

Phonetic Realization of Narrow Focus by Beijing EFL Learners in English Yes-No Sentences

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Abstract—Focus plays a critical role in English. The present study investigates how focus is phonetically realized in English *yes-no* sentences by Beijing EFL learners. The study tends to examine different F_0 contours at different positions of English *yes-no* sentences to see whether Beijing EFL learners' phonetic realization of narrow focus is distinct from native English speakers'. Four native speakers of American English and four Beijing EFL learners are taken as subjects to record the English *yes-no* sentences in different focus positions. Detailed F_0 inspection reveals that the phonetic realization of focus of Beijing EFL learners is different from that of native speakers. At the on-focus positions, F_0 contours of native speakers in narrowly focused sentences are suppressed in comparison with those in broadly focused sentences; however, the Beijing EFL learner show expanded F_0 contours. Moreover, at post-focus positions, the F_0 contours of native speakers in narrowly focused sentences are higher than those in broadly focused sentences, while Beijing EFL learners show the intact or opposite conditions. Apart from the differences, the study explains the reasons for these differences from the perspective of negative transfer of Chinese on the production of English focused *yes-no* questions.

Keywords—*yes-no question; focus; phonetic realization; Beijing EFL learners; negative transfer*

I. INTRODUCTION

Focus plays a very important role in natural language, which has aroused great interest in different branches of linguistics such as phonology, syntax, semantics, and discourse analysis and so on. Besides, linguists who study functional and formal linguistics also pay great attention to focus (Xu [1]). The words under focus are always considered as bearing new information (Schwarschild [2]). Halliday [3] mentions that focus reflects new information and Lambrecht [4] classifies focus from syntax perspective into two types—broad focus and narrow focus. The former one means the whole sentence instead of individual constituents is considered as focus while the latter one refers to that some constituents within a sentence are regarded as focus. Focus has been studied widely

home and abroad. In China, linguists make studies on focus from different perspectives. Fan [5] and Gu [6] pay much emphasis on the manifestation of focus. Liu & Xu [7] largely stress the functional feature of focus. Sheng [8], Fan & Zhang [9] study focus from the semantic perspective. Xu [10] makes a study of focus on English sentences. Besides, some scholars switch attention to study phonetic realization of narrow focus in dialect regions, like Hu & Jia, [11], Duan [12]. As for study abroad, famous linguists such as Halliday [3], Chomsky [13], Ladd [14] have made much research on focus. Among those scholars, however, most of them study how focus is manifested or realized by native speakers; a few include the realization of focus by language learners, especially the *yes-no* sentences with focus in various sentential positions.

Every utterance people uttered in a conversation or a monologue may be of one type: i.e., statement, question, exclamation, command, or request, among others. In addition to optional morpho-syntactic manipulations, these sentence types are frequently conveyed through prosodic means, and pitch contours in particular or more broadly known as intonation (Liu & Xu [15]). Among those sentence types, *yes-no* sentence is one of the most important. It is studied by some scholars from different aspects. Bolinger [16] makes a research on intonation across languages and makes a summary that about 70% of the nearly 250 languages adopt a rising terminal to mark questions. Liu & Xu [15] make a study to investigate question intonation in Mandarin by also considering the role of focus. Ji, Wang & Li [17] study the intonation patterns of *yes-no* questions for Chinese EFL learners. Though there are a lot of studies on *yes-no* sentences from different perspectives, few researchers study the focus in English *yes-no* sentences.

In languages like English, focus is affected by different factors. Many acoustic experiments show that the realization of focus bears a close relation with pitch, duration, and intensity. And factors which affect pitch attract many scholars' attention. Cooper et al [18] mention that focused

words are featured as of higher pitch and long duration. Among those elements mentioned above, F₀ contour which represents pitch is the most correlated acoustic parameter. Xu [10] makes a conclusion that a narrow focus is realized by expanding the pitch range of on-focus stressed syllables, suppressing the pitch range of post-focus and leaving the pitch range of pre-focus syllables largely intact. Hu [19] makes a study on phonetic realization of narrow focus by Beijing EFL learners in declarative sentences and finds that the English focus realization in Beijing EFL learners' F₀ contours is similar to that of native speakers of American English.

From the discussion mentioned above, it can be obtained that most of the study concentrate on the realization of focus by native speakers instead of languages learners, and few of researchers make a research in the realization of focus in English *yes-no* sentences. The present study takes mainly pitch into consideration and four American native speakers and four Beijing EFL learners will be taken as the subjects and their F₀ contours under different focus conditions will be compared to examine whether Beijing EFL learners use the similar way to realize focus when they speak English *yes-no* sentences. If there are differences, the study will try to find the reasons, which can provide important evidences to the study of Second Language Acquisition.

II. METHODOLOGY

A. *Materias*

25 English *yes-no* sentences with or without narrow focus are selected. 22 normal *yes-no* sentences and 3 sentences which are in a declarative form but can express the question meaning are selected to do this experiment. Firstly, a prompt declarative sentence will be given then some constituents will be changed and then focus is realized by changing the new declarative sentence into *yes-no* sentence.

The compositions of all stimuli are shown in Table 1. The locations of narrow focus vary from sentence-initial, sentence-medial and sentence-final. Words under focus are different in word length and stress patterns; word length varies from one syllable to three syllables. All sentences are from "AESOP" (Asian English Speech Corpus Project)_CASS_Beijing.

TABLE I. RESEARCH SENTENCES

Focus locations	Focus conditions	Stimuli
Sentence initial	Narrow focus	Anna comes to the party with Tom. Can JANE/ SARAN / CATHERINE come with Tom? I gave flowers to George. YOU gave flowers to George?
	Broad focus	Can Jane/ Saran / Catherine come with Tom You give flowers to George?

Sentence medial	Narrow focus	Texas exports violin/beef to Japan. Does Texas export BEEF/ VIOLIN to Japan? Guess from where did the ship depart in the morning. Did the ship depart from JAPAN/ GERMANY in the morning? I give flowers to George. You give FLOWERS to George?
	Broad focus	Does Texas export beef/ violin to Japan? Did the ship departed from Japan/ Germany in the morning? You give flowers to George?
Sentence final	Narrow focus	Jane comes to the party with Manny. Can Jane come with TOM/ BURNELL/ MANNY/ CHRISTOPHER? I gave flowers to George. You gave flowers to GEORGE?
	Broad focus	Can Jane come with Tom/ Burnell/ Manny/ Christopher? You give flowers to George?

B. *Subjects and recording*

Four Beijing EFL learners were recruited as subjects, two females and two males. They were all born and raised in Beijing and have learned English for more than ten years. Four native speakers of American English, two females and two males, were recorded as the referential group. They all spoke general American English without noticeable abnormal accents. All speakers don't have speech disorders. Recording was conducted in the sound-treated booth at the Phonetics Laboratory at Chinese Academy of Social Sciences. All the sentences will be present to the subjects on a screen of a computer. Subjects are instructed to produce each sentence at a normal rate and not pause in the middle of a sentence. Each sentence may be produced more than once but only one will be used to do further analysis. The recording software was CHUK-SIAT Recording Tool designed by the cooperation of Chinese University of Hong Kong and CASS. The equipment of the recording was the laptop and the head-wear with microphone. Its type was Sennheiser PC166, with the built-in sound card. The sampling rate was 16 kHz.

C. *Data annotation and extraction*

All sound tracts were first automatically processed by a segmentation program to generate both word level and phone level transcriptions, which can be read by Praat. Then careful examination would be taken to make sure boundaries, F₀ contours were on the correct positions. Then F₀ of each vowel was extracted at ten equal proportional intervals to normalize duration.

D. *Grading*

One native speaker of American English was invited as the grader to evaluate each subject's English pronunciations. The grades included four aspects. They are intonation, accentuation, focus and fluency.

III. ANALYSIS AND RESULTS

A. Focus effects on native speakers of American English

Figures which are drawn display refer to F_0 contours of all research sentences with and without focus produced by four native speakers of American English and four Beijing EFL learners. In each figure, the ordinate is the mean F_0 in semitones averaged over repetitions by 4 subjects, and the abscissa is normalized time. The blue curves show the narrow focus on the designed words as indicated by capital letters in the sentences, and the red curves have broad focus. The breaks on the curves represent syllable boundaries. There are some capital letters to explain. UAS and BJ show the places of the speakers, they are America and Beijing. S, D, T represent respectively single syllable, double syllables and tri-syllables. I, M, F show the positions of the focus. They are initial, middle and final. N and B mean the narrow focus and broad focus separately. For example, in USA_IS_N, the combination means that the narrow focus which is produced by native speakers of American English is formed by a single syllable and it is on the initial position of the sentence. The research sentences are shown on top of each figure, with the focus constituents capitalized.

The *yes-no* sentences which were selected can be divided into two types. The first is the common *yes-no* sentence, like “Can Jane come with tom?” and the second one is that the question meaning can be expressed in the form of a declarative sentence, like “you give flowers to George” Though it is a declarative sentence, if a question meaning is added, it becomes a *yes-no* question. So the further analysis will be made into two types.

Firstly, for the common *yes-no* type, from visual inspection of the mean F_0 contours produced by native speakers in narrowly and broadly focused sentences, the effects of focus on their F_0 contours are quite evident. Some patterns are observed: 1) on the on-focus positions, the F_0 contours in the narrowly focused sentences tend to be lower than those in the broadly focused sentences. 2) at pre-focus places, the F_0 contours within a narrowly focused sentence are lower. 3) the most evident finding is on the post-focus positions. For nearly all post-focus locations, the F_0 contour peak of each word in sentences with narrow focus is generally higher than that of sentences with broad focus.

Secondly, as for the declarative sentences which express question meaning, two patterns are also found: 1) on the on-focus locations, F_0 contours in sentences with narrow focus tend to be lower or unchanged with those in sentences with broad focus. 2) as for the post-focus positions, F_0 contours are higher in narrowly focus sentences compared with those in broadly focused sentences. Due to the limited length, only two graphs are presented. Figure 1 is showed below to give details. The capitalized words indicate the narrow focus.

Does Texas export **VIOLIN** to Japan?

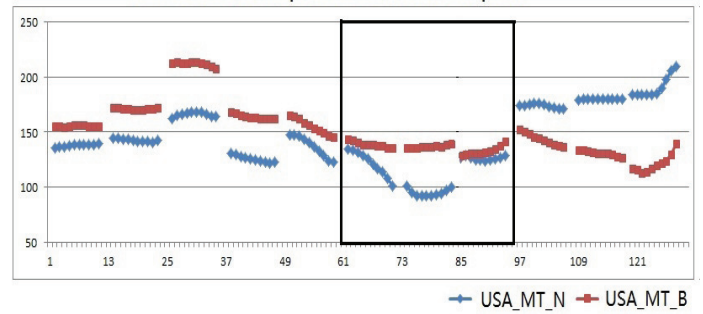


Fig 1(a): F_0 contours by native speakers in common *yes-no* sentence

You give **FLOWERS** to George?

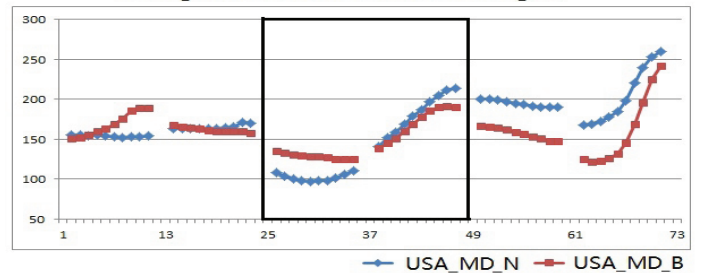


Fig 1(b) F_0 contours by native speakers in declarative sentence

B. Focus effects on Beijing EFL learners

As for Beijing EFL learners in common *yes-no* sentences, the phonetic realization of narrow focus can be concluded that F_0 contours at on-focus positions in narrowly focused sentences are higher than those in broadly focused sentences, which shows the opposite tendency with the native speakers. Besides, at post-focus positions, compared with the sentences with broad focus, F_0 contours are largely intact or lower in sentences with narrow focus.

In declarative sentences which express question meaning, at the on-focus positions, F_0 contours in narrowly focused sentences tend to be higher than those in broadly focused sentences. And at the post-focus positions, F_0 contours are suppressed in sentences with narrow focus compared with those in sentences with broad focus. Due to the limited length, only two graphs are presented. Figure 2 is showed below.

Does Texas export **BEEF** to Japan?

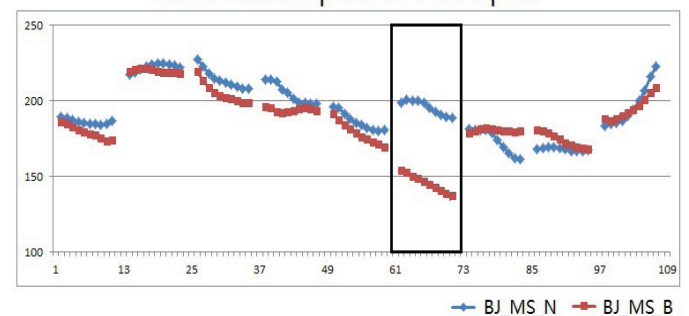


Fig 2(a): F_0 contours by Beijing EFL learners in common *yes-no* sentence

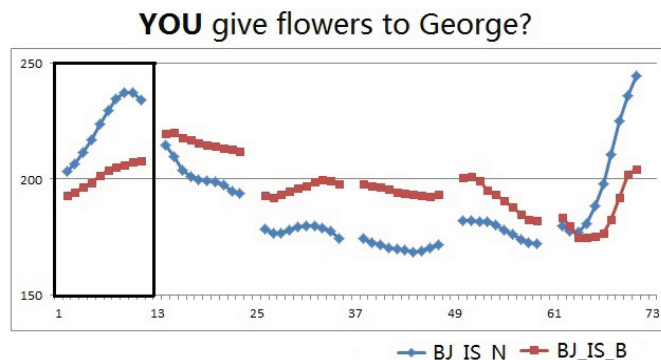


Fig 2(b): F_0 contours by Beijing EFL learners in declarative sentence

IV. DISCUSSION AND CONCLUSIONS

A. Focus realizations by Beijing EFL learners

Through careful inspection of detailed F_0 contours in English *yes-no* sentences with different focus conditions produced by native speakers of American English and Beijing EFL learners; it is found that the phonetic realization of narrow focus of Beijing EFL learners is different from native speakers. Their main differences are at the on-focus and post-focus positions. In common *yes-no* sentence, at the on-focus positions, F_0 contours of native speakers are suppressed while that of Beijing EFL learners are expanded. Besides, at the post-focus locations, F_0 contours of native speakers are higher while that of Beijing EFL learners are intact or lower. In another type, the declarative sentences expressing question meaning, the most obvious difference lies in the post-focus positions. F_0 contours by native speakers are expanded while those of Beijing EFL learners are suppressed.

B. Reasons for the different realization of focus in common *yes-no* sentences

1) Reasons for different realizations of on-focus by native speakers and Beijing EFL learners

Many scholars have made study on interrogative sentences. Xu [10] makes a study of question intonation in Mandarin intonation by also considering the role of focus and gets a conclusion that focus generates the same pitch range modification in questions as in statements. i.e. expanding the pitch range of the focus word, suppressing that of the post-focus words, but leaving that of the pre-focus words largely unaffected. However, in the English *yes-no* questions, there exist some differences with the conclusion. It can be inferred that the intonation in English plays a significant role in affecting the F_0 contours. English is an intonation language whose tendency can be shown by symbols H or L. Mandarin language is a tone language which means each Chinese character bears a tone. English emphasizes the intonation of the whole sentence while Chinese emphasizes each character. So in English *yes-no* sentences produced by native speakers, the on-focus positions which should be stressed and expanded are greatly influenced by the intonation and become suppressed.

However, for Beijing EFL learners who were born in China and speak Chinese for year are probably influenced by Chinese when they learn English, which can be called the negative transfer. To be detailed, when students learn a foreign language, if mother language promotes the learning of a foreign language, it is called positive transfer. And if hinders, it is called negative transfer. Chinese is a tone language, each Chinese character bears a tone, so when a person pronounces a word, he will try his best to make it stressed and clear. And this influences the English learning, that's why at the on-focus positions in English *yes-no* sentences, F_0 contours of EFL learners are expanded.

2) Reasons for different realizations of post-focus by native speakers and Beijing EFL learners

For native speakers of American English, the F_0 contours of post-focus are higher because it is also influenced by the question intonation, which has mentioned above. As to the Beijing EFL learners, the F_0 contours of post-focus are intact or lower. Juffs [20] reports that Chinese English learners' speech are always perceived as 'flat' in intonation, probably due to many stresses are assigned. When learning English, Beijing EFL learners are influenced by Chinese, so they do not use an obvious rising or falling intonation, which leads to the F_0 contours of post-focus positions in narrowly focused sentences are unchangeable or even lower than those in broadly focused sentences.

C. Reasons for the different realization of post-focus in declarative sentences

Declarative sentences to express question meaning are often used by Americans and Chinese, especially in spoken language. From a visual perception of F_0 contours at the post-focus in declarative sentences, it is found that F_0 are higher by native speakers while lower by Beijing EFL learners. English is an intonation language, so Americans often use a clear way to express the intonation. According to the study of Ji, Wang & Li [17], American speakers adopt a low-level (L^*) or low rising tone (L^*H) on nuclear accents no matter the nuclear accent is on the medial or final part of a sentence. Though it is a declarative sentence, if a kind of question meaning is added, American tend to use very clear rising intonation to express it. As for Chinese, it is a tone language, people often use a flat tone or even a falling tone to express the question meaning, which transfers to the English learning, so the F_0 contours of post-focus by Beijing EFL learner are lower in sentences with narrow focus than those in sentences with broad focus,

D. conclusions

The present study makes a systematical investigation and comparison of focus at different positions in English *yes-no* sentences produced by native speakers of American English and Beijing EFL learners. The main differences lie in the on-focus and post-focus positions. And the reasons for these differences are that Beijing EFL learner are influenced by Chinese when they learn English to some degree.

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