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### RESULTS AND DISCUSSION:

- Kids generally mirror their model: sounds more frequent in model's speech are also more frequent in children's speech (Fig. 1)
- Sounds that occur in both English and Hul'q'umi'num' (red) are more frequent than ones that occur in Hul'q'umi'num' only (blue) (Fig. 1)
- Some sounds (e.g., /ch/, /h/, /k/, /w/) are over-represented in 3 year olds' speech, as expected from cross-linguistic productions (gliding (w), debuccalization (h), stopping (k)) (Grunwell (1981))(Fig. 1)
- /q/, /qw/ and /q'/ are produced by 3-year-olds (surprising to adults) (Fig. 1)
- Glottalized sounds are rarely produced by kids and adult models (Fig. 1)
- /t/ and /ch/ occur earlier and /hw/ and /xw/ occur later in Hul'q'umi'num' than predicted based on cross-linguistic research (Fig. 2)
- By 7 years old, exposure to Hul'q'umi'num' influences proportion of Hul'q'umi'num' only sounds produced by kids: L is exposed to Hul'q'umi'num' more regularly than E2 and has a much higher proportion of Hul'q'umi'num' only sounds (Fig. 3a)
- In a span of 5 months (3;5 to 3;10), A went from saying no Hul'q'umi'num'-only sounds to saying 30% of those she heard (Fig. 3b)

Limitations: few children, variable-quality recordings; word lists not identical between all children/ages; task (elicited word lists) not representative of natural speech.

### REFERENCES:

Grunwell, P. (1981). The development of phonology: A descriptive profile. *First Language*, 2(6), 161-191.  
 Maphalala, Z., Pascoe, M., Smouse, M. R. 2014. Phonological development of first language isiXhosa-speaking children aged 3;0–6;0 years: A descriptive cross-sectional study. *Clinical Linguistics & Phonetics*, 28(3), 176-194.  
 Pascoe, M., Rossouw, K., Fish, L., Jansen, C., Manley, N., Powell, M., & Rosen, L. (2016). Speech processing and production in two-year-old children acquiring isiXhosa: A tale of two children. *The South African Journal of Communication Disorders*, 63(2), 134.  
 Wagner, K. O. C., Baker-Smemoe, W. 2013. An investigation of the production of ejectives by native (L1) and second (L2) language speakers of Qeqchi' Mayan. *Journal of Phonetics*, 41(6), 453-467

### BACKGROUND:

- Hul'q'umi'num' (Salish; Southeastern Vancouver Island, BC Canada) is relatively well-documented with academic- and community-oriented materials.
- Activism has led to early immersion home-based and school-based programs for language reclamation and revitalization.
- Our goal is to understand the developmental trajectory of hul'q'umi'num' child pronunciation acquisition, to support parents and educators.

### RESEARCH QUESTIONS:

1. At what age can we expect bilingual English/Hul'q'umi'num' children to produce specific sounds?
2. What is the relationship between adult model pronunciations and children's pronunciation?

### HUL'Q'UMI'NUM' SOUND INVENTORY:

- Contains many consonants that are not in English: ejective stops (e.g. p'), uvular consonants (e.g. q), coronal fricatives & affricates (e.g. lh /h/, th /tθ/).

### METHODS:

- Caregiver recorded lists of words and phrases spoken by themselves and repeated by four children (3;5-3;10, 3;8, 7;3, and 7;10 years old).
- Final corpus: 362 word tokens, 1075 consonant tokens, transcribed from recordings in Praat.
- For each consonant, we computed the frequency in the adult and child pronunciations, and age of first production using Google Sheets.
- For phonemes in Hul'q'umi'num' but not English, we consulted acquisition literature for other languages sharing those/similar consonants to predict when children might first produce them. (Fig. 2)

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### Figures

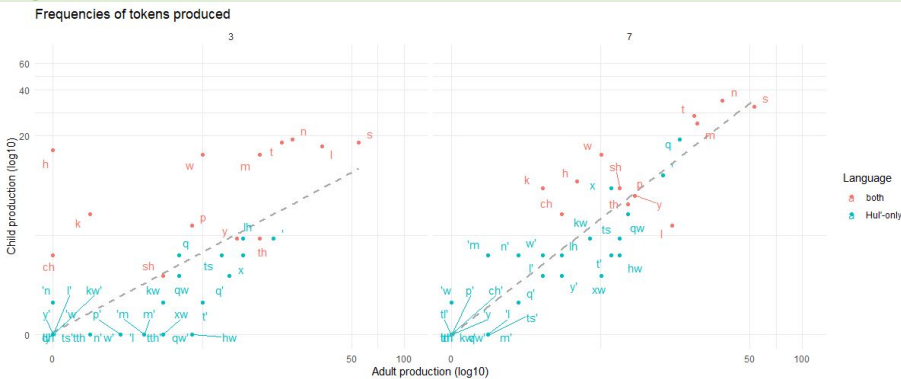


Figure 1. Comparison between caregiver (x-axis) and child (y-axis) production frequencies for Hul'q'umi'num' consonants.

Age predicted from cross-linguistic research	Age of first production in Hul'q'umi'num'						Legend Hul'q'umi'num' age compared cross-linguistically
	3	4	5	6	7	Not yet produced	
3	h, k, kw, l, lh, m, n, p, qw, s, sh, t, w, x, y					hw, xw	*ch', q', kw', q'
4	ch, t'						*ch', p'
5							*t'
6							
7							
No prediction	*, 'h, q, q', th, ts					f, m, n', w', *w, y	*l, m', th, tθ, ts', *y

\* Starred sounds were not in the adults' speech either

Figure 2. Comparison of age of first production between Hul'q'umi'num' data and predictions based on isiXhosa and Qeqchi' data in Pascoe (2016), Maphalala et al. (2014) and Wagner & Baker-Smemoe (2013).

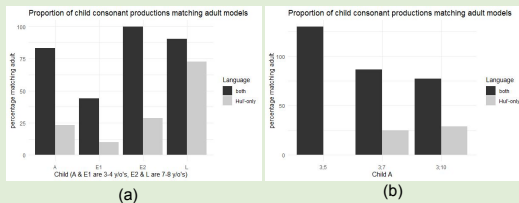


Figure 3. Proportion of kids' to adult model's sounds (black: both English and Hul'q'umi'num'; grey: Hul'q'umi'num' only); (a) all four participating kids; (b) child A only at 3;5, 3;7, and 3;10