Focus Marking in German

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Prosodic marking of broad vs narrow focus in German

- Féry (1993) looked for categorial distinctions in the prosodic marking of broad versus narrow focus in German.
- The result of an production experiment revealed that speakers used the same nuclear pitch accent type (H*L) in both broad and narrow focus as in (4) and (5).

(4) a. Q: Was ist los?
   b. A: [ANna ist weggelaufen.]_F

(5) a. Q: Wer ist weggelaufen?
   b. A: [ANna]_F [ist weggelaufen.]_background

Prosodic Marking of Focus Domains
Categorial or Gradient

(1) a. Q: Who did you call?
   b. A: [I called]_background [MARY]_F

(2) a. Q: Did you call John?
   b. A: No, [I called]_background [MARY]_F

(3) a. Q: What happened?
   b. A: [MARY]_F

- The differences between answers in (1b), (2b), and (3b) are discrete:
  - it is either MARY or I called Mary which is in focus and
  - MARY is either contrasted with another specific person, or is singled out from a larger set.

- Are these differences marked prosodically, and
- does the prosodic marking involve
  - discrete means, i.e. phonological categories such as pitch accent type, or
  - gradient means, such as duration, or F0 timing and scaling differences (which do not lead to a difference in phonological categories.

Production experiment
Baumann et al. (2006) design a production experiment to investigate whether

- prosodic means are used in German to differentiate between three sizes of focus domains involving focus projection and
- between these and narrow focus and
- between narrow focus and contrastive focus

Questions:

1. Was gibt’s Neues? What’s new?
2. Was gibt’s Neues von Manuela? What about Manuela?
3. Was will Manuela? What does Manuela want?
4. Was will Manuela? What does Manuela want to paint?
5. Manuela will Gesichter malen? Manuela wants to paint faces?

Answers:

<table>
<thead>
<tr>
<th>Broad Focus</th>
<th>Narrow Focus</th>
<th>Contrastive Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manuela will Blumen malen.</td>
<td>Manuela will Blumen malen.</td>
<td>Manuela will Gesichter malen.</td>
</tr>
</tbody>
</table>

lit.: Manuela wants flowers paint
Results and discussion

Categorial means

- Contrary to predictions in the literature, both the size of the focus domain and type of focus affect the choice of accent type on the focus exponent:
  - In broad focus structures a downstepped nuclear accent was produces in 42% of all cases.
  - In narrower focus domains fewer downsteps occurred.
  - In contrastively focused utterances no downstep was produced at all.

- As the focus domains narrows in the examples, the use of different gradient means was observed:
  - increased duration of the focus exponent
  - higher peak on the nuclear accent (marking the focus exponent)
  - greater pitch excursion to the peak of the nuclear accent
  - delay in the nuclear accent peak

Increased duration

- Across all speakers, duration of the focus exponent varied consistently with the size of the focus domain.
- But it did not distinguish between contrast and non-contrast narrow focus.
Higher accent peaks

- Two speakers showed a highly significant effect of nuclear accent pitch height on sentence type.

![Graph showing differences in pitch height of nuclear accent peak (mean values) in relation to sentence type, speaker NP](image1)

Late accent peaks

- Another indicator of prominence consists in late accent peaks.
- Two speakers showed such a trend: the smaller the focus domain, the later the peak measured in ms from the accented syllable onset.

![Graph showing differences in nuclear peak position (mean values) in relation to sentence type, speaker MG](image2)

Greater pitch excursion

- Perceived prominence is very often not a correlate of pitch *height*, but of relative pitch excursion.
- The data from the production experiment show that for all speakers the nuclear rise excursion in sentence type 1 (broad focus) is significantly smaller than the rise in sentence type 5 (contrastive focus).
- The data for speaker CB indicate tendencies towards a gradual increase of the pitch excursion as the focus domain narrows, plus a sharp increase from narrow to contrastive focus.

![Graph showing differences in pitch excursion of nuclear accent rise (mean values) in relation to sentence type, speaker CB](image3)

Articulatory gestures and focus marking

- The study in Hermes et al. (2008) reports on a production experiment investigating tonal and articulatory means of encoding different focus structures in German.
- The movements of the upper and lower lips during the production of target words occurring in four different focus conditions were examined.
The Experiment

Questions:
1. Will Norbert Dr. Bahber treffen? Does Norbert want to meet Dr. Bahber?
2. Was gibt’s Neues? What’s new?
3. Wen will Melanie treffen? Whom does Melanie want to meet?
4. Will Melanie Dr. Werner treffen? Does Melanie want to meet Dr. Werner?

Answers: Melanie will Dr. Bahber treffen.

| 1. [ ] focus | background |
| 2. [ ] focus | broad focus |
| 3. [ ] focus | narrow focus |
| 4. [ ] focus | contrastive focus |

(lit.: Melanie wants Dr. Bahber to-meet)

Results and discussion

Accent types

▶ All three speakers deaccented the target words when they occurred in the background.
▶ In broad focus, speakers used downsteps and upsteps.
▶ In narrow focus, two speaker only used upsteps.
▶ In contrastive focus, all three speakers always used upsteps.

<table>
<thead>
<tr>
<th>speaker</th>
<th>background</th>
<th>broad</th>
<th>narrow</th>
<th>contrastive</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM</td>
<td>Ø</td>
<td>H*</td>
<td>H*</td>
<td>H*</td>
</tr>
<tr>
<td>AH</td>
<td>Ø</td>
<td>H*</td>
<td>H*</td>
<td>H*</td>
</tr>
<tr>
<td>WP</td>
<td>Ø</td>
<td>H*</td>
<td>H*</td>
<td>H*</td>
</tr>
</tbody>
</table>

Table 1: Most frequently produced accent types per speaker and focus condition.

Labeling of the data

Figure 1: Labelling scheme; from top to bottom: oscillogram, F0 curve, velocity and position curve of lip aperture (LA); target word Blister.

Figure 3: Differences in duration of focus exponent (mean values) in relation to sentence type, speaker NP

Acoustic durations

▶ For all three speakers there was a significant increase in word duration from background to contrastive focus, as well as from broad to contrastive focus.
▶ However, none of the three speakers showed a significant increase in word duration from broad to narrow focus.
Kinematic results

- Kinematic results are presented for two speakers for the vowel /iː/.
- The figure shows averaged trajectories for the distance between upper and lower lip during the production of the target word, for each focus condition separately.
- Low displacements indicate that the lips are closed for the production of the stop consonants.
- High values indicate open lips during the vowels.
- Going from background through broad and narrow to contrastive focus there is an increase in duration and lip aperture.

![Graph showing lip aperture over time for different focus conditions](image)

Results and Discussion

- Acoustic and articulatory data were labelled by hand.
- For the kinematic data, the lip aperture (LA) index was calculated in terms of the Euclidean distance between upper and lower lip (Lip Aperture) during the production of the target word /b/iː/ber, for each focus condition separately.
- No. 285 in Linguistische Arbeiten.

Bibliographie

