Variation in intonational marking of topic and focus in children

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Defining topic and focus

- **Topic:**
  - the referent that a WH-question is about

- **Focus:**
  - the information required by the WH-word

**Speaker A:** Look! A rabbit! The rabbit seems to be eating something.

**What is the rabbit eating?**

**Speaker B:** The rabbit is eating grapes.

- topic
- focus
- given, contrastive
- new, contrastive
Prior work in child language

- Acquisition of adult inventory of pitch contours by late two-word stage
- No research on use of intonation to mark topic
  - Early acquisition of morpho-syntactic topic marking
- Not much known on intonational marking of focus except for:
  - marking of contrastive focus
    - Emphatic accentuation used correctly at 4 in English and German
    - Conflicting findings on effect of position of contrast
- No attention paid to individual variation in spite that language development is characterised with individual variation
Phonological marking of (non-contrastive) topic and focus in different sentence positions in Dutch children

- Accent placement (accented or not)
- Types of accent

Variations between children with two different speaking styles

- ‘neutral’ group
- ‘playful’ group
Method

- A picture matching game
- 4- to 5-year-olds (N=16, mean age 5;1)
- Adults (N=9)
E: This is a beet. S: What's
Method (cont’d)

- 36 SVO answer sentences
  
  questions about subject
  
  Wie eet een biet?
  
  De poetsvrouw eet een biet

  questions about object
  
  Wat pakt de poetsvrouw?
  
  De poetsvrouw pakt een vaas.

- Annotated for intonation following ToDI

- Multinominal logistic regression analysis
Results: adults_sentence initial

- No effect of information structure on choice of intonation pattern
  - Focus and topic: H*L, H*

[Bar chart showing distribution of H*, H*L, and other intonation patterns for focus and topic]

- H*
- H*L
- OTHER
- no-accent
Results: adults_sentence final

- Information structure affects choice of intonation pattern (p < 0.0001)
  - Topic: no accent
  - Focus: H*L and !H*L
    - preference for H*L
Results: adults (summary)

- **Focus:**
  - typically accented (with H*L) independent of sentence position

- **Topic:**
  - typically not accented sentence-finally
  - but accented (with H*L) sentence-initially
    - rhythmically motivated
    - optional
Results: ‘neutral group’ _sentence initial_

- No effect of information structure on choice of intonation pattern, as found in adults’ speech
  - Focus and topic: H*L, H*
Results: ‘neutral’ group_sentence final

- Information structure affects choice of intonation pattern (p < 0.0001)
  - Topic: no-accent ---- adult-like
  - Focus: H*L, !H*L, L*H (but no preference for H*L) ---- unlike adults
Results: ‘neutral’ group vs. adults

- Adult-like in …
  - marking initial topic and focus
  - preferring
    - accentuation over no accent in final focus
    - no accent over accentuation in final topic
- Unlike adults
  - showing no preference for H*L in final focus
  - frequent use of L*H in focus
- Why do they use L*H?
  - Uncertain about the focal information because of newness of the words
  - Seeking confirmation from the adult
  - A manner of speaking
- Regression models without L*H: still lack of preference of H*L over !H*L in sentence-final focus
Results: ‘playful’ group

- Characteristics of ‘playful’ 4- to 5-year-olds
  - A wider pitch span (150 ~ 600Hz vs. 100Hz ~ 450 Hz in other children)
  - Substantial intra-speaker variation in voice quality and speaking styles
  - Phrasing
  - More ups and downs in their intonation
  - Laughing while speaking sometimes
Results: ‘playful’ group - sentence initial

- Information structure affects choice of intonation pattern (p < 0.005)
  - H* more likely in focus compared to H*L (P < 0.005)
Results: ‘playful’ group _sentence final

- Information structure affects choice of intonation pattern (p < 0.05)
  - H*L more likely in focus compared to !H*L (P = 0.062)
Conclusions: ‘playful’ group vs. ‘neutral’ group and adults

- More frequent use of accentuation to realise a noun regardless of sentence position and information structure in ‘playful’ group
  - This is interpreted as a tendency to speak in an emphatic manner
    - This interpretation fits nicely with the observation that they break a sentence into more than one IP more often than the other children
- How to interpret ‘playful’ group’s preference for H*L over !H*L in sentence-final focus?
  - Also a strategy to sound emphatic when conveying new information
- But how about ‘playful’ group’s preference for H* over H*L in sentence-initial focus?
  - Conveying new information in a less predictable pattern (i.e. H*); conveying given information in a more predictable pattern (i.e. H*L)
  - Or: H* and H*L in focus condition to introduce intonational variation
    - 65% of sentence-initial focused nouns spoken with H* and H*L
    - 65% of sentence-initial topical nouns spoken with H*L
Future research on individual variation

- Target groups: children with different habitual pitch ranges
  - ‘narrow range’ children: < 30 Hz
  - ‘normal range’ children: 80 ~ 120 Hz
  - ‘wide range’ children: > 150 Hz

- Why this choice?
  - Habitual pitch range is relevant for focus marking because it defines space for pitch-related variation
Future research on individual variation (cont’d)

- **Research question 1:**
  - How does habitual pitch range affect prosodic focus-marking in different languages?
    - Hypothesis A: The ‘wide range’ children may encounter difficulty with prosodic reduction in post-focus sequence. This may be more severe in languages like Dutch and Korean, where a flat pitch contour is favoured in the post-focus sequence than in languages like Swedish and Chinese, where the pitch range of the post-focus sequence gets only compressed to some degree.
    - Hypothesis B: The ‘narrow-range’ children may encounter difficulty with prosodic enhancement of the focused constituent, especially in Dutch and Chinese, where the prosody of the focused constituent is characterised with an expanded pitch range. This may be less a problem in Swedish and Korean.
    - Hypothesis C: The ‘narrow range’ children will acquire prosodic marking of focus earlier than the ‘wide range’ children (because young children have more difficulty with prosodic reduction than with prosodic enhancement)
Future research on individual variation (cont’d)

- Research question 2:
  - Will the ‘narrow-range’ children and the ‘wide range’ children develop alternative strategies other than pitch-related cues to mark focus at a certain developmental point? For example, will they then primarily use a non-pitch related means, e.g. duration and vowel quality, to encode focus, independent of how focus is prosodically realised in the ambient language?