The Neutral Tone in Trisyllabic Sequences in Chinese Dialects

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Abstract

Early studies of the pitch of the neutral tone are confined to the study of its appearance in the second syllable of disyllabic sequences in Beijing dialect. Although the study was extended to more dialects later, it was still confined to disyllabic sequences. This paper argues that in trisyllabic sequences with the neutral tone in the middle, the syllable following the neutral tone plays different roles in different dialects. So in studying the pitch of the neutral tone, it is imperative also to take into consideration trisyllabic sequences in order to have an overall understanding of the neutral tone and to compare the properties of the neutral tone in different dialects.

Early studies of the neutral tone are confined to the study of the neutral tone appearing in the second syllable of disyllabic sequences in Beijing dialect (also called Mandarin, Beijing Mandarin or Standard Mandarin in the West). The neutral tone always occurs in unstressed syllables. It has no pitch value of its own, but acquires its pitch value according to context. In early studies of Beijing dialect, the pitch values of the neutral tone in different contexts were determined by ear, and the data restricted to disyllabic sequences with the neutral tone as the second syllable. The pitch values of the neutral tone in Beijing dialect in different contexts resulting from these early studies can be summed up as in (1). The pitch values are marked by Chao's tone letters along a five-degree scale (Chao 1930), with 5 representing the highest pitch in the voice range and 1 as the lowest. The superscripts 1,2,3,4 indicate Tones 1,2,3,4, the superscript 0 indicates the neutral tone.

(1)

Tone of preceding syllable		Pitch of neutral tone	Example	Gloss
Tone 1	(55)	2	$tian^1qi^0$	weather
Tone 2	(35)	3	fu^2qi^0	luck
Tone 3	(214)	4	$xiao^3qi^0$	stingy
Tone 4	(51)	1	ke^4qi^0	polite

(Luo & Wang 1957)

(The pitch contour of Tone 3 becomes 21 before neutral tone)

Later, some studies of other dialects also gave very brief accounts of the pitch value of the neutral tone (see Shi 1988 for a brief survey).

Shih (1986) divides tone languages into two types: Z-tone (syllable tone) language and M-tone (word tone) language. She says that in a Z-tone language, atonic syllables (i.e. neutral tone syllables in Chinese) either carries an unmarked (default) pitch or copies the quality of some neighboring tone, leaving the host tone unaffected, while in an M-tone language, the atonic tone shares the melody of the host tone by splitting it up.

Shi (1988) is the first study on the pitch values of the neutral tone across Chinese dialects. He divides the pitch values acquired by the neutral tone into three major types: 1) attenuation (somewhat equivalent to Shih's default value, which is usually low or mid); 2) splitting (equivalent to Shi's splitting) and 3) end spreading (roughly equivalent to Shi's copying). Some of his examples are given in (2).

(2)

a. attenuation

dialect	pitch of host tone	pitch of neutral tone
Xining	44	1
Xi'an	55	1

b. splitting

Beijing	214 (21)	4
Anqing	213 (11)	4

c. end spreading

Lanzhou	33	3
Jinan	55	5

(pitch in brackets indicate pitch of host after splitting)

Shi(1988)'s tripartite classification of the pitch value of the neutral tone and his examples show that the pitch realization of the neutral tone is dependent on the pitch of the preceding full tone. But since he only deals with the neutral tone in the position of the second syllable in disyllabic sequences, we do not know whether the pitch of the neutral tone is affected by a syllable following it if there is one. And we know there are many cases when the neutral tone can be in the middle position of a trisyllabic sequence; for example, in trisyllabic sequences such as " xin^1 de^0 che^1 (new car)", " $hong^2$ de^0 bi^3 (red pen)", $xiao^4$ zhe^0 $shuo^1$ (say with a smile)", " tuo^1 le^0 xie^2 (take off the shoes)", we have the neutral tone in the middle of the trisyllabic sequences.

Recent studies of the pitch of the neutral tone in trisyllabic sequences in different dialects through the use of acoustic experiments help to acquaint us with the role played by the tone of the following syllable on the pitch of the neutral tone.

In some dialects, the pitch of the neutral tone is decided by the preceding tone both in disyllabic and trisyllabic sequences and the following tone is of no consequence. For instance, in examining the pitch of the neutral tone in trisyllabic sequences in Beijing, Peng (1993) came to the conclusion that the following syllable has no fundamental influence on the pitch of the neutral tone preceding it, the main influence comes from the full tone of the syllable preceding it.

In Shanghai dialect, in disyllabic words the second syllable loses its original tone and shares the tone of the first syllable. In trisyllabic words the second syllable shares the tone of the first syllable as in disyllabic words, but the third syllable takes the default tone (Selkirk & Shen 1990). This has been regarded as tone sandhi by most previous analyses, but I would rather treat the second syllable in the disyllabic words and the second and third syllables in trisyllabic words as having neutral tone (See Shi 1988 for detailed discussion). In this case the second syllable in trisyllabic words loses its original tone and share the tone of the first syllable as does the second syllable in disyllabic sequences, and is not influenced by the third syllable following it since the third syllable has lost its original tone and takes the default tone. Thus in these

two dialects the pitch of the neutral tone is dependent solely on the preceding syllable. It seems that in dialects in which the pitch of the neutral tone is realized by sharing the pitch of at least one preceding tone, the following tone has no part to play in determining its pitch phonologically.

However, in dialects where the pitch of the neutral tone in disyllabic sequences is not realized by sharing the tone of at least one preceding syllable, the following tone often has a part to play in determining the pitch of the neutral tone. Take for instance the case in Jinnan dialect, which is spoken in the southern suburbs of Tianjin. Jinnan has four lexical tones as shown in (3) (all data of Jinnan dialect from Li 1996).

Tone name (tone number)	citation pitch value	tone features
Yinping (Tone 1)	53	HL
Yangping (Tone2)	55	HH
Shangsheng (Tone 3)	24	LH
Qusheng (Tone 4)	31	LL

In acoustic studies, although the neutral tone is generally short, its pitch is not a point or a short level line, but could be a rising or falling contour in different contexts. In such cases we do not regard the contour as a unitary unit, but take the end point of the contour as its phonological feature, and the starting point as the result of phonetic co-articulation with the preceding syllable (Wang 2002). Thus in disyllabic sequences, the neutral tone in Jinnan disyllabic sequences takes the default value, no matter preceded by which tone, as shown in (4)

Preceding Tone (tonal feature)	Feature of neutral tone
Tone 1 (HL)	L
Tone 2 (HH)	L
Tone 3 (LH)	L
Tone 4 (LL)	L

But in trisyllabic sequences, the neutral tone of Jinnan dialect, unlike that of Beijing, is influenced by the tonal category of the following tone: it becomes H before Tone 1 (HL) and Tone 4 (LL), no matter what the preceding tone is, while still retaining its default tone L before the other two tones, as shown in (5):

(5)

feature of neutral tone	following tone (tone feature)
H	Tone 1 (HL)
L	Tone 2 (HH)
L	Tone 3 (LH)
H	Tone 4 (LL)

The change of pitch of the neutral tone in Jinnan from L to H before Tone 1 and Tone 4 is not accidental. It conforms with the tone sandhi phenomenon in Jinnan shown in (6):

(6) Tone sandhi in Jinnan

HL → HH / __LL

HL → HH / __HL

LL → LH / __LL

LL → LH / __HL

From the above we can see that in Jinnan, the tonal feature of the neutral tone when followed by a full tone undergoes the same process a full tone undergoes in tone sandhi. They are realizations of the same tonal process, and can be given a unified and principled explanation. This also occurs in other dialects. Some examples are given in (7).

(7)

dialect	context where T0 is H	relevant tone sandhi phenomenon
Tianjin	__ LL	LL → LH / __ LL
		HL → HH / __ LL
Hefei	__ LL	LL → LH / __LL
	__ HL	LL → LH / __ HL

In some other dialects, such as Taiyuan, in trisyllabic sequences with the neutral tone in the middle, the neutral tone takes the interpolation value between the preceding and the following tones, which is utterly phonetic.

Thus we see that in trisyllabic sequences the tone of the syllable following the neutral tone has three types of influences on the neutral tone:

1. the phonological feature of the neutral tone which is obtained under the influence of the preceding tone is not influenced by the following tone, and is retained;
2. the neutral tone gets a phonological feature under the influence of the tone of the following syllable in conformity with the tonal rules / constraints governing tone sandhi of the specific dialect;
3. the neutral tone takes the interpolation value between the preceding and following syllable, in which case the process is entirely phonetic.

From the above we can see that it is not adequate to study the pitch of the neutral tone in different Chinese dialects only by looking at its pitch in disyllabic sequences. It is imperative also to take into consideration its behavior in trisyllabic sequences as well in order to have an overall understanding of the neutral tone and to compare the properties of the neutral tone in different dialects.

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