

Appendix A

The Constraints Listed in the Dissertation

The constraints needed to account for the prosodic phonological and morphological aspects of Casablanca Moroccan Arabic dealt with in this dissertation are listed below:

1. AFFIX-TO-N_{stem}

The nisba morpheme is suffixed to a noun stem.

2. ALIGN-E (Root, PrWd)

The left edge of the root must correspond to the left edge of the PWd and the right edge of the root must correspond to the right edge of the PrWd.

3. ALIGN-FT-R

The right edge of every foot must be aligned with the right edge of the prosodic word.

4. ALIGN-Nisba-R

The right edge of the nisba affix must be aligned with the right edge of the PWd.

5. ALIGN-R

The right edge of the root must be aligned with the right edge of the syllable.

6. ALIGN-R (Ft', PWd)

The right edge of the prominent foot must be aligned with the right edge of the PWd.

7. ALIGN-R- σ'

The right edge of the stem must be aligned with the right edge of the prominent syllable.

8. ALIGN-R (verb/adjective, σ') (ALIGN-R (Vb/Adj, σ'))

The right edge of the verb/adjective stem must be aligned with the right edge of the prominent syllable.

9. ANCHOR (Base, L, RED, L)

The left edge of the base must correspond to the left edge of the reduplicant.

10. *COMPLEX

Codas and onsets must not branch.

11. CONSTRAINTS ON LABIALIZED CONSONANTS

- a. *T^w, *H^w, *B^w >> *K^w
- b. *TT^w, *HH^w, *KK^w >> *BB^w

12. DEP-IO

Every segment of the output has a correspondent in the input.

13. FEM = [-a]

The feminine morpheme must be realized in the output as [-a].

14. FT-BIN

Feet are binary under syllabic or moraic analysis.

15. *GEM-σ1

Gemинates are prohibited in the first syllable.

16. *GEM

Gemинates are prohibited.

17. H-NUC

A higher sonority nucleus is more harmonic than one with lower sonority.

18. IAMB

Feet are right-headed.

19. IDENT-BR [cons]

The base featural specification for [cons] must be preserved in the reduplicant.

20. IDENT-IO [cons]

Featural specification for [cons] must be preserved in the input/ output mapping.

21. IDENT-IO [rd]

Identity of the feature [round] must be preserved in the input/output.

22. INITIAL-CC

Words must begin with two consonants.

23. LABIALIZE (C, L, PWd, L)

The left edge of the prosodic word must be aligned with a labialized consonant.

24. MAX-IO:

Every segment of the input has a correspondent in the output.

25. MAX-IO [rd]

The feature [round] must be preserved in the input/output mapping.

26. MAX-Rt-BR

Every root segment of the base has a correspondent in the reduplicant.

27. *Min-LH

A LH foot whose light syllable is minor is prohibited.

28. *Min- σ

Minor syllables are prohibited.

29. *Min- σ'

Prominent minor syllables are prohibited.

30. MORPH-REAL

An input morpheme must be realized in the output.

31. NO-CODA:

syllables must not have a coda.

32. NON-FINALTY (σ' , PPh)

The main-stressed syllable of a word is not in phrase final position.

33. NO-LONG-V

Long vowels are prohibited.

34. NO-SPLITTING

Epenthesis cannot apply to geminates.

35. NO-SPREAD (μ , C)

The spreading of a consonant is prohibited.

36. *[Noun + Adjective]_{PWd}

A sequence of a noun and an adjective is prohibited.

37. ONSET

Syllables must have an onset.

38. O-O_{stem} ANCHOR (Ft, Ft, Initial)

A foot initial segment in the affiliate output form must correspond to a foot initial segment in the base output form.

39. O-O_{stem} ANCHOR (σ , σ , Initial)

Where two strings S1 and S2 are in an O-O_{stem} correspondence relation and S1 is the base and S2 the affiliate of that correspondence relation, a syllable-initial segment belonging to S2 must correspond to a syllable-initial segment belonging to S1.

40. O-O_{word} ANCHOR (σ , σ , Initial)

Where two strings S1 and S2 are in an O-O_{word} correspondence relation and S1 is the base and S2 the affiliate of that correspondence relation, a syllable-initial segment belonging to S2 must correspond to a syllable-initial segment belonging to S1.

41. O-O_{stem} IDENT- σ

Light/heavy syllables in the affiliate output form must correspond to light/heavy syllables in the base output.

42. PARSE- σ

Syllables must belong to a foot.

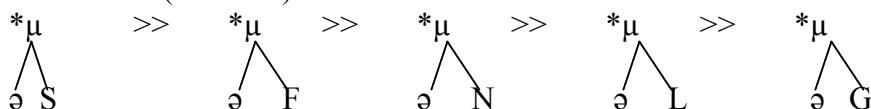
43. PARSE-seg

Every segment must belong to a syllable.

44. *RdRd

Sequences of round segments are prohibited.

45. SONORITY (in nouns)



46. TROCHEE

Feet are left-headed.

47. VERB ROOT = [μ μ]

A verb root must correspond to two moras.

48. WSP

A heavy syllable is stressed in foot structure.

Appendix B

The Quantitative Test: The Questionnaire

This questionnaire is undertaken in the framework of a research study whose objective is to determine some phonological aspects of Casablanca Moroccan Arabic.

Please respond to the questions below. Thank you for your contribution.

5.	wal.mək	it (mas.) suits you
6.	naw.ya	intending (fem.)
7.	bab.ha	her/its (fem.) door
8.	li.mun	oranges
9.	da.ruh	they did it (mas.)
10.	li.kum	for/to you
11.	məl.məl	he shook (sth.)
12.	wəl.dək	your (sg.) son
13.	ma.yəl	bent (mas.)
14.	fu.dək	your (sg.) stick
15.	Rəm.la	sand
16.	Səm.na	we fasted
17.	wa.lu	nothing
18.	Da.Ru	his house
19.	li.na	for/to us

ii. TRISYLLABIC WORDS

20.	law.yin.hum	they are twisting them
21.	man.Da.Rin	clementine
22.	wal.mu.kum	they fit you (pl.)
23.	bəZ.Tam.kum	your (pl.) wallet
24.	mər.məd.nak	we trailed you (in dust)
25.	ru.bəl.kum	he disturbed you (pl.)
26.	fiR.ga.nin	they are sweaty
27.	mql.bi.nək	they are deceiving you
28.	wəl.dat.ni	she gave birth to me
29.	min.ʒa.ra	sharpener
30.	ban.ya.ha	she built it (fem.)
31.	rub.lu.ni	they disturbed me

- | | | |
|-----|------------|-----------------|
| 32. | gən.Du.Ra | a Moroccan gown |
| 33. | yəD.Rəb.na | he hits us |
| 34. | məl.mlu.na | they shook us |
| 35. | li.mu.na | an orange |
| 36. | fi.ni.na | our eyes |

iii. POLYSYLLABIC WORDS

- | | | |
|-----|------------------|---------------------------------------|
| 37. | ban.ya.ha.lih | she is building it (fem.) for him |
| 38. | di.ri.ha.li.ha | do it (fem.) for her |
| 39. | gəl.bu.ha.li.kum | they reversed it (fem.) for you (pl.) |

Appendix C

The Instrumental Test: The Data

1.	lawyin	wilted (pl.)
2.	kalkum	he ate you (pl.)
3.	məlyun	one million
4.	Drəbhūm	he hit them
5.	walmək	it (mas.) suits you
6.	babha	her/its (fem.) door
7.	limun	oranges
8.	daruh	they did it (mas.)
9.	məlməl	he shook (sth.)
10.	wəldək	your (sg.) son
11.	mayəl	bent (mas.)
12.	Rəmla	sand
13.	walu	nothing
14.	lina	for/to us
15.	lawyinhum	they are twisting them
16.	manDaRin	clementine
17.	mərmədnak	we trailed you (in dust)
18.	ʃəRganin	they are sweaty
19.	mqlubinək	they are deceiving you
20.	wəldatni	she gave birth to me
21.	banyaha	she built it (fem.)
22.	gənDuRa	a Moroccan gown
23.	yəDRəbna	he hits us
24.	məlmluna	they shook us
25.	limuna	an orange

- | | | |
|-----|--------------|---------------------------------------|
| 26. | banyahalih | she is building it (fem.) for him |
| 27. | dirihaliha | do it (fem.) for her |
| 28. | gəlbuhalikum | they reversed it (fem.) for you (pl.) |

Appendix D

Scores of Subjects in Test Items in Isolation

The charts below give the values for fundamental frequency (F0), intensity (IT) and duration (D) of the 28 test items in Appendix C as pronounced in isolation by four subjects. The first three subjects are males; the last is a female.

1. lawyin

F0	law	yin	IT	law	yin	D	law	yin
<i>S 1</i>	124	140	<i>S 1</i>	32	30	<i>S 1</i>	213	289
<i>S 2</i>	120	128	<i>S 2</i>	37	37	<i>S 2</i>	253	354
<i>S 3</i>	130	147	<i>S 3</i>	29	23	<i>S 3</i>	240	380
<i>S 4</i>	206	225	<i>S 4</i>	32	31	<i>S 4</i>	270	316

2. kalkum

F0	kal	kum	IT	kal	kum	D	kal	kum
<i>S 1</i>	128	93	<i>S 1</i>	37	26	<i>S 1</i>	304	187
<i>S 2</i>	141	121	<i>S 2</i>	33	27	<i>S 2</i>	213	236
<i>S 3</i>	167	117	<i>S 3</i>	28	24	<i>S 3</i>	262	255
<i>S 4</i>	240	242	<i>S 4</i>	31	29	<i>S 4</i>	289	278

3. məlyun

F0	məl	yun	IT	məl	yun	D	məl	yun
<i>S 1</i>	104	128	<i>S 1</i>	28	38	<i>S 1</i>	156	347
<i>S 2</i>	114	134	<i>S 2</i>	31	25	<i>S 2</i>	194	335
<i>S 3</i>	126	138	<i>S 3</i>	25	28	<i>S 3</i>	213	337
<i>S 4</i>	208	229	<i>S 4</i>	23	30	<i>S 4</i>	156	327

4. DRəbhum

F0	DRəb	hum	IT	DRəb	hum	D	DRəb	hum
<i>S 1</i>	142	108	<i>S 1</i>	35	30	<i>S 1</i>	261	195
<i>S 2</i>	147	117	<i>S 2</i>	31	25	<i>S 2</i>	240	255
<i>S 3</i>	166	124	<i>S 3</i>	30	22	<i>S 3</i>	274	147
<i>S 4</i>	261	202	<i>S 4</i>	30	27	<i>S 4</i>	251	209

5. walmək

F0	wal	mək	IT	wal	mək	D	wal	mək
<i>S 1</i>	139	112	<i>S 1</i>	36	18	<i>S 1</i>	261	234
<i>S 2</i>	142	105	<i>S 2</i>	30	18	<i>S 2</i>	262	274
<i>S 3</i>	155	130	<i>S 3</i>	27	19	<i>S 3</i>	228	175
<i>S 4</i>	244	178	<i>S 4</i>	29	24	<i>S 4</i>	262	289

6. babha

F0	bab	ha	IT	bab	ha	D	bab	ha
<i>S 1</i>	137	105	<i>S 1</i>	36	21	<i>S 1</i>	316	163
<i>S 2</i>	134	92	<i>S 2</i>	36	22	<i>S 2</i>	346	140
<i>S 3</i>	146	124	<i>S 3</i>	28	17	<i>S 3</i>	304	133
<i>S 4</i>	236	183	<i>S 4</i>	31	18	<i>S 4</i>	281	175

7. limun

F0	li	mun	IT	li	mun	D	li	mun
<i>S 1</i>	114	142	<i>S 1</i>	32	34	<i>S 1</i>	152	335
<i>S 2</i>	112	143	<i>S 2</i>	32	32	<i>S 2</i>	160	350
<i>S 3</i>	129	145	<i>S 3</i>	24	25	<i>S 3</i>	171	388
<i>S 4</i>	202	234	<i>S 4</i>	28	27	<i>S 4</i>	216	330

8. daruh

F0	da	ruh	IT	da	ruh	D	da	ruh
<i>S 1</i>	118	148	<i>S 1</i>	34	32	<i>S 1</i>	220	316
<i>S 2</i>	125	144	<i>S 2</i>	36	31	<i>S 2</i>	213	262
<i>S 3</i>	128	148	<i>S 3</i>	27	28	<i>S 3</i>	171	323
<i>S 4</i>	203	234	<i>S 4</i>	30	33	<i>S 4</i>	228	323

9. məlməl

F0	məl	məl	IT	məl	məl	D	məl	məl
<i>S 1</i>	139	104	<i>S 1</i>	34	32	<i>S 1</i>	179	243
<i>S 2</i>	156	96	<i>S 2</i>	33	29	<i>S 2</i>	194	217
<i>S 3</i>	152	117	<i>S 3</i>	28	22	<i>S 3</i>	232	207
<i>S 4</i>	286	190	<i>S 4</i>	33	35	<i>S 4</i>	228	278

10. wəldək

F0	wəl	dək	IT	wəl	dək	D	wəl	dək
<i>S 1</i>	147	116	<i>S 1</i>	36	34	<i>S 1</i>	209	228
<i>S 2</i>	156	115	<i>S 2</i>	34	28	<i>S 2</i>	240	236
<i>S 3</i>	166	127	<i>S 3</i>	26	23	<i>S 3</i>	252	162
<i>S 4</i>	256	202	<i>S 4</i>	30	32	<i>S 4</i>	259	240

11. mayəl

F0	ma	yəl	IT	ma	yəl	D	ma	yəl
<i>S 1</i>	137	106	<i>S 1</i>	35	22	<i>S 1</i>	240	201
<i>S 2</i>	142	93	<i>S 2</i>	35	23	<i>S 2</i>	327	186
<i>S 3</i>	144	115	<i>S 3</i>	26	23	<i>S 3</i>	203	227
<i>S 4</i>	212	192	<i>S 4</i>	27	29	<i>S 4</i>	194	144

12. Rəmlə

F0	Rəm	la	IT	Rəm	la	D	Rəm	la
<i>S 1</i>	144	113	<i>S 1</i>	34	32	<i>S 1</i>	232	198
<i>S 2</i>	144	85	<i>S 2</i>	33	28	<i>S 2</i>	190	144
<i>S 3</i>	174	123	<i>S 3</i>	27	21	<i>S 3</i>	196	154
<i>S 4</i>	265	179	<i>S 4</i>	27	21	<i>S 4</i>	220	144

13. walu

F0	wa	lu	IT	wa	lu	D	wa	lu
<i>S 1</i>	145	113	<i>S 1</i>	35	20	<i>S 1</i>	266	129
<i>S 2</i>	138	98	<i>S 2</i>	31	21	<i>S 2</i>	251	156
<i>S 3</i>	134	114	<i>S 3</i>	29	24	<i>S 3</i>	195	143
<i>S 4</i>	212	182	<i>S 4</i>	28	22	<i>S 4</i>	248	124

14. lina

F0	li	na	IT	li	na	D	li	na
<i>S 1</i>	142	106	<i>S 1</i>	35	26	<i>S 1</i>	209	190
<i>S 2</i>	147	112	<i>S 2</i>	34	27	<i>S 2</i>	228	160
<i>S 3</i>	159	115	<i>S 3</i>	26	19	<i>S 3</i>	186	158
<i>S 4</i>	267	170	<i>S 4</i>	34	29	<i>S 4</i>	217	152

15. lawyinhum

F0	law	yin	hum	IT	law	yin	hum	D	law	yin	hum
<i>S 1</i>	112	152	115	<i>S 1</i>	31	36	29	<i>S 1</i>	187	237	218
<i>S 2</i>	121	147	101	<i>S 2</i>	36	30	24	<i>S 2</i>	247	205	213
<i>S 3</i>	136	164	121	<i>S 3</i>	28	25	19	<i>S 3</i>	209	255	224
<i>S 4</i>	189	248	192	<i>S 4</i>	26	26	20	<i>S 4</i>	236	240	209

16. manDaRin

F0	man	Da	Rin	IT	man	Da	Rin	D	man	Da	Rin
<i>S 1</i>	109	119	147	<i>S 1</i>	28	34	33	<i>S 1</i>	175	191	288
<i>S 2</i>	114	118	140	<i>S 2</i>	34	32	21	<i>S 2</i>	241	144	245
<i>S 3</i>	129	129	131	<i>S 3</i>	23	28	26	<i>S 3</i>	158	165	297
<i>S 4</i>	212	204	214	<i>S 4</i>	28	30	30	<i>S 4</i>	217	148	274

17. mərmədnak

F0	mər	məd	nak	IT	mər	məd	nak	D	mər	məd	nak
<i>S 1</i>	116	122	148	<i>S 1</i>	31	31	34	<i>S 1</i>	109	171	409
<i>S 2</i>	111	113	130	<i>S 2</i>	31	29	31	<i>S 2</i>	175	132	386
<i>S 3</i>	139	134	155	<i>S 3</i>	26	26	26	<i>S 3</i>	162	190	256
<i>S 4</i>	204	203	211	<i>S 4</i>	25	27	28	<i>S 4</i>	163	213	323

18. ŋəRganin

F0	ŋəR	ga	nin	IT	ŋəR	ga	nin	D	ŋəR	ga	nin
<i>S 1</i>	111	121	140	<i>S 1</i>	29	34	30	<i>S 1</i>	171	249	288
<i>S 2</i>	112	124	133	<i>S 2</i>	29	34	25	<i>S 2</i>	209	179	259
<i>S 3</i>	135	146	149	<i>S 3</i>	24	25	24	<i>S 3</i>	217	171	300
<i>S 4</i>	209	195	275	<i>S 4</i>	28	31	26	<i>S 4</i>	186	186	300

19. mqlbinək

F0	mqlul	bi	nək	IT	mqlul	bi	nək	D	mqlul	bi	nək
S 1	123	147	107	S 1	35	32	24	S 1	253	218	253
S 2	119	138	102	S 2	36	26	22	S 2	354	140	226
S 3	142	174	161	S 3	29	25	21	S 3	396	179	160
S 4	222	227	196	S 4	31	28	23	S 4	373	190	236

20. wəldatni

F0	wəl	dat	ni	IT	wəl	dat	ni	D	wəl	dat	ni
S 1	118	149	109	S 1	30	36	21	S 1	202	276	159
S 2	111	133	105	S 2	33	34	19	S 2	190	259	190
S 3	139	153	121	S 3	25	28	22	S 3	234	285	127
S 4	214	250	201	S 4	28	35	25	S 4	190	285	167

21. banyaha

F0	ban	ya	ha	IT	ban	ya	ha	D	ban	ya	ha
S 1	116	145	113	S 1	32	33	23	S 1	226	245	159
S 2	114	133	96	S 2	35	27	19	S 2	210	237	163
S 3	135	154	138	S 3	28	27	19	S 3	233	175	167
S 4	206	231	215	S 4	27	26	17	S 4	255	194	133

22. gənDuRa

F0	gən	Du	Ra	IT	gən	Du	Ra	D	gən	Du	Ra
S 1	116	145	117	S 1	30	35	26	S 1	186	236	144
S 2	118	139	134	S 2	35	29	27	S 2	266	217	127
S 3	139	152	148	S 3	24	31	25	S 3	228	194	110
S 4	211	222	190	S 4	28	29	21	S 4	266	217	127

23. yəDRəbna

F0	yəD	Rəb	na	IT	yəD	Rəb	na	D	yəD	Rəb	na
S 1	119	148	122	S 1	28	35	27	S 1	182	228	186
S 2	117	144	98	S 2	30	32	25	S 2	191	152	163
S 3	132	164	111	S 3	22	26	20	S 3	191	196	122
S 4	213	238	194	S 4	22	25	19	S 4	190	137	133

24. məlmluna

F0	məl	mlu	na	IT	məl	mlu	na	D	məl	mlu	na
S 1	120	154	109	S 1	30	35	27	S 1	175	315	152
S 2	115	146	98	S 2	32	30	21	S 2	202	269	136
S 3	139	159	130	S 3	23	25	18	S 3	152	278	137
S 4	211	239	188	S 4	26	30	23	S 4	144	251	114

25. limuna

F0	li	mu	na	IT	li	mu	na	D	li	mu	na
S 1	123	165	112	S 1	23	35	26	S 1	156	228	194
S 2	117	140	93	S 2	33	33	24	S 2	183	167	152
S 3	141	158	127	S 3	23	26	23	S 3	171	214	122
S 4	210	224	176	S 4	28	26	21	S 4	152	179	110

26. banyahalih

a. Fundamental Frequency

F0	ban	ya	ha	lih
S 1	118	142	129	148
S 2	123	124	122	144
S 3	138	146	141	150
S 4	209	237	195	202

b. Intensity

IT	ban	ya	ha	lih
S 1	30	33	30	29
S 2	34	25	25	25
S 3	28	24	22	21
S 4	25	28	23	25

c. Duration

D	ban	ya	ha	lih
S 1	167	175	167	296
S 2	288	124	144	296
S 3	285	137	171	323
S 4	237	171	163	276

27. dirihaliha

a. Fundamental Frequency

F0	di	ri	ha	li	ha
S 1	137	134	132	148	113
S 2	133	135	133	148	120
S 3	140	141	140	161	139
S 4	223	236	223	229	184

b. Intensity

IT	di	ri	ha	li	ha
S 1	33	34	32	31	23
S 2	38	36	34	29	25
S 3	26	22	22	25	18
S 4	34	37	30	34	20

c. Duration

D	di	ri	ha	li	ha
S 1	163	113	159	218	171
S 2	230	120	120	136	171
S 3	243	118	140	182	133
S 4	144	125	148	156	167

28. gølbuhalikum

a. Fundamental Frequency

F0	gøl	bu	ha	li	kum
S 1	119	131	125	131	90
S 2	125	132	131	139	96
S 3	142	160	157	158	65
S 4	205	204	190	213	199

b. Intensity

IT	gøl	bu	ha	li	kum
S 1	29	35	30	27	20
S 2	31	34	26	23	21
S 3	26	25	24	25	21
S 4	28	28	26	23	16

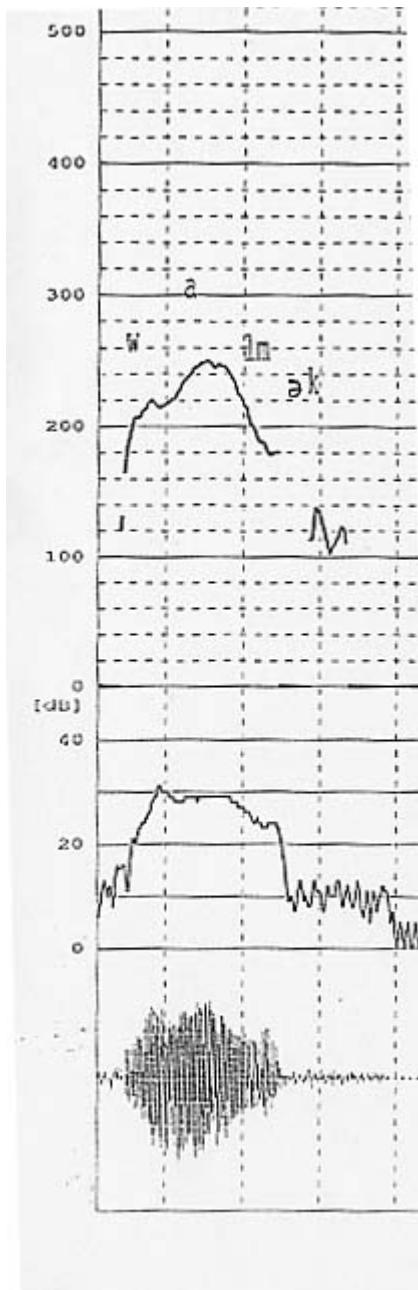
c. Duration

D	gəl	bu	ha	li	kum
<i>S 1</i>	167	144	167	163	167
<i>S 2</i>	144	132	132	159	210
<i>S 3</i>	125	148	133	144	217
<i>S 4</i>	167	156	140	175	190

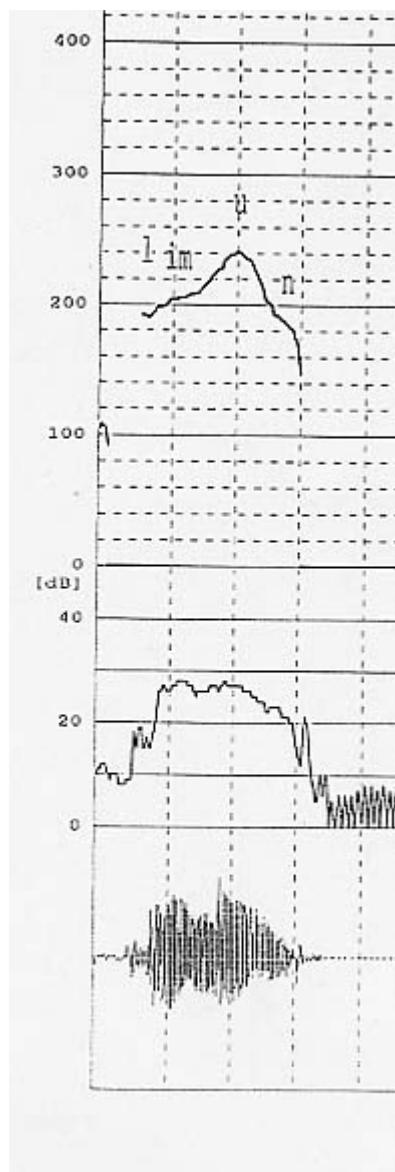
Appendix E

Pitch Tracks of Selected Test Items in Isolation

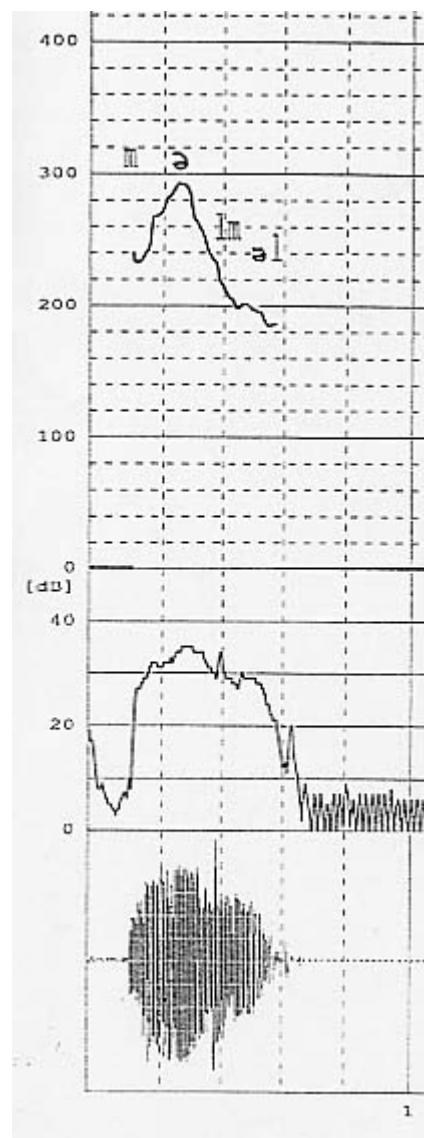
5. [walmək] “it (masc.) suits you”



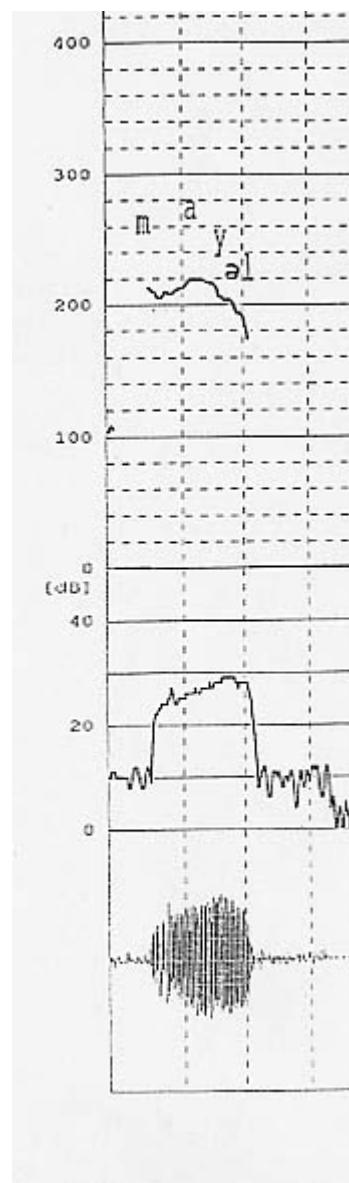
7. [limun] “Oranges”



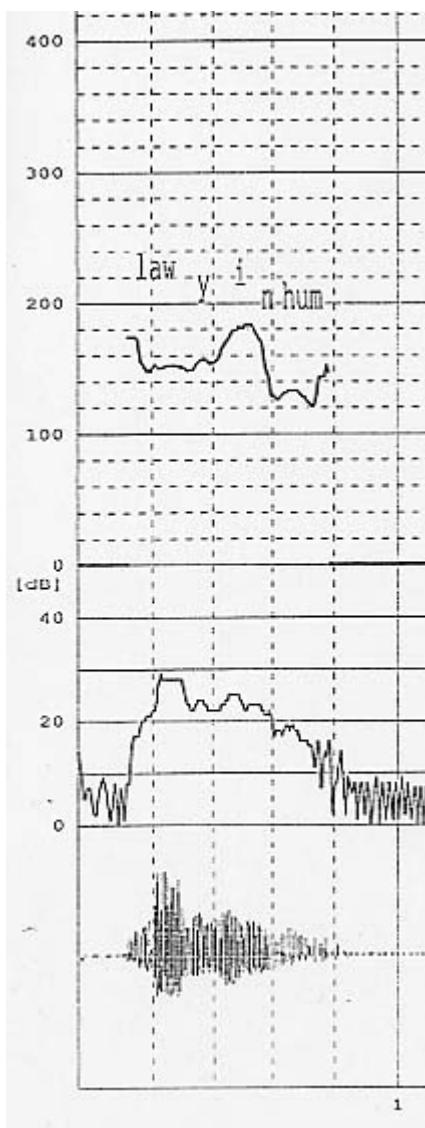
9. [məlməl] “He shook (sth.)



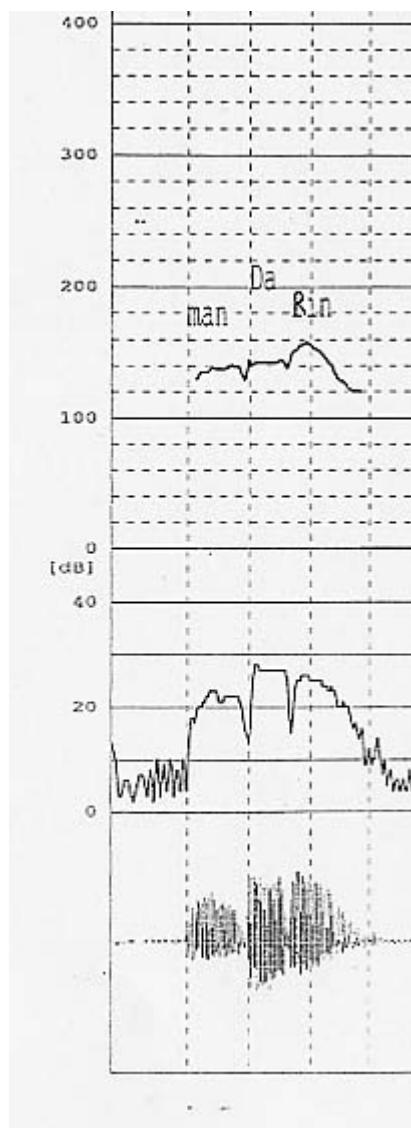
11. [mayəl] “Bent (masc.)



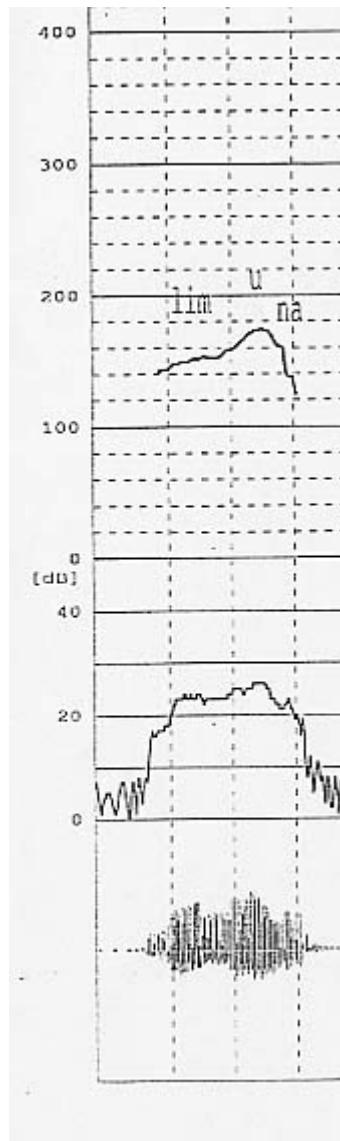
15. [lawyinhum] “They are twisting them”



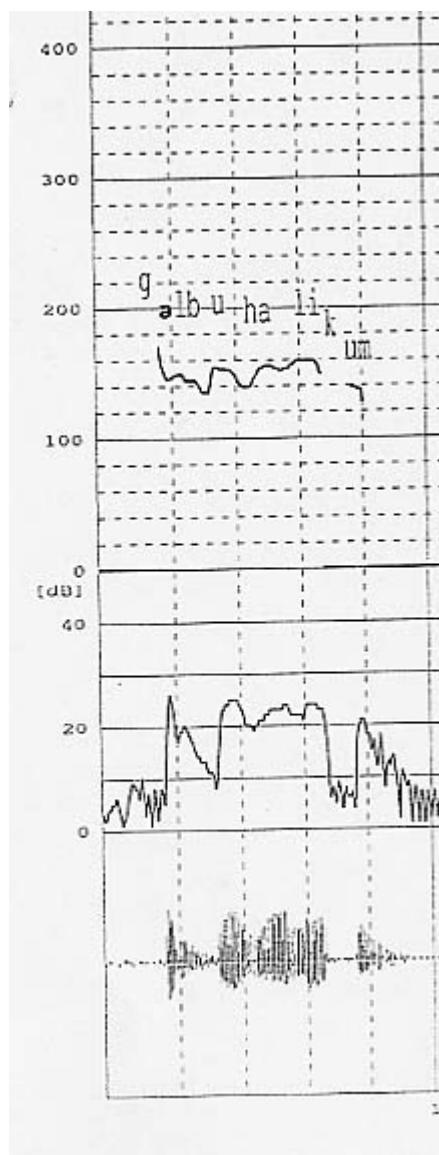
16. [manDaRin] "Clementine"



25. [limuna] “An orange”



39. [gəlbuhalikum] “They reversed it (fem.) for you (pl.)”



Appendix F

Scores of Subjects in Test Items in Context

The charts below give the values for F0, I and duration D of the 28 items in Appendix C as pronounced by 5 subjects in the middle of the sentence: [gal [target word] 3u3 məRRat] “he said twice.” The first three subjects are males; the lat two are females.

1. lawyin

F0	law	yin	IT	law	yin	D	law	yin
<i>S 1</i>	120	164	<i>S 1</i>	28	24	<i>S 1</i>	247	283
<i>S 2</i>	131	176	<i>S 2</i>	35	27	<i>S 2</i>	317	347
<i>S 3</i>	122	170	<i>S 3</i>	30	28	<i>S 3</i>	225	312
<i>S 4</i>	201	268	<i>S 4</i>	27	25	<i>S 4</i>	256	320
<i>S 5</i>	204	260	<i>S 5</i>	36	32	<i>S 5</i>	286	340

2. kalkum

F0	kal	kum	IT	kal	kum	D	kal	kum
<i>S 1</i>	119	140	<i>S 1</i>	31	26	<i>S 1</i>	244	255
<i>S 2</i>	131	165	<i>S 2</i>	31	28	<i>S 2</i>	263	259
<i>S 3</i>	124	136	<i>S 3</i>	29	27	<i>S 3</i>	250	246
<i>S 4</i>	208	262	<i>S 4</i>	34	29	<i>S 4</i>	237	312
<i>S 5</i>	207	270	<i>S 5</i>	34	31	<i>S 5</i>	258	261

3. məlyun

F0	məl	yun	IT	məl	yun	D	məl	yun
<i>S 1</i>	117	155	<i>S 1</i>	25	25	<i>S 1</i>	177	375
<i>S 2</i>	126	165	<i>S 2</i>	26	26	<i>S 2</i>	190	333
<i>S 3</i>	122	159	<i>S 3</i>	27	25	<i>S 3</i>	189	313
<i>S 4</i>	202	270	<i>S 4</i>	31	31	<i>S 4</i>	196	367
<i>S 5</i>	200	264	<i>S 5</i>	25	34	<i>S 5</i>	196	349

4. DRəbhum

F0	DRəb	hum	IT	DRəb	hum	D	DRəb	hum
<i>S 1</i>	131	162	<i>S 1</i>	28	27	<i>S 1</i>	180	299
<i>S 2</i>	138	157	<i>S 2</i>	32	28	<i>S 2</i>	243	339
<i>S 3</i>	132	159	<i>S 3</i>	30	29	<i>S 3</i>	213	320
<i>S 4</i>	220	257	<i>S 4</i>	31	30	<i>S 4</i>	292	205
<i>S 5</i>	193	231	<i>S 5</i>	33	34	<i>S 5</i>	225	334

5. walmək

F0	wal	mək	IT	wal	mək	D	wal	mək
<i>S 1</i>	127	170	<i>S 1</i>	29	23	<i>S 1</i>	258	233
<i>S 2</i>	139	179	<i>S 2</i>	32	25	<i>S 2</i>	336	250
<i>S 3</i>	132	178	<i>S 3</i>	30	24	<i>S 3</i>	279	240
<i>S 4</i>	207	264	<i>S 4</i>	38	33	<i>S 4</i>	285	269
<i>S 5</i>	205	233	<i>S 5</i>	35	31	<i>S 5</i>	293	270

6. babha

F0	bab	ha	IT	bab	ha	D	bab	ha
<i>S 1</i>	118	161	<i>S 1</i>	30	30	<i>S 1</i>	249	193
<i>S 2</i>	139	165	<i>S 2</i>	32	30	<i>S 2</i>	366	230
<i>S 3</i>	129	164	<i>S 3</i>	31	30	<i>S 3</i>	302	280
<i>S 4</i>	208	256	<i>S 4</i>	37	34	<i>S 4</i>	234	209
<i>S 5</i>	204	226	<i>S 5</i>	35	33	<i>S 5</i>	322	249

7. limun

F0	li	mun	IT	li	mun	D	li	mun
<i>S 1</i>	128	154	<i>S 1</i>	22	26	<i>S 1</i>	187	322
<i>S 2</i>	137	173	<i>S 2</i>	25	29	<i>S 2</i>	226	315
<i>S 3</i>	131	164	<i>S 3</i>	24	27	<i>S 3</i>	210	318
<i>S 4</i>	216	262	<i>S 4</i>	31	33	<i>S 4</i>	176	321
<i>S 5</i>	198	242	<i>S 5</i>	23	34	<i>S 5</i>	256	319

8. daruh

F0	da	ruh	IT	da	ruh	D	da	ruh
<i>S 1</i>	127	177	<i>S 1</i>	30	26	<i>S 1</i>	169	320
<i>S 2</i>	132	177	<i>S 2</i>	32	26	<i>S 2</i>	222	319
<i>S 3</i>	130	170	<i>S 3</i>	31	28	<i>S 3</i>	212	309
<i>S 4</i>	202	254	<i>S 4</i>	35	32	<i>S 4</i>	184	225
<i>S 5</i>	204	229	<i>S 5</i>	34	31	<i>S 5</i>	243	351

9. məlməl

F0	məl	məl	IT	məl	məl	D	məl	məl
<i>S 1</i>	147	141	<i>S 1</i>	25	26	<i>S 1</i>	185	247
<i>S 2</i>	133	145	<i>S 2</i>	28	26	<i>S 2</i>	253	253
<i>S 3</i>	129	153	<i>S 3</i>	27	26	<i>S 3</i>	198	250
<i>S 4</i>	211	261	<i>S 4</i>	30	33	<i>S 4</i>	177	201
<i>S 5</i>	198	235	<i>S 5</i>	29	31	<i>S 5</i>	213	260

10. wəldək

F0	wəl	dək	IT	wəl	dək	D	wəl	dək
<i>S 1</i>	142	183	<i>S 1</i>	26	29	<i>S 1</i>	211	237
<i>S 2</i>	141	159	<i>S 2</i>	29	31	<i>S 2</i>	291	217
<i>S 3</i>	138	170	<i>S 3</i>	28	30	<i>S 3</i>	241	218
<i>S 4</i>	225	284	<i>S 4</i>	33	30	<i>S 4</i>	233	258
<i>S 5</i>	197	226	<i>S 5</i>	27	33	<i>S 5</i>	228	264

11. mayəl

F0	ma	yəl	IT	ma	yəl	D	ma	yəl
<i>S 1</i>	120	154	<i>S 1</i>	27	23	<i>S 1</i>	192	199
<i>S 2</i>	134	156	<i>S 2</i>	28	24	<i>S 2</i>	272	211
<i>S 3</i>	128	152	<i>S 3</i>	28	25	<i>S 3</i>	230	206
<i>S 4</i>	203	268	<i>S 4</i>	35	32	<i>S 4</i>	163	247
<i>S 5</i>	211	227	<i>S 5</i>	32	31	<i>S 5</i>	234	280

12. Rømla

F0	Røm	la	IT	Røm	la	D	Røm	la
<i>S 1</i>	129	140	<i>S 1</i>	25	30	<i>S 1</i>	183	214
<i>S 2</i>	130	170	<i>S 2</i>	24	31	<i>S 2</i>	260	245
<i>S 3</i>	129	157	<i>S 3</i>	24	30	<i>S 3</i>	232	230
<i>S 4</i>	204	274	<i>S 4</i>	32	32	<i>S 4</i>	217	250
<i>S 5</i>	206	233	<i>S 5</i>	33	33	<i>S 5</i>	264	202

13. walu

F0	wa	lu	IT	wa	lu	D	wa	lu
<i>S 1</i>	130	186	<i>S 1</i>	30	20	<i>S 1</i>	258	191
<i>S 2</i>	137	178	<i>S 2</i>	31	21	<i>S 2</i>	299	234
<i>S 3</i>	134	184	<i>S 3</i>	30	22	<i>S 3</i>	278	212
<i>S 4</i>	197	274	<i>S 4</i>	36	35	<i>S 4</i>	220	208
<i>S 5</i>	206	240	<i>S 5</i>	33	31	<i>S 5</i>	257	225

14. lina

F0	li	na	IT	li	na	D	li	na
<i>S 1</i>	126	174	<i>S 1</i>	22	29	<i>S 1</i>	207	211
<i>S 2</i>	135	164	<i>S 2</i>	25	28	<i>S 2</i>	253	236
<i>S 3</i>	132	172	<i>S 3</i>	24	28	<i>S 3</i>	230	245
<i>S 4</i>	219	276	<i>S 4</i>	27	32	<i>S 4</i>	208	267
<i>S 5</i>	209	233	<i>S 5</i>	30	33	<i>S 5</i>	243	219

15. lawyinhum

F0	law	yin	hum	IT	law	yin	hum	D	law	yin	hum
<i>S 1</i>	125	138	180	<i>S 1</i>	27	20	25	<i>S 1</i>	245	175	234
<i>S 2</i>	137	136	165	<i>S 2</i>	31	24	28	<i>S 2</i>	246	221	268
<i>S 3</i>	133	135	170	<i>S 3</i>	29	23	27	<i>S 3</i>	239	202	250
<i>S 4</i>	205	217	306	<i>S 4</i>	36	32	34	<i>S 4</i>	239	225	272
<i>S 5</i>	206	207	242	<i>S 5</i>	34	25	31	<i>S 5</i>	230	167	254

16. manDaRin

F0	man	Da	Rin	IT	man	Da	Rin	D	man	Da	Rin
<i>S 1</i>	127	129	170	<i>S 1</i>	26	30	22	<i>S 1</i>	215	155	236
<i>S 2</i>	144	140	163	<i>S 2</i>	26	31	19	<i>S 2</i>	244	191	242
<i>S 3</i>	132	136	169	<i>S 3</i>	26	32	20	<i>S 3</i>	230	180	241
<i>S 4</i>	213	198	269	<i>S 4</i>	33	32	31	<i>S 4</i>	230	165	253
<i>S 5</i>	210	212	238	<i>S 5</i>	30	35	29	<i>S 5</i>	215	183	240

17. mərmədnak

F0	mər	məd	nak	IT	mər	məd	nak	D	mər	məd	nak
<i>S 1</i>	127	125	177	<i>S 1</i>	22	20	27	<i>S 1</i>	149	177	344
<i>S 2</i>	145	137	168	<i>S 2</i>	23	22	27	<i>S 2</i>	175	189	315
<i>S 3</i>	136	130	165	<i>S 3</i>	24	23	25	<i>S 3</i>	180	198	323
<i>S 4</i>	209	207	268	<i>S 4</i>	34	30	34	<i>S 4</i>	197	184	256
<i>S 5</i>	210	211	233	<i>S 5</i>	31	29	34	<i>S 5</i>	150	224	285

18. ŋəRganin

F0	ŋəR	ga	nin	IT	ŋəR	ga	nin	D	ŋəR	ga	nin
<i>S 1</i>	121	124	172	<i>S 1</i>	24	24	22	<i>S 1</i>	162	214	219
<i>S 2</i>	134	137	173	<i>S 2</i>	28	30	22	<i>S 2</i>	244	232	269
<i>S 3</i>	125	131	165	<i>S 3</i>	26	28	23	<i>S 3</i>	187	223	255
<i>S 4</i>	215	209	290	<i>S 4</i>	33	34	30	<i>S 4</i>	151	193	265
<i>S 5</i>	182	211	238	<i>S 5</i>	31	34	25	<i>S 5</i>	168	205	245

19. mqulbinək

F0	mqul	bi	nək	IT	mqul	bi	nək	D	mqul	bi	nək
<i>S 1</i>	149	143	193	<i>S 1</i>	27	25	23	<i>S 1</i>	343	175	215
<i>S 2</i>	153	136	161	<i>S 2</i>	31	27	24	<i>S 2</i>	389	197	212
<i>S 3</i>	151	140	178	<i>S 3</i>	29	25	26	<i>S 3</i>	360	187	215
<i>S 4</i>	227	217	264	<i>S 4</i>	32	31	30	<i>S 4</i>	348	176	158
<i>S 5</i>	222	215	235	<i>S 5</i>	34	25	30	<i>S 5</i>	343	167	218

20. wəldatni

F0	wəl	dat	ni	IT	wəl	dat	ni	D	wəl	dat	ni
<i>S 1</i>	125	132	187	<i>S 1</i>	20	30	21	<i>S 1</i>	175	282	242
<i>S 2</i>	140	139	173	<i>S 2</i>	23	32	23	<i>S 2</i>	191	260	221
<i>S 3</i>	128	140	182	<i>S 3</i>	22	33	24	<i>S 3</i>	182	278	232
<i>S 4</i>	213	213	275	<i>S 4</i>	31	36	30	<i>S 4</i>	208	255	286
<i>S 5</i>	200	212	247	<i>S 5</i>	23	35	24	<i>S 5</i>	160	245	203

21. banyaha

F0	ban	ya	ha	IT	ban	ya	ha	D	ban	ya	ha
<i>S 1</i>	124	127	177	<i>S 1</i>	26	26	26	<i>S 1</i>	263	203	227
<i>S 2</i>	136	128	172	<i>S 2</i>	32	24	27	<i>S 2</i>	230	200	281
<i>S 3</i>	129	125	174	<i>S 3</i>	28	25	28	<i>S 3</i>	254	202	233
<i>S 4</i>	210	205	249	<i>S 4</i>	33	34	30	<i>S 4</i>	216	200	281
<i>S 5</i>	212	208	246	<i>S 5</i>	33	34	29	<i>S 5</i>	228	215	219

22. gənDuRa

F0	gən	Du	Ra	IT	gən	Du	Ra	D	gən	Du	Ra
<i>S 1</i>	127	127	164	<i>S 1</i>	30	24	28	<i>S 1</i>	218	160	190
<i>S 2</i>	139	134	170	<i>S 2</i>	28	31	27	<i>S 2</i>	275	204	208
<i>S 3</i>	129	132	166	<i>S 3</i>	28	26	25	<i>S 3</i>	222	180	198
<i>S 4</i>	239	211	276	<i>S 4</i>	31	29	29	<i>S 4</i>	243	204	208
<i>S 5</i>	211	121	233	<i>S 5</i>	33	33	31	<i>S 5</i>	210	159	159

23. yəDRəbna

F0	yəD	Rəb	na	IT	yəD	Rəb	na	D	yəD	Rəb	na
<i>S 1</i>	194	125	168	<i>S 1</i>	15	27	27	<i>S 1</i>	196	154	179
<i>S 2</i>	145	135	155	<i>S 2</i>	21	31	26	<i>S 2</i>	209	269	211
<i>S 3</i>	165	126	164	<i>S 3</i>	19	25	26	<i>S 3</i>	198	174	203
<i>S 4</i>	227	204	279	<i>S 4</i>	23	26	30	<i>S 4</i>	152	163	241
<i>S 5</i>	197	214	247	<i>S 5</i>	26	34	32	<i>S 5</i>	155	199	179

24. məlmluna

F0	məl	mlu	na	IT	məl	mlu	na	D	məl	mlu	na
<i>S 1</i>	127	136	171	<i>S 1</i>	19	22	27	<i>S 1</i>	223	219	161
<i>S 2</i>	144	140	174	<i>S 2</i>	25	26	26	<i>S 2</i>	292	228	230
<i>S 3</i>	129	138	179	<i>S 3</i>	23	25	28	<i>S 3</i>	285	234	196
<i>S 4</i>	220	201	291	<i>S 4</i>	24	22	26	<i>S 4</i>	150	252	208
<i>S 5</i>	208	215	235	<i>S 5</i>	26	30	32	<i>S 5</i>	185	261	174

25. limuna

F0	li	mu	na	IT	li	mu	na	D	li	mu	na
<i>S 1</i>	126	130	168	<i>S 1</i>	20	24	29	<i>S 1</i>	134	190	200
<i>S 2</i>	144	140	171	<i>S 2</i>	25	28	28	<i>S 2</i>	186	249	214
<i>S 3</i>	134	139	161	<i>S 3</i>	23	26	29	<i>S 3</i>	141	220	211
<i>S 4</i>	210	203	288	<i>S 4</i>	27	24	29	<i>S 4</i>	149	158	206
<i>S 5</i>	210	214	225	<i>S 5</i>	25	32	33	<i>S 5</i>	174	189	186

26. banyahalih

a. Fundamental Frequency

F0	ban	ya	ha	lih
<i>S 1</i>	122	124	124	179
<i>S 2</i>	141	135	135	174
<i>S 3</i>	123	125	127	169
<i>S 4</i>	217	207	197	288
<i>S 5</i>	204	206	215	245

b. Intensity

IT	ban	ya	ha	lih
<i>S 1</i>	26	23	27	23
<i>S 2</i>	30	28	27	25
<i>S 3</i>	27	25	27	24
<i>S 4</i>	28	27	28	23
<i>S 5</i>	32	34	30	31

c. Duration

D	ban	ya	ha	lih
<i>S 1</i>	195	134	152	256
<i>S 2</i>	242	174	196	311
<i>S 3</i>	224	179	198	279
<i>S 4</i>	206	159	191	253
<i>S 5</i>	200	184	162	201

27. dirihaliha

a. Fundamental Frequency

F0	di	ri	ha	li	ha
<i>S 1</i>	129	128	128	127	163
<i>S 2</i>	147	146	139	128	168
<i>S 3</i>	131	126	126	129	161
<i>S 4</i>	234	225	204	200	352!!
<i>S 5</i>	207	204	209	207	249

b. Intensity

IT	di	ri	ha	li	ha
<i>S 1</i>	22	25	27	22	28
<i>S 2</i>	28	29	29	26	26
<i>S 3</i>	26	27	29	24	29
<i>S 4</i>	30	29	26	26	27
<i>S 5</i>	28	29	33	34	31

c. Duration

D	di	ri	ha	li	ha
<i>S 1</i>	146	115	124	152	203
<i>S 2</i>	170	127	204	170	251
<i>S 3</i>	187	134	142	165	209
<i>S 4</i>	144	163	163	167	265
<i>S 5</i>	115	146	163	114	193

28. gølbuhalikum

a. Fundamental Frequency

F0	gøl	bu	ha	li	kum
S 1	126	129	127	129	161
S 2	139	148	144	137	159
S 3	137	141	138	134	164
S 4	233	216	210	202	265
S 5	203	211	211	203	242

b. Intensity

IT	gøl	bu	ha	li	kum
S 1	24	27	29	18	27
S 2	24	30	31	21	24
S 3	24	28	30	21	27
S 4	30	31	31	27	30
S 5	32	31	31	31	31

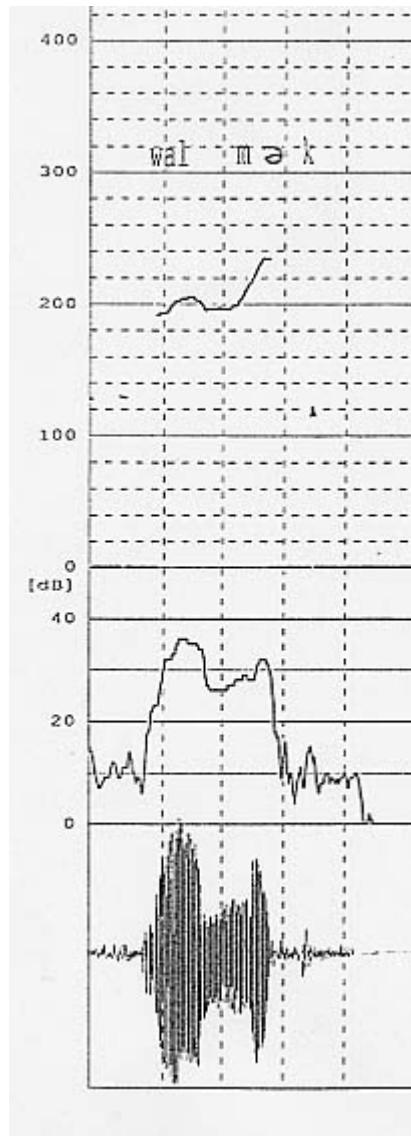
c. Duration

D	gøl	bu	ha	li	kum
S 1	200	136	156	131	247
S 2	150	150	196	196	233
S 3	198	145	179	144	239
S 4	149	154	160	143	259
S 5	195	107	128	157	225

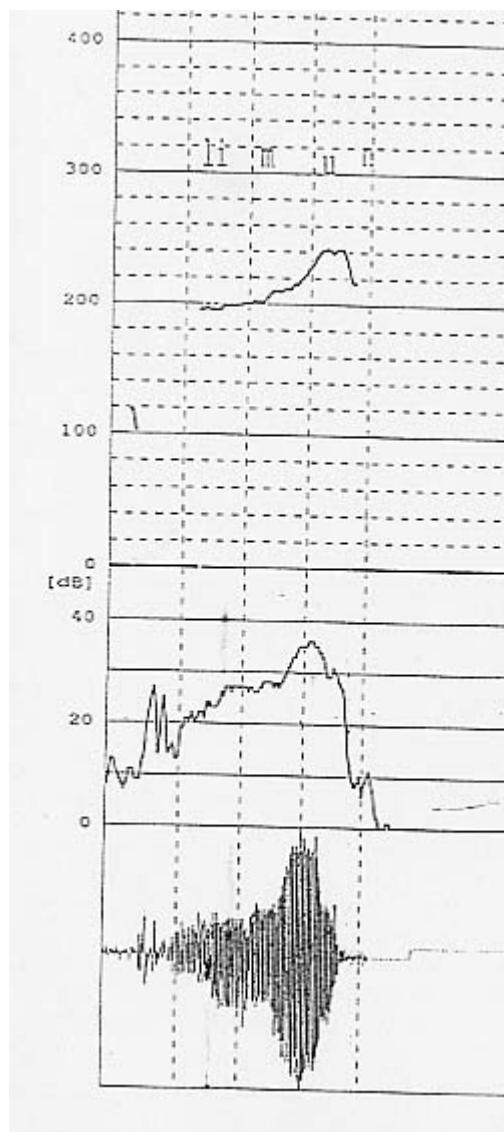
Appendix G

Pitch Tracks of Selected Test Items in Context

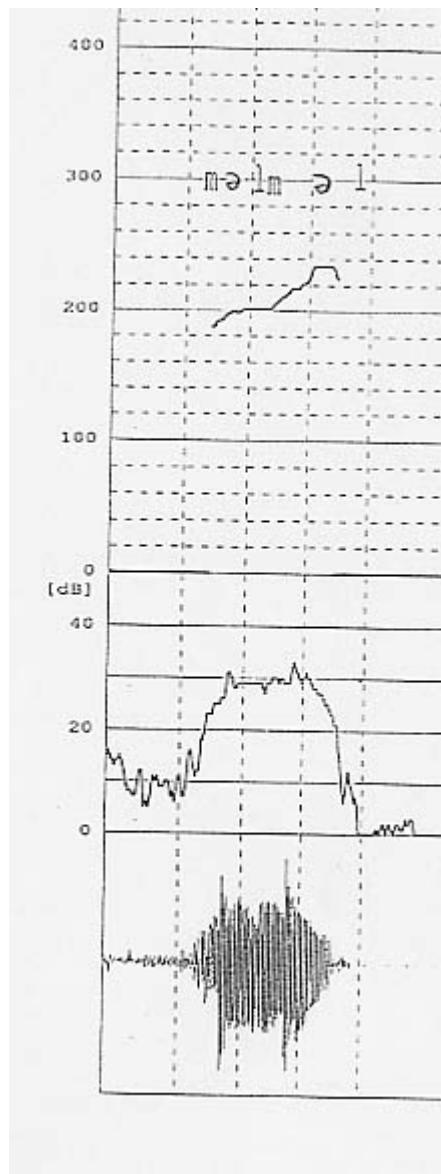
5. [walmək] “it (masc.) suits you”



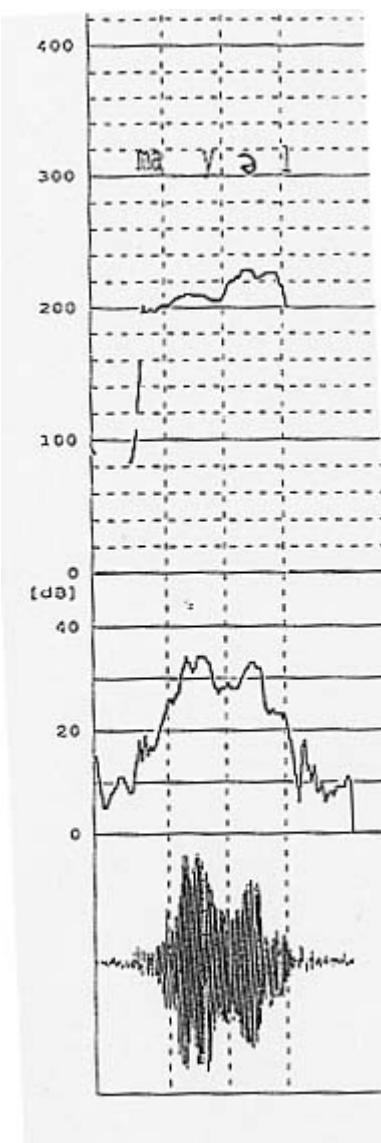
7. [limun] “Oranges”



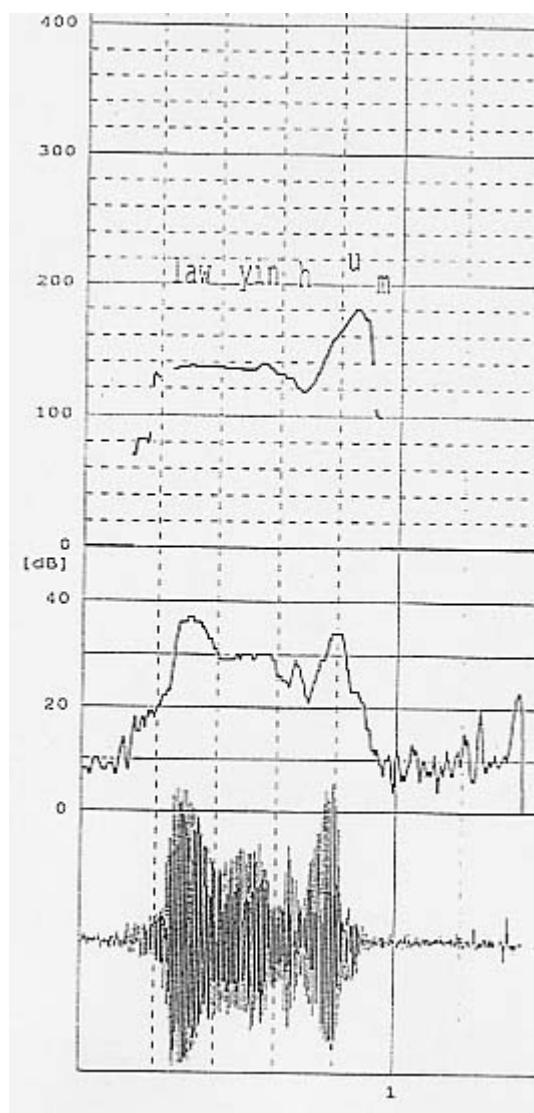
9. [məlməl] “He shook (sth.)



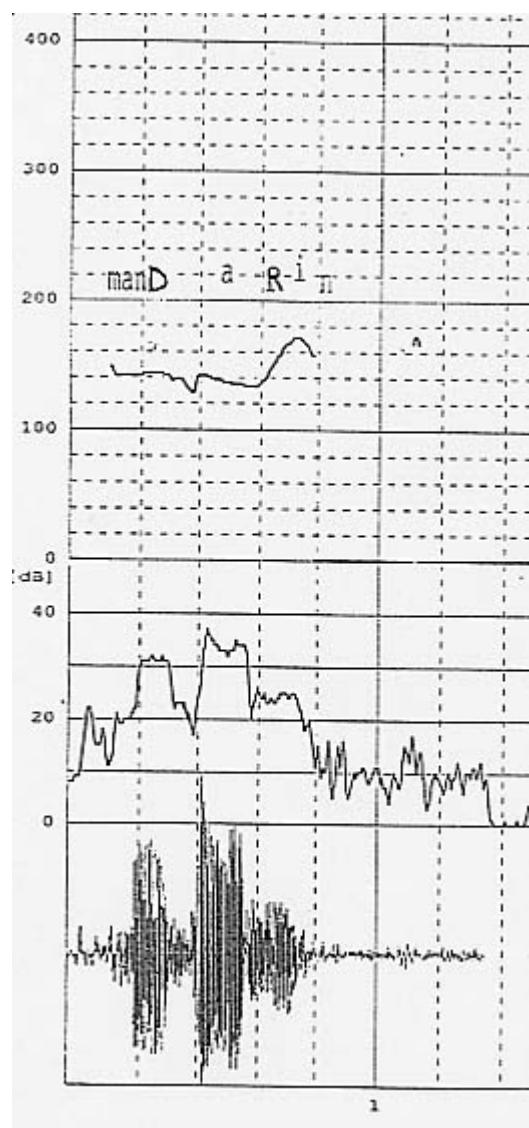
11. [mayəl] “Bent (masc.)



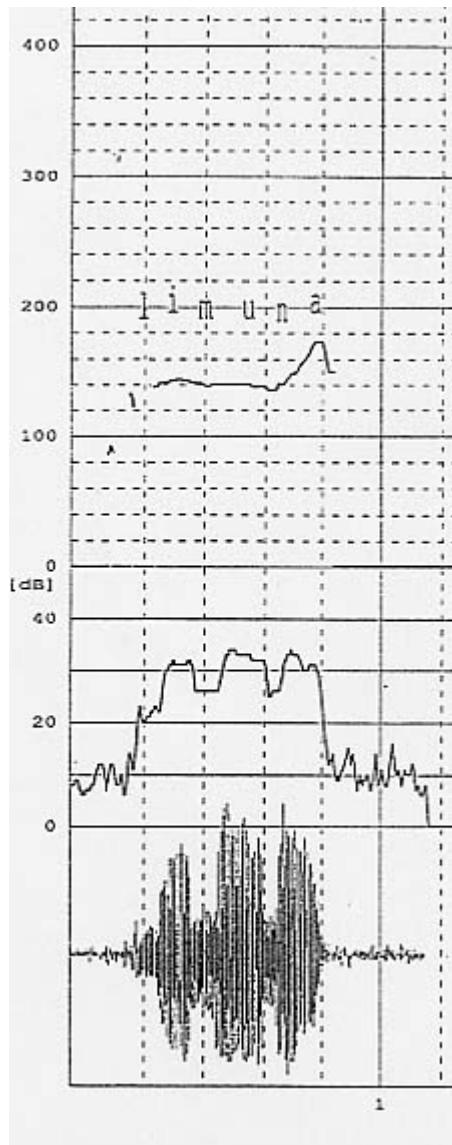
15. [lawyinhum] “They are twisting them”



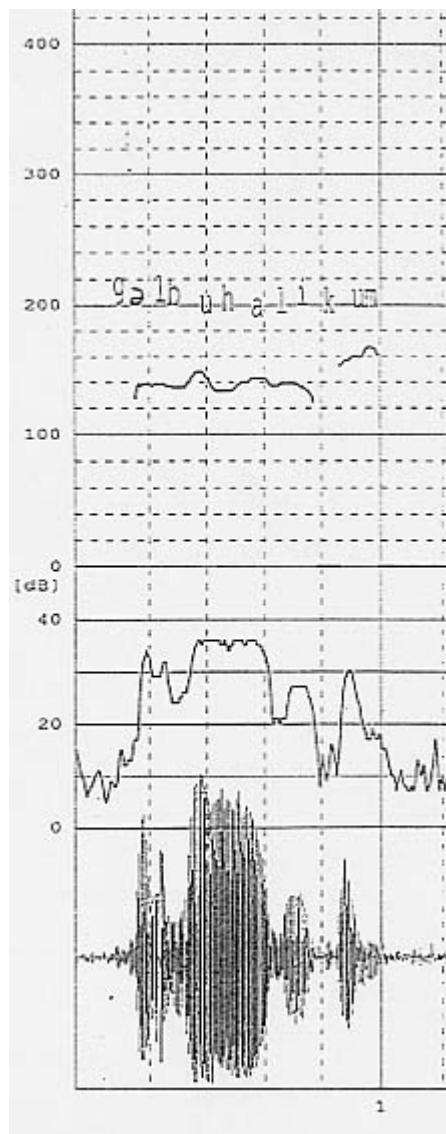
16. [manDaRin] "Clementine"



25. [limuna] “An orange”



39. [gəlbuhalikum] “They reversed it (fem.) for you (pl.)”



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