PHONETIC ANALYSIS ON SPEECH STYLE OF GERMAN LANGUAGE TEACHERS AND UNIVERSITY LECTURERS

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Disclaimer

- If you have any questions, please feel free to interrupt or leave a comment ☺

- Simply set your microphone on (you won't hear me for a few seconds)
- Write comments on chat
  - Specify the page number
  - Topic
  - ➢ Deictic information gets lost fast!

Outline

- Motivation of the study
- Theoretical background
  - Listening comprehension difficulties in L2
  - Sociolinguistic variations
- Study methods
- Results
- Conclusion
- References
- Discussion

MOTIVATION OF THE STUDY

Motivation of the study

- I didn't understand my university lecturers at German university
  - Passed German language tests to be enrolled to university
  - I did understand my language teachers
  - Why???
- High dropout rate of international degree seeking students in Germany
  - Researches about internal factors
    - Note / exam strategy
    - Language competence
    - Intercultural competence etc.
  - But also external factors
    - Many researches about English for academic purposes
    - Do German language teachers and university lecturers speak differently?

Kercher (2019); Wisniewski (2018)

THEORETICAL BACKGROUND

Listening comprehension difficulties in L2: Factors

- External and internal factors: Linguistic features of input and strategies in listening
- Different linguistic levels in general and academic contexts
  - Discourse structure, pragmatic, semantic, syntactic, lexical, phonological/phonetic
- On affective and cognitive levels
- Especially high perceived difficulties in listening (n=118) (Stepanovienė 2012)
  - High speech rate
  - Phonological reduction
  - Vocabulary
  - Syntactic reduction
  - Cross-cultural elements
  - Sequencing of information
  - Breaking down speech into words or groups of words etc.

Chaudron (1994); Flowerdew (1995); Kurita (2012); Rubin (1994); Stepanovienė (2012)

Listening comprehension difficulties in L2: Studies

- High speech rate (Griffiths 1990; 1992)
  - Pre-recorded sequences with different speech rates: Either differently spoken or modified in PC, comprehension task
  - The faster, the more difficult: More correct answers in slower speech (n = 11~24)
  - Also silent pauses play an important role
- Phonological reduction (Field 2003; Henrichsen 1984)
  - Not-canonical realisations
    - *habe -> hab*
    - *ist -> is*
    - *eine -> ne*
  - The more reductions, the more difficult: With reductions, more error in dictation (n = 65, comparison between L1 and high/low proficient L2)

Sociolinguistic variations: Register

- Influential factors
  - Speech intention
  - Relation between speaker and addressee
  - Speech setting
  - Conversation topic
  - Type and number of addresses

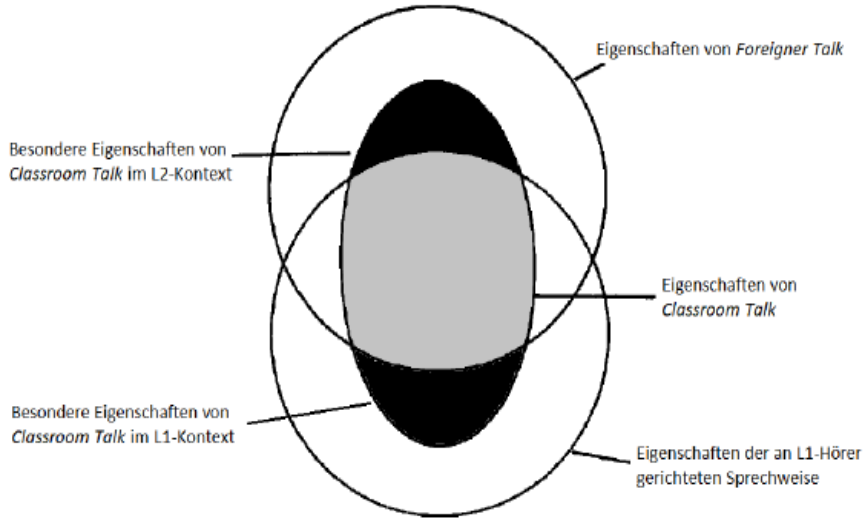

Figure 1: Classroom talk in L1 and L2 context (modified from Chaudron 1995: 55)

- No fixed number of registers, can be defined at any level
  - Foreigner directed speech
  - Native directed speech
  - Classroom talk: Several addresses, power relation, teaching purpose
    - Classroom talk in L1 context: German university lecturers
    - Classroom talk in L2 context: German language teachers

Biber (2009); Chaudron (1995); Henzl (1979); Markee & Kasper(2004); Roche (1998)

Sociolinguistic variations: Phonetic features

- Classroom talk in L2-Context (teacher talk)
  - Low speech rate, avoidance of reductions, frequent and long silent pauses and overarticulation
  - Intentionally changed in terms of intelligibility and facilitation in listening
- Classroom talk in L1-Context (academic speech style)
  - Possibly different speech rates depending on disciplines
  - On spoken German: Reductions (Rogozińska 2016)
    - No burst in /t/ in auslaut
    - Schwa-elision: *habe* -> *hab*
    - Reduced variants of indefinite articles: *eine* -> *ne*, *ein* -> *n*

Chaudron (1995); Saito und van Poeteren (2012); Rogozińska (2016)

Sociolinguistic variations: Differences

- Lower speech rate when speaking to L2-listeners (Henzl 1979)
  - Imagined story telling to three listener groups: L1 and L2 listeners on low and high proficiency
  - Intra-subjective design, cross-linguistic: 5 in Czech, 3 in German and 3 in English
- No difference (Griffiths 1991)
  - Recordings in real seminars of three speaker groups: 1st, 2nd and 3rd year international students and short presentation with L1-listeners
  - Inter-/intra-subjective research (n = 3~4)
  - Sequences of 30 seconds
- Lower speech rate and longer silent pauses when speaking to L2-listeners (Griffiths & Beretta 1991)
  - Recordings of short presentation to three listener groups: L1 and L2 listeners on low and high proficiency
  - Intra-subjective research (n = 6)
  - Sequences of 3*30 seconds in the beginning, middle and end of 5-15 minutes

STUDY METHODS

Data collection

- Recordings in real lectures with portable microphone (+ waist pouch) in Berlin /Brandenburg
- One whole lecture session with their real students, cut afterwards
  - 3 German language courses (preparation courses for university entrance / language centre)
  - 3 Lectures at the university (German grammar, introduction to linguistics)
- Two different speaker groups: Ideally intra-speaker analysis, but not here
- Unwilling factors
  - Age: Between 39 and 65
  - Biological sex: 1 male and 5 female participants
  - Different regional origins
  - Different Lecture topics: German grammar, linguistics, text review
  - Different language level of addressees: B2-C1, C1-C2
  - Different participant numbers: 8-10 in language courses, ca. 20 in lectures

Vgl. Foulkes et al. (2010); Thomas (2011)

Metadata of each speaker

Table 1: Metadata of university lecturers

	UD1	UD2	UD3
Biological sex	Female	Female	Female
Topic	German grammar	Introduction to linguistics	Introduction to linguistics
Course size	ca. 20	ca. 20	ca. 20
Recording purpose	Linguistic research	Linguistic research	Linguistic research

Table 2: Metadata of language teachers

	DL1	DL2	DL3
Biological sex	Male	Female	Female
Topic	German grammar	German grammar	Text review
Course size	8	10	10
Recording purpose	C1-C2	B2-C1	B2-C1
Target group	Supplementary course to study for international students	Preparatory course for university entrance examination	Preparatory course for university entrance examination
Recording purpose	Linguistic research	Phonetic research	Linguistic research

Data preparation

- Data selection
  - Duration: 5 minutes speaking part (out of 90 minutes), without silent pauses longer than 100 ms and extralinguistic occurrences
  - Regulative register: Same discourse structure (no instructions, course content), as little turn-taking as possible
  - Different timings in the lecture: Beginning, middle part or end

Table 3: Number of phrases and total duration time with / without silent pauses [sec]

Subject	Phrases	Duration with pauses [sec]	Duration without pauses [sec]
DL1	203	555.3	300
DL2	234	445	300
DL3	241	414.2	300
UD1	216	607.5	300
UD2	250	423.2	300
UD3	203	717.9	300

Vgl. Kendall (2013); Christie (2002)

Data annotation: Phonetic parameters

- Articulation rate
  - Syllables per second without silent pauses
- Silent pauses
  - Frequency
  - Duration [ms]
- Reductions
  - Schwas of verbal flexion: -e (1st person singular); -en (1st & 3rd person plural)
  - Burst of plosives: /t/ in ten most frequent words in the database
  - Indefinite articles: *ein, eine, einem, einen, einer*

Vgl. Griffiths & Beretta (1991); Rogozínska (2016)

Data annotation: Annotation tiers

- Orthographic transcription (Praat)
- Phonetic transcription (WebMAUSGeneral)
  - To find out silent pauses
- Five annotation tiers
  - Phrases: Divided through pauses longer than 100 ms, laughter, and cough etc.
  - Transcription: Orthographic transcription (pronunciation based)
  - Schwa elision: With or without schwa (categorical)
  - Burst elision: With or without burst (categorical)
  - Weak forms of indefinite articles: Canonical or reduced (categorical)
- Syllables in each phrases are detected with *sylly* (R-package)
- Data analysis in R, using *EmuR* (R-package)

Data annotation: Example

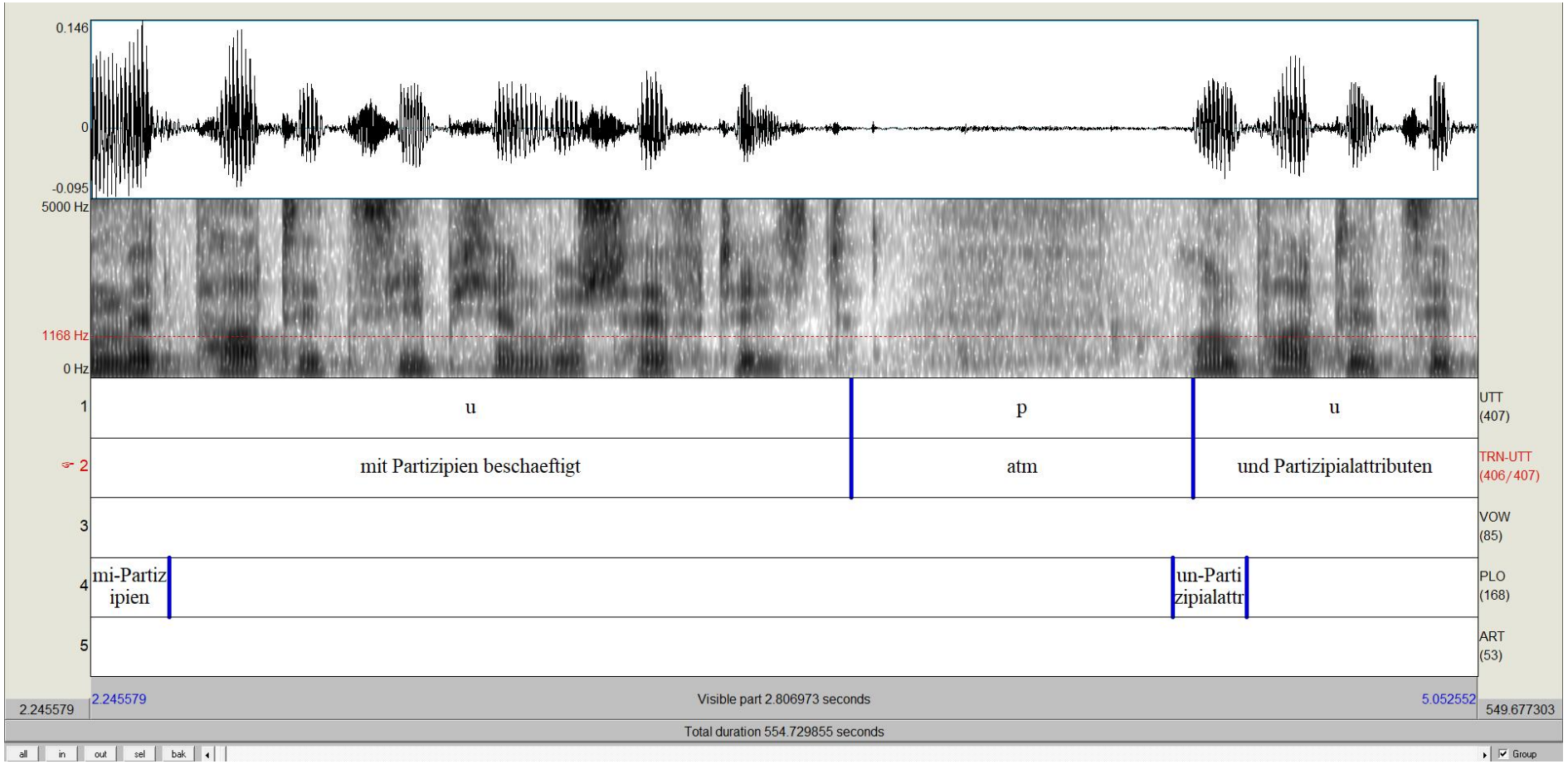

Figure 2: Example for annotation tiers in Praat interface

RESULTS

Articulation rate

- Analysis on local articulation rate (1336 phrases in total)
- In general: German language teachers speak slower than of university lecturers

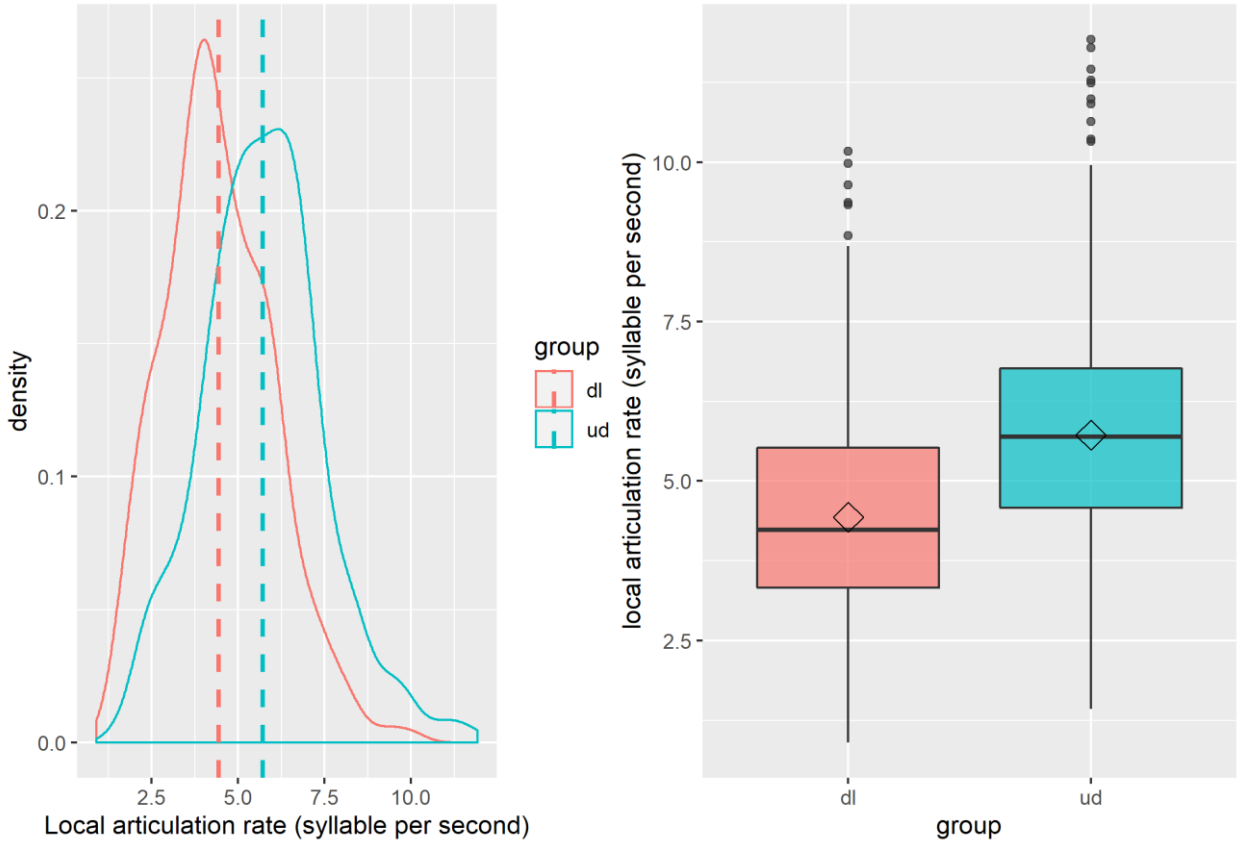

Figure 3: Local articulation rate depending on speaker groups

Articulation rate

- Individual analysis: Big overlap between the two speaker groups
  - Almost same articulation rate for three speakers (dl1, ud1 and ud2)
  - Two speakers (dl3 & ud3) significantly contribute to the total tendency

Table 4: Mean values, median and sd of local articulation rate

	Phrases	Mean	Median	SD
DL1	203	5.3	5.51	1.63
DL2	232	4.61	4.59	1.53
DL3	238	3.52	3.55	1.01
UD1	216	5.39	5.4	1.56
UD2	245	5.26	5.13	1.65
UD3	202	6.63	6.57	1.76

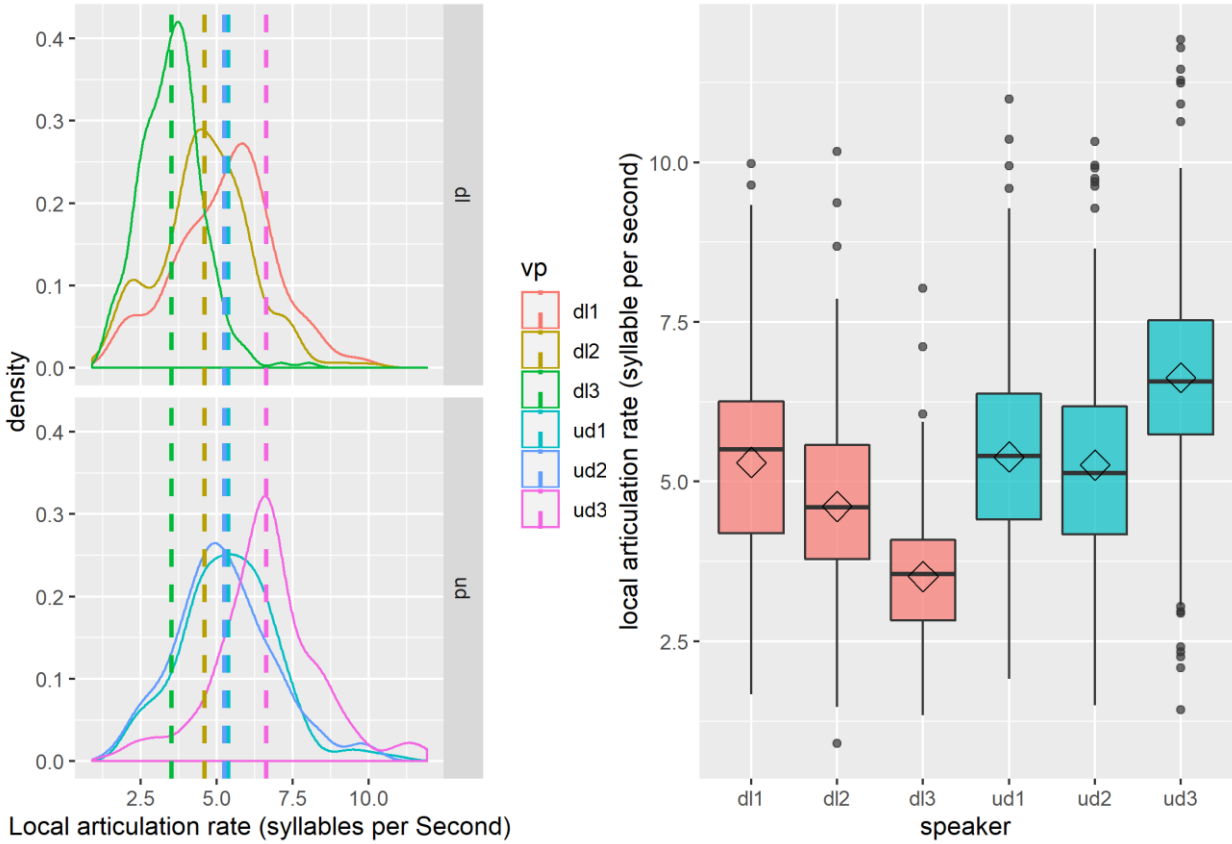

Figure 4: Local articulation rate depending on speakers

Silent pauses

- No significant difference regarding the pause duration between two speaker groups and individual speakers
- Slight tendency in frequency: German language teachers produce silent pauses more often

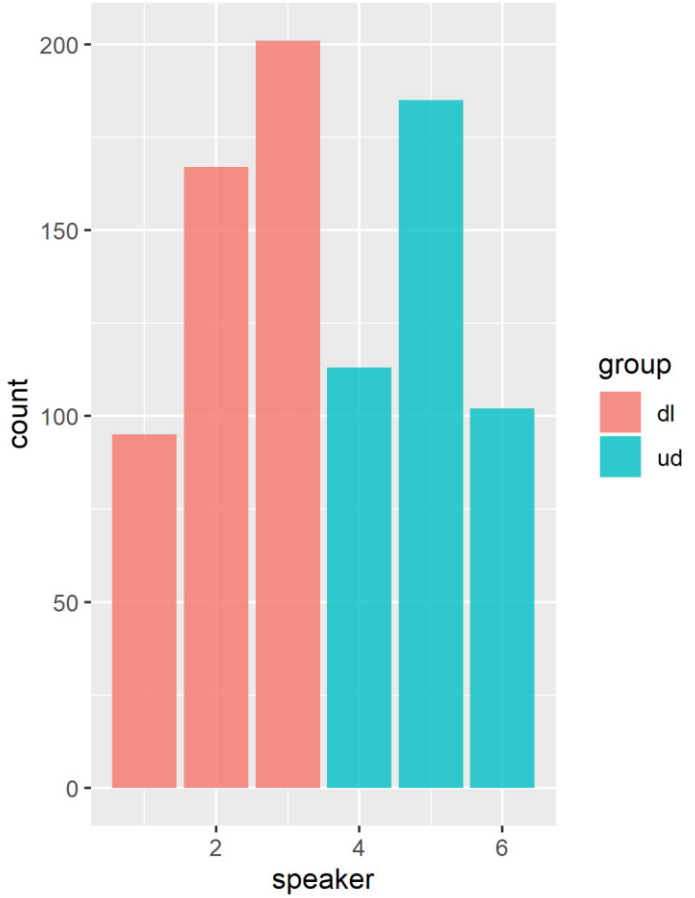

Figure 5: Pause frequency of each speaker

Reductions: Schwa

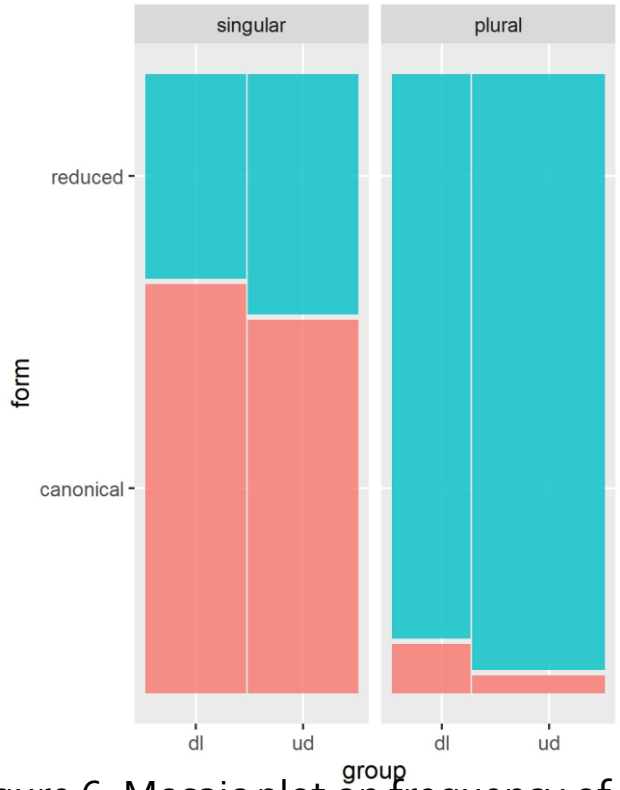

Figure 6: Mosaic plot on frequency of schwa elision in singular / plural depending on speaker groups

- As total: University lecturers use tendentially more reductions
- Because of small size of dataset, not meaningful to do individual analysis

Table 5: Occurence of canonical and reduced forms in singular / plural

	Singular		Plural	
	Canonical	Reduced	Canonical	Reduced
German teachers	14	7	5	58
University lectures	14	9	3	103

Reductions: Plosives

- Slight tendency: German university lectures use more reduced forms without burst
- Individual difference: dl3 use much more canonical form with burst
- Correlation with articulation rate (dl3 and ud3)

Table 6: Occurence of burst reduction

	Canonical	Reduced
German teachers	84	162
University lectures	103	253

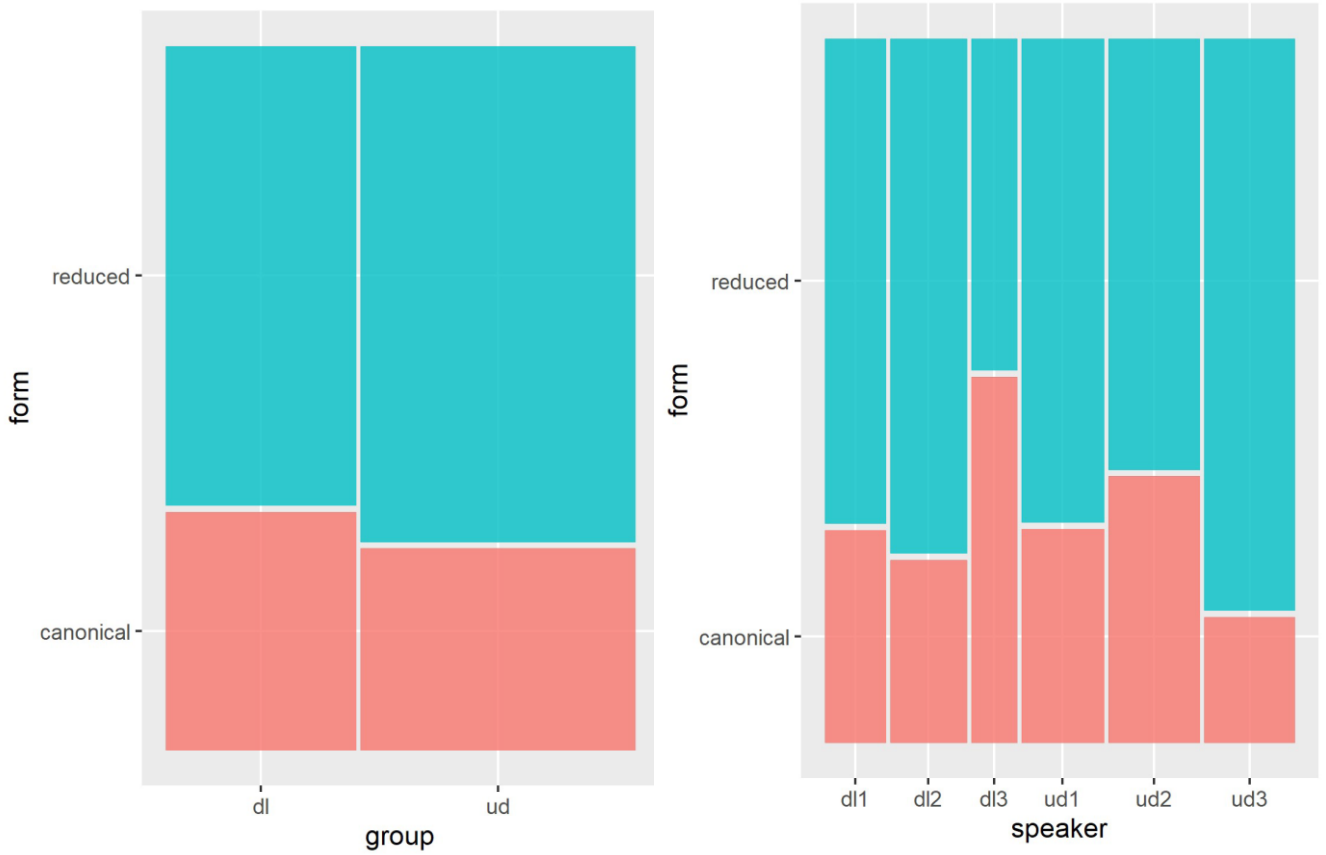

Figure 7: Mosaic plot on frequency of burst elision depending on speaker groups (left) and individual speakers (right)

Reductions: Indefinite articles

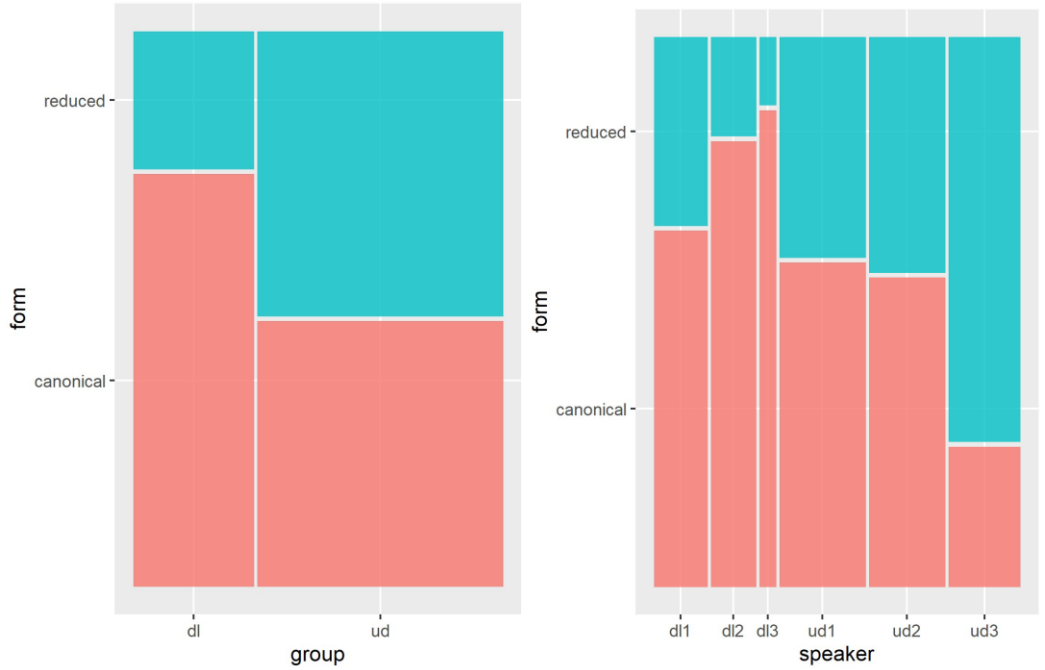

Figure 8: Mosaic plot on frequency of canonical and reduced forms of indefinite articles depending on speaker groups (left) and individual speakers (right)

- German university lectures use significantly more reduced forms of indefinite articles
- Especially different use (dl2, dl3 & ud 3), correlated to articulation rate
- Small data set

Table 7: Occurence of canonical and reduced forms of indefinite articles

	Canonical	Reduced
German teachers	42	14
University lectures	55	59

CONCLUSION

Conclusion 1

- German language teachers show lower articulation rate
  - Correlated to the use of reductions
  - More canonical forms obviously increase the total duration of utterances, leads to lower articulation rate
  - Tendential difference between two occupational groups
- Noticeable individual differences thoghout different parameters
  - dl3 shows overall tendency to speak slowly, use fewer reductions
    - Possibly because of course topic?
    - Strong awareness of intelligibility? No information about the speaker's attitude
  - dl1 shows similar characteristics like university lecturers
    - Because of the language level of the course?
  - ud3 shows overall tendency to speak faster

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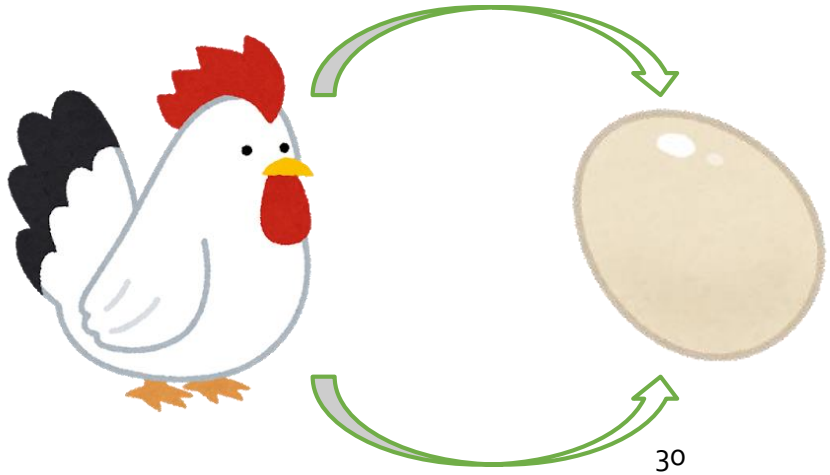
Conclusion 2

- Nature of sociolinguistic studies
  - Many influential factors, difficult to determine which factor affects which variables
- For more plausible results
  - More datasets, ideally intra-speaker analysis
  - Retrospective interview for the sake of detailed analysis
- Further question: Influence on listening comprehension?
  - Potential to conduct listening comprehension task with L2 listeners

To all those who study in an L2

- Do not be anxious about your language skill
  - It's normal to have difficulties – because of difference in speech styles
  - Online format: Low audio quality, listening comprehension is much harder
  - Not your fault ☺
- Chicken or the egg?
  - You don't need to be "perfect" in comprehension/speaking beforehand
  - It will come as the time goes by



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QUESTIONS?

DISCUSSION