

Velar Fronting and Dorsal Harmony in Child Language

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Children differ concerning their productions of back oral stops /k/. Some avoid /k/ at the beginning of stressed syllables; velar fronting (VF) is usually attested in their outputs (1) (e.g. E (Inkelas & Rose 2007); Julia (this work)). Other children favor /k/ in this position; regressive dorsal harmony (DH) is attested (2) (e.g. Daniel (Menn 1971); Amahl (Smith 1973); Trevor (Pater & Werle 2001)). To my knowledge, no unified account has been provided for VF and DH: it remains a mystery why /k/ is treated differently by different children. This work strives to answer this question.

Following the proposal that the representation of /k/ varies cross-linguistically (Rice 1996a), i.e. /k/ may be velar (less complex than labial and coronal in representation) or dorsal (more complex than labial and coronal), I first show that there are two types of adult languages: velar languages (e.g. Chukchi), where velar is the least marked place of articulation (3), and dorsal languages (e.g. Korean), where coronal is the least marked place (4). If children's grammars are possible (adult) grammars (Pinker 1984), we expect to find that /k/ is treated as velar by some children and as dorsal by others, even if these children are learning the same language. If this is true, how do children who regard /k/ as velar acquire languages (e.g. English) where /k/ is dorsal? I propose that when acquiring the contrast among labial, dorsal and coronal in English, where labial and dorsal are equally marked, there are three stages that children go through, with two paths possible for stage 2 (cf. Fikkert & Levelt 2008).

Following 'minimality' (children initially only have minimal structure) and 'monotonicity' (only one feature is added at a time) (Rice 1996b), I suggest that at Stage 1, a two-way contrast between labial and non-labial develops (5), similar to the contrast in Hawaiian (Elbert & Pukui 2001). At Stage 2, two paths are possible. Path 1 is characterized by a three-way contrast among labial, coronal and velar (6a), similar to the contrast observed in Chukchi (Krause 1980). Path 2 is a three-way contrast among labial, dorsal and coronal (6b), similar to the contrast observed in Korean (Park 1996). At Stage 3, a three-way contrast among labial, coronal and dorsal is established (7), similar to the major place contrast in English-type languages. Evidence for the hypothesized stages comes from DH and VF attested in several children's outputs.

Similar to Rose (2000) and Goad (2001), I argue that DH and VF are both triggered by the prosodic licensing principle: prosodic dependents cannot be more complex than their heads (Dresher & van der Hulst 1998), coupled with the segmental structure children build at different stages in L1 development: at Stage 2, VF is attested in Julia's outputs because she treats /k/ as velar (8); DH is observed in Daniel's productions because he analyzes /k/ as dorsal (9). If DH is attested at Stage 3, it should no longer target labial. This is what is attested in Trevor's outputs (10-11).

(1) Velar Fronting (VF)

- a. go [do:] (E, 1;10,01)
- b. coat [d^hoʔ] (Julia, 2;28)

(2) Dorsal Harmony (DH)

- a. milk [ɲiʌk] (Daniel 25+ -25.5 mos)
- b. duck [ɟʌk] (Amahl at 2;60)

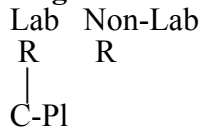
(3) **Chukchi Place assimilation** (data from Bogoras 1922)

- a. No assimilation of /t/ and /p/ to /k/:
ye-tku-lin → yetkulin “he consumed it”
ye-pkir-lin → gepkirin “he came”
- b. /k/ assimilates to /p/ but not to /t/:
mykpenwel → mywpenwel “many two-year-old reindeer-bucks”
uwiktimnen → uwiytimnen “she killed herself”
- c. /k/ is least marked place; /t/ has no features under C-Place.

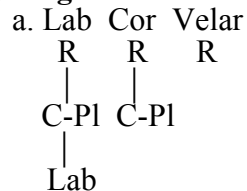
(4) **Korean Place assimilation** (after Jun 1995:51–52; de Lacy 2002:350–351)

- a. /t/ assimilates to both /p/ and /k/:
/mit + ko/ → [mikko] “believe and”
/kot + palo/ → [koppalo] “straight”
- b. /p/ assimilates to /k/ but not to /t/:
/ip + ko/ → [ikko] “wear and”
/ip + ta/ → [ipta] “wear + SE”
- c. No assimilation of /k/ to either /p/ or /t/:
/tʃak + p^ha/ → [tʃak^ha] “destruction”
/ik + ta/ → [ikta] “ripe + SE”
- d. /t/ is least marked place; /k/ is most marked place.

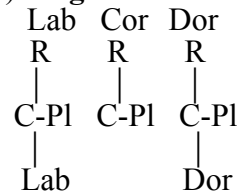
(5) **Stage 1**



(6) **Stage 2**



(7) **Stage 3**



(R = root node; C-Pl = Consonant-Place)

(8) **Julia (2;28) (Path 1 of Stage 2)**

- a. coat [d^hoɪt^h] (VF)

(9) **Daniel (24.5 & 25.5 mos) (Path 2 of Stage 2)**

- a. dog [gɔg] (DH)
- b. milk [ŋiɪlk] (DH)

(10) **Trevor (1;5) (Stage 2)**

- a. dog [gɔg] (DH)
- b. bug [gʌg] (DH)

(11) **Trevor (1;11) (Stage 3)**

- a. duck [gʌk] (DH)
- b. book [buk] (No DH)

Selected References:

Dresher, van der Hulst. 1998. Head-dependent asymmetries in prosodic phonology: visibility and complexity. *Ph* 15. **Fikkert, Levelt.** 2008. How does place fall into place? The lexicon and emergent constraints in the developing phonological grammar. In *Contrast in phonology: perception and acquisition*. Berlin: Mouton. **Goad 2001.** Assimilation phenomena and initial constraint ranking in early grammars. In *Proceedings of BUCLD 25*. **Inkelas, Rose.** 2007. Positional neutralization: a case study from child language. *Lg* 83. **Menn.** 1971. Phonotactic rules in beginning speech. *Lingua* 26. **Pater, Werle.** 2001. Typology and variation in child consonant harmony. In *Proceedings of HILP 5*. University of Potsdam. **Pinker.** 1984. *Language Learnability and Language Development*. Cambridge, Mass: HUP. **Rice.** 1996a. Default variability: the coronal-velar relationship. *NLLT* 14. 1996b. Phonological variability in language acquisition: A representational account. In *Proceedings of the Child Language Research Forum*. Stanford: CSLI. **Rose.** 2000. *Headedness and prosodic licensing in the L1 acquisition of phonology*. PhD thesis, McGill University. **Smith.** 1973. *The Acquisition of Phonology*. Cambridge: CUP.