# Patterns of language dominance in German-Turkish heritage bilingualism: the case of adolescent learners of French

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## Introduction

- 2.7 million Germans of Turkish origin (3.4% of the population), 440,000 between 10 and 20 years old (5.8%); 1.4% of households are mainly Turkish-speaking (Statistisches Bundesamt 2018: 63, 485)
- Potential of multilingual learners largely ignored in the educational system, e.g., similarities between HL Turkish and FL French (Gabriel et al. 2018; 2022)
- First empirical studies on L3 acquisition in speakers of migration or heritage languages (Valdés 2000; Montrul 2018) from the 2010s
- Bilinguals tend to be **dominant** in one of their languages (mainly as a function of language use and proficiency); complementary principle (Grosjean 2016)
- Traditional measures of **language dominance** (LD; Treffer-Daller 2016) either
  - generic but subjective (questionnaires) or
  - objective but specific (global measures/tests of proficiency, usually of reading and writing skills)

  → Production in foreign language should also be considered.

## The learner group (B)

6 German-Turkish bilinguals, born and living in Northern Germany, 2nd or 3rd generation immigrants (4 had at least one parent born in Germany), ages: 15–17, attending senior high school, 3rd year of formal instruction of French (participants of MEZ project, data collection 2016)

### Assessment of language dominance

1. Dominance score calculated on basis of a questionnaire (four parts, similar to *Bilingual Language Profile*; Birdsong et al. 2012), answers are pointed and summed up for both languages, then subtracted → max. ±91 points (numerically negative values = dominance in Turkish)
2. Proficiency measures (means over 4 successive measurement times):
   - *Lesegeschwindigkeits- und Verständnistest* (LGVT; Schneider et al. 2017): reading comprehension (multiple choice), reading speed (number of read words), reading accuracy (% of correct answers)
   - writing skills (Klinger et al. 2019): score (= percentage of maximal possible) including task completion, text length, types of nouns, adjectives, verbs, and compounds, number of formal elements

**Language background**
parents' languages, language used at home, …

**Language use**
with father/mother, father with mother, with best friend, among friends, in the schoolyard, at home …

**Attitudes**
importance of speaking well, importance and usefulness of the HL, TV choices …

**Self-assessed proficiency**
Pronunciation, writing texts, orthography, grammar, lexicon

**Results**

| | | B1 | B2 | B3 | B4 | B5 | B6 |
|---|---|---|---|---|---|---|---|
| **Dominance score** | | 17.75 | –1.25 | –7.25 | 16.25 | –2.5 | 35.5 |
| **Comprehension** | **German** | 42 | 47 | 28 | 42 | 43 | 33 |
| | **Turkish** | 18 | 26 | 38 | 40 | 14 | 10 |
| **Speed** | **German** | 1007 | 1141 | 948 | 1214 | 1137 | 917 |
| | **Turkish** | 565 | 616 | 761 | 941 | 634 | 475 |
| **Accuracy** | **German** | 99 | 96 | 79 | 90 | 93 | 89 |
| | **Turkish** | 70 | 84 | 90 | 82 | 61 | 57 |
| **Writing** | **German** | 42 | 30 | 40 | 51 | 42 | 44 |
| | **Turkish** | 26 | 25 | 52 | 42 | 27 | 56 |

**→ Participants are fairly balanced bilinguals. But: their reading and writing skills tend to be higher in German.**

Explanation: they mainly use German in public and educational contexts, while Turkish is largely restricted to the familial domain.

### Research questions

1. What about their speaking skills in Turkish? Is their prosody influenced by German?
2. How does their bilingualism affect FFL? Is there a bilingual advantage? Does their language dominance have an effect?

## Background knowledge: German, French, and Turkish prosody

considerable differences; Turkish occupies an intermediate position between French and German
→ possible source of **positive transfer** for German-Turkish bilinguals in **French as a foreign language (FFL)**

| | German | Turkish | French |
|---|---|---|---|
| Global speech rhythm (GSR) | stress-timed<br>r-vocalization: /ʁ/ articulated as [ɐ] in coda position | syllable-timed | syllable-timed |
| Intonation | based on the **prosodic word**; F0 contours determined by local pitch movements (pitch accents) on stressed syllables (Féry 1993) | stress on last syllable of **prosodic words** (exceptions: borrowings, place names, words containing certain affixes, e.g. verbal negation *BİL*[Neg *mi*]*yorum* 'I don't know'); prosodic words marked by **initial L** edge tone and **final rise** (İpek/Jun 2013; Kamalı 2011) | no lexical stress, **phrase-based**; F0 contours determined by **pitch excursions** occurring at the **beginning** and the **end of accentual phrases** (AP); underlying tonal pattern: /aLHiLH*/ (Delais-Roussarie et al. 2015) |

## Prosody in the HL Turkish

### Materials and methods

- analysis of read speech in Turkish (data collection: Northern Germany, 2016, MEZ; control groups: Mainz, 2018–2019)
- comparison of F0 contours and GSR properties with those of groups L1-TR and L2-TR by calculating deviation scores and rhythm metrics (%V, VarcoV)

| | | ages | *n* |
|---|---|---|---|
| L1-TR | L1 speakers of Turkish | 21–32 | 6 |
| L2-TR | German learners of Turkish | 22–43 | 5 |

### F0 contours in Turkish as L1, HL and FL

- F0 values were normalized for each segment with the formula below (Rose 1987; Seoudy 2016), assigning values between 0 and 1.
- calculation of deviation from the average F0 contour within groups B, L1-TR and L2-TR
- calculation of deviation from the L1 norm (average of group L1-TR)

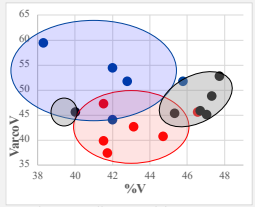
$$F_{0norm} = \frac{(F_{0i} - \overline{F}_0)}{\sigma}$$

| | within-group variation | deviation from L1 |
|---|---|---|
| L1-TR | 0.50 | - |
| B | 0.42 | 0.58 |
| L2-TR | 0.61 | 0.72 |

F0 variation within Turkish speaker groups and deviation of HL and L2 speakers from L1 Turkish.

- highest variation within group L2-TR (various degrees of proficiency)
- F0 contours of group B deviate less from those of group L1-TR than those of group L2-TR

### Global speech rhythm in Turkish as L1, HL and FL




%V and VarcoV for group L1-TR (black dots, individual values), group B (red dots, individual values) and group L2-TR (blue dots, individual values).

- %V: group B (43.18) takes an intermediate position between group L1-TR (45.66) and the L2-TR (42.15)
- VarcoV: group B scores lower (42.38) than group L1-TR (47.38) while group L2-TR scores the highest (52.39)
- group B performs closer to group L1-TR than group L2-TR

**→ group B's Turkish GSR and intonation seem not to be strongly influenced by German**

## Prosody in L3 French (FFL)

### Materials and methods

- analysis of French read speech (data collection: Northern Germany, 2016, MEZ; control groups: Mainz, 2018–2019)
- calculation of the monolingual (M) and bilingual (B) learner's **deviation** from the mean values attained by group L1-F for 5 sentences based on prominence values assigned to each σ by ANALOR (Avanzi et al. 2008)
- to determine whether there is a bilingual advantage: comparison bilingual learners' F0 contours and GSR properties with those of groups M and L1-F were compared with those of L1 French by calculating deviation scores and rhythm metrics (%V, VarcoV)

| | | ages | *n* |
|---|---|---|---|
| M | monolingually raised German learners of French | 15–17 | 8 |
| **B** | **bilingual Turkish-German learners of French (Turkish as a heritage language)** | **15–17** | **6** |
| L1-F | L1 speakers of Standard French | 21–23 | 3 |

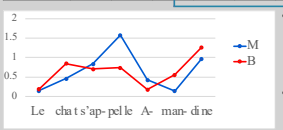
### Intonation in French as FL

| | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 | mean M |
|---|---|---|---|---|---|---|---|---|---|
| Sentence 1 | 0.42 | 0.32 | 1.21 | 1.02 | 0.55 | 0.30 | 0.48 | 0.88 | **0.65** |
| Sentence 2 | 0.47 | 0.88 | 1.30 | 0.35 | 0.39 | 0.84 | 1.02 | 0.86 | **0.77** |
| Sentence 3 | 1.39 | 1.43 | 0.82 | 1.07 | 1.24 | 1.15 | 0.58 | 1.27 | **1.12** |
| Sentence 4 | 1.11 | 0.97 | 1.96 | 0.72 | 0.60 | 1.06 | 0.64 | 1.98 | **1.13** |
| Sentence 5 | 0.54 | 0.37 | 0.36 | 1.07 | 0.16 | 0.34 | 0.52 | 1.35 | **0.59** |
| | **0.89** | **0.96** | **1.16** | **0.84** | **0.73** | **0.86** | **0.67** | **1.27** | **0.92** |

| | B1 | B2 | B3 | B4 | B5 | B6 | mean B |
|---|---|---|---|---|---|---|---|
| Sentence 1 | 1.03 | 0.44 | 0.38 | 0.77 | 0.89 | 0.33 | **0.64** |
| Sentence 2 | 0.49 | 0.41 | 0.56 | 0.61 | 0.72 | 1.42 | **0.70** |
| Sentence 3 | 0.81 | 0.73 | 0.67 | 1.01 | 0.70 | 1.55 | **0.91** |
| Sentence 4 | 1.23 | 1.66 | 0.98 | 2.27 | 1.27 | 0.68 | **1.35** |
| Sentence 5 | 0.39 | 0.89 | 0.53 | 1.14 | 0.44 | 1.32 | **0.79** |
| | **0.82** | **0.81** | **0.65** | **1.14** | **0.82** | **1.15** | **0.90** |

Deviation from L1-F based on the prominence values assigned by ANALOR (upper panel: M; lower panel: B).

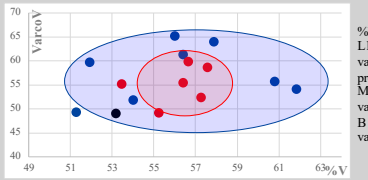
strongest language dominance in Turkish vs. in German




Mean deviation scores in sentence 1 for **M** (blue) and **B** (red) learners (mean values per syllable); sentence 1.

- group M: high deviation score on *-pelle* [pɛl], indicating a (non-target-like) prosodic boundary before *Amandine* (absent from group B's production)
- no significant difference between groups (p = .803)
- calculation based on the methodology presented in the section on F0 contours in Turkish yielded similar results

### Global speech rhythm in French as L1 and FFL




%V and VarcoV for L1 French (mean value; black); FFL produced by group M (individual values; blue) and B (individual values; red dots).

- group B less variable and closer to the target
- but: difference M vs. B not significant for neither %V (p = .364) nor VarcoV (p = .052)

### r-vocalization in FFL

- group B produced less instances of incorrect r-vocalization in French than group M (B: 60% vs. M: 87.5% non-target like instances)
- impact on GSR: extends the duration of vocalic intervals and increases VarcoV and %V as compared to native performance
- example: *sport* produced as [spɔɐ] yields a longer V interval than target-like [spɔʁ]

**→ Bilinguals are overall not more target-like in FL than monolinguals, but bilinguals with a stronger dominance of Turkish perform slightly better**

## Conclusions

- German-Turkish learners are balanced bilinguals, but writing and reading skills are better in German; their Turkish prosody largely patterns with monolinguals
- No significant positive transfer of prosodic properties from HL to FL (but rhythm is slightly more target-like due to less instances of r-vocalization and bilinguals with a stronger dominance of Turkish perform slightly better)
- As opposed to the segmental level (e.g., VOT production), suprasegmentals are less accessible in FL learning and positive transfer needs support by fostering prosodic awareness in multilingual learners.

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