Acquisition of **Ejective Consonants** by **Hul’q’umi’num’ Children**

Presented by Martina Joe, Blair Chartrand & Samantha Sundby

Roseanna George, Martina Joe, Thomas Johnny, Dana Shier & Blair Chartrand

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Introduction

- With the contribution from HLCS/HLA and Funding from First people's council, Rosie and I have been able to teach and learn alongside with our children on revitalizing the language by having the opportunity to have a language nest in cowichan. With our data collection from recording the children we have been able to see the differences and where the children are with their understanding with pronouncing the Hul'q'umi'num' language and seeing how the age difference affects the learning experience.

Introduction

- Being a first for everything, myself and six other students were honored to be the first to receive our certificate for proficiency in a First Nations Language from Simon Fraser University 2019.
- By completion of this summer term 2021 we have completed our Bachelor of Arts, Extended Minor in Linguistics.

The cast of Jealous Moon, a play written in Hul'q'umi'num, featuring some of our language acquisition class:
Chris Alphonse, Roseanna George, Martina Joe And Thomas Johnny.

Image Credit: Cim Macdonald
https://www.sfu.ca/sfunews/stories/2020/06/first-cohort-of-hul-q-umi-num--speakers-graduate-with-indigenous.html

Background

- Several studies have noted cross-linguistic differences in the production of ejectives by adult speakers of Salish languages (Bird, 2020; Bird, Gerdts & Leonard, 2016; Percival, 2019).
- Ejectives have been categorized across languages as either “strong” or “weak” based on the quality of the voice onset time and initial burst intensity.
    - /t’/ is categorized as weak in SENĆOŦEN and more likely to change in sound quality (Bird, 2020).
    - With this in mind, the /t’/-/t/ phonemic contrast may no longer be apparent in some speakers.
    - But, with the help of social and educational contexts, /t’/ can shift to become a strong ejective due to hyperarticulation

Background

- Percival (2019) documents L1 Hul’q’umi’num’ speakers as producing ejectives with a longer voice onset time than for regular stops.
- Word-initial ejectives were also found to be produced with longer duration (voice onset time) than those produced word-medially (Percival 2019). Percival mentions acoustic correlates of ejectives may vary among individual speakers.
- The research has yet to fully determine how much inter speaker and intra speaker variation exists among second language speakers of Hul’q’umi’num’ and their children.

Aims of the Current Study

- Expanding Rosie & Martina's language acquisition research on children age 2-7 years old.
- **Research question**: To what extent do plain stops contrast with ejective stops for Hul'q'umi'num' children for word initial **t/t'** and word initial **q/q'**?
- How do the children's ejective realizations compare to adult productions? And how do the younger children's productions compare to the older children's?

Predictions

- Ejective **/t’/** and uvular ejective **/q’/** are absent from English; producing them may be challenging for young speakers of Hul’q’umi’num’
- Phonetic characteristics of Hul’q’umi’num’ ejectives noted in the literature may not manifest in child’s productions, and for younger children especially
- *Developmental Guide: Children’s mastery of speech sounds of Squamish (SFU’s LangDev lab)*
    - Children learning Sḵwx̱wú7mesh have likely acquired ejective consonant **t’** by 4-5 years.
    - Older children (aged 6-7) can produce the ejectives more reliably than the younger children (2-3).

Participants

Name	Age	Related to	
Laticia	7	Martina	Loves learning and speaking the language. Helps her sister (AJ) with remembering or pronouncing a word.
Ava-Lynn	3	Martina	Attended class with me, has heard the language since she was about 5 months old.She is now speaking more, if she couldn't say a sound she would replace the sound with another.
Emily Joe	3	Martina	Emily is an only child and is a month older then Ava-Lynn, she is more verbal and outspoken then Ava-Lynn, her words tend to be more clear when she speaks.
Silken	7	Rosie	Silken is my soon to be adopted sister, with us since she was 2 months old. She is in grade 2. Silken loves doing Hul'q'umi'num' language, and loves reading books. She is at a grade 3 reading level.
Richie	6	Rosie	Richie is finishing his year in kindergarten. He has enlarged adenoids, and has been seeing a ENT specialist for sometime now. And was told that having enlarged adenoids is affecting his speech. He cannot say some words or sounds. Mainly just me and his mom can understand him. Richie has a hard time sitting still and learning. He has no patience. Very adventurous impatient little boy.
Frances	2	Rosie	She is my youngest. She is a quick learner and catches on with words fast. She was actually my surprise baby. Didn't know I was pregnant. So during my language journey. I was carrying her. And we did a lot of the language in summer 2018. Frances does have a lot of sounds in hul'q'umi'num' but have a hard time recording her as she cannot sit still. Always wants to be on the move.

Methods - Recording

- **Stimuli:** words with **/t/, /t’/, /q/, /q’/** were selected from existing recordings
- 1 on 1 with the child when recording
- Children repeated stimuli after hearing adults pronunciation

Word List

1) *tunuqsun* - Duck: Mallard
2) *tumus* - Otter: Sea otter
3) *toohw* - Nine
4) *t'eluw'* - Arm
5) *t'xum* - Six
6) *qulum'* - Eye
7) *q'ullhanumutsun* - Killer whale
8) *lhq'etsus* - five

Methods - Analysis

TRANSCRIPTION: Rosie and Martina transcribed their own speech & their children's speech into Hul'q'umi'num' orthography. Our group member Dana transcribed the children's speech into IPA.

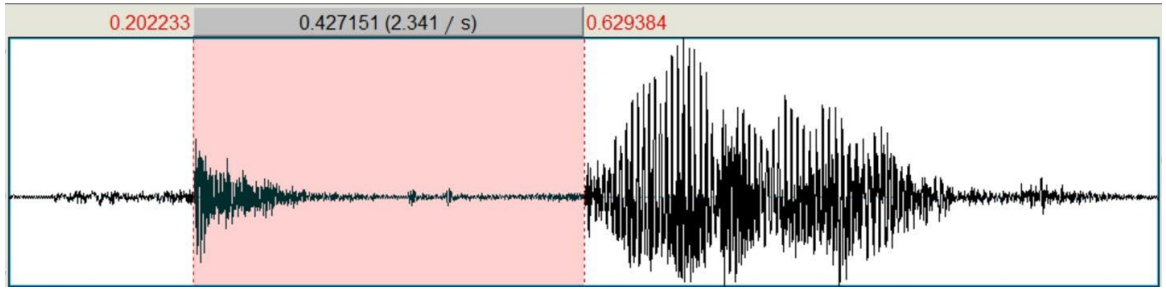
AUDITORY REPORTS: Adult Hul'q'umi'num speakers made impressionistic reports for whether they clearly perceived the target sounds (word-initial stops).

ACOUSTICS: For adults and children we measured VOT in Praat for ejective and plain stops.

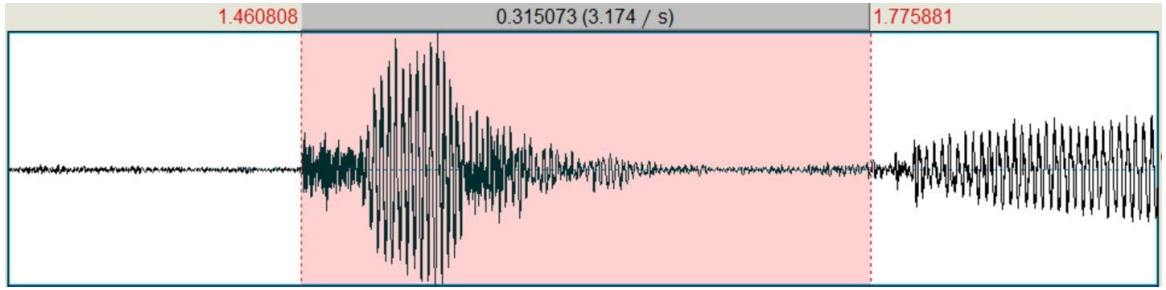
Overall Findings

Age Group	/t/ heard as expected	/t'/ heard as expected	/q/ heard as expected	/q'/ heard as expected
6-7	7/9	1/6	2/3	1/6
2-3	3/4	0/6	1/1	0/3
Age Group	**Strategies for /t/**	**Strategies for /t'/**	**Strategies for /q/**	**Strategies for /q'/**
6-7	Substitution	Substitution, Vowel Insertion	N/A	Substitution, Cluster Simplification
2-3	Substitution, Deletion	Substitution, Deletion	N/A	Substitution, Syllable Deletion

Findings



Above: Rosie's ejective /t'/ in "t'eluw'"



Above: Silken's ejective /t'/ in "tu'eluw'"

Silken_t'eluw'1

Rosie: t'eluw'
Silken: teluw'

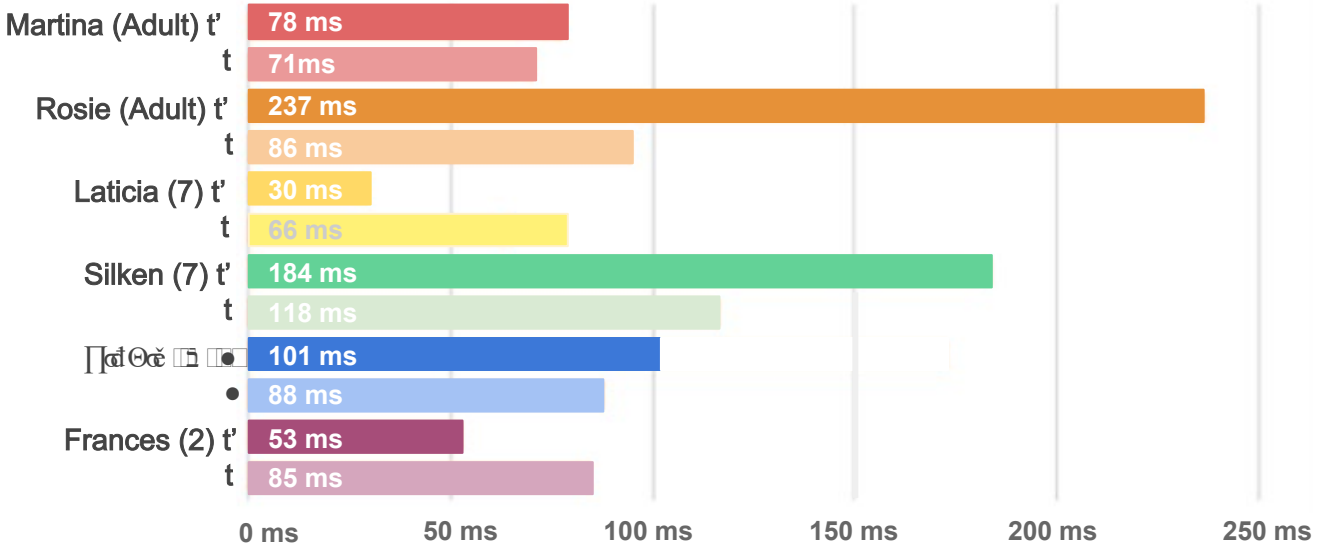
Silken_t'eluw'2

(seen left)

Rosie: t'eluw'
Silken: tu'eluw'

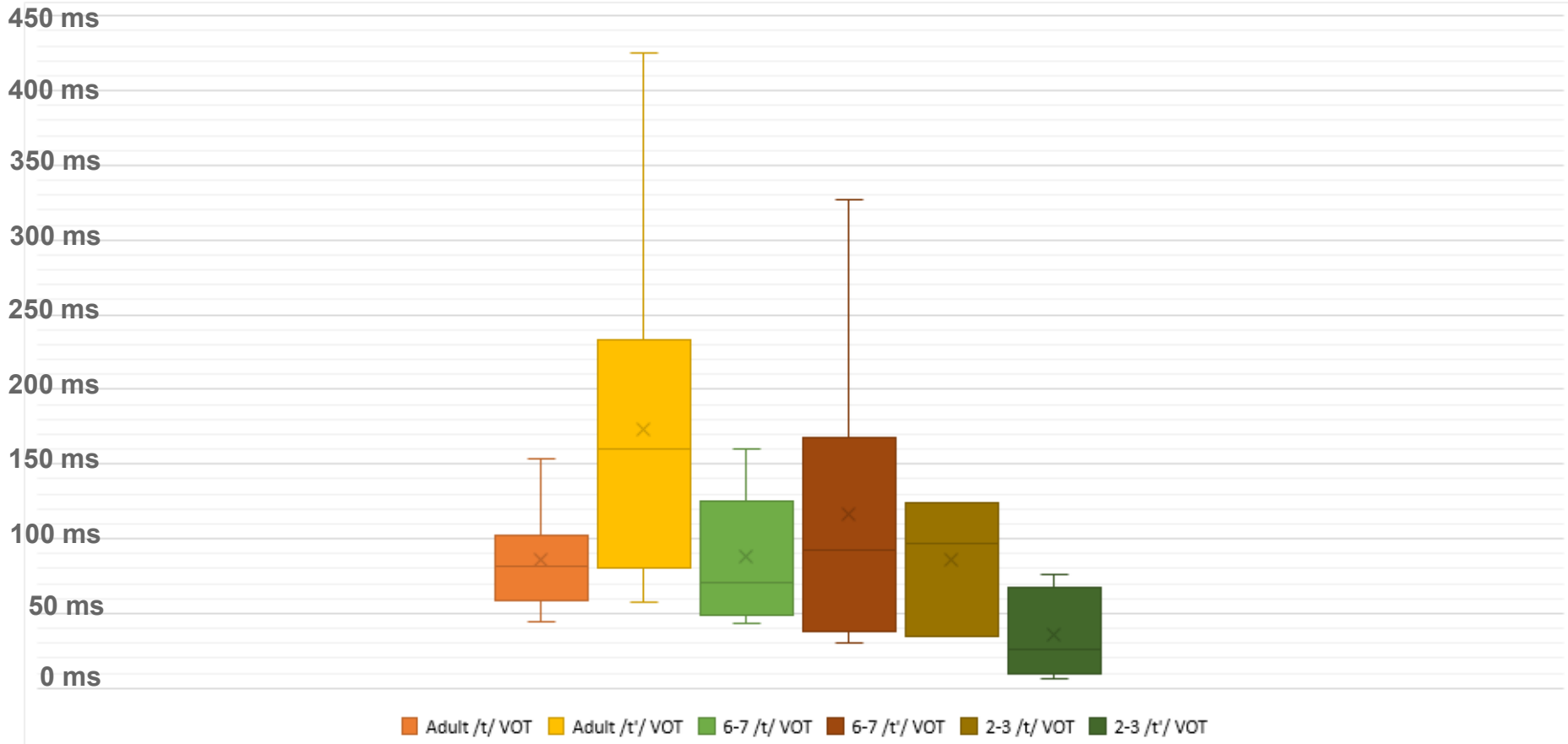
Note: waveforms here are intended to show the difference in the initial burst intensity between an adult and child speaker. They are not intended to show duration.

Voice Onset Time - Individual Averages



Note: this figure represents individual t-t’ contrast and includes *all realizations* (including those not heard as expected) for the regular stop and the ejective. Based on a small sample of available recordings from each speaker.

Voice Onset Time - Group Average and Range



Discussion

- There may also be careful pronunciation of the ejectives by children, as seen in Rosie and Silken’s example.

Careful productions	Relaxed Productions
Hearing Directly from the Elder Speaking loudly Singing in the Language	One on one speaking Short language learning time

Discussion

- We predicted the 6 and 7 year olds would produce the ejectives more reliably; however, only a small number of ejectives were heard as expected by adult speakers.

- Despite this, the 6-7 year olds produced a similar contrast in voice onset time between t and t’, on average, compared with the adult group.

- Our findings suggest that the children may not produce the ejective with the same phonetic quality that adult speakers do. Young Hul’q’umi’num’ speakers may rely on other acoustic correlates to mark their ejective stops, not explored here.

Avenues for Future Work

- Further documenting the phonological and morphological environments that create challenges in children's productions of ejective **/t'/** and **/q'/**
- Performing a more detailed analysis of the ejectives which we excluded from our data set (ie., velar /kw'/ and uvular /qw'/) and the remaining consonant inventory.
- Further investigating the sociocultural influences on children's acquisition of Hul'q'umi'num'.

Conclusion

- Working with the Language Learning and Development Lab at SFU, we hope to establish the order of acquisition of specific sounds for this cohort of children.

- Further, describe the go-to processes and substitutions the children use when producing non-English sounds common in Hul’q’umi’num’.

- How does the content and amount of Hul’q’umi’num’ input influence language development?
- What kinds of sounds, words, and sentences do the Children hear from day to day?
- How does the language that kids hear relate to the language they speak?

Works Cited

Bird, S. (2020). Pronunciation among adult Indigenous language learners: The case of SENĆOŦEN /t’. *Journal of Second Language Pronunciation*. 10.1075/jslp.17042.bir.

Bird, S., Gerdts, D., & Leonard, J. (2016). The realisation of coronal obstruents across Hul’q’umi’num’ speakers. *Canadian Acoustics*, *44*(3). Retrieved from https://jcaa.caa-aca.ca/index.php/jcaa/article/view/2971

George, R. & Joe, M. (2020). qwaqwul’ tthu me’mun’t tst — Our children speak.

Percival, M. (2019). Contextual Variation in the Acoustics of Hul’q’umi’num’ Ejective Stops.

Wright, R., Hargus, S., & Davis, K. (2002). On the categorization of ejectives: Data from Witsuwit'en. *Journal of the International Phonetic Association*. *32*. 43-77. doi: 10.1017/S0025100302000142.

Yeung, H., McClay, E., Dand L., & Mann, K. (N.D.) Learning the sounds of Skwxwú7mesh sníchim: A primer on children’s mastery of speech sounds used in the Squamish language.

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Findings: */t/ Sound Transcriptions - **t**unuqsun*

Recording	Adult Transcription	Adult Transcription (IPA)	Child Transcription	Child Transcription (IPA)	/t/ heard as expected?
tunuqsun					
Frances_tunuqsun	tunuqsun	[tʌnʌqsɪn]	te'tutelhqen	[tɛt.tɛzɛzən]	yes
Laticia_tunuqsun1	tunuqsun	[tʌnʌqsɪn]	tthunux sin	[dʌ.nʌs.tɪn]	no
Laticia_tunuqsun2	tunuqsun	[tʌnʌqsɪn]	tunuqsin	[tʌnʌstɪn]	yes
Richie_tunuqsun	tunuqsun	[tʌnʌqsɪn]	qunustun	[tʌnʌstɪn]	no
Silken_tunuqsun	tunuqsun	[tʌnʌqsɪn]	tunuqsun	[tʌnʌqsɪn]	yes

Findings: */t/ Sound Transcriptions - **t**umus*

Recording	Adult Transcription	Adult Transcription (IPA)	Child Transcription	Child Transcription (IPA)	/t/ heard as expected?
tumus					
Frances_tumus	tumus	[tʌmɪs]	tumnus	[tʌnɪs]	yes
Laticia_tumus1	tumus	[tʌmɪs]	tomus	[tʌmɪs]	yes
Laticia_tumus2	tumus	[tʌmɪs]	tumsth	[tʌmɪs]	yes
Richie_tumus	tumus	[tʌmɪs]	tumus	[tʌmɪs]	yes
Silken_tumus	tumus	[tʌmɪs]	tumus	[tʌmɪs]	yes

Findings: */t/ Sound Transcriptions - **t**oohw*

Recording	Adult Transcription	Adult Transcription (IPA)	Child Transcription	Child Transcription (IPA)	/t/ heard as expected?
toohw					
EricJack_toohw	toohw	[t^hux^w]	u	[du]	no
Frances_toohw	toohw	[t^hux^w]	tooshw	[tʌʃ]	yes
Richie_toohw	toohw	[t^hux^w]	tuloohw	[t^hux^w]	yes
Silken_toohw	toohw	[t^hux^w]	hiihw	[t^hux^w]	no

Findings: */t'/ Sound Transcriptions - **t'**eluw'*

Recording	Adult Transcription	Adult Transcription (IPA)	Child Transcription	Child Transcription (IPA)	/t'/ heard as expected?
t'eluw'					
Ava_t'eluw'1	te'luw	[t'eiloʊ]	aye yuh	[tʰei.jo]	no
Ava_t'eluw'2	te'luw	[t'eiloʊ]	dei doh	[dei.do]	no
Frances_t'eluw'1	t'eluw'	[t'eiloʊ]	teluw'	[tʰilaʊ]	no
Frances_t'eluw'2	t'eluw'	[t'eiloʊ]	teluw'	[tʰi.laʊ]	no
Laticia_t'eluw'	teluw	[t'eiloʊ]	teyoo	[tʰeɪjo]	no
Richie_t'eluw'	t'eluw'	[t'eiloʊ]	teluw	[tʰeɪlo]	no
Silken_t'eluw'1	t'eluw'	[t'eiloʊ]	teluw'	[eɪloʊ]	no
Silken_t'eluw'2	t'eluw'	[t'eiloʊ]	tu'eluw'	[tʰeɪloʊ]	yes

Findings: */t’/ Sound Transcriptions - **t’xum***

Recording	Adult Transcription	Adult Transcription (IPA)	Child Transcription	Child Transcription (IPA)	/t’/ heard as expected?
t'xum					
EricJack_t'xum	txum	[t'xʌm]	tum	[tʌm]	no
Frances_t'xum	t'xum	[t'xʌm]	kum	[kʌm]	no
Richie_t'xum	t'xum	[t'xʌm]	tum	[ðʌm]	no
Silken_t'xum	t'xum	[t'xʌm]	thum	[tʌm]	no

Findings: *Q Sound Transcriptions - **q**ulum'*

Recording	Adult	Adult (IPA)	Child	Child (IPA)	/q/ heard as expected?
qulum'					
Frances_qulum'	qulum'	[qʌlʌm']	qulum'	[kælʌm]	yes
Richie_qulum'	qulum'	[qʌlʌm']	qumlun	[qʌlʌm]	yes
Silken_qulum'	qulum'	[qʌlʌm']	qulum'	[qʌlʌm]	yes
Laticia_qulum'	qulum'	[qʌlʌm']	q'aam	[qʌlʌm]	yes

Findings: *Q' Sounds: lhɑ'etsus & ɑ'ullhanumutsun*

Recording	Adult	Adult (IPA)	Child	Child (IPA)	/q'/ heard as expected?
lhq'etsus					
Frances_lhq'etsus	lhq'etesus	[ɬq'ɛtsɛs]	'etsus	[eɪt.sɪs]	no
Richie_lhq'etsus	lhq'etesus	[ɬq'ɛtsɛs]	ketsus	[keɪt.sɪs]	no
Silken_lhq'etsus	lhq'etesus	[ɬq'ɛtsɛs]	sketsus	[skeɪt.sɪs]	no
EricJack_lhq'etsus	lhq'etesus	[ɬq'ɛtsɛs]		[keɪsɪ]	no
q'ullhanumutsun					
Laticia_q'ulh1	q'ullhanumutsun	[q'ɪlhɑnəmʌtsɛn]	qal thamuntsun	[qəl.səmʌtzɛn]	no
Laticia_q'ulh2	q'ullhanumutsun	[q'ɪlhɑnəmʌtsɛn]	-	[qəlθɑmʌtsɛn]	no
Richie_q'ulh	q'ullhanumutsun	[q'ɪlhɑnəmʌtsɛn]	nunumutsun	[nɑnəmʌtzɛn]	no
Silken_q'ulh	q'ullhanumutsun	[q'ɪlhɑnəmʌtsɛn]	q'athunamunsun	[q'θɑnəmʌtsɛn]	yes
Frances_q'ulh	q'ullhanumutsun	[q'ɪlhɑnəmʌtsɛn]	tututiiyun	[əh.tʰɑdmeɪzɪn]	no