The Perception of Manipulated German Vowels by Turkish GFL Learners

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CUNY Phonology Forum Conference on the Segment,
New York
11th-13th of January, 2012
How does the *L2* segment fit in?

- “Investigation of L2 phonology is underrepresented” and trails behind research in other linguistic areas (Gut 2009)
- Of all aspects of second language phonology, it is the **segment** that has attracted most attention (Archibald, Young-Scholten 2003)
- Trubetzkoy (1939) and the idea of a “phonological sieve”
- Lado (1957) and Contrastive Analysis: Aspects of the L2 that are similar to the L1 are easy to acquire
- Flege (1995) and Speech Learning Model: Similar sounds are harder to learn the older learners are (→ equivalence classification)
Could I pay for this closet in rats*?
Kann ich den Schrank in Ratten* zahlen?

*Intended: Raten (German)/installments (English)
Motivation and hypothesis

• German vowels (both vowel quality and vowel quantity) as special problem for Turkish learners of L2 German (Rolffs 2005)

• Feature Hypothesis (McAllister et al. 2002): L2 features not used to signal phonological contrast in L1 will be difficult to perceive for the L2 learner

• Desensitization Hypothesis (Bohn 1995): Duration cues in vowel perception are easy to access whether or not listeners have had linguistic experience with them

→ Hypothesis: Vowel quality and quantity are not equally problematic for Turkish learners of L2 German, in that quantity differences are easier to perceive
Quick overview: German and Turkish vowel systems

**German**

- German differentiates lax and tense vowels
- Tense vowels are usually long, lax vowels are short

**Turkish**

- Turkish described as language without vowel length
- Long vowels only through secondary lengthening and in borrowed foreign words

(Source: Handbook of the IPA)
Data collection and participants

• **Data collection** in Istanbul, Turkey and Dortmund, Germany

• **Experimental group** from İstanbul Erkek Lisesi, Istanbul: 22 Turkish students (8 female/14 male; Ø age: 17.5; SD=.5)

• **Control group** from Dortmund, West Germany: 21 native German speakers (12 female/9 male; Ø age: 17.9; SD=.7)

• All subjects participated in a perception (focus of this talk) and an additional production experiment

• For analysis: 20 per group (N=40)
Perception experiment

• Discrimination task with manipulated nonsense word pairs ([biːp]-[bɪp], [baːp]-[bap], etc.)
• Manipulation of prototypical items (with PRAAT) in reminiscence of a design used by Sendlmeier (1981):

  **Long vowels were shortened** to the average length of their corresponding short counterpart

  **Short vowels were lengthened** to the average length of their corresponding long counterpart
Experimental conditions

Example items for category /u/:

- **Proto**: non-manipulated long vowel versus non-manipulated short vowel
- **Length**: non-manipulated long vowel versus lengthened short vowel (*same length, different quality*)
- **Quality**: non-manipulated long vowel versus shortened long vowel (*same quality, different length*)
Results: Perception experiment

- Statistics: Wilcoxon test and Bonferroni correction (α=.003), N(participants)=20 per group
- Length_u: p<.001 (U=48)
Conclusion

- German vowel quality and quantity do not seem to be equally hard to perceive for Turkish GFL learners:
  - no significant differences for the perception of vowel pairs that differ in length
  - difficulties with the perception of vowel quality in the manipulated /u/-pair

- Apparent support for Bohn’s desensitization hypothesis concerning perception of vowel length

- Explanation in terms of Flege’s SLM: Quality of Turkish /u/ is too similar to both German /u:/ and /ʊ/
Open questions

• Influence of secondary long vowels in Turkish?
  – Implication: Contrastive analysis on a phonemic level not helpful
  – Further studies with for example Polish GFL learners, who neither have long vowels on a phonemic or phonetic level

• Influence of experimental design?
  – Extension of discrimination experiment with different consonantantal contexts and carrier sentences (cf. Levy, Strange 2008)
References


• Trubetzkoy, N. 1939: Grundzüge der Phonologie. (Travaux du Cercle Linguistique de Prague. 7). Prag [postum].