Phonology **36** (2019). Supplementary materials

A story of two schwas: a production study from Tashlhiyt

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Supplementary materials

Appendix A: Distribution of schwa within consonant sequences in polar question items

nucleus type	word	condition	distribution	number of schwas ($n = 42$)
T_{vl}	iftk	*is* *i*$C_1.C_2C_3$	C_1C_2 C_2C_3	0 1
		is=t *i*$C_1.C_2C_3$	C_1C_2 C_2C_3	0 0
	iʕtq	*is* *i*$C_1.C_2C_3$	C_1C_2 C_2C_3	0 1
		is=t *i*$C_1.C_2C_3$	C_1C_2 C_2C_3	0 1
T_{vd}	ibdg	*is* *i*$C_1.C_2C_3$	C_1C_2 C_2C_3	27 37
		is=t *i*$C_1.C_2C_3$	C_1C_2 C_2C_3	24 40
	iʒbd	*is* *i*$C_1.C_2C_3$	C_1C_2 C_2C_3	22 29
		is=t *i*$C_1.C_2C_3$	C_1C_2 C_2C_3	24 29

Table II
Items with voiceless and voiced stop nuclei.

nucleus type	word	condition	distribution	number of schwas ($n = 42$)
F_{vl}	iftχ	*is i*$C_1.C_2C_3$	C_1C_2 C_2C_3	0 0
		is=t i$C_1.C_2C_3$	C_1C_2 C_2C_3	0 0
	imsʜ	*is i*$C_1.C_2C_3$	C_1C_2 C_2C_3	0 0
		is=t i$C_1.C_2C_3$	C_1C_2 C_2C_3	0 0
F_{vd}	izdʁ	*is i*$C_1.C_2C_3$	C_1C_2 C_2C_3	0 40
		is=t i$C_1.C_2C_3$	C_1C_2 C_2C_3	0 36
	inʁz	*is i*$C_1.C_2C_3$	C_1C_2 C_2C_3	34 38
		is=t i$C_1.C_2C_3$	C_1C_2 C_2C_3	33 20

Table III
Items with voiceless and voiced fricative nuclei.

nucleus type	word	condition	distribution	number of schwas ($n = 42$)
N	ikʃm	*is* iC$_1$.C$_2$C$_3$	C$_1$C$_2$ C$_2$C$_3$	0 28
		is=*t* iC$_1$.C$_2$C$_3$	C$_1$C$_2$ C$_2$C$_3$	0 31
	iʃtˢn	*is* iC$_1$.C$_2$C$_3$	C$_1$C$_2$ C$_2$C$_3$	0 0
		is=*t* iC$_1$.C$_2$C$_3$	C$_1$C$_2$ C$_2$C$_3$	0 0
L	intl	*is* iC$_1$.C$_2$C$_3$	C$_1$C$_2$ C$_2$C$_3$	0 0
		is=*t* iC$_1$.C$_2$C$_3$	C$_1$C$_2$ C$_2$C$_3$	0 0
	ifsɾ	*is* iC$_1$.C$_2$C$_3$	C$_1$C$_2$ C$_2$C$_3$	0 41
		is=*t* iC$_1$.C$_2$C$_3$	C$_1$C$_2$ C$_2$C$_3$	0 42

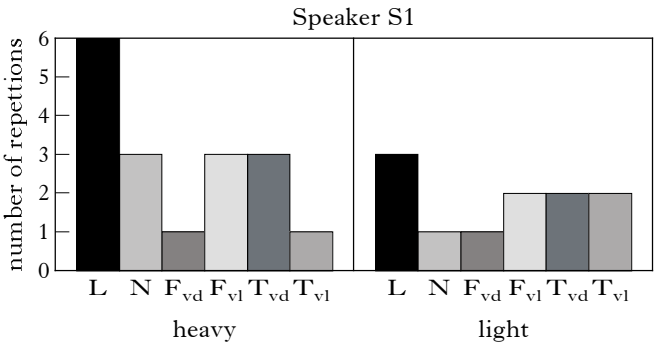
Table IV
Items with sonorant consonant nuclei.

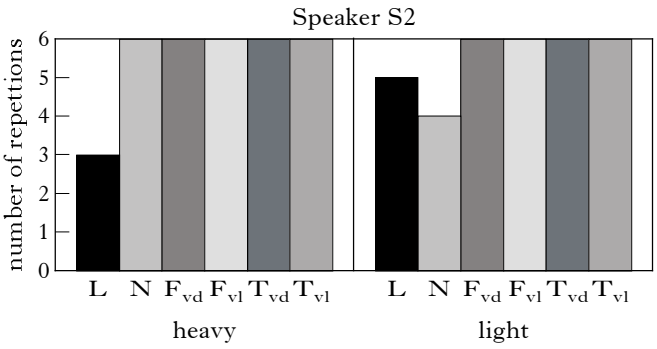
nucleus type	word	condition	distribution	number of schwas ($n = 42$)
V	ibna	*is* iC$_1$.C$_2$V	C$_1$C$_2$	36
		is=*t* iC$_1$.C$_2$V	C$_1$C$_2$	37
	ifka	*is* iC$_1$.C$_2$V	C$_1$C$_2$	0
		is=*t* iC$_1$.C$_2$V	C$_1$C$_2$	0

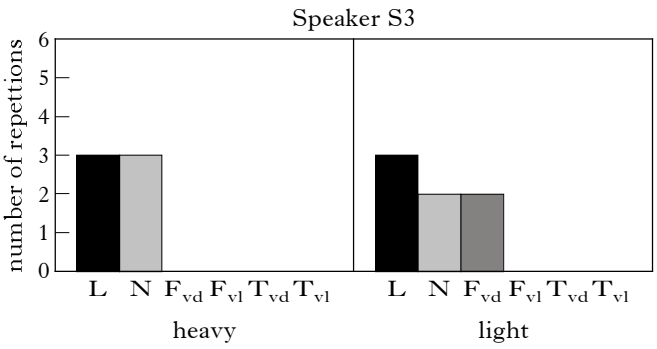
Table V
Items with vowel nuclei.

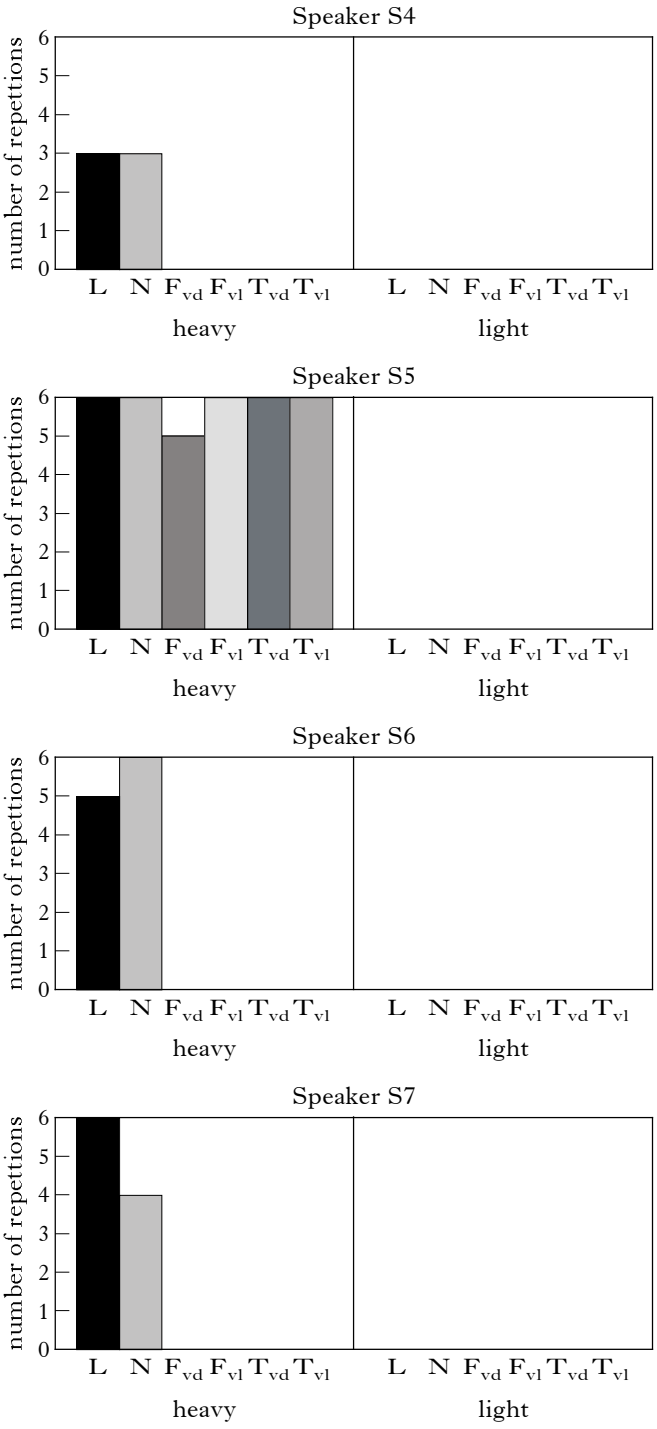
Appendix B: Frequency of occurrence of schwa lengthening for all speakers

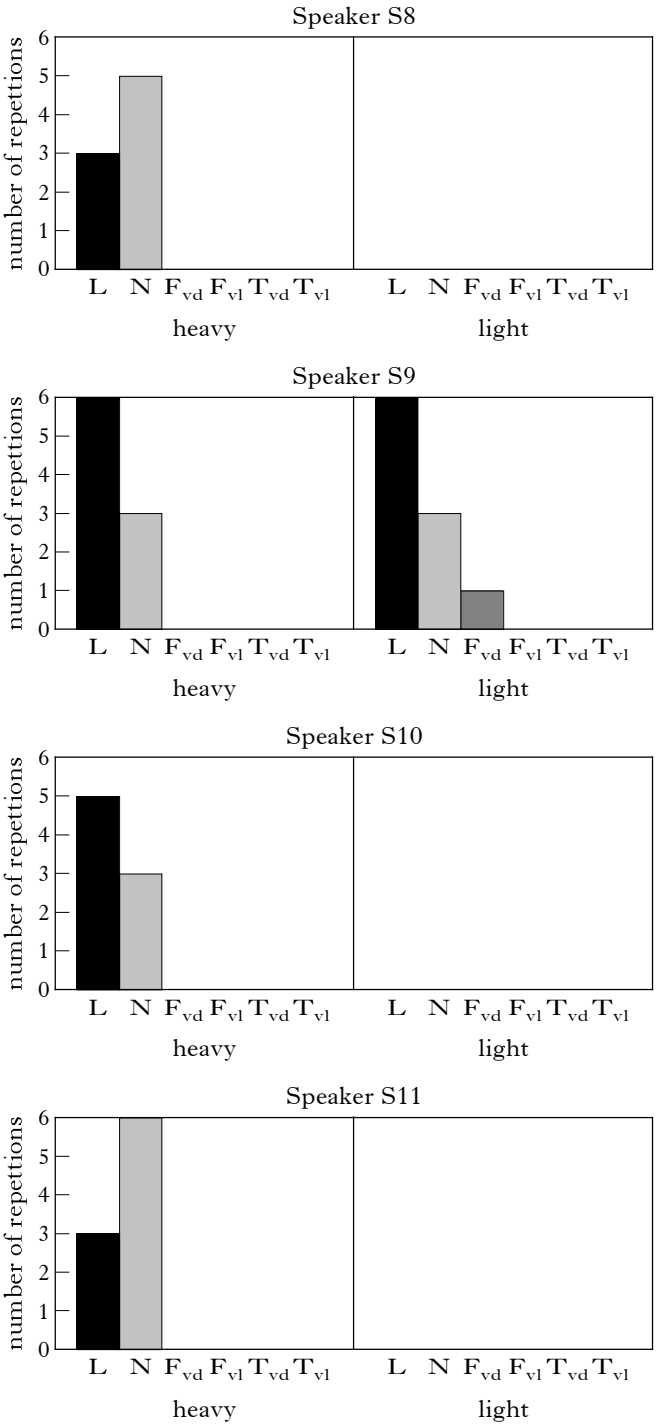
The following gives the frequency of occurrence of lengthened schwas by syllable weight and nucleus type for each of the 14 speakers. The *y*-axis gives the number of repetitions for each condition (i.e. two words repeated three times). A value of 0 means that schwa was never used to express emphatic lengthening; a value of 6 that it occurred in all three repetitions of both words.

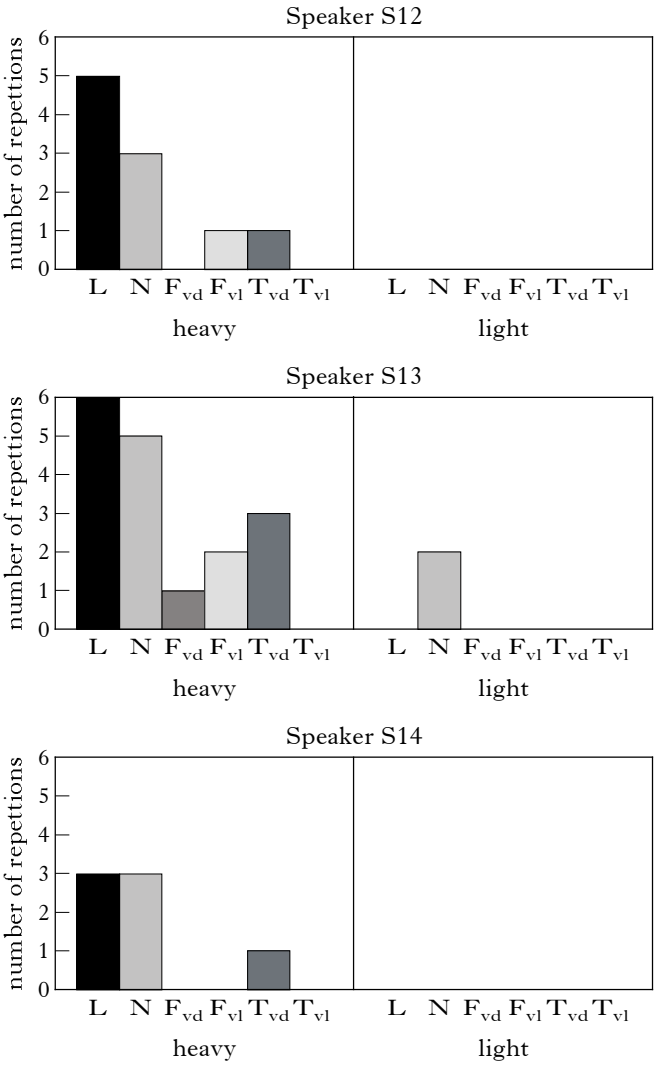







Speaker S4
number of repettions
0
1
2
3
4
5
6
L N F_{vd} F_{vl} T_{vd} T_{vl}
heavy
L N F_{vd} F_{vl} T_{vd} T_{vl}
light
Speaker S5
number of repettions
L N F_{vd} F_{vl} T_{vd} T_{vl}
heavy
L N F_{vd} F_{vl} T_{vd} T_{vl}
light
Speaker S6
number of repettions
L N F_{vd} F_{vl} T_{vd} T_{vl}
heavy
L N F_{vd} F_{vl} T_{vd} T_{vl}
light
Speaker S7
number of repettions
L N F_{vd} F_{vl} T_{vd} T_{vl}
heavy
L N F_{vd} F_{vl} T_{vd} T_{vl}
light


Speaker S8
number of repettions
0
1
2
3
4
5
6
L N F_{vd} F_{vl} T_{vd} T_{vl}
heavy
L N F_{vd} F_{vl} T_{vd} T_{vl}
light
Speaker S9
number of repettions
L N F_{vd} F_{vl} T_{vd} T_{vl}
heavy
L N F_{vd} F_{vl} T_{vd} T_{vl}
light
Speaker S10
number of repettions
L N F_{vd} F_{vl} T_{vd} T_{vl}
heavy
L N F_{vd} F_{vl} T_{vd} T_{vl}
light
Speaker S11
number of repettions
L N F_{vd} F_{vl} T_{vd} T_{vl}
heavy
L N F_{vd} F_{vl} T_{vd} T_{vl}
light


Speaker S12
number of repettions
0
1
2
3
4
5
6
L N Fvd Fvl Tvd Tvl
heavy
L N Fvd Fvl Tvd Tvl
light
Speaker S13
number of repettions
0
1
2
3
4
5
6
L N Fvd Fvl Tvd Tvl
heavy
L N Fvd Fvl Tvd Tvl
light
Speaker S14
number of repettions
0
1
2
3
4
5
6
L N Fvd Fvl Tvd Tvl
heavy
L N Fvd Fvl Tvd Tvl
light

Appendix C: The dataset

The dataset obtained from the production experiment is available at https://doi.org/10.1017/S0952675719000216. It contains three types of information: (i) the frequency of occurrence of schwa within the consonant sequences of target items in polar questions and emphatic statements, (ii) the frequency of lengthening of the first or the second syllable in emphatic statements and (iii) the type of segments lengthened in emphatic statements.

The dataset is encoded in UTF-8, and has twelve comma-delimited columns:

A. ID: subject's identification.
B. initials: initials of the subject's name.
C. repetition: the second, third and fourth repetitions (2–4) were used in the dataset.
D. syllable weight: the weight of the final syllable of the word (light or heavy).
E. word: the 14 target verbs used in the experiment.
F. nuclear type: the final-syllable nucleus segment according to the following sonority scale: vowels (V) > liquids (L) > nasals (N) > voiced fricatives (Fvd) > voiceless fricatives (Fvl) > voiced stops (Tvd) > voiceless stops (Tvl).
G. prosodic condition: the type of condition the target word was uttered in. It is either a polar question or emphatic statement.
H. lengthened syllable: the position of the lengthened syllable within the word (either the first or the second syllable)
I. segment lengthened (@ = schwa): the type of segment lengthened in an emphatic statement.
J. distribution of schwa: the context within the word where schwa occurs (1 = following C1, 2 = following C2, 3 = following C3).
K. schwa (1 = yes, 0 = no). Realisation of schwa (either transitional or lengthened).
L. lengthened schwa (1 = yes, 0 = no). Realisation of lengthened schwa to express an emphatic statement.