

**BACKGROUND**– Age-typical misarticulations in phonological development that are attested in any given language might be explained by universal “markedness constraints” or by language-specific “phonotactic constraints”.

• **Markedness constraints:** This term refers to universal tendencies that originate from the child's immature motor system (Davis *et al.*, 2002). It has been claimed that marked phonemes are acquired later. For instance, dorsals such as [k] (marked [+posterior]) are claimed to be acquired later than coronals such as [t] (Locke, 1983; Jakobson, 1941; Yamaguchi, 2008; Brandão de Carvalho *et al.*, 2010).

• **Phonotactic constraints:** Other researchers have suggested that language-specific frequencies can modulate markedness constraints. For example, recent cross-sectional developmental studies on Greek (Nicolaidis *et al.*, 2003), Japanese (Beckman *et al.*, 2003) and Drehu and French (Monnin & Lœvenbruck, 2010) suggest that the tendency to produce coronals more accurately than dorsals is modulated by language-specific frequencies.

**RESEARCH QUESTION**– Is this language-specific modulation due to consonant frequency *per se* or to the language-specific frequencies of "fronted frames" *vs* "backed frames" (Davis *et al.*, 2002)?

**CORPUS**–

Productions of [k] and [t] in different vowel contexts [a, i, u]

Elicited word initially in a picture-prompted word-repetition task

4 groups of about 40 French-acquiring children, aged 2 through 5 years

3 groups of about 16 Drehu-acquiring children (Austronesian language from New Caledonia), aged 3 through 5 years

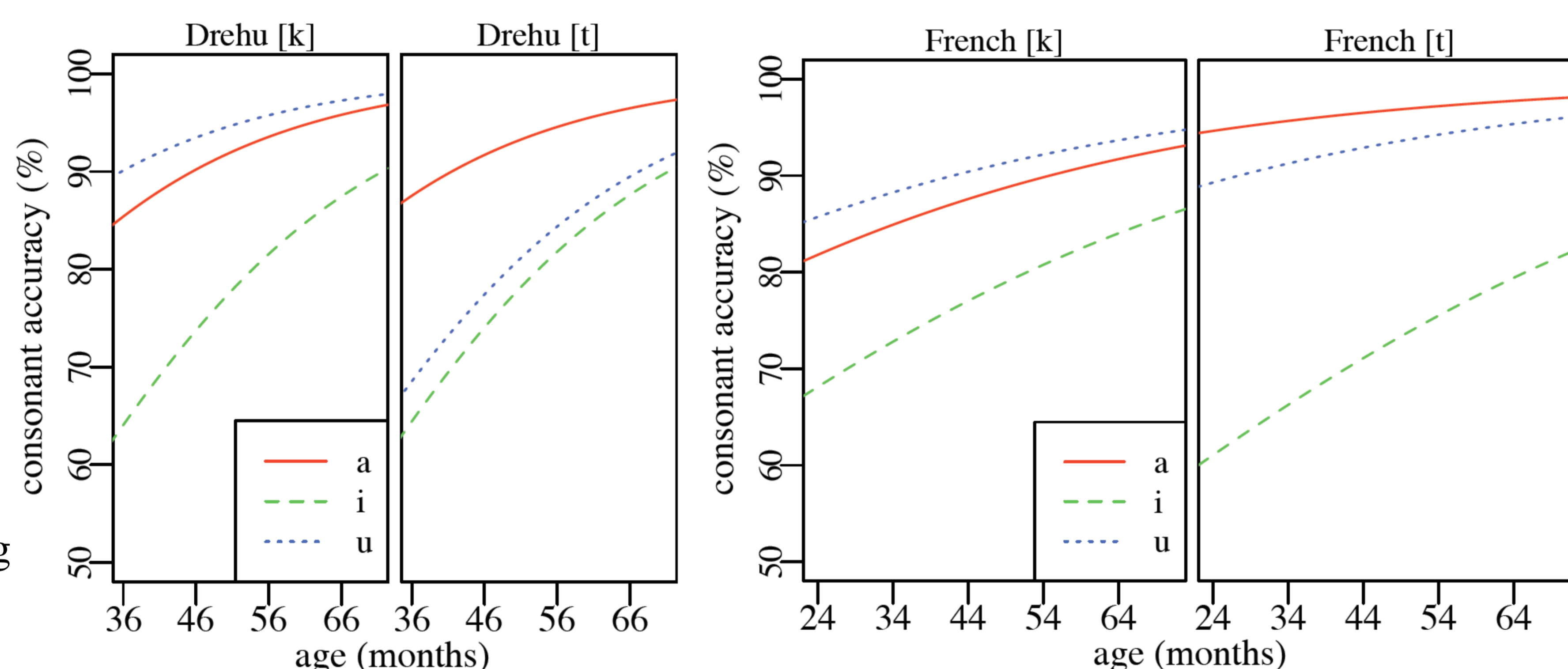


Figure 1. Elicitation of French [k] in the context before [a] in *carotte* ‘carrot’

**RESULTS**–

**Evaluation of the vowel context effect**

Figure 2. Growth in accuracy of [k] and [t] productions in the context of [a, i, u] for Drehu-speaking children (left) and for French-speaking children (right).

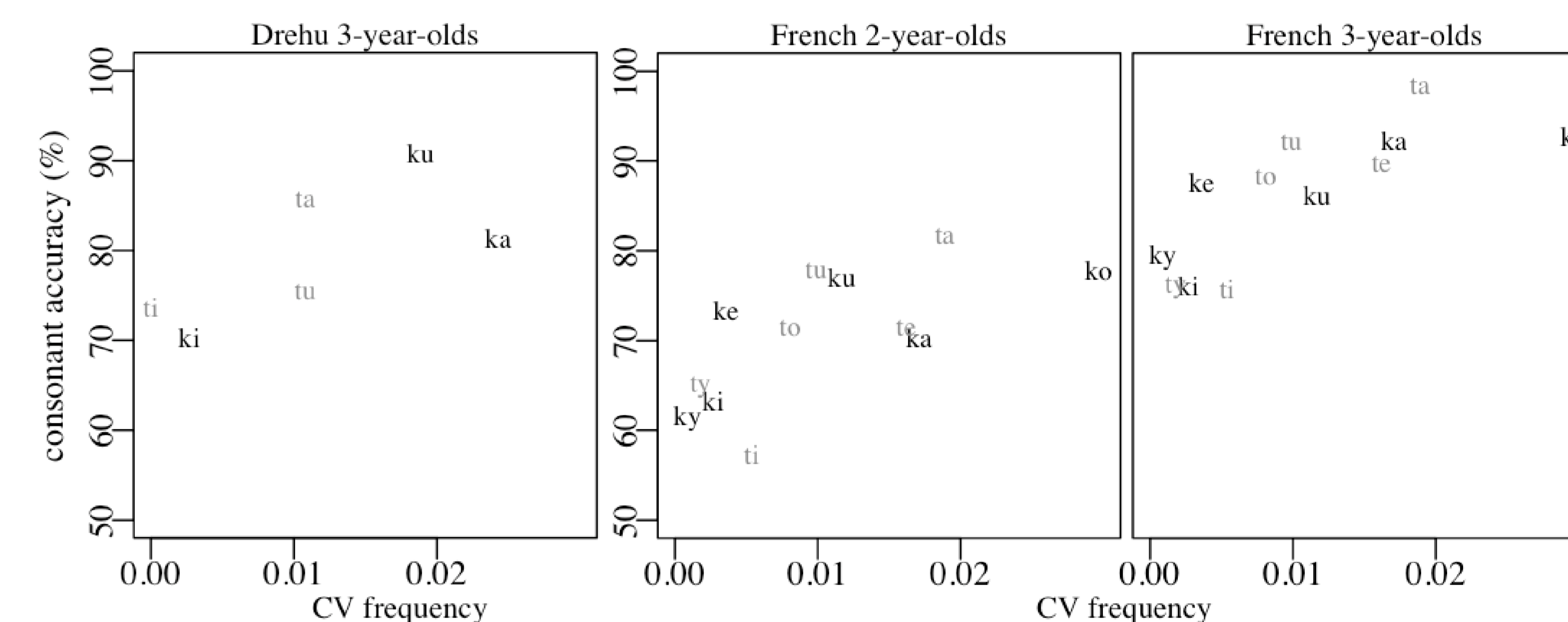


- In both languages: both stops are mastered early, [k] is somewhat more accurate for the youngest children.
  - For Drehu, [t] is less accurate before [u] than [k], in keeping with the "backed frame" hypothesis.
  - For French, [t] is less accurate before [i] than [k], unexpected in a universal account.
- ☞ The difference in accuracy is modulated by vowel context

**Evaluation of the frequency effect**

Type frequencies for [k] and for [t] in the [a, i, u] contexts in French and Drehu were estimated using two corpora of child-directed speech (Monnin & Lœvenbruck, 2008).

Figure 3. Mean accuracy of the initial [k] or [t] plotted against its context-specific frequency for the youngest age groups for each language.



- In both languages : very low frequency of the [ti] sequence
  - For the youngest children, the lower frequency of [ti] relative to [tu] might explain the lower accuracy of [t] in a front-vowel context (relative to a back-vowel context).
- ☞ The difference in accuracy is modulated by CV frequency in the ambient language

**CONCLUSION AND FUTURE RESEARCH**–

The relative accuracy of [t] and [k] in development reflects the markedness of particular combinations of lingual stop and coarticulated vowel, as modulated by language-specific phonotactics. Future analyses will examine stop burst spectra and vowel formants to evaluate whether there are cross-language phonetic differences in the consonant and vowel targets which might also contribute to the accuracy differences.

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