

Modelling Mandarin speakers' phonotactic knowledge

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Supplementary materials

Appendix

tei ~ tei	teu ~ teu	ten ~ ten	tai ~ tai	tau ~ tau	tjan ~ tjan
tāi ~ tāi	tāu ~ tāu	tān ~ tān	tāi ~ tāi	tāu ~ tāu	tjān ~ tjān
toi ~ toi	tou ~ tou	ton ~ ton	tei ~ tei	teu ~ teu	tjen ~ tjen
tāi ~ tei	tāu ~ teu	tān ~ ten	tai ~ tai	tau ~ tau	tjan ~ tjan
tei ~ toi	teu ~ tou	ten ~ ton	tai ~ tei	tau ~ teu	tjen ~ tjan
toi ~ tāi	tāu ~ tou	ton ~ tān	tai ~ tei	tau ~ teu	tjan ~ tjen
pei ~ pei	peu ~ peu	pen ~ pen	pai ~ pai	pau ~ pau	pjan ~ pjan
pāi ~ pāi	pāu ~ pāu	pān ~ pān	pai ~ pai	pau ~ pau	pjan ~ pjan
poi ~ poi	pou ~ pou	pon ~ pon	pei ~ pei	peu ~ peu	pjen ~ pjen
pāi ~ pei	pāu ~ peu	pān ~ pen	pai ~ pai	pau ~ pau	pjan ~ pjan
pei ~ poi	peu ~ pou	pen ~ pon	pai ~ pei	pau ~ peu	pjen ~ pjan
poi ~ pāi	pāu ~ pou	pon ~ pān	pai ~ pei	pau ~ peu	pjan ~ pjen

Table III
Pre-test stimuli.

real words	tsan t ^h aŋ tɛ ^h yn k ^h a ci t ^h an ʂai p ^h jaʊ	xəŋ fa tɛ ^h en kai tɕ ^h uŋ zɑŋ tɕəŋ təau	xou sau cy p ^h ən pən tɕ ^h wən pjaŋ t ^h uŋ	tɕ ^h wei sa k ^h wa tɛ ^h ou p ^h ai tɕ ^h u tɕ ^h ən ɛwʊŋ	xwən k ^h u tɕ ^h ən ti a lu tɕ ^h ə p ^h in
tonal gaps	naŋ mjəŋ tɛ ^h wʊŋ nai xən ljen zwan k ^h wo	tə zwei nou ljaŋ tɕ ^h ou xwai kei zuŋ	k ^h wai mjən t ^h ə tɕən nɥe fwo min zə	ʂwei nwo zwan nan tɛwʊŋ zən tɕ ^h ə nu	nwan njaʊ ʂei mei nei tɕwən laŋ mu
allophonic gaps	ko lja sa zɛ tɕeŋ p ^h jeu tson tɕwɛŋ	xwəi zau kwə tɛ ^h au ɛa me xwen pjeŋ	tɛ ^h an tɕ ^h əu k ^h ai nwə kwa ʂwon ləu wen	təo xeu tɕwai tɛ ^h əu twəi tɛjaʊ men t ^h au	p ^h eŋ xwə njə non kəu tɛeŋ xwɛŋ k ^h eu
accidental gaps	fjəu swai lwaŋ t ^h jon t ^h wɛŋ tɕwaŋ pjən nɥaŋ	pja zwai nwəi syŋ nɥa njon t ^h ən fjon	fjou mɥŋ nwɛŋ tei tjon fyŋ tɕwəŋ pə	tən tɛ ^h yŋ twa pyŋ xwəŋ tɕ ^h wa zwai nwən	əŋ lwɛŋ zwan nyŋ nwa lən t ^h ɥan swai
systematic gaps	ʂjeu tɕ ^h jo p ^h jun ʂɥon k ^h ɥe kɥau zɥaŋ k ^h wəu	ɥai kjei t ^h ɥou k ^h ɥə zɥo tɕjun nwau tɕ ^h jun	tɕɥiu k ^h jou k ^h ɥai p ^h ɥin k ^h ɥiu zjəu mwiŋ xwin	mwa p ^h juŋ ʂɥa xyŋ ʂjui ʂɥou sui zwou	zjan tɕ ^h ɥuŋ ʂin xwau jəi xɥai tweu zjoi

Table IV
Main test stimuli.

constraint	excludes:	type	weight
*[+approx, +hi][+approx, +hi]	[+high][+high]	systematic	2.017
*[+approx, +hi, +fr][−#][+approx, +hi, +fr]	[cor] __ [cor]	systematic	2.823
*[+hi, +rd][−#][+hi, +rd]	[lab] __ [lab]	systematic	3.714
*[−approx, +lab][+rd, −syll]	pw, pq	systematic	0.143
*[−ant][+approx, +fr, −syll]	tsj, tsq	systematic	3.994
*[−son, +hi, −cor][+approx, +hi, +fr]	kj	systematic	4.328
*[+del, +ant, −dors][+approx, +fr, −syll]	tsj, tsq	accidental	3.768
*[+del, +lab][+approx, +hi, +fr]	fj	accidental	3.222
*[+fr, +rd][+lo]	qa	accidental	3.107
*[−del, +ant][+fr, +rd]	tq	accidental	3.418
*[−son, +ant][+fr, +rd, +syll][+nas, −lab]	n/lyn/ŋ	accidental	0.616
*[−approx, +lab][+fr, +rd, +syll]	py	accidental	3.205
*[+ant, −dors][−fr, −syll][+lo][+#]	twa#, tswa#	accidental	0.890
*[+ant, −dors][−fr, −syll][+lo][+son, +hi, −rd]	twai/ŋ, tswai/ŋ	accidental	0.191
*[+son, +del][−fr, −syll][+lo][+#]	rwa#	accidental	0.242
*[+son, +del][−fr, −syll][+lo][+son, +hi, −rd]	rwai/ŋ	accidental	0.032
*[−del, +ant][−lo, −fr, −back][+nas, +ant]	tən	accidental	0.648
*[+son, +ant][−lo, −fr, −back][+nas, +ant]	n/lən	accidental	0.098
*[−approx, +lab][−lo, −fr, −back][+#]	pə#	accidental	2.842
*[−syll][−fr, −syll][−lo, −fr, −back][+nas, +hi]	wəŋ	accidental	0.153
*[+approx, −rd, −syll][−hi, −lo, −fr][+nas, +ant]	jən, jon	accidental	0.363
*[+fr, +rd, +syll][+hi]	yŋ	accidental	2.251
*[−fr, −syll][−hi, −lo, −back][+#]	wɛ#, wə#	allophonic	2.212
*[−hi, −lo, −back][+hi, −fr, +syll]	eu, əu	allophonic	2.960
*[+approx, +fr, −syll][−hi, −lo, −fr][+#]	j/qə, j/qo	allophonic	2.387
*[−hi, −lo, −fr][+hi, −rd, +syll]	əi, oi	allophonic	2.968
*[−approx][−hi, +fr][+#]	Cɛ#	allophonic	4.160
*[−approx][−hi, +rd][+#]	Co#	allophonic	4.160
*[−approx][−hi, +fr][+nas, +ant]	Cen	allophonic	1.943
*[−fr, −syll][−hi, +fr][+nas, +ant]	wen	allophonic	0.386
*[−hi, +fr][+nas, +hi]	eŋ	allophonic	2.570
*[−hi, +rd][+nas, +ant]	on	allophonic	2.567
*[−hi, +rd][+nas, +hi]	oŋ	allophonic	2.570
*[+lo, +back][+#]	ɑ#	allophonic	4.509
*[+lo, +back][+nas, +ant]	ɑn	allophonic	2.546
*[+lo, +back][+hi, −rd, +syll]	ɑi	allophonic	2.460
*[+lo, −back][+nas, +hi]	aŋ	allophonic	2.550
*[+lo, −back][+hi, −fr, +syll]	au	allophonic	2.454
*[+approx, +fr, −syll][+lo][+nas, +ant]	j/qan, j/qan	allophonic	0.375
*[+H][+son, −dors]	sonorant + T1	tonal	1.076

Table V

Handwritten Mandarin phonotactic grammar.

	p	p ^h	m	f	t	t ^h	n	l	ts	ts ^h	s	tʂ	tʂ ^h	ʂ	z	tɕ	tɕ ^h	ɕ	k	k ^h	x	ŋ	j	w	ɥ	i	u	y	ə	e	o	a	ɑ	H	R	L	F							
syllabic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+								
approx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+								
sonorant	-	-	+	-	-	-	+	+	-	-	-	-	-	-	+	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+								
continuant	-	-	-	+	-	-	-	+	-	-	+	-	-	+	+	-	-	+	-	-	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+							
delayed	-	-		+	-	-			+	+	+	+	+	+	+	+	+	+	-	-	-	+																						
aspirated	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
nasal	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
anterior					+	+	+	+	+	+	+	-	-	-	-	+	+	+																										
lateral	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
high																	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+						
low																	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+					
front																	+	+	+					+	-	+	+	-	+	-	+	-	+	-	-	-	-	-						
back																	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	-	+	-	+						
round	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-	-	+	-	-	+	-	-	-	-						
labial	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-	-	+	-	-	+	-	-	-	-						
coronal	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
dorsal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+					
High																																							+	-	-	-		
Rising																																								-	+	-	-	
Low																																									-	-	+	-
Falling																																									-	-	-	+

Table VI
Mandarin feature chart.