

# Quantifying dialectal input: Manual coding vs. perceptual ratings

Sarah Warchhold<sup>1</sup>, Bettina Braun<sup>1</sup>, Katharina Zahner-Ritter<sup>2</sup>

<sup>1</sup>University of Konstanz, <sup>2</sup>University of Trier

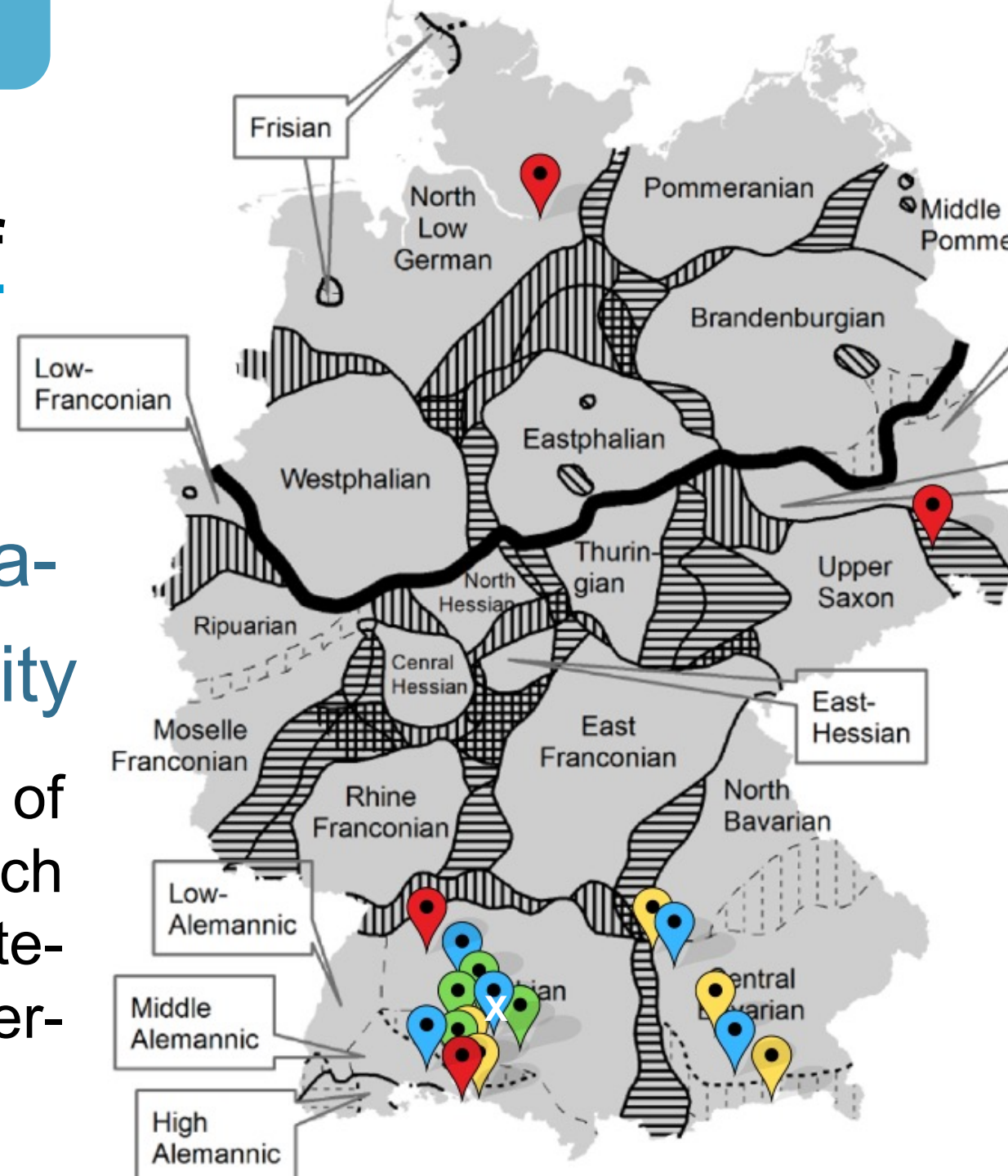
## Background

### Linguistic soundscape of Germany

taken from [1]

→ inter- and intra-speaker variability

Pins mark origin of participants for each dialect strength category based on perception, see 2



### Quantifying variability in children's input

- Quantifying phonological variability in children's input (e.g., induced by regional accents) is challenging and time-consuming
- Measures and tools:
  - Questionnaires, automatic systems on word counts (LENA, [2])
  - Manual coding systems that vary in granularity: binary coding of word forms [3] vs. phonetic distances using IPA-based transcriptions [4,5]
  - Perceptual codings with 4+ categories [6,7]

## Research Questions

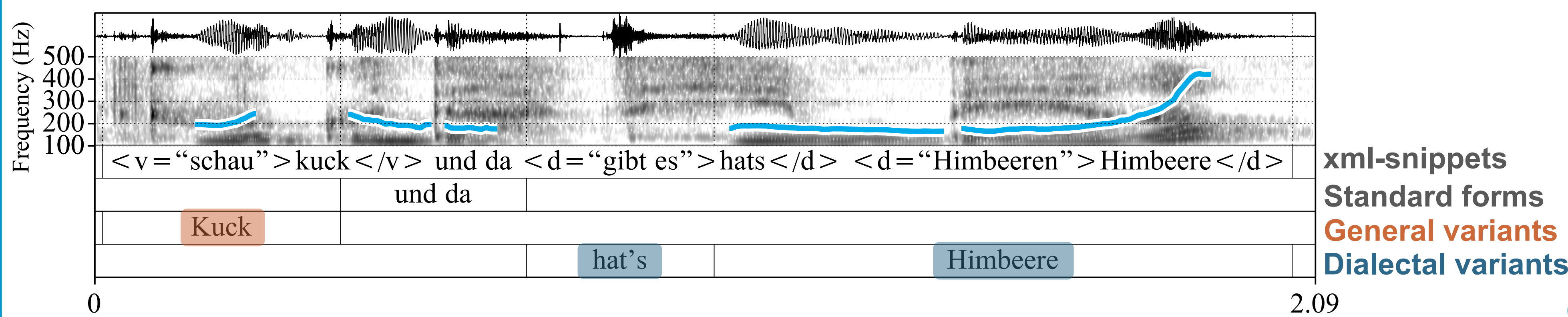
- How do we best quantify (dialectal) input?
- Are subjective ratings of perceived dialect strength a reliable and valid alternative to manually coding phonological alternations in order to quantify the variability in the input?

## Methods

**Data:** one-minute-long parental picture descriptions collected via App [8], 2047 words in total (20 descriptions, five per dialect strength category (based on perceptual ratings))

### 1 Manual coding (of word forms)

- Encoding of realisation using xml-snippets in Praat: Standard word form, spoken-language specific variant, e.g. reductions (general variant) or dialectal word form/realisation
- Each recording was annotated by two independent annotators and disagreements in annotation of word forms were resolved by two annotators



**Example annotation** of a recording with dialect strength score of 4 (marked with an X in the map above). Note that clitics ('s) have been added to the preceding word. Proportion of general variants is 0.2 (1/5) and proportion of dialectal variants is 0.4 (2/5).

Mean proportion of general and dialectal variants

### 2 Perceptual ratings (dialect strength)

- Perceived dialect strength was coded (and averaged) by 4 raters\* from different regions of Germany on a 4-point scale [9]

1 Citation form (Standard)

2 Few/only weak dialect features

3 More/strong dialect features

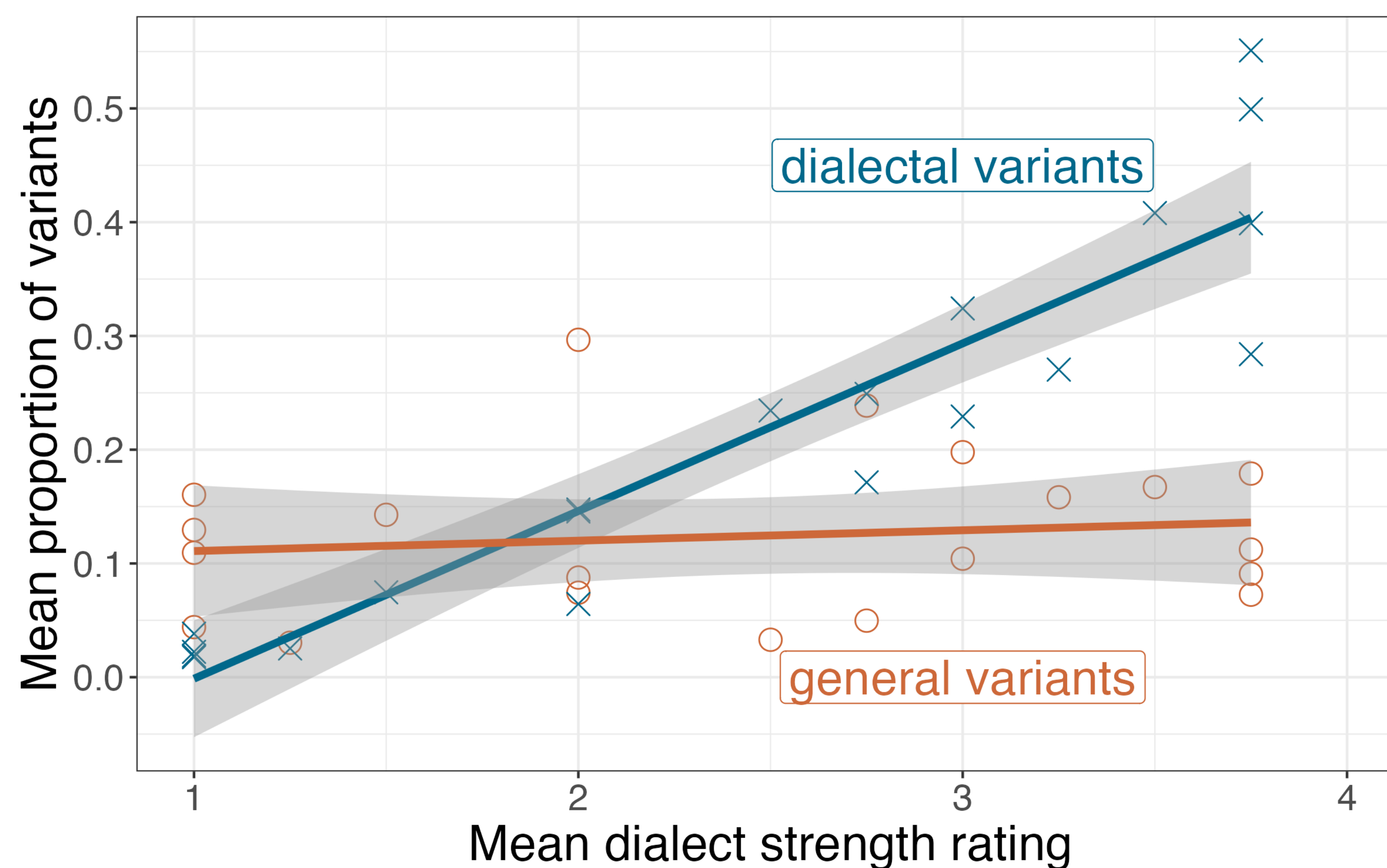
4 Strong dialect

Averaged dialect strength score

\* = all born and raised in Baden-Wuerttemberg or Bavaria

## Results and Discussion

- 70% average pairwise agreement for dialect strength ratings (SD = 15%)
- High reliability for perceptual dialect scores (ICC = 0.88) and moderate for 3-point coding of word forms (ICC = 0.55)
- Correlation of mean proportion of general and dialectal variants with mean dialect strength rating
  - General variants:** No correlation with dialect rating ( $r = 0.18, p > 0.4$ )
  - Dialectal variants:** Strong positive correlation ( $r = 0.97, p < 0.001$ )



- Supporting reliability of perceptual coding of dialect strength
- High correlation with proportion of variant word forms
- Valid and reliable measure for quantifying dialectal input

### Future work

How can we apply perceptual ratings in the study of early word form representations?