

WORD-FINAL DEVOICING IN RUSSIAN AND GERMAN: ELECTROGLOTTOGRAPHIC ANALYSIS

SPSASSD June 7-11, 2010 – Darja Appelgan

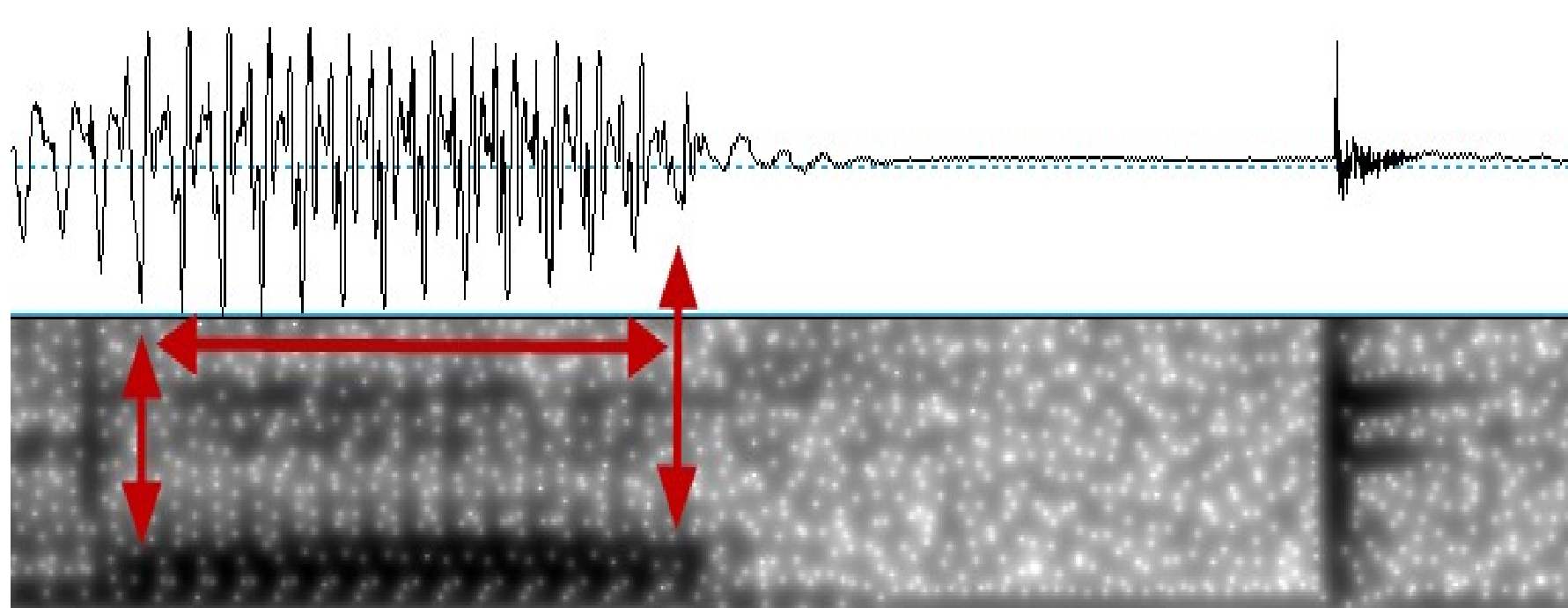
Phonological Rule (Absolute Neutralization)

Final devoicing: [-sonorant] → [-voice] / _#

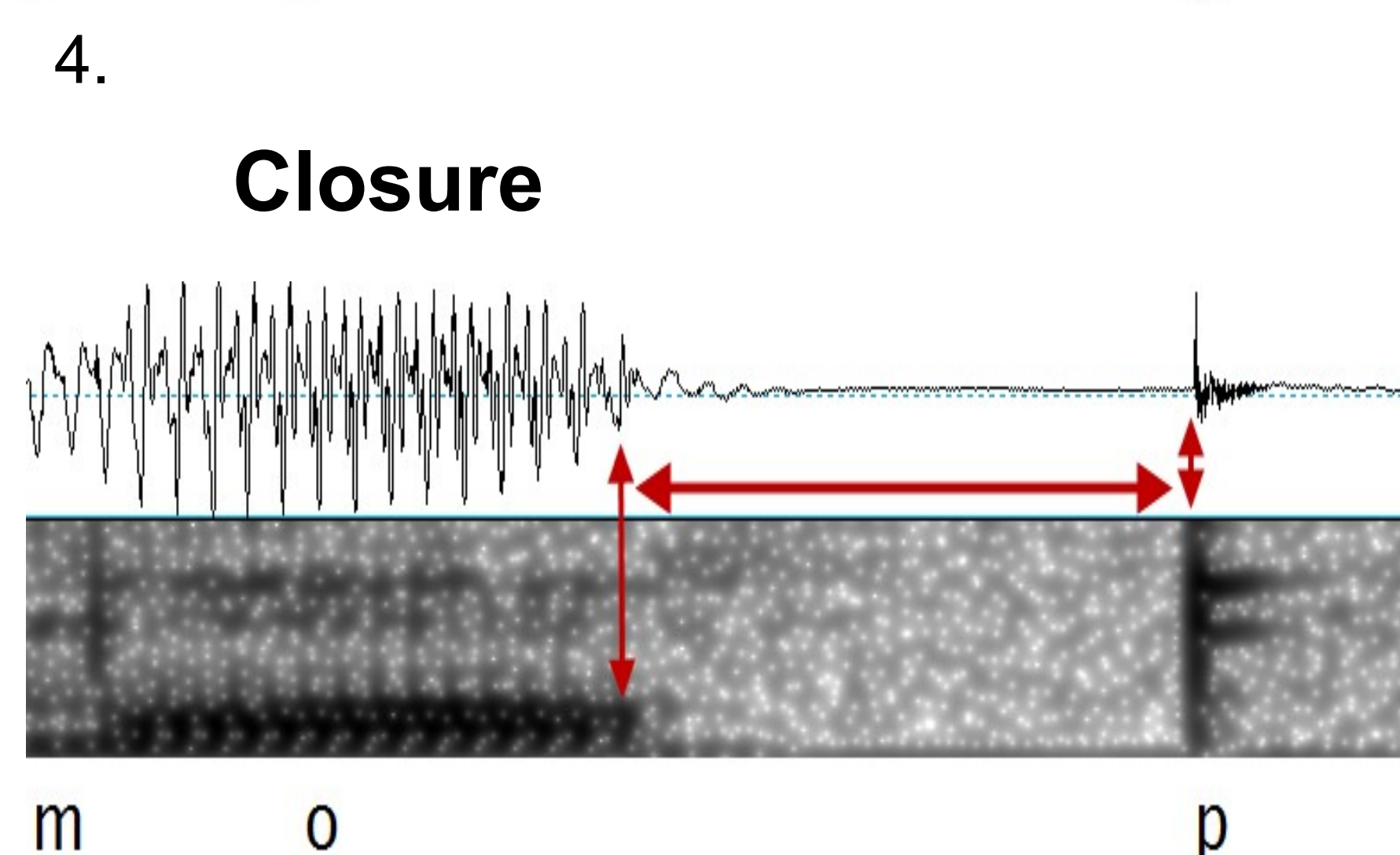
Research Questions:

1. Is the voiceless/voiced distinction neutralized in Russian and German?
2. Do Russian and German behave in the same way?
3. Are there any distinctions based on the gender of the speakers within a language?
4. Are there any differences according to the position of the word in the sentence?

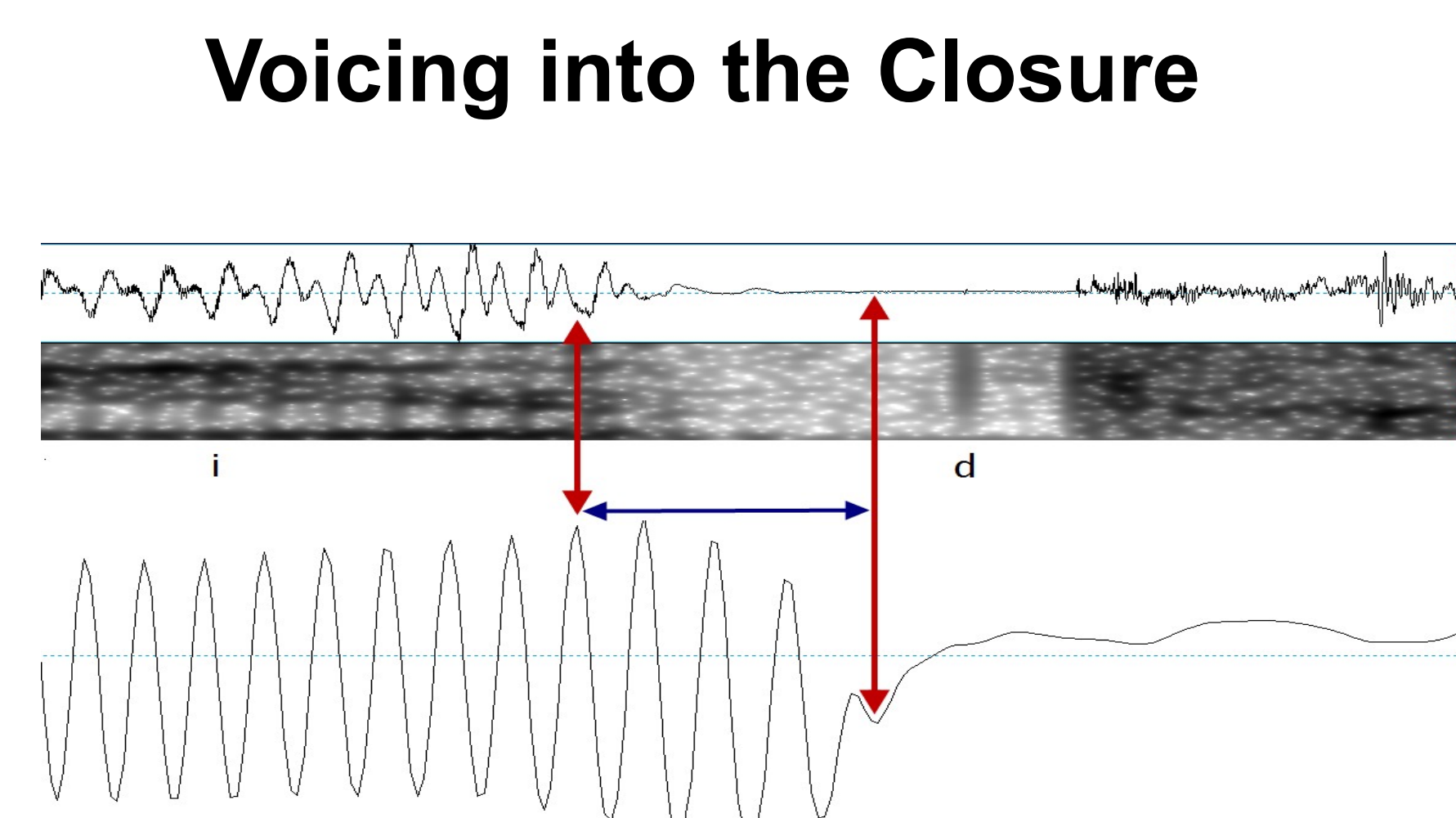
Durational Measurements Preceding Vowel



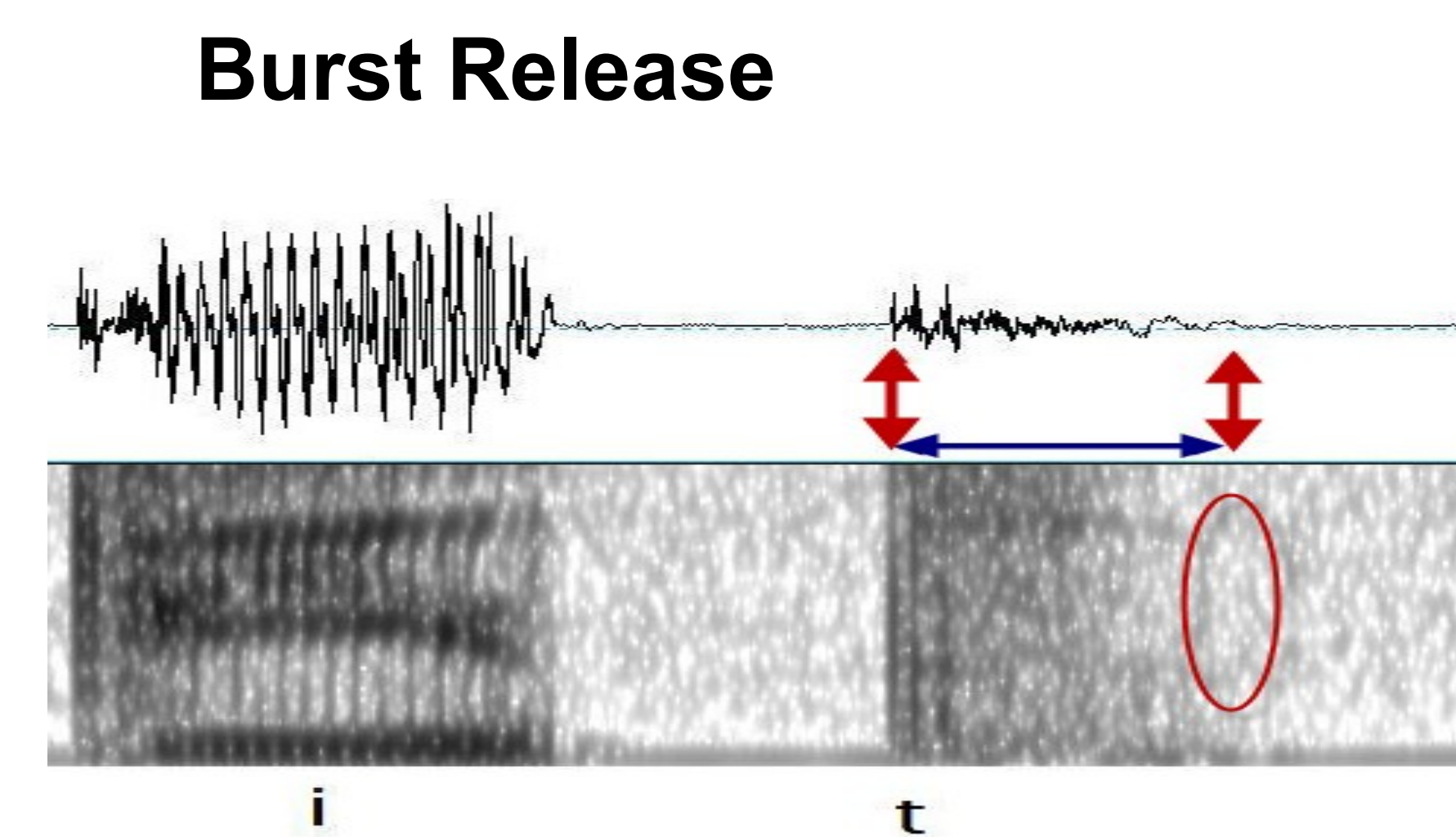
From the first formant in the spectrogram (or the first regular amplitude in the audio waveform) until the end of the second formant or the abrupt drop in the waveform amplitude



From the end of the vowel until the burst release



From the end of the vowel until the last steady cycle of the EGG



From the onset of a sudden discontinuity in the spectrogram (or in the acoustic waveform) until the end of the visible noise in the spectrogram

Experimental Design

Participants

- 10 native Russian speakers (6f, 4m)
- 9 native German speakers (4f, 5m)

Stimuli

- 6 minimal word pairs (bilabial, dental and velar stops)
- Real words
- Filler items
- Two sentential positions: final and medial

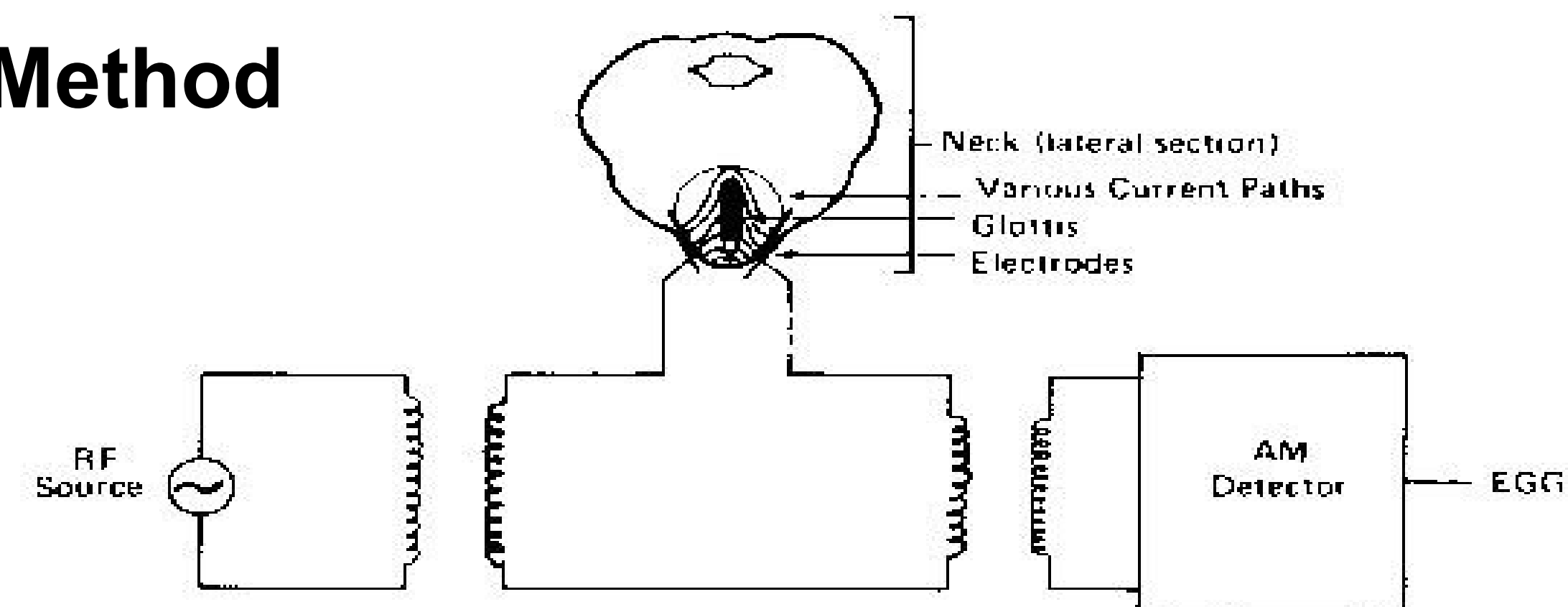
Russian minimal word pairs:

прут - whip	пруд - pond
спит - sleeps	спид - aids
грипп - flu	гриб - mushroom
сноп - sheaf	сноб - snob
лук - onion	луг - meadow
мак - poppy	маг - magician

German minimal word pairs:

Alp - alp	Alb - incubus
Mop - mop	Mob - mob
Rat - advice	Rad - wheel
buk - baked	Bug - prow
tot - dead	Tod - death
weg - gone	weck- - to wake s.o. up

EGG Method



The principle of the EGG device (from Childers & Krishnamurthy, 1985:133)

Russian vs. German – Overall Results

• Consistent tendency for voiced C's to have longer VCL in both Russian and German

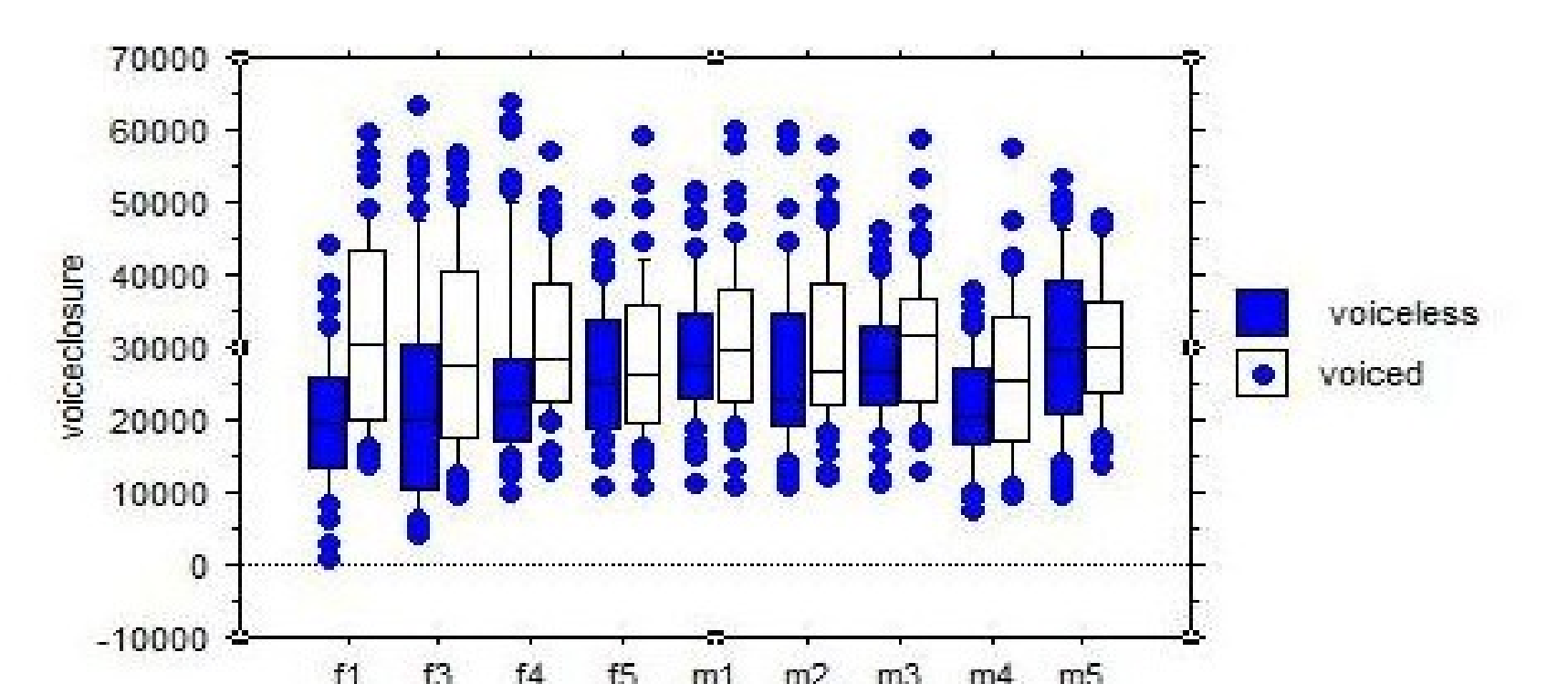
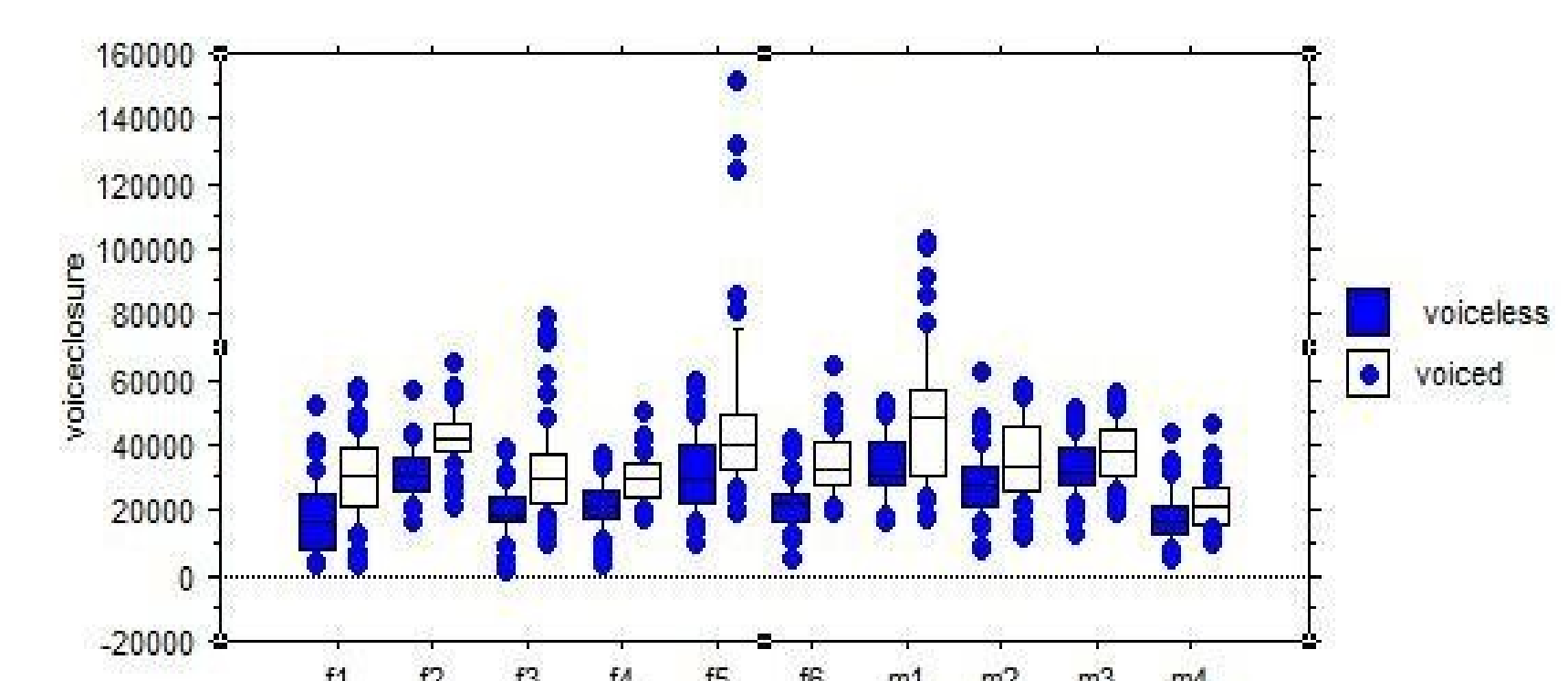
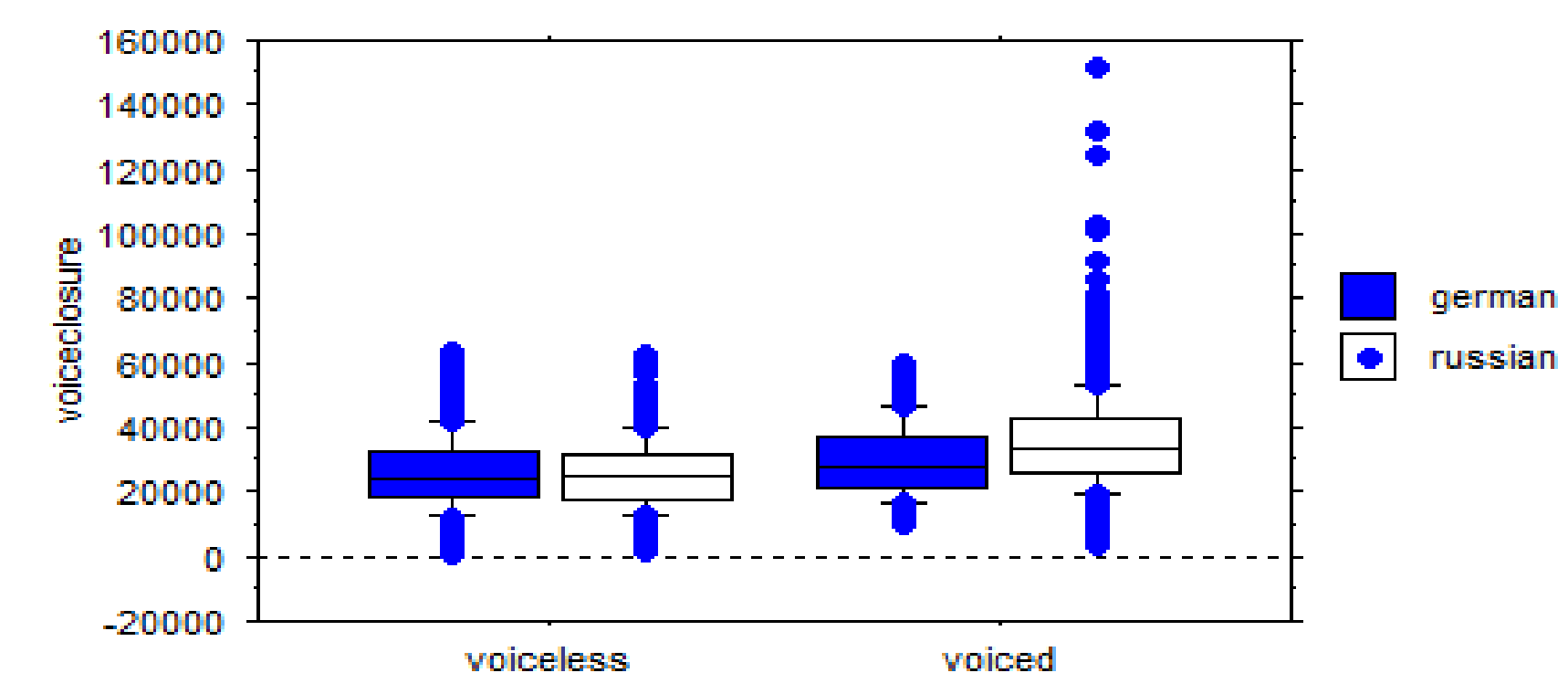
• Slight tendency for Russian voiced C's to have longer VCL than those for Germans

• Consistent tendency for Russian voiced C's to have more variation in production of VCL

• No difference in VCL between Russian and German voiceless C's

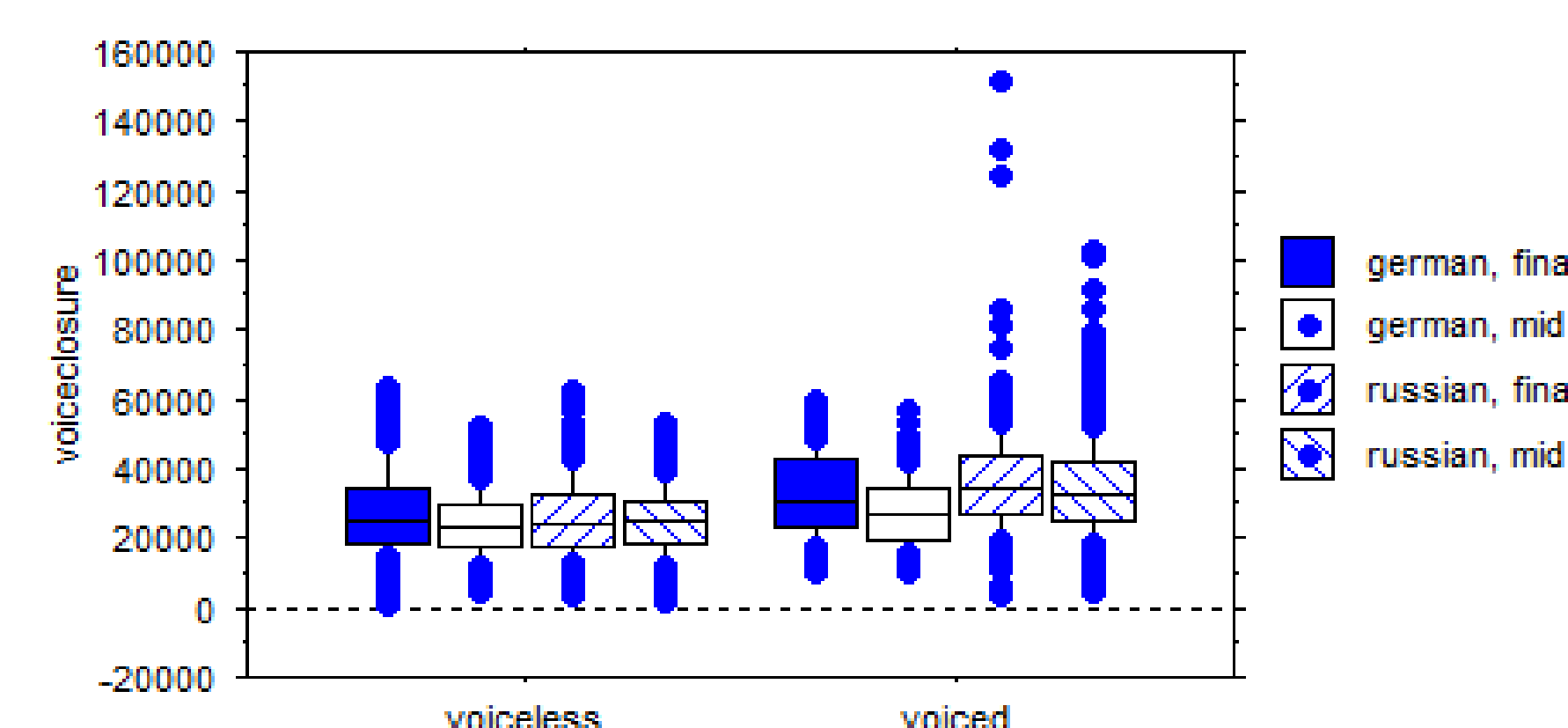
• Russian: 8 speakers were clearly differentiating voiced from voiceless C's

• German: 2 speakers were clearly differentiating voiced from voiceless C's



Sentential Context

• Consistent tendency for voiced and voiceless C's in Russian and German to have increased VCL in final sentence position

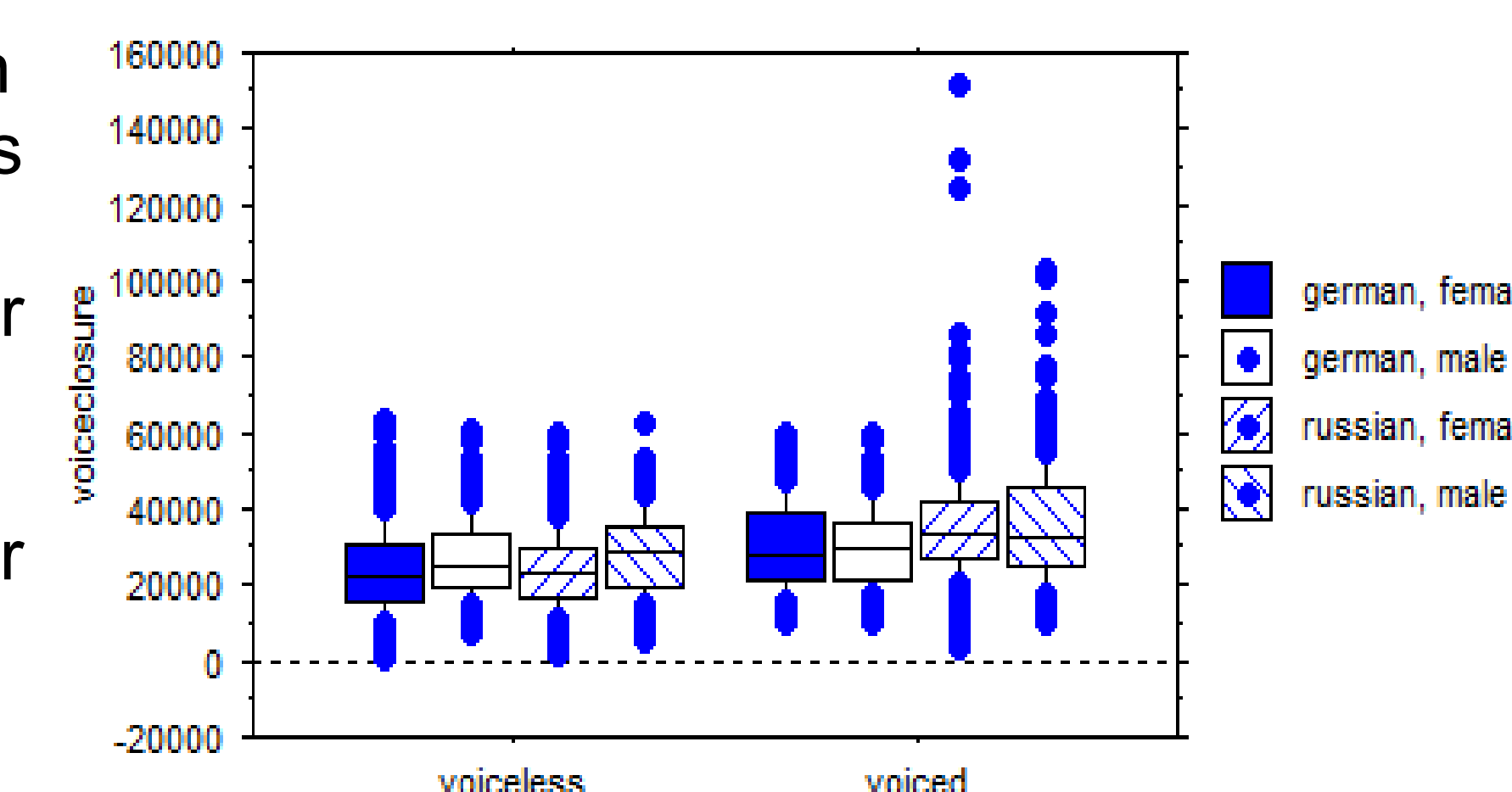


Gender Differences

• VCL is slightly longer for males in Russian and German voiceless C's

• Russian: VCL is slightly longer for males in voiced C's

• German: VCL is slightly longer for females in voiced C's



Conclusions

1. The voiceless/voiced distinction is realized differently in Russian and German languages

2. Russian and German show similar tendencies:

- longer VCL in voiced C's
- wide individual variation in VCL to differentiate between voiced and voiceless C's

3. Females seem to have far widespread dispersion of VCL for voiced and voiceless C's than males

4. The position of a word in a sentence does have influence on the devoicing of the final consonant:
final lengthening → longer VCL in sentence final position