Some methodological problems of developmental research in „small languages“

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To share experience

- Some native languages of ELDEL members belong to languages used by relatively small community of people, like Greek, Rumanian, Czech, Slovak
- less studied from developmental perspective
- shortage of research and diagnostic tools that limits developmental studies
Brief description of Slovak language

- Historically: an Indo-European, Slavic, West-Slavic language
- is used in Slovakia by 5 million people and in other countries (1 million)
- is relatively simple and relatively regular
- uses a Latin alphabet, but is rich on diacritic placed above certain letters
- 43 phonemes, 49 graphemes, 46 letters
- relatively transparent orthography: 87% correspondence between phonemic and graphemic structure of morphemes
- **Spelling principles:**
  - phonematic – dominates: one phoneme is represented by one grapheme
- **morphematic** – in writing a unified form of words and morphemes is preserved with voiced and voiceless consonants unlike pronunciation (dub – dubček)
- **grammatical** - indicate the difference among morphological categories
- **etymological** – graphemes are written traditionally (i, y stand for /i/)
- Slovak is basically a flective language with relatively free word-order
- Regular conjugation (5 classes of verbs)
- Limited number of irregular verbs (their conjugation is regular)
- Three persons in singular and plural
- Three tenses: present, past and future
- Two voices
- Three moods
- Perfective and imperfective aspects
- Relatively regular declination
- Three nominal genders (M, F, N)
- Two numbers (sing., pl.)
- 6 cases (N, G, D, A, L, I)
SLI triggered language acquisition research

- SLI research: started in 1980’s from clinical neuropsychological perspective in the absence of language acquisition research
- SLI and aphasia: any parallels?
- „norm“ in adults is better understood, less factors influence symptoms, existence of models (Lurian etc.)
Questions asked: what and how?

- SLI, dyslexia: delay or deficit? Same or different?
- **What** is typical development of phonology, morphosyntax, semantics and pragmatics in Slovak?
- **How** can we measure developmental phenomena in the absence of normative language tests?
Comparative studies (Bates et al., 2004)

- in late talkers, SLI, autism, Williams syndrome, early focal brain injury and Down syndrome.
- despite differences in rate of development, the sequences and error types are remarkably similar.
- it appears that they are determined primarily by the "problem space" posed by a particular language.
Reilly et. al (2004): „All have undertaken a journey along the same highway, but some of them are in the slow lane, with occasional stops along the road“.

**But:** very low achievers are usually not included in the studies – unable to pass the tests... *(I am skeptical)*
Constructing language acquisition model in Slovak

- Our research group: three linguists (D. Slančová, J. Kesselová, I. Bónová), SLP (S. Kapalková), psychologist (M. Mikulajová)
- Virtual laboratory of child language on http://laboratorium.detskarec.sk
- Study: 5 children from birth to 6 years
Methodology

- Videotaping 1 hour/month in home environment with mother
- Transcription of samples in CHILDES format, [http://childes.psy.cmu.edu/](http://childes.psy.cmu.edu/)
- **Qualitative** analyses of phonology, morphosyntax, semantics, pragmatics and play from birth to 3 years (6 years)
- **Quantitative** tools: MLU and P-MLU
Practical output: creating CDI in Slovak, 2010

- The MacArthur-Bates Communicative Development Inventory (Fenson et al., 1993)
- Parent report forms for assessing language and communication skills in age of 8-30 months
- Research-based instrument: 5 longit. + over 1700 children 8-36 months
Mean Length of Utterance

- MLU - better estimation of language development than chronological age
- Included in CDI: 3 longest sentences
- In English easy explicit rules described by R. Brown (1973):
  - 1 morpheme: drink, doggie, birthday, gonna, went, feet
  - 2 morphemes: inflected verbs, nouns
MLU in Slovak

- In English: development sequence of 14 morphemes
- In Slovak: more complex morphology
- What to count in Slovak?
- Brown’s rule: count only morphemes that reflect linguistic-cognitive growth and productive use
čít-a-l-a som

čít- lexical meaning, root M
-a- thematic M - codes conjugation class (5 classes)
-l- form M - codes the form of infinitive
-a- congruent grammatical M - codes agreement with a noun in gender and number: here codes feminine and singular
som - free grammatical M, codes person and number, here: 1. person (I) sing.

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Past tense - behavioural marker of SLI in English

- I, you, he, we ... read
- I, you, he, we ... walk-ed
- Agreement in gender, person, number:
  - Masc., 1. pers., sing.: číta som
  - Fem., 1 pers., sing.: číta la som
  - čít-a-l-0 som, čít-a-l-a som / ling. 5
  - root-class-tense-gender+number-person+number
Agreed rules for Slovak

- morphemes that reflect linguistic-cognitive growth and productive use:
  - číta-\textbf{l-0 som} / dev. 4
  - číta-\textbf{l-a som} / dev. 4
  - root – tense – gender – pers.+number including \textcolor{red}{zero}-morphemes
  - incorrect morphemes = 0,5 p.
  - morpheme germs (č\textcolor{red}{'i}) = 0,5 p.
Phonological MLU (D. Ingram, 2003)

- The measurement of whole-word productions, not segments
- 4 measures:
  1. **Phonological MLU**: a measure of whole-word complexity of child words (can be calculated also for targets)
  2. **Intelligibility index**: a ratio between child’s P-MLU and P-MLU of targets
3. Proportion of whole-word correctness: number of words produced correctly relative to the sample size

4. Proportion of whole-word variability: how often a child produces words in distinct phonological shapes

based on 25 or 50 content words in a spontaneous language sample
How to count P-MLU according to Ingram

- Production rules: heart of P-MLU
- 1 p. for each produced sound (assign no more points than in the target)
- 1 p. for each correctly produced consonant (vocals in English have low perceptual salience)
- [bat] for „bath“: 3 + 1
Agreed rules in Slovak (Bónová, Slančová, 2005)

- 1 p. for each produced sound
- 1 p. for each correctly produced consonant
- 1 p. for each correctly produced vowel (quantity of vowels is ignored)
- 0,5 p. for incorrect diphtong: [em] for „viem“, reflects developmental stage
- **Position rule**: correctly pronounced segments according to their position in the target:

- \[\text{dotkolka} \text{ for doktorka} = 13: \]

- 8 for produced segments + 2 for correct C \([d, k]\) + 3 for correct V

- **Target rule** = a phonological form that the child is exposed to (e.g. dialect)
What we know up to date

- MLU and P-MLU in Slovak are better indicators of language development than chronological age
- Changes in quantity reflect higher qualitative levels of language acquisition in phonology, morhosyntax, semantic categories and pragmatic functions – a topic of current and future research
In Slovak, unlike in English, grammar development begins with morphology, not with syntax.

The difference between P-MLU of the target word and child's word seems to be the most relevant and cross-linguistically universal indicator of phonological development.
The tools (MLU, P-MLU) can be productive in sentence repetition tasks, articulation (by naming) and word repetition tasks and invented spelling research (Z. Jagerčíková, 2007) with typically developing and SLI children.

Thank you for your attention.