Acquisition of Morphologically and Phonologically Conditioned Vowel Length in Albanian

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Albanian and Gheg
Vowel lengthening rules in Gheg
Acquisition of morpho-phonological rules
Our study (part of a bigger project)
Results from children and adults
Discussion in relation to field
Limitations and future directions
Albanian

• Language spoken in SE Europe

• Considered morpho-phonologically “complex”
  (e.g. Hubbard, 1985; Buchholz, 1987)
  • dashi, e dashit, dashit, dashin, dashit
    (5 declensions of ram – def., sing.)
  • deshtë, e deshëve, deshëve, deshtë, deshëve
    (5 declensions of rams – def., plu.)

• Toshk and Gheg dialects
  • Gheg (spoken in northern & central Albania & Kosovo)
Vowel lengthening in Gheg

- Gheg has two types of vowel lengthening rules (e.g. Beci, 1995; Gjinari et al, 2007; Lloshi, 2009; Shkurtaj, 2004):
  1. Morphologically sensitive lengthening (hereafter, **Type 1**)
  2. Phonologically sensitive lengthening (**Type 2**)
Morphologically-conditioned lengthening in Gheg

- **Type 1** characterizes indefinite nouns, as opposed to definite nouns (e.g. /veza/ “the egg” vs. /ve:z/ “an egg”)

  - /veza/ e bardhë
    - **the** white egg
  - një /ve:z/ e thyer
    - a broken egg

- Type 1 is the **most frequent** lengthening process (e.g. Shkurtaj, 2004; Çeliku, 1971; Murati, 1989).
Phonologically-conditioned lengthening in Gheg

- **Type 2** happens when vowels occur:
  
  (a) before sonorants
  - /ka:ʃ/ (horse)
  - /kat/ (storey, as in one-storey house)

  (b) in open final syllables
  - /miː/ (mouse)
  - /miz/ (fly)
Tendencies from previous acquisition studies:

1. **Statistical frequency** is one of the main predictors of ease and speed of acquisition of morpho-phonological patterns
   (e.g. Stemberger, 1993; Demuth, 2007; Ambridge et al., 2015; Tessier, 2016; etc.)
   → Type 1 is more frequent

2. **Phonological rules** acquired earlier than morphological ones,
   even if they are less frequent
   (e.g. Eimas, 1971; MacWhinney, 1975, 1978; Łukaszewicz, 2006; etc.)
   → Type 2 is a phonological rule
Discover the developmental pattern of the two different vowel length rules (Type 1 & Type 2) in Gheg speaking children

Determine whether children benefit more from a frequently occurring morphological rule (Type 1) or a less frequently occurring phonological rule (Type 2) during acquisition

- Type 1 acquired earlier according to the statistical learning thesis
- Type 2 acquired earlier according to the phonological rule thesis
Speakers

• Native speakers of Gheg
• 22 adults (29-74 years old, mean = 44.2, 20 women)
  • living in greater Tirana area (village and city)
  • they were the children’s parents, grandparents or teachers
• 37 children (6-7 years old, 20 girls)
  • living in greater Tirana area (village and city)
  • earliest age group likely to show phonetic proficiency in communicating morpho-phonologically complex factors in languages like Albanian (e.g. MacWhinney, 1978 for Hungarian; Tomas et al., 2017 for Russian)
Task

- Speakers recorded in primary schools in Albania (Speech Recorder, Draxler & Jänsch, 2004)
- Picture-naming task designed for 6-7 year olds (1st grade)
- Images of relevant cultural objects, presented 4 times each
- Each image corresponded to a monosyllabic word:
  - 7 words of Type 1
  - 6 words of Type 2
  - 5 control words
Examples of pictures

Type 1
/bu:k/ (bread)

Type 2
/mi: / (mouse)

Control
/posht/ (under)
Data Processing and Analysis

• Speech signal forced-aligned using WebMAUS (Schiel, 1999; Kisler et al., 2017)

• Database handled in EMU-SDMS (Winkelmann et al., 2017)
  • including hand-correction of segment boundaries

• Statistical analyses with lme4 and lmerTest packages in R (Bates et al., 2015; Kuznetsova et al., 2017; R Core Team, 2020)
Results

Model initially tested:  
\[ \text{duration} \sim (\text{word_type} \times \text{age_group}) + (\text{age_group} | \text{word}) + (\text{word_type} | \text{speaker}) \]

Best model found:  
\[ \text{duration} \sim \text{word_type} + \text{age_group} + (\text{age_group} | \text{word}) + (\text{word_type} | \text{speaker}) \]

Duration of vowels in Control, Type 1 and Type 2 words in adult and child speakers
1. Children (right) have longer durations than adults (left) \((F[1, 68.71]=10.25, p<0.01)\) → Likely due to slower articulation

2. Type 1 (red) and Type 2 (blue) are longer than control (black) (Type 1: \(t[15.9]=3.22, p<0.05\); Type 2: \(t[16.1]=2.88, p<0.05\)) → Evidence for contrastive vowel lengthening
3. Type 1 (red) and Type 2 (blue) are undifferentiated
   \( t[15.6] = 0.24, p = 0.96 \) → No statistical difference

4. No interaction between word type and age group
   \( F[2, 23.43] = 0.82, p = 0.44 \) → Relationship between word types is the same for children and adults
Taken together, these results show that:

1. Children have mastered both types of lengthening by age 6-7
   • They produce the same length patterns as adults
   • Type 1 and Type 2 are longer than Control words

2. Less frequent phonological and more frequent morphological factors are learned with equal proficiency
   • Type 1 (frequent) and Type 2 (phonological) rules are not different from one another
Limitations and future work

1. **Age limitations**
   - Despite recent findings for Russian (Tomas et al., 2017), perhaps our children are too old for a developmental study?
     → Younger age group(s) needed
     → Could be specific to Gheg that length is particularly prominent

2. **Sociolinguistic factors**
   - Age range in adults (parents/teachers vs. grandparents)
   - Potential differences between city (Tirana) and village

3. **More words and identical phonetic environment needed for a full-fledged study**


Thank you!

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