

## Phonological variability in child-directed-speech is not affected by recording setting: Preliminary results on Southern German and Swiss German

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Analyses of child-directed speech (CDS) typically focus on prosodic parameters [1-3], but little is known on the extent of segmental variability in children's input, particularly with respect to regional variation. The long-term goal of our project is to study how the extent of regional phonological variability in the input affects children's early lexical representations [4]. Here, we present the phonological variability in the input of 4 children (0;6-2;10), 2 living in Southern Germany, 2 in Switzerland, see Table 1. These two Alemannic dialect areas [5] (Fig. 1) differ in the prestige and the usage of dialect [6-8]: In Switzerland, dialect is spoken across different contexts (e.g., also in politics and media). In Southern Germany, dialect is rather spoken in less formal situations and more strongly influenced by the standard language. We analysed CDS from 2 caregivers per child in 2 settings: (a) every-day input in home settings recorded over 2-3 days, which is less artificial and rather informal, and (b) parental descriptions of custom-made picture books in the presence of a researcher, a situation which is more targeted and controlled [9, 10] and thus may be more formal. Because of the different status, we expect variability to be reduced in (b) compared to (a) for children in Southern Germany, while for Swiss children, variability is expected to be comparable across the two recording settings.

For (a), we collected 2897 minutes of speech from the 4 families (of which 124 minutes were analysed,  $N = 7656$  words). Families were asked to switch on a portable recorder as often as possible during a 2-3-day period. The recordings were chunked into sound files of ~10 sec. Using Praat [11], for each CDS word form (for both caregivers), we coded whether the realized form deviated segmentally from the standard citation form, i.e., either being a *dialectal* variant of a specific region (e.g., [nø:t] for [niçt] *nicht* 'not') or a *general* variant common across different regions (e.g., elisions in spoken communication, [niç] for [niçt]). For (b), we constructed an electronic picture book for each child, in which each picture occurred 3 times. The objects were the 16 most frequent nouns from (a); the pictures were selected from [12, 13] following a naming-test. Parents were recorded via *Zoom* while looking through the picture book with their child and instructed to naturally interact with the child; the experimenter changed pages after 2-3 mentions of the targets. A picture-book recording session lasted between 5-15 min. Data (63 minutes of speech,  $N = 7130$  words) were annotated as in (a).

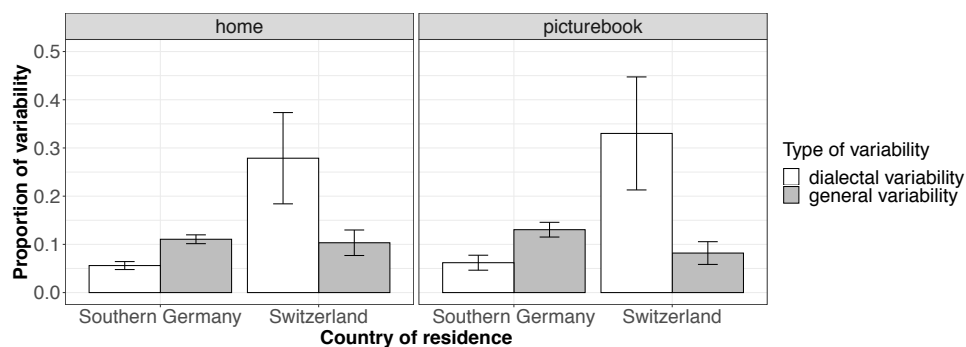
Figure 2 presents the proportion of the two types of variability (general vs. dialectal) across country of residence and recording setting. There was an interaction between *country of residence* and *type of variability* ( $\beta = -0.27$ ,  $SE = 0.07$ ,  $t = -4.12$ ,  $p < 0.001$ ), with more dialectal than general variability for Swiss German children, and, conversely, more general than dialectal variability for Southern German children. There was generally more variability in Switzerland than in Germany ( $\beta = 0.25$ ,  $SE = 0.05$ ,  $t = 5.21$ ,  $p < 0.001$ ). Importantly, recording setting did not play a role ( $p = 0.68$ ) and did not interact with the other factors. Hence, the difference in phonological variability in the input of children growing up in Southern Germany vs. in Switzerland appeared in both the naturalistic home setting and the picture-book task even though day-long recordings are supposedly less controlled and artificial than recordings done in lab-like situations. Rather, the degree of variability seems to depend on the prestige of the dialect [6-8]. We are currently analysing more data of families from more rural areas in Southern Germany (where dialect is expected to be used more frequently than in urban areas). We will also examine the type of phonological variability more closely (e.g., elisions, alternations) in order to derive hypotheses on the formation of early word form representations in children who grow up with a different extent of phonological variability.



**Figure 1.** Overview of dialects in the region around Lake Constance adapted from [14].

ID	Age at recording (yrs; months)	Country of residence (state, town)	Parent 1: Mum – Raised state, town (own dialect score, 1-5)	Parent 2: Dad – Raised state, town (dialect score)
Child-1	1;7 – 2;3	G (BW, Konstanz)	BW, Göppingen (score 2)	BW / HH, Konstanz, Hamburg (score 2)
Child-2	0;10 – 1;5	G (BW, Konstanz)	BW, Konstanz (score 3)	BW, Konstanz (score 2)
Child-3	2;8 – 2;10	CH (TG, Mannenbach)	TG, Kreuzlingen, (score 4)	BW, Konstanz (score 3)
Child-4	0;6 – 0;8	CH (ZH, Wetikon)	BY, Augsburg (score 3)	ZH, Bubikon (score 5)

**Table 1.** Overview of participants' meta data, i.e., child age at time of recording (home recording to picture book, column 2), country of residence (column 3), linguistic background of parents (column 4-5). G = Germany, CH = Switzerland; German federal states: BW= Baden-Wuerttemberg, BY=Bavaria, HH=Hamburg; Swiss cantons: TG = Thurgau, ZH = Zurich.



**Figure 2.** Proportion of variability (dialectal in white, general in grey) for different countries of residence (Southern Germany vs. Switzerland), split by setting (day-long home recordings on the left, and picture-book recording on the right).

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