\[
\text{[CP [NP MARIA] hat [TP t1 [VP [NP ein Buch] gekauft]]]}
\]

‘Mary bought a book.’ [16, p. 1907]

It is generally assumed that pronouns in German do not carry a sentence accent: Pronouns fail to be phrased as a φ-phrase [1, p. 94]. As an example [1, p. 94] illustrate this fact in (3) where each φ-phrase receives one pitch accent. In the second φ-phrase the pitch accent falls on the verb because the indefinite pronoun was ‘something’ cannot project a prosodic phrase head and can thus not receive sentence accent.

\[
(MARIA)\phi (hat \text{ was gekauft})\phi
\]

‘Mary bought something.’ [1, p. 94] (3)

Usually, the deviation from expected sentence accent assignment in case of a pronoun is discussed in the literature; [12] shows that aligned prosodic phrases depend on syntax [13, 15, 16]. A pitch accent (Mittelfeld ‘middle field’) and a syntactically right-exposed constituent after the finite verb is usually in the position of the Nachfeld ‘after field’. An example of a data set is given in Table 1. A total of 48 sentences (3 items x 2 focus types x 2 NP-types x 2 sizes x 2 positions) were recorded per speaker.

<table>
<thead>
<tr>
<th>Context</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>broad</td>
<td>‘New actors are interviewed at the theatre.’</td>
</tr>
<tr>
<td>focus</td>
<td>‘By whom is the artistic director impressed?’</td>
</tr>
<tr>
<td>narrow</td>
<td>‘New actors are interviewed at the theatre.’</td>
</tr>
<tr>
<td>focus</td>
<td>‘By whom is the artistic director impressed?’</td>
</tr>
</tbody>
</table>

Four female native speakers of (Standard) German in their twenties participated in the recordings. Speakers received a small fee or course credits for participation. None of the speakers reported any speech or hearing deficits.

### 2. Production study

#### 2.1. Method

##### 2.1.1. Speech materials

In total, three target sentences in two contexts were created. The context elicited either broad focus on the target sentence or narrow focus on the target constituent (full NP or pronoun). Target constituents were controlled for ‘phonological size of pronoun’ (monosyllabic vs. disyllabic) and ‘position in the target sentence’ (Mittelfeld ‘middle field’ or Nachfeld ‘after field’). An example of a data set is given in Table 1. A total of 48 sentences (3 items x 2 focus types x 2 NP-types x 2 sizes x 2 positions) were recorded per speaker.

<table>
<thead>
<tr>
<th>Context</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>F=full NP, P=pronoun, SG=singular, PL=plural, m=Mittelfeld, n=Nachfeld.</td>
<td></td>
</tr>
<tr>
<td>‘By whom is the artistic director impressed?’</td>
<td></td>
</tr>
<tr>
<td>‘New actors are interviewed at the theatre.’</td>
<td></td>
</tr>
<tr>
<td>‘By whom is the artistic director impressed?’</td>
<td></td>
</tr>
<tr>
<td>‘New actors are interviewed at the theatre.’</td>
<td></td>
</tr>
</tbody>
</table>

#### 2.1.2. Speakers

Four female native speakers of (Standard) German in their twenties participated in the recordings. Speakers received a small fee or course credits for participation. None of the speakers reported any speech or hearing deficits.

#### 2.1.3. Recording procedure

The recording took place in a sound-proof chamber equipped with an AT4033a audiotechnica studio microphone, using a C-Media Wave sound card at a sampling rate of 44.1 kHz with 16 bit resolution. Participants were listening to pre-recorded context sentences or questions and were then reading aloud target sentences which were shown on a screen using presentation software. In case of hesitations or false starts, speakers were asked to repeat their reading. Presentation flow was controlled by the experimenter. The whole recording session took about 25 min on average. Filler sentences from an unrelated experiment were interspersed with a 1:1 ratio.

#### 2.1.4. Data annotation

Recordings were segmented at the level of the word and of the syllable using standard criteria for segmental labelling [2]. Prosodic annotation was first done applying DIMA, a consensus system for annotation of German intonation [23]. In DIMA, the complex signal is annotated at three levels, the level of phrases, of tones and of prominence. Two types of tones are distinguished, accentual tones and non-accentual tones. This division is mainly done to decompose complex pitch accents carry pragmatic meaning [12, 24]. In a task where the presence or absence of pitch accents is investigated, as is done here, an annotator need not to annotate any pitch accent type and is thus
2.2. Results

2.2.1. Focus

Generally and as expected, a narrow FOCUS caused almost exclusively accented target constituents as shown in Fig. 1. This holds both for full NPs and pronouns. In broad focus on the other hand, in about 20% of the cases a target constituent was not accented; except one full NP realisation without an accent all other unaccented cases were pronouns. There was also a shift in accent type such that twice as much rising accents occurred in broad focus indicating that there is a further pitch accent on the next and final constituent; prenuclear accents are commonly rising in German [26, 27].

2.2.2. Phonological Size

The phonological SIZE of the pronoun affected its accentuation. There were about 20% more pitch accents on disyllabic pronouns than in monosyllabic ones, cf. Fig. 2. The majority of accents were high (H*) or downstepped falling accents (H*L). Concerning the prominence ratings, a clear division between full prominence accents (prominence rating 2 in DIMA [23]) on disyllabic pronouns and less prominent pitch accents (prominence rating 1 in DIMA [23]) on monosyllabic pronouns was observed, cf. Tab. 2. Disyllabic pronouns carried fully prominent accents in the majority of cases while monosyllabic pronouns carried accents rated with less prominence.

2.2.3. Position

The syntactic POSITION of the pronoun had an effect on its accentuation. Pronouns in the Mittelfeld were more often accented than pronouns that were syntactically exposed to the right in the Nachfeld, cf. Fig. 3. There was also a difference in pitch accent types such that a H* pitch accent was the most common pitch accent on a pronoun in the Mittelfeld, while this accent did not occur in the Nachfeld in our data.

The prominence ratings of the accents clearly show that in the Mittelfeld, pitch accents were more often realized as full prominence pitch accents of prominence level 2, cf. Tab. 3. For the accents in the Nachfeld, there was a 50-50 distribution of the prominence levels.

Table 2: Prominence ratings of pitch accents according to [23] in mono- and disyllabic pronouns.

<table>
<thead>
<tr>
<th>Accent</th>
<th>Monosyllabic</th>
<th>Disyllabic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>H*L</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>H*</td>
<td>44%</td>
<td>-</td>
</tr>
<tr>
<td>L*H</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>ø</td>
<td>38%</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3: Prominence ratings of pitch accents according to [23] on pronouns in the Mittelfeld and in the Nachfeld.

<table>
<thead>
<tr>
<th>Accent</th>
<th>Mittelfeld</th>
<th>Nachfeld</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>H*L</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>H*</td>
<td>38%</td>
<td>25%</td>
</tr>
<tr>
<td>L*H</td>
<td>-</td>
<td>25%</td>
</tr>
<tr>
<td>ø</td>
<td>12%</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

2.3. Discussion

The results of the present study showed that contrary to previous views expressed in the literature (cf. e.g. [1, 17]), pronouns may be accented in German. As expected, the factor FOCUS had an effect on the accentuation of target constituents.
in general, and on pronouns in particular such that a focused constituent requires a pitch accent in German. Only 3% of the cases were unaccented in narrow focus, while 19% unaccented target constituents were observed in broad focus. Also the accent distribution differs. In 75% of the cases in narrow focus we find falling accents, either downstepped or plain falling ones. See [28] for a similar pattern with downstepped pitch accents in focus. These accents are the most common in German [26, 27], and in terms of their pragmatic meaning, we may conclude that speakers express their confident commitment towards the information that they utter and that this information be shared in the speaker-hearer common ground [24, 26].

The data also showed that the phonological size of a pronoun appears to matter. There were about 20% more disyllabic accentuated pronouns than monosyllabic ones. However, 50% of the monosyllabic pronouns still carried an accent. Interestingly, these pitch accents were rated as less prominent (DIMA prominence level 1) than pitch accents on disyllabic pronouns (DIMA prominence level 2). Hence, the generally assumed fact that pronouns are unaccented in German mirrors itself in a lesser degree of prominence, if a pronoun carries an accent. Still, the higher prominence rating for disyllabic pronouns suggest that a larger phonological size may cause a strong version of a pronoun (cf. [7]).

A similar pattern arises with the position in which a pronoun may occur. In the Nachfeld, the assumption is that elements tend to be rather unaccented than elements in the Mittelfeld. Our Nachfeld data shows that in 50% of the cases, a pronoun did not carry an accent. In the Mittelfeld, 77% of the pronouns were accentuated, and the majority of them was rated as a fully prominent accent (DIMA prominence level 2). Hence, a structural condition as the syntactic position of a pronoun the may also impact on the division of prosodically strong and weak pronouns.

3. General discussion

This study tackled the question whether pronouns in German may carry a pitch accent or not. We found a considerable amount of variation on the accentuation of pronouns that need to be taken into account for an analysis of prosodic phrasing. The findings corroborate findings from conversational data in German that pronouns may be accentuated. Apart from the fact that narrow focus requires a pitch accent on a pronoun, in broad focus contexts pronouns were accentuated to a certain degree as well. Narrow focus requires some maximal prosodic prominence within the t-phrase and the focused constituent is associated with a sentence accent that represents the head of the φ-phrase and, at the same time, the head of the t-phrase [29, 30]. However, accentuated pronouns in broad focus occur as well, and the presence of a pitch accent has consequences for the prosodic phrasing of a pronoun.

The presence of an accent may speak in favor of the presence of a φ-phrase (cf. [1, 12–14]). However, the proposal of minor and major prosodic phrases, and thus the distinction between obligatory and optional pitch accents may be more appealing to account for the accent patterns on pronouns in German (cf. [1]). The phrasing pattern in (5) shows that an accentuated pronoun is phrased as ω, and optionally (indicated by parenthesis) phrased as the head of a recursively embedded φ-phrase, cf. (6a). A possible alternative phrasing pattern could also be (6b) where the final ω of the φ-phrase, the finite verb as the head, receives the main sentence accent while the previous ω, the pronoun, receives a less prominent and optional pitch accent. Both phonological size and syntactic position are conditions that appear to cause a prosodically strong pronoun that receives a (less prominent) pitch accent.

\[
\begin{align*}
\text{φ-level} &
\begin{cases}
\text{x} & \text{t-level} \\
\x & \text{φ-level}
\end{cases} \\
\text{t-level} & \text{x} \\
\text{φ-level} & \text{x} \\
\text{ω-level} & \text{x}
\end{align*}
\]

(5)

\[
\begin{aligned}
(\text{a}) & \quad \text{φ} \\
(\text{b}) & \quad \text{ω}
\end{aligned}
\]

(6)

According to [1, p. 128] “there are other pitch accents – in English, Dutch, German, and other languages – which have no particular meaning contribution. These pitch accents appear to be epenthetic tonal elements whose function, if any, is to enhance the head of a prosodic constituent.” As a conclusion, I would propose that these pitch accents which we observed to occur on pronouns in the current study appear optionally on prosodically strong pronouns in German if a pronoun is prosodically phrased as a prosodic word.

4. Conclusions

Syntax-Phonology-Mapping is not a simple matter of the presence or absence of pitch accents in German. Prosodically weak elements such as pronouns may receive an accent. These accents may be interpreted as “epenthetic” (cf. [1]). At the same time, these accents carry less prominence than (usually bitalon) rising or falling accents (cf. [25]). Hence, “ACCENT” is not like “accent”. Pronouns may be optionally phrased as prosodic words. If so, they may carry an optional, yet less prominent pitch accent. These optional and less prominent pitch accents may occur on other constituents than just pronouns as well.

5. Acknowledgements

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6. References


