Clustering in a nonword repetition study of Russian-speaking children

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The question

• In a nonword repetition task, will consonant cluster simplification result in compensatory duration?

The study

• Subjects: 9 typically developing Russian-speaking children aged 7-10, population subgrouped from larger study in which TD matched SLI (Northern Russia, rural population)
• Task: Nonword repetition task, evidence task, accuracy testing
• Why clusters?
• Consonant clusters are frequently difficult in L1 acquisition and in L2 acquisition for L2 learners whose L1 has different cluster restrictions.
• Russian has a variety of different cluster types

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Russian phonotactics

• Russian has both onset and codas C and CCC clusters
• Not all clusters in Russian obey the Sonority Sequencing Generalization (SSG)

Word Class Cluster position Sonority
C - onsets 
S - codas 
CVC - Onset of CV Onset Plateau
CVCC - Onset of CV Onset Plateau
CK - Coda rise of Rising
lg - forehead-gen.s'ng - Onset rise of Rising
mb - mouth-gen.s'ng - Onset rise of Rising
mb - Onset rise of Rising-Rising

Production data

• Clusters produced with many errors, including deletion
• Lexical attestedness correlates with accuracy for TD (though not matched SLI)
• Sonority is a factor for both groups (though in slightly different ways not relevant here)

Study procedures

• Nonword repetition study of 144 nonwords: 2 random lists.
• 36 nonwords began with biconsonantal (CC) clusters: 18 with triconsonantal (CCC) clusters.

Clusters in stressed syllables only
- CCC
- CVCCV, CVCCCV, cvCVCC, cvCVCC
- CC vs. CCC clusters
- CCC: lbata, lbata, lbata
- CVCCV: gmra, gmra, gmra
- Onsets vs. codas clusters
- Onset: brupa, pyata
- Coda: tabak, takad
- Rising, falling, level sonority CC clusters
- Rising: brupa, gmuva
- Falling: ibata, nkupu
- Level (obstruent and sonorant): lbata, pbata, mnata
- Fillers without clusters: dopa, kalda

Attestedness: None of CCC clusters are attested in Russian. Half of the CC clusters are attested. Attested in Russian in: Unattested in Russian: nba

Stimuli

• Disyllabic Nonwords: No palatalization: Vowels: a, o, u
• Clusters in stressed syllables only
• CVCCV, CVCCCV, cvCVCC, cvCVCC
• CC vs. CCC clusters
• CCC: lbata, dbata, lbuka
• CCC: gmra, gmra, gmra
• Onsets vs. codas clusters
• Onset: brupa, pyata
• Coda: tabak, takad
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Main findings

• The mean duration of intended CC clusters is shorter than that of corresponding reduced (CCC to CC) clusters (p < .02)

Duration hypothesis

• CCC clusters reduced to CC by deletion (e.g., ibuipa produced as lbupa) will be longer than comparable CC clusters produced as intended (e.g., lbata as lbata)

Interpretation

• These findings suggest that both past production experience (the effect of attestedness) and planning complexity (the effect of reduction) affect cluster duration.

References