

Appendix A: Miscellaneous tables

Table A. Word list used for native Southern French production data and stimulus elicitation.

Onset C	Target V							
	/a/	/ã/	/ɛ/	/ẽ/	/o/	/õ/	/i/	/u/
/p/	<i>pas</i> “step”	<i>paon</i> “peacock”	<i>paix</i> “peace”	<i>pain</i> “bread”	<i>pot</i> “pot/jar”	<i>pont</i> “bridge”	<i>pie</i> “magpie”	<i>pou</i> “louse”
/b/	<i>bas</i> “low”	<i>banc</i> “bench”	<i>baie</i> “bay”	<i>bain</i> “bath”	<i>beau</i> “beautiful”	<i>bon</i> “good”	<i>bi</i> “bi/dual”	<i>bout</i> “tip/end”

Table B. Maximum formant values (Hz) for automatic estimation of the first two formants in Praat.

Vowel pair	Native speakers				Naïve imitators								
	SF01	SF02	SF03	SF04	AE01	AE02	AE03	AE04	AE05	AE06	AE07	AE08	AE09
/ẽ/-/ɛ/	2000	2000	2000	1600	1600	1400	1200	1450	1400	1350	1400	1550	1300
/ã/-/a/	2000	1600	1800	1800	1600	1350	1400	1500	1450	1300	1500	1600	1800
/õ/-/o/	1500	1200	1500	1600	1600	1500	1300	1500	1700	1700	1350	1250	1650

Table C. Results for linear mixed-effects models created to test the effect of nasality on F1', nasalance, tongue height, and contact quotient. For each vowel pair model, the oral vowel is used as the base model and the estimates are for the nasal vowel in comparison to its oral counterpart. Random intercepts for imitator, speaker, token order, and onset consonant are included in each model. Statistically significant effects are highlighted in gray for Bonferroni adjusted $\alpha = 0.004$.

DV	Comparison	Inter.	β	SE	df	t	p
F1'	/ã/ vs. /a/	1.429	-0.860	0.036	257.9	-23.98	< 0.001
	/ẽ/ vs. /ɛ/	-0.176	0.842	0.037	304.9	23.05	< 0.001
	/õ/ vs. /o/	-0.275	0.006	0.029	275.8	0.20	= 0.840
Nasalance	/ã/ vs. /a/	-1.075	1.914	0.029	206.0	65.76	< 0.001
	/ẽ/ vs. /ɛ/	-0.561	1.440	0.028	220.2	51.41	< 0.001
	/õ/ vs. /o/	-0.781	1.971	0.036	220.9	54.51	< 0.001
Height	/ã/ vs. /a/	-1.072	0.031	0.023	685.1	1.34	= 0.181
	/ẽ/ vs. /ɛ/	0.831	-1.133	0.028	468.9	-40.2	< 0.001
	/õ/ vs. /o/	-0.096	-0.403	0.026	602.0	-15.57	< 0.001
CQ	/ã/ vs. /a/	0.332	-0.334	0.046	304.2	-7.21	< 0.001
	/ẽ/ vs. /ɛ/	0.323	-0.217	0.053	374.2	-4.07	< 0.001
	/õ/ vs. /o/	0.040	-0.299	0.055	341.4	-5.45	< 0.001

Table D. Results for linear mixed-effects models created to test the effect of group on nasal-oral difference in F1', nasalance, tongue height, and contact quotient. For each vowel pair model, the SF native speakers are used as the base model and the estimates are for the AE naïve imitators in comparison to the SF speakers. Random intercepts for imitator, speaker, token order, and onset consonant are included in each model. Statistically significant effects are highlighted in gray for Bonferroni adjusted $\alpha = 0.004$.

DV	Difference	Inter.	β	SE	df	t	p
F1'	/ã/ - /a/	-0.819	-0.034	0.051	1194.7	-0.66	= 0.508
	/ẽ/ - /ɛ/	0.914	-0.140	0.052	1270.0	-2.72	= 0.007
	/õ/ - /o/	0.012	0.003	0.038	1178.2	0.07	= 0.944
Nasalance	/ã/ - /a/	1.984	-0.149	0.046	1189.4	-3.25	< 0.004
	/ẽ/ - /ɛ/	1.672	-0.492	0.043	1209.0	-11.47	< 0.001
	/õ/ - /o/	2.331	-0.752	0.051	1184.0	-14.74	< 0.001
Height	/ã/ - /a/	-0.044	0.162	0.024	1191.7	6.78	< 0.001
	/ẽ/ - /ɛ/	-1.072	-0.186	0.029	1211.9	-6.50	< 0.001
	/õ/ - /o/	-0.506	0.110	0.025	1183.2	4.33	< 0.001
CQ	/ã/ - /a/	-0.336	0.036	0.060	1188.3	0.61	= 0.542
	/ẽ/ - /ɛ/	-0.152	-0.137	0.063	1216.4	-2.19	= 0.029
	/õ/ - /o/	-0.262	0.045	0.064	1183.2	0.71	= 0.478

Table E. Results for linear mixed-effects models created to test the effect of nasalance, tongue height, and contact quotient on $F1'$, as well as the interaction of group with these articulatory variables. For each vowel pair model, the SF native speakers are used as the base model and the estimates are for the AE naïve imitators in comparison to the SF speakers. Random intercepts for imitator, speaker, token order, and onset consonant are included in each model. Statistically significant effects are highlighted in gray for Bonferroni adjusted $\alpha = 0.006$.

Difference	Factor	β	SE	df	t	p
/ã/ - /a/	Nasalance	-0.662	0.046	1250.0	-14.49	< 0.001
	Group	-0.489	0.118	1255.1	-4.14	< 0.001
	Nasal. : Gr.	0.194	0.057	1252.9	3.43	< 0.001
	Height	0.089	0.102	747.9	0.87	= 0.384
	Group	-0.006	0.051	1203.6	-0.13	= 0.899
	Height : Gr.	-0.327	0.117	992.2	-2.81	< 0.006
	CQ	0.278	0.036	1073.4	7.61	< 0.001
	Group	-0.090	0.052	1216.3	-1.73	= 0.084
	CQ : Gr.	-0.157	0.048	1150.6	-3.28	< 0.006
/ẽ/ - /ε/	Nasalance	-0.642	0.054	1271.9	-11.98	< 0.001
	Group	-0.743	0.110	1271.4	-6.73	< 0.001
	Nasal. : Gr.	0.243	0.065	1271.6	3.73	< 0.001
	Height	0.329	0.081	1264.5	4.04	< 0.001
	Group	-0.478	0.115	1272.0	-4.14	< 0.001
	Height : Gr.	-0.316	0.091	1272.8	-3.46	< 0.001
	CQ	0.134	0.034	1271.1	3.93	< 0.001
	Group	-0.126	0.052	1269.1	-2.45	= 0.015
	CQ : Gr.	-0.018	0.044	1271.0	-0.41	= 0.682
/õ/ - /o/	Nasalance	-0.435	0.030	1237.6	-14.31	< 0.001
	Group	-0.635	0.088	1235.0	-7.18	< 0.001
	Nasal. : Gr.	0.197	0.040	1239.8	4.97	< 0.001
	Height	0.092	0.076	1072.4	1.22	= 0.223
	Group	-0.110	0.056	1244.4	-1.97	= 0.049
	Height : Gr.	-0.263	0.086	1210.2	-3.06	< 0.006
	CQ	0.130	0.023	1161.6	5.69	< 0.001
	Group	0.002	0.038	1183.8	0.06	= 0.953
	CQ : Gr.	0.026	0.033	1232.3	0.79	= 0.432