Production and Perception of Focus in L2 Mandarin of Qiang Speakers

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2016-10-19

Outline

1. Introduction
2. Production Experiment
3. Perception Experiment
4. Discussion
5. Conclusions

1. Introduction

1.1. The previous studies of focus production

➢ **Acoustic cues of focus**:

- higher F0
- greater intensity
- longer duration
- Post-focus Compression (PFC) —the reduction of pitch range and amplitude of all post-focus components in an utterance (Xu, 2011).

➢ PFC languages

English (Eady et al., 1986; Xu & Xu, 2005; Liu, 2009, 2010)
German (Féry & Kügler, 2008)
Japanese (Ishihara, 2002)
Korean (Lee & Xu, 2010)
Swedish (Heldner & Strangert, 2001)
Beijing Mandarin (Xu, 1999; Liu, 2009; Liu & Xu, 2005)
Nanchang dialect of Mandarin (Wang et al., 2011)
Uygur (Wang et al., 2011; Wang et al., 2013)
Ando Tibetan (Wang et al., 2011), Lhasa Tibetan (Zhang et al., 2012)

➢ Non-PFC languages

- PFC is absent in many languages spoken in the south of China:

  Hong Kong Cantonese (Wu & Xu, 2010)
  Taiwanese, Taiwan Mandarin (Xu et al., 2012)
  Yi, Wa, Deang (Wang et al., 2011)
  Tsat (Wang et al., 2012)
  Li (Wu et al., 2015)
  Qiang (Zhang & Wang, 2016)

- It is also absent in some African languages. (Zerbian, 2007; Zerbian et al., 2010)

➢ PFC in L2 acquisition

- PFC does not seem to transfer easily from one language to another through language contact and L2 learning.
- PFC has been found to be lost in Taiwan Mandarin through close contact with Taiwanese. (Xu et al., 2012)
- Cantonese-English bilinguals brought up in London did not transfer PFC from English to their Cantonese. Some of them even lost PFC in their English (Wu & Chung, 2011).

- Wang et al. (2012) found that there is almost no F0 variation due to focus in Tsat and Tsat-Mandarin.
- Chen et al. (2012) found that older speakers of Quanzhou Southern Min did not show PFC in their Mandarin, but younger speakers did. They also found that non-Chinese-heritage American learners did not produce PFC in their Mandarin, but Chinese-heritage learners did.
- Under the right conditions such as large amount of the second language use and earlier exposure, native-like productions of focus can be obtained. (Chen et al., 2012)

- Gao et al. (2015) investigated how focus is prosodically realized in declarative sentences by Chinese EFL learners, they found that PFC is learnable through targeted training.

1.2. The previous studies of focus perception

- PFC languages:
  Uygur (Wang et al., 2013): 83.2%
  Beijing Mandarin (Xu et al., 2012): 82.3%
- Non-PFC languages:
  Taiwanese: 52.5%
  Tsat: 30%
  Li: 29.3%
  Qiang: 28.1%
- Xu et al. (2010, 2012) have suggested that PFC is probably the most effective cue to focus perception.

1.3. Research Question

- Research question:
  production and perception of focus in Qiang-Mandarin
- Qiang language:
  Tibeto-Burman language family
  two groups of dialects--Northern Qiang and Southern Qiang
- Second languages of Qiang people:
  Sichuan dialect of Mandarin & Mandarin
- Object of the study:
  Longxi dialect, Southern Qiang
  five tones--55, 33, 21, 213, 51
  word order--SOV
- Investigation spot:
  AerVillage, Wenchuan county

2. Production Experiment

2.1. Materials

Sentence 1:

爷爷把牛卖了。

Grandpa-preposition-cow-sold-auxiliary

Grandpa sold the cow.

Sentence 2:

妈妈给妹妹买了衣服。

Mom-preposition-younger sister-bought-auxiliary-dress

Mom bought (a) dress for (my) younger sister.

Sentence 3:

妈妈摸猫咪。

Mom stroke kitty.

- *Four focus conditions: initial, medial, final and neutral focus*
- *360 tokens: 3 (target sentences) × 4 (focus conditions) × 3 (repetitions) × 10 (speakers) =360*

2.2. Participants

- 10 speakers of Qiang:
  5 males & 5 females, aged 14-66
- Second languages:
  standard Mandarin & Sichuan dialect of Mandarin

2.3. Results

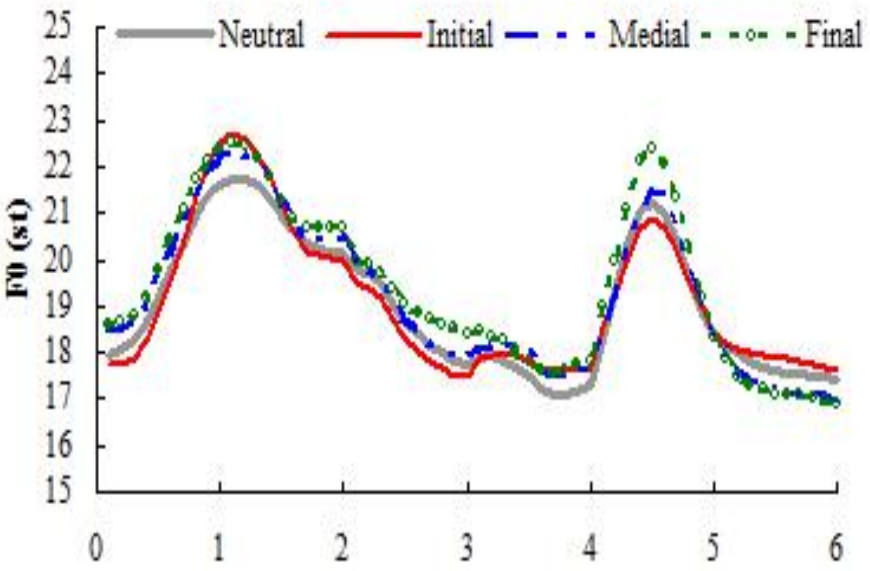

Figure 1: *Intonation contours of sentence 1 under the four focus conditions*

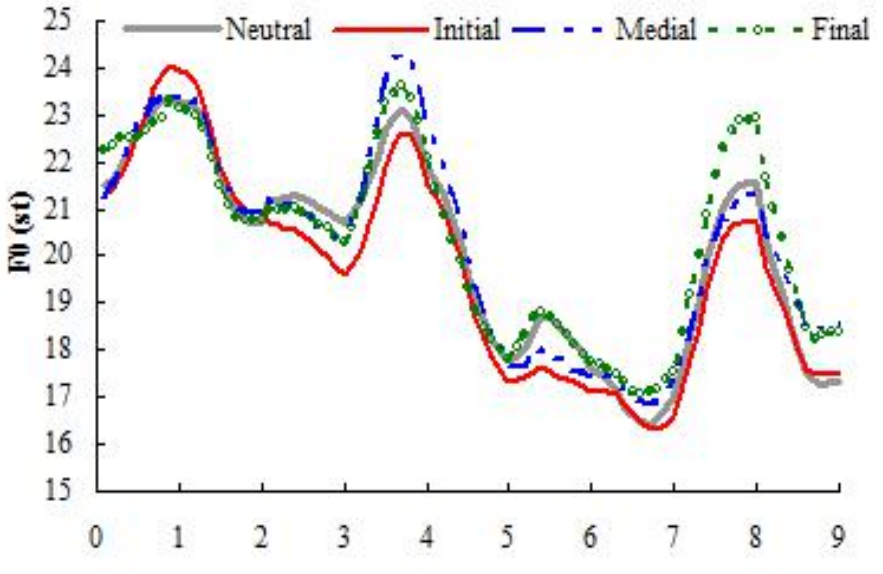

Figure 2: *Intonation contours of sentence 2 under the four focus conditions*

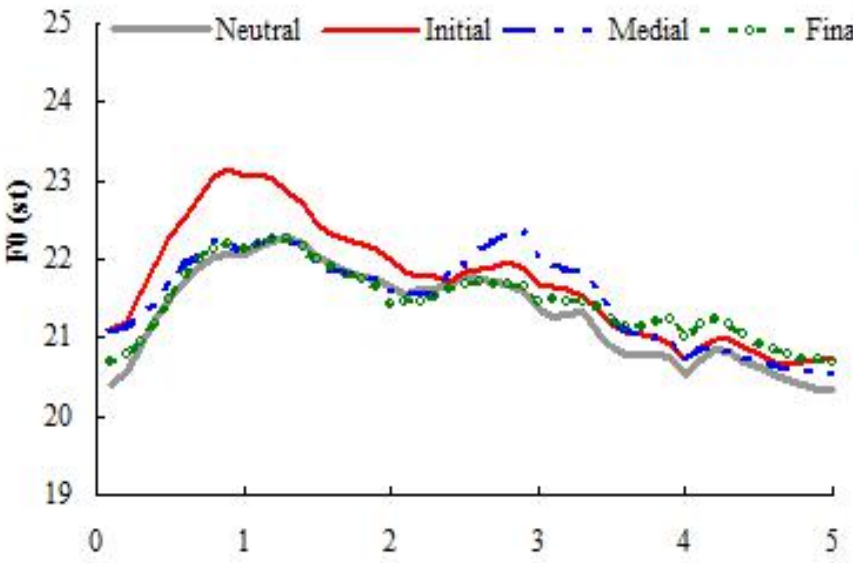

Figure 3: *Intonation contours of sentence 3 under the four focus conditions*

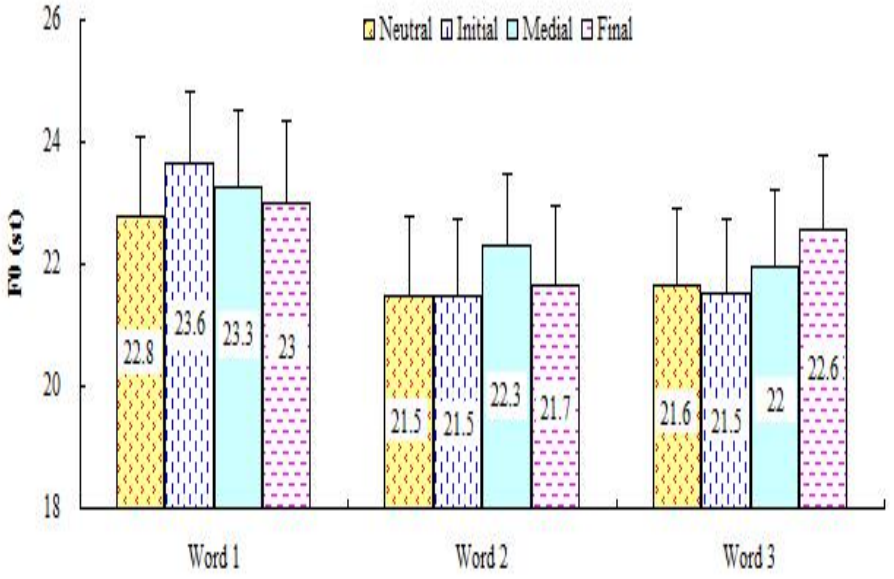

Figure 4: *Max F0 of the three target words under four focus conditions (st).*

Results of statistical tests:

- Higher F0 (except the initial focus, which is only slightly higher than neutral focus statistically)
- No PFC

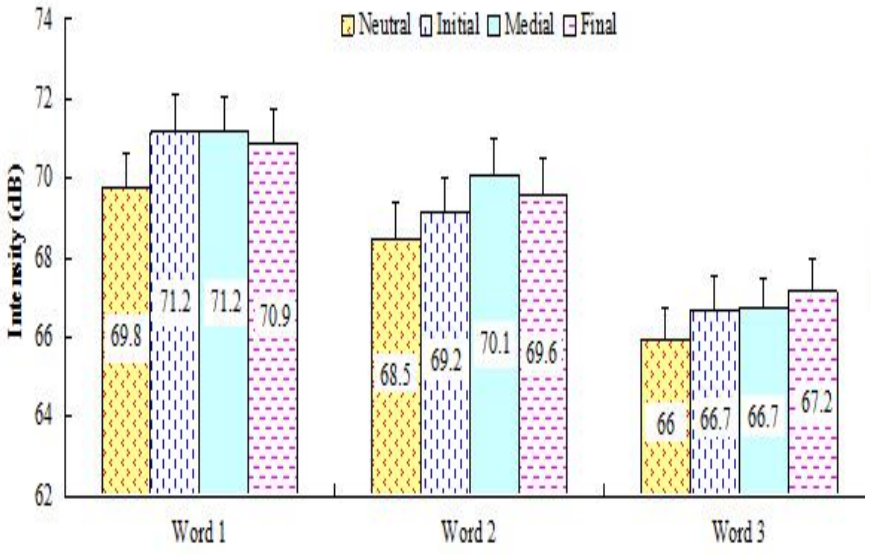

Figure 5: *Intensity of the three target words under four focus conditions (dB).*

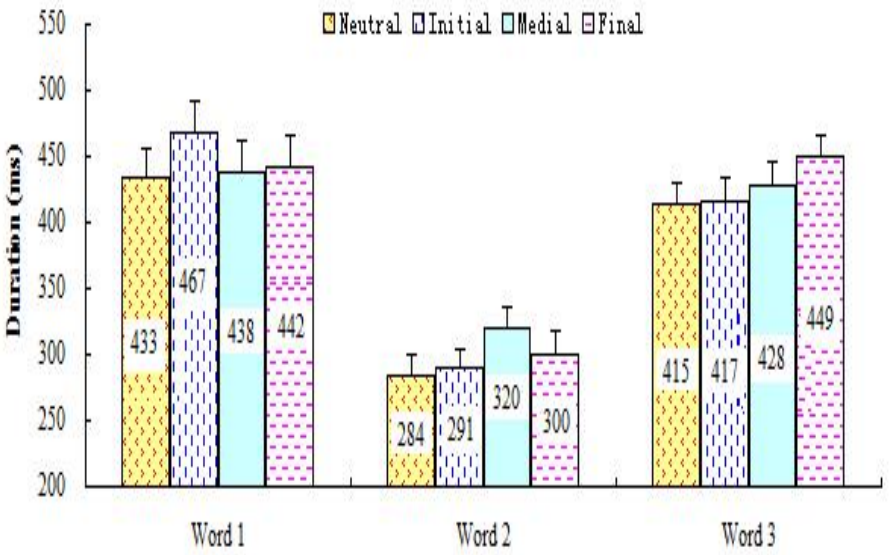

Figure 6: *Duration of the three target words under four focus conditions (ms).*

Results of statistical tests:

- Greater intensity (compared to neutral focus)
- No compression of intensity
- Longer duration
- Duration remains largely intact before or after the focused part.

3. Perception Experiment

3.1. Materials

- The 2nd repetition of sentence 2 & sentence 3 from 6 speakers (3 males & 3 females)
- 48 tokens

3.2. Participants

- 8 native speakers of Qiang, aged 19-49
- Second languages: Mandarin & Sichuan dialect of Mandarin

3.3. Results

Confusion matrix of focus identification under four focus conditions.

Original	Heard As			
	Neutral	Initial	Medial	Final
Neutral	***17.7***	26.0	32.3	24.0
Initial	13.5	***32.3***	41.7	12.5
Medial	15.6	30.2	***36.5***	17.7
Final	14.6	31.3	28.1	***26.0***

- The average hitting rate is 28.1%.

4. Discussion

4.1. Prosodic Realization of Focus

- On-focus words exhibit significant F0 rising, intensity increasing and duration lengthening. There is no Post-focus Compression (PFC). The duration of pre-focus and post-focus words remains largely intact. The findings are consistent with Qiang (Zhang & Wang, 2016).
- The pattern is also similar to Taiwanese and Taiwan Mandarin (Xu et al., 2012), Tsat and Tsat-Mandarin (Wang et al., 2012), and Quanzhou Min and Quanzhou-Mandarin (Chen et al, 2012).

- The studies on the prosodic encoding of focus across nearly 50 languages and dialects show that duration seems to be the most stable way to mark the focus, while F0 performs in quite different ways, especially for the post-focus part.
- PFC is an effective means to highlight the focus, but it is not a universal feature. It differs even in the same language family, e.g., Qiang and Mandarin.
- The L2 Mandarin of the Qiang speakers exhibit similar F0 pattern as their Qiang, other than Mandarin. It further confirms that PFC is a prosodic feature hard to gain.

4.2. Perception of Focus

- The perception of focus in Qiang-Mandarin is quite weak. Maybe it is because there is no PFC in Qiang-Mandarin, which is a very effective cue for focus perception.
- The average correct rate of initial and medial focus is 34.4%, which is higher than final focus (26%). Maybe it is because the pitch and intensity gradually decline in the declarative sentence, the final focus tended to be perceived as initial or medial focus.
- These findings are in consistent with Qiang (Zhang & Wang, 2016).

- The pattern is quite the same with Tsat and Tsat-Mandarin (Wang et al., 2012). Wang et al. (2012) found that Tsat speakers perceived focus in Mandarin at a much lower rate than native Mandarin listeners, which indicates PFC is probably hard to notice by speakers of a non-PFC language. This may offer an explanation as to why PFC is hard to be learned in L2.

- We suggest that the acoustic cues in production play a crucial role in focus perception. In the non-PFC languages, perhaps no direct connection is built between focus identification and PFC.

5. Conclusions

- In Qiang-Mandarin, on-focus words exhibit significant F0 rising, intensity increasing and duration lengthening. There is no Post-focus Compression (PFC). The duration of pre-focus and post-focus words remains largely intact.
- The perception of focus in Qiang-Mandarin is with pretty low accuracy. It suggests that PFC is a prosodic feature that is hard to be acquired in L2, and it is effective for focus perception.

Thank you!

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