

Appendix

Full list of stimuli

Pairs separated by a tilde exhibited variation along the indicated dimension. Some speakers preferred /tøʃøk/ over /kørpø/. In those cases, /tøʃøk/ was used. Some speakers did not recognize /kelte/, which is an antique gun. For those speakers, a completely different lexical item, /tezek/ ‘dung’ was elicited in its place.

	Vowel	Root	Gloss	Root	Gloss
Monosyllabic roots	a	bal	honey	baʃ	head
	o	ɖol	road	dos	friend
	u	ɖuɭ	year	quʃ	winter
	u	qul	slave	muz	ice
	e	bel	lower back	es	memory
	ø	køɭ~gøɭ	lake	køz~gøz	eye
	i	pil	elephant	tiʃ	tooth
	y	gyl	flower	tyʃ	dream
Disyllabic roots	a	balta	axe	parda~ pardo	curtain
	o	moldo	mullah		
	u	urum	superstition		
	e	kelte	a type of gun	tezek	dung
	ø	kørpø	sleeping mat	tøʃøk	bed
	i	ilim	science		
	y	ɖyzym	grape		

ANOVA tables

ANOVA table (type III) for |F1| from monosyllabic roots

	Sum Sq	Mean Sq	Num DF	Den DF	<i>F</i>	<i>p</i>
Vowel	1110.1	158.6	7	5332.7	1610.2	< .001
Position	6.60	3.30	2	5334.2	33.51	< .001
Duration	0.43	0.43	1	5111.0	4.40	.04
Preceding C place	4.67	1.56	3	5331.9	15.80	< .001
Following C place	8.94	2.98	3	5338.4	30.25	< .001
Vowel:Position	47.65	3.40	14	5331.2	34.56	< .001
Vowel:Duration	4.79	0.68	7	5333.9	6.95	< .001
Position:Duration	1.47	0.74	2	5332.0	7.47	< .001
Vowel:Position:Duration	2.86	0.20	14	5332.3	2.08	.01

ANOVA table (type III) for |F2| from monosyllabic roots

	Sum Sq	Mean Sq	Num DF	Den DF	<i>F</i>	<i>p</i>
Vowel	443.8	63.40	7	5332.7	1206.2	< .001
Position	3.54	1.77	2	5334.3	33.70	< .001
Duration	5.34	5.34	1	5083.0	101.6	< .001
Preceding C place	0.80	0.27	3	5331.9	5.05	.002
Following C place	9.38	3.13	3	5338.6	59.48	< .001
Vowel:Position	22.34	1.60	14	5331.2	30.35	< .001
Vowel:Duration	5.97	0.85	7	5334.0	16.23	< .001
Position:Duration	0.09	0.05	2	5330.7	0.88	.41
Vowel:Position:Duration	3.07	0.22	14	5332.3	4.17	< .001

ANOVA table (type III) for |F1| from disyllabic roots

	Sum Sq	Mean Sq	Num DF	Den DF	<i>F</i>	<i>p</i>
Vowel	657.6	93.94	7	3903.6	834.2	< .001
Position	12.44	4.15	3	3904.2	36.82	< .001
Duration	2.51	2.51	1	3833.7	22.25	< .001
Preceding C place	0.47	0.16	3	3903.2	1.39	.24
Following C place	20.52	6.84	3	3905.6	60.73	< .001
Vowel:Position	37.99	2.00	19	3902.2	17.76	< .001
Vowel:Duration	4.47	0.64	7	3903.3	5.67	< .001
Position:Duration	0.38	0.13	3	3908.4	1.12	.34
Vowel:Position:Duration	4.27	0.23	19	3902.7	2.00	< .01

ANOVA table (type III) for |F2| from disyllabic roots

	Sum Sq	Mean Sq	Num DF	Den DF	<i>F</i>	<i>p</i>
Vowel	259.0	37.00	7	3905.0	680.3	< .001
Position	31.12	10.37	3	3905.8	190.7	< .001
Duration	1.84	1.84	1	3622.7	33.90	< .001
Preceding C place	11.25	3.75	3	3904.5	68.92	< .001
Following C place	9.46	3.15	3	3907.1	57.95	< .001
Vowel:Position	18.35	0.97	19	3902.8	17.75	< .001
Vowel:Duration	1.87	0.27	7	3904.7	4.90	< .001
Position:Duration	0.19	0.07	3	3909.9	1.19	.31
Vowel:Position:Duration	2.74	0.14	19	3903.7	2.65	< .001