German 3-year-olds intonational realization of information status in spontaneous speech

Thomas Grünloh, Elena Lieven & Michael Tomasello
Introduction

• For West-Germanic languages:
  – the placement of pitch accent is crucial for the marking of information status
  – a referent that is accented introduces new information into the discourse
  – de-accenting is assumed to refer to already established or given referents.
Introduction

• For English (Pierrehumbert & Hirschberg, 1990)
  – L* accents – in addition to deaccentuation – seem suitable to mark given information.
  – H* is assumed to signal newness.

• For German (Baumann & Hadelich, 2003)
  – H* the most appropriate marker for new referents.
  – For given referents, listeners judged deaccentuation as most appropriate, whereas H* was least acceptable.
  – deaccentuation and H+L* were judged equally appropriate for accessible referents

→ no dichotomy of accented vs. deaccented.
Introduction

• wide examination about the intonational encoding of discourse referents in adults

• evidence about children’s competence in this area is scarce
Wieman (1976)

- spontaneous two-word utterances (5 children 1;9 - 2;5)

- In adjective + noun combinations like “Blue Man”, the noun
  - was accented when mentioned for the first time
  - deaccented when already active (“Man. Blue man”)

- similar findings for noun + locative combinations

- only seven examples in the entire study
MacWhinney & Bates (1978)

- 3, 4 & 5 year-old children

- usage of accentuation to mark the informational status of discourse referents.

- triplets of pictures with increasing Giveness

- 3 y.o. used accentuation on the new referent rather than on a referent that was already introduced

- no significant age-difference
  - use of accentuation for a distinction between new and given is already acquired at the age of three
• Do children use the same pitch accents as adults
• 5 & 7 year old children in a picture story telling task
• Newness: realized with an accent
• Givenness: lack of accent

• Interestingly, not every already mentioned referent was treated as given
  • accessible referents were realized similar to new ones

• children of this age are in fact sensible to the status of target referents within a discourse – and they use intonation to mark this.
• Children accent new, but not given information in their own utterances (e.g. Baltaxe, 1994; MacWhinney & Bates, 1978, Wieman, 1975)
  – within one intonation unit
  – children were experienced with language
  – no detailed and/or useful phonological or phonetic analyses
  – stress is an equal term for all kinds of accentuation

→ nothing is known about the types of pitch accent (including deaccentuation) or other prosodic features that young children use
Design

- children’s (2;6 years & 3 years) and adult’s intonational marking of the informational status of discourse referents

- picture book - task

- manipulation of the occurrence of a target referent
  - either inactive (and thus new)
  - already established into the discourse and given
Design

- 4 target referents:
  - Möwe – seagull
  - Biene – bee
  - Eule – owl
  - Igel – hedgehog

- well known by young children
- disyllabic with a sonorant segmental make-up to facilitate pitch analysis
- no switch form in declination.
Design

**warm-up:**
- “surprise-bag” with 8 different items

**practice phase:**
pictures containing:
- single items
- causative actions in order to elicit SVO-sentences

**test phase:**
- “real” picture book
- the experimenter said as less as possible in order to let the child talk about the pictures
• separation of those intonation units in which the target referent occurred
• only natural and spontaneous utterances
• first uttered within the discourse = “new”
• utterance after this activation = “given”
• intonational realization (H*, L*, deaccentuation) of target referents
• pitch range = local F0-min & F0-max
• digitized and annotated using the EMU Speech Database System & GTobI
Results

<table>
<thead>
<tr>
<th></th>
<th>new</th>
<th>given</th>
<th>adults</th>
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<tbody>
<tr>
<td>2;6</td>
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<tr>
<td>3;0</td>
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<tr>
<td>adults</td>
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Summary

• **New information**: adults & both children age-groups behave similarly.

• **Given information**:
  – adults deaccent given information, but not children.
  – instead, children treat given information as if they were new (by accenting them).

• But, older children de-accent given information more than the younger children.
Summary

• why do younger children not de-accent given information while older children do???

• Imitation of the input ???
• Accenting given information is a characteristic of motherese
  • high pitch, exaggerated intonation contours (e.g. Fernald 1984)
  • even when words are already known or mentioned for a second time (e.g. Papousek, Papousek & Haekel 1987, Fernald & Mazzie 1991)

• children seem to “learn” the usage of their speech organs

• investigation and comparison of adult’s intonational realization when directed to their children
Design

• Eight parents (1 father, 7 mothers) of 2 y.o. children (range 2;0 - 2;6, mean=2;3)
  – grown up in the same dialectal environment as participants from study 1

• Materials and design were the same as in Study 1
Results – Pitch Range

![Bar chart showing pitch range for different age groups. The chart indicates that adults and individuals with CDS have a larger pitch range compared to younger children.](chart.png)
Summary

• **New information:** similar in all of the tested groups

• **Given information:** adult – adult differs from CDS
  
  – less high pitch accents and more deaccentuation
  – In CDS parents behave vice versa – identically to the 2;6 year olds

• it seems plausible that young children's intonational behavior is highly dependent on the input (and develops with age)
• What develops?

(1) form-function mapping / imitation

• younger children are hearing something different from the older children (speech directed to them vs. speech around them)

• both are learning the use of intonation from the language they concentrate on (see deRuiter, 2010)
Discussion

• What develops?

(2) lack of control over the speech organs

- children in the late two-word stage acquire the use of accent placement and accent type to mark focus, but, due to difficulty with pitch control, their performance is not yet adult-like (see Chen, in press).
Discussion

• What develops?

(3) cognitive abilities

• the informational status of target referents is based on the speaker’s assumptions about the cognitive accessibility of referents in the mind of the listener (e.g., Givón, 1990; Vallduví, 1992; Lambrecht, 1994)

→ the speaker needs to have an understanding about what I know, what you know, what is given and what is new for the other participant(s) of a conversation (see e.g. Moll & Tomasello, 2007)
Discussion
Thank you...