

The Realization of Accentual Focus in Moroccan Learners of English

Mohamed Yeou

Chouaib Doukkali University, Morocco
m_yeou@yahoo.com

Abstract

The present study compared the acoustic characteristics of accentual focus produced by Moroccan learners of English with that produced by native American speakers. Ten advanced Moroccan learners of English produced a sentence in three focus contexts. The Moroccan speakers were found to produce focused words with higher F0, longer duration and lower intensity.

1. Introduction

The importance of suprasegmentals has begun to emerge in the fields of English as a second language and English as a foreign language (ESL/EFL), as approaches to language teaching have moved toward communicative methods (for a comprehensive literature review, see [5]). This tendency in teaching is corroborated by recent research in second language acquisition (SLA) focusing on the acquisition of prosody.

For example work done by [12, 13] investigated how non-natives speakers of English use intonation to signal meaning in their discourse. The non-natives (Spanish, Japanese and Thai) were not found to use intonation consistently as did the native speakers. Another study [4] compared the acoustic characteristics of English accentual focus produced by Mandarin speakers to those of American English speakers. Mandarin speakers were found to produce accented words with a significantly higher F0 and shorter duration compared to American speakers. Other intonational patterns of second language (L2) speech have been reported by, among others, [8, 9, 10, 11].

A common characteristic of all the above studies is their theoretical concern with L2 speech. The studies have paid very little attention to the intonational characteristics of foreign language (FL) speech.

The present paper reports preliminary results from an ongoing project on the experimental investigation of the prosody of English as a FL produced by Moroccan university students. The paper examines objective measures of articulatory production focusing on the acoustic characteristics of the learners' speech production rather than presenting accent-ratings. The aim of this paper is to investigate the production of accentual focus by Moroccan learners of English in comparison with native speakers of English.

In English focus or emphasis can be applied to words or parts of words in order to signal newness or contrast. The following sentences exemplify contrastive focus on the words in capital and italics:

- *HE* bought books. (It was him not someone else)
- He *BOUGHT* books. (not borrowed)
- He bought *BOOKS*. (not magazines....)

Accentual focus is signalled by the following acoustic attributes: higher F0, larger pitch rise, greater duration and intensity [1, 6, 7].

2. Method

2.1. Subjects

The set of speakers included a control group and an experimental group. The control group consisted of native speakers of American English while the experimental group consisted of advanced Moroccan learners of English. As far as the native American speakers were concerned no new audio recordings were made, but the findings reported in [4] were reused. The American speakers were 40 adults (20 females and 20 males, with average ages of 27 years and 33 years, respectively). The ten Moroccan learners of English (5 females and 5 males, with average ages of 24 years and 26 years, respectively) who had to read the same speech materials were selected on the basis of their performance in realizing the correct location of sentence stress. Many subjects were discarded because they gave relatively equal prominence to each word in the sentence. All the Moroccan learners of English were 4th year university students at the Department of English, Chouaib Doukkali University (El-Jadida). All of them have taken courses of Spoken English.

2.2. Speech materials

The speech material used in the experiment consisted of the same sentence used by [4] (cf. [6]) to study focus production: "I bought a cat there." The sentence was produced in three focus contexts. The three sentences with varying focus placement (in capitals and italics) are shown below:

- *I* bought a cat there.
- I *BOUGHT* a cat there.
- I bought a *CAT* there.

Each of the three sentences was repeated three times by the ten subjects who were allowed to practice the sentences prior to the recording. Repetitions were permitted in the event of reading errors, disfluencies or subject-initiated "corrections"; for such items the final production was considered for further analysis. Speech samples were recorded by a condenser microphone connected to a PC. The signal was digitised at 11025 Hz in real time using the Sound Forge program (Sonic Foundary, Inc.) and stored on the computer's hard disk.

2.3. Analysis procedures

Duration, intensity and fundamental frequency (F0) measures were extracted for the keywords in each sentence production using the PRAAT speech analysis system [3]. The analysis procedures adopted were similar to those used by [4]. Three

portions of the vowel nucleus were selected for the F0 and intensity measurements. A 50-ms windowed cursor was placed at onset, midpoint and offset locations of the vowel. The F0 and intensity values were based on the median of the values extracted at the three measurement points.

2.4. Accentual focus calculation

In order to compare between the production of the native American speakers and that of the Moroccan learners of English, two different calculations were used as in [4]. The first calculation, referred to as average accentual focus, provided absolute mean values of duration, intensity and fundamental frequency for the accented words. The second calculation, referred to as differentiated accentual focus, involved comparing the acoustic patterns of an accented word (e.g., accented “CAT”) to the same but unaccented words (the other unaccented “cat” items) produced across the three different sentences.

3. Results

3.1. Average accentual focus

The F0, intensity and duration values for average accentual focus are given in Table 1 for Moroccan and American speakers (males and females). The difference between the Moroccan and American speakers is striking for F0. Both Moroccan males and females produced the three accented words with a higher F0 compared to American counterparts. The difference is even more important for the Moroccan females compared to American ones.

Table 1: Mean (M) and standard deviation (s.d.) values for fundamental frequency (F0), intensity and duration for the three accented words produced by Moroccan (M) and American (A) speakers.

Group	Accented word	F0 (Hz)		Intensity (dB)		Duration (ms)	
		M	s.d.	M	s.d.	M	s.d.
M Male	<i>I</i>	159	8	77	2	264	71
	<i>Bought</i>	175	34	78	2	220	59
	<i>Cat</i>	167	32	76	5	176	45
A Male	<i>I</i>	140	29	61	7	299	82
	<i>Bought</i>	144	25	67	6	208	44
	<i>Cat</i>	154	32	62	6	170	39
M Female	<i>I</i>	290	32	76	1	266	52
	<i>Bought</i>	289	28	77	1	219	28
	<i>Cat</i>	314	37	76	2	214	28
A Female	<i>I</i>	219	28	61	7	277	89
	<i>Bought</i>	225	34	63	7	209	44
	<i>Cat</i>	232	52	58	8	160	29

The durational values for the target words did not differ much between the Moroccan and American speakers. The values were generally comparable except for two target words. Moroccan females produced the word *CAT* with a longer duration while Moroccan males produced *I* with a shorter duration.

As regards intensity values, there was a general difference between the two groups of speakers, with Moroccans producing the accented words with greater intensity compared to Americans.

3.2. Differentiated accentual focus

3.2.1. F0

Comparison of differentiated accentual focus between Moroccan and American speakers is illustrated in Figures 1-3. It can be seen from Figure 1 that both Moroccan males and females produced differentiated focus with a higher F0 compared to American speakers. The difference is even more important for the Moroccan females compared to American ones. There is however an exception to this F0 pattern: the word *BOUGHT* was produced with comparable F0 by the Moroccan subjects, both males and females.

3.2.2. Duration

Results of the duration analysis is shown in Figure 2. In general, Moroccan males and females produced differentiated focus with longer vowel durations compared to American ones. However, the differentiated duration of the word *I* produced by Moroccan males was found to be similar to that of American males.

3.2.3. Intensity

Comparison of differentiated intensity between Moroccan and American speakers is illustrated in Figure 3. In general, Moroccan males and females differentiated accented words from non-accented words with lower intensity compared to American males and females.

4. Discussion

The data presented here showed that the acoustic characteristics of accentual focus produced by the Moroccan learners of English were generally not identical to that produced by the American speakers. The Moroccan speakers were found to produce focused words with higher F0, longer duration and lower intensity. The higher F0 pattern was also reported for Mandarin speakers of English as L2 in [4], where it was believed to reflect an interference from L1. The use of higher F0 and longer duration by the Moroccan can also be assumed to be due to transfer from L1. Results from a study by the author indicate that when focus is medial in Moroccan Arabic, the duration of the focused syllable is increased by 75 ms, and the F0 excursion size by 69 Hz [14]. These values are comparable to those realised by the Moroccan learners of English.

As regards intensity, it seems that the Moroccan learners of English attach little weight to intensity in signalling accentual focus. It is possible that their use of lower intensity is in fact compensated by their use of higher F0 and longer duration.

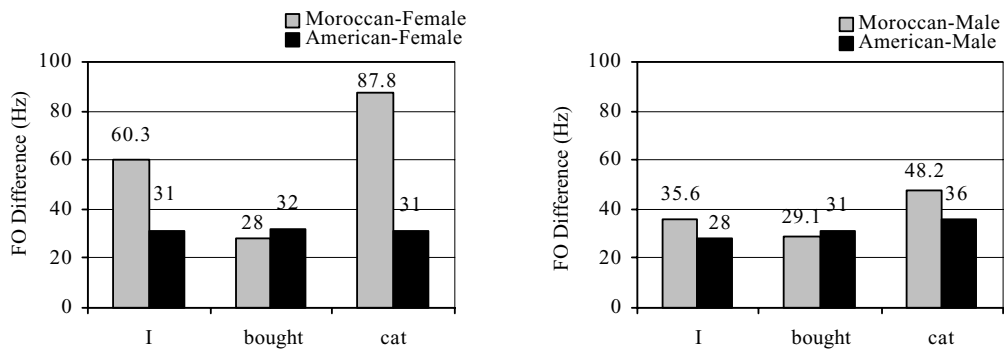


Figure 1: Comparison of differentiated accentual focus between Moroccan and American speakers. The values correspond to the mean F0 difference in Hz between accented and non-accented words across sentences.

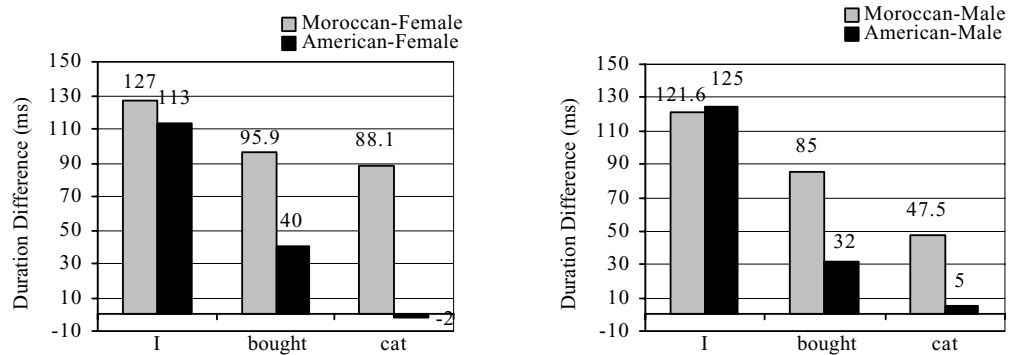


Figure 2: Comparison of differentiated accentual focus between Moroccan and American speakers. The values correspond to the mean duration difference in ms between accented and non-accented words across sentences. The negative value indicates that the non-accented word was produced with longer duration compared to the accented word.

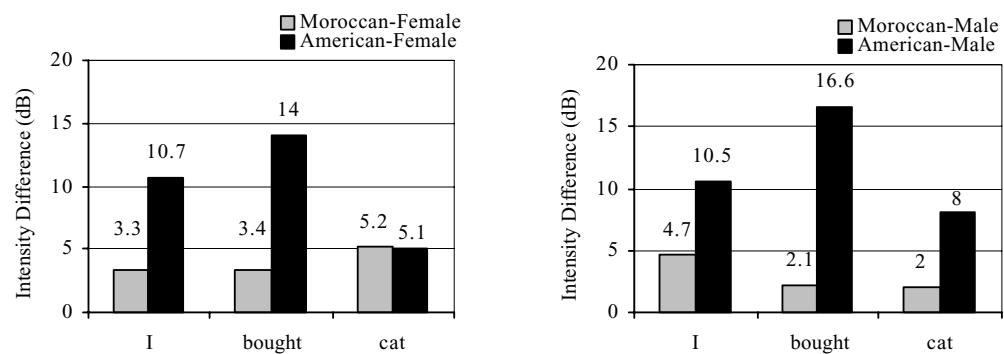


Figure 3: Comparison of differentiated accentual focus between Moroccan and American speakers. The values correspond to the mean intensity difference in dB between accented and non-accented words across sentences.

Results of this study cannot be directly and exclusively predicted by the prosodic transfer of L1 Moroccan Arabic. First, the prosody of English did not assume a prominent place in pronunciation training for the Moroccan learners of English. Second, these learners had little exposure to native spoken English in the classroom, having studied only with Moroccan teachers. Finally, the pronunciation instruction they received made no use of audio-visual tools.

5. Conclusion

A future direction for research suggest itself as a result of the present study. A detailed analysis of the acoustic characteristics of accentual focus in Moroccan Arabic should be undertaken to examine the influence of L1 Moroccan Arabic on the production of English as FL.

6. References

- [1] Beckman, M.E. 1986. *Stress and non-stress accent*. Dordrecht: Foris Publications.
- [2] Benkirane, T. 1999. Intonation in Western Arabic. In *Intonation Systems*, D. Hirst & A. Di Cristo (eds.). Cambridge: Cambridge University Press, 345-359.
- [3] Boersma, P.; Weenik, D. 1992-2003. PRAAT: a system for doing phonetics by computer. <http://www.praat.org>.
- [4] Chen, Y.; Robb, M.P.; Gilbert, H.R.; Lerman, J.W., 2001. A study of sentence stress production in Mandarin speakers of American English. *Journal of the Acoustical Society of America* 109(4), 1681-90.
- [5] Chun, D.M. 2002. *Discourse intonation in L2: from theory and research to practice*.
- [6] Cooper, W.; Eady, S.J.; Mueller, P.R. 1985. Acoustical aspects of contrastive stress in question-answer contexts. *Journal of the Acoustical Society of America* 77, 2142-2156.
- [7] Cooper, W.; Sorensen, J. 1981. *Fundamental frequency in sentence production*. New York: Springer-Verlag.
- [8] Lepetit, D. 1989. Cross-linguistic influence in intonation: French/Japanese and French English. *Language Learning* 39(3), 397-413.
- [9] Mennen, I. The realization of nucleus placement in second language intonation. *Proc. 14th ICPHS*, 555-558.
- [10] Shen, X. 1990. Ability of learning the prosody of an intonational language by speakers of a tonal language: Chinese speakers learning French prosody. *Int. Rev. Appl. Ling. Lang. Teach.* 28(2), 119-34.
- [11] Ueyama, M.; Jun, S.A. 1998. Focus realization in Japanese English and Korean English intonation. *Japanese and Korean Linguistics* 7, 629-45.
- [12] Wennerstrom, A. 1994. Intonational meaning in English discourse: a study of non-native speakers. *Applied Linguistics* 15(4), 399-420.
- [13] Wennerstrom, A. 2001. *The music of everyday speech prosody and discourse analysis*. New York: Longman.
- [14] Yeou, M. to appear. Effects of focus, position and syllable structure on F0 alignment in Arabic.