

Comparative Study on the Phonetic Features of Poetry Reading and Recitation

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Abstract: This article investigates and analyzes the phonetic data of 20 poems read and recited by four speakers, and analyzes the rhythm and melody characteristics of reading and recitation, as well as the methods of recitation. The analysis results indicate that recitation has stronger rhythm and melody characteristics than reading aloud. In the recitation of five character modern style poetry, each sentence has three beats, while in the recitation of seven character modern style poetry, each sentence has four beats. The length of the beats alternates between long and short, presenting the characteristics of "flat long with short tones" and "flat low with high tones". The final characters of the five character and seven character contemporary poetry recitation, regardless of their tone, have a "dragging tone", forming a unique charm of ancient poetry recitation. Reciting each sentence has ups and downs in pitch and melody, and sentence structures with the same pitch, tone, and rhythm have similar pitch and melody patterns. The basic method of recitation is to follow the characteristics of "flat long, flat short" and "flat low, flat high", with five characters and three beats, seven characters and four beats, and trailing notes at the end of the sentence. The same melody pattern is used for the same flat and flat tones.

Keywords: Poetry reading; Poetry recitation; Speech analysis; Phonetic Feature; Poetry analysis

1. INTRODUCTION

China is a country of poetry, and Zhejiang is one of the important birthplaces of Tang poetry. In 2018, the Zhejiang Provincial Government proposed to build the "East Zhejiang Tang Poetry Road", which closely integrates Tang poetry research with Zhejiang's regional culture. Recitation is closely related to Tang poetry, just as Du Fu said, "New poetry should be transformed into long recitations." Recitation is a classical poetry recitation method that falls between "singing" and "reading," with a rhythmic and unique melodic tone. Reciting is not only an important way to appreciate poetry, but also an important means of creating poetry, and it is now a national intangible cultural heritage. As Mr. Wang Li said in "Ten Lectures on Poetry and Rhythm", "Poetry is not written for viewing, but for chanting.

Recitation is a traditional method of reciting classical poetry, as described by Lu Xun in private school teaching, which involves "shaking the head and tail"

to read ancient poetry and prose. The earliest scholar to record, organize, and study recitation was linguist Mr. Zhao Yuanren [1]. As early as 1925, Mr. Zhao Yuanren recorded his 11 Changzhou dialect recitations using a wire recorder in the United States and wrote multiple research papers on recitation, which were included in the book "Zhao Yuanren's Music Essays Collection" [2]. Mr. Zhao Yuanren defined recitation as "improvising a melody based on the tone of a character, rather than strictly following the tone to produce a completely unchanged melody [3].

The research on recitation is mainly conducted from the perspectives of linguistics and music. Scholars such as Wang Enbao, Chen Shaosong, Qin Dexiang, and Xu Jianshun have conducted in-depth research on recitation from a literary perspective [4], summarizing the recitation methods and characteristics of recitation tones in ancient poetry, prose, and other literary genres. Ye Jiaying believes in "On the Aesthetic Characteristics of Chinese Old Poetry and the Tradition of Recitation" that recitability is one of the important features of classical Chinese poetry, and recitation is also an important method for us to study the beauty of ancient Chinese culture [5]. Zhao Minli's "On the Language based Characteristics of Traditional Recitation" discusses that the tone of recitation is determined by the phonetics, tones, and tones of Chinese characters, and that traditional recitation is essentially an art of language [6]. Xu Jianshun's "On the Basic Methods of Recitation" elaborates in detail on the methods of recitation from six aspects: "flat length, narrow tone, short tone", "following the characters and singing style", "literary reading and pronunciation", and "vocal singing style"[4]. Yang Feng etc. analyzed over 100 reading and recitation works from a linguistic theoretical perspective using experimental phonetics research methods [7-10].

2. SIGNAL ACQUISITION

This article collected the phonetic data of 20 poems read and recited by four speakers, and analyzed the phonetic characteristics of poetry reading and recitation through phonetic acoustic analysis. Record a total of 20 poems, read each one aloud and recite them again.

Using microphone, mixing console, electronic glottometer (EGG) and other equipment, synchronously record two signals, with the first

recording voice signal and the second recording EGG voice signal. After the recording is completed, the data is sorted and edited, and each ancient poem is recited and saved as a file. Each file has two channels, with the left channel being the voice signal and the right channel being the EGG voice signal. Mark the syllables and steps of the recitation speech signal, calculate parameters such as syllable duration, step duration, pause duration, etc., and output the parameters to an Excel spreadsheet for statistical analysis. Extract fundamental frequency parameters from voice signals, smooth and normalize them, and output them to an Excel spreadsheet.

3. COMPARATIVE ANALYSIS OF PRONUNCIATION BETWEEN READING AND RECITATION

(1) Comparative Analysis of Reading and Reciting Five Character Poetry

In the recitation of five character modern poetry, the step structure consists of two syllables or three syllables at the end of the sentence, with a step structure of 2+3, while in recitation, it consists of two syllables or one syllable at the end of the sentence, with a step structure of 2+2+1. That is to say, the rhythm in five character recitation is two beats 2+3, while in recitation it is three beats 2+2+1.

In the recitation of five character modern poetry, each sentence consists of three beats, and the five characters form a 2+2+1 rhythm pattern, alternating in length and presenting the characteristic of "flat long and flat short". The following picture is a recitation of Du Fu's "Chun Wang", with the phrases "Cheng Chun/Chao Mu/Shen", "Flat/Pitch/Flat". The first beat of "Chen Chun" lasts for 2.21 seconds, which is a combination of flat and flat tones. The second character "Chun" has a duration several times longer than the previous syllable after dragging. The duration of the second beat of "Chao Mu" is 0.89 seconds, which is a combination of tones and tones, and the duration is shorter than the first beat. The third beat is composed of a single word "Shen" drag sound, with a duration of 1.67 seconds, which is longer than the second beat. Three beats form a rhythm pattern of "long+short+long".

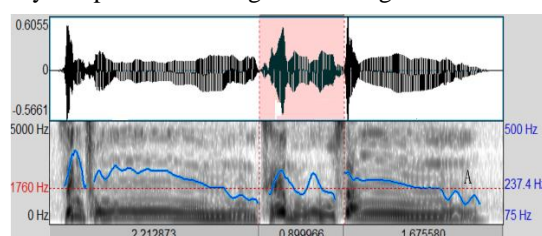


Figure 1 Waveform diagram of reciting the second sentence of "Chun Wang" in a five character modern style poem

The meter pattern of each line in the five character modern style poem is three beats, showing a characteristic of alternating length, and the words at the end of the line are all dragged. The statistical

results of acoustic parameters for reciting 10 five character modern style poems. The average duration of the flat combination is 2.72 seconds, which is much longer than the average duration of the tonal combination, which is 0.87 seconds. The trailing tone of the last character alone is one beat, and the average duration is 1.62 seconds.

At the end of a sentence recited in a five character modern style poem, regardless of the tone, there is always a "drag tone". The vowel of the tone is extended, while the tone is usually formed by adding characters such as "um" and "oh" to form a "drag tone". As shown in Figure 1, the word "Shen" at the end of the sentence is a flat tone character, and the vowel is extended several times. The final character "Zai" in "Guo Po Shan He Zai" is a tone tone character, and adding the character "Oh" forms a drag tone. At the same time, in the dragging tone of the last character, there are two periods of ups and downs in the pitch, as shown in the fundamental frequency curve at point A in Figure 1, which has two periods of fluctuations, forming a long-lasting charm in ancient poetry recitation.

The pitch and melody of each sentence in the five character modern style poem have ups and downs, and the combination of pitch and rhythm presents a characteristic of "flat low, flat high". The fundamental frequency of the flat combination is 216Hz, while that of the oblique combination is 298Hz. The pitch is arranged in a staggered manner to form the melody of each sentence. The pitch of the middle part "Chao Mu" is slightly higher than the pitch of the front part "Chen CHUN" and the back part "Shen", presenting a "low+high+low" pitch melody variation pattern.

The sound intensity of each sentence in the recitation of a five character modern style poem also fluctuates, presenting the characteristic of a loud and long-lasting dragging tone at the end of the sentence. The sound intensity of the combination of tones and tones is slightly lower than that of the combination of tones. The sound intensity of the last character in the sentence is the highest, with an average of 78.7 decibels. The sound intensity of the flat combination is the lowest, at 68.1 decibels, and the sound intensity of the oblique combination is 73.4 decibels, which is higher than that of the flat combination.

The melody pattern of reciting a five character modern style poem with the same level, tone, and rhythm can be the same, and the same method can be used to recite a five character modern style poem with the same sentence structure. There are four basic sentence patterns in five character modern poetry, which can be classified into four types based on the first sentence's tone structure: the first sentence's tone start tone end tone structure, the first sentence's tone start tone end tone structure, the first sentence's tone start tone end tone structure, and the first sentence's tone start tone end tone structure. The tone format of

the same type of five character quatrain and four sentences is the same, and the melody corresponding to each basic sentence pattern is consistent. The tone format of the four lines before and after the eight sentence five character modern style poem is consistent, and the melodic pattern of its recitation is also consistent. That is to say, poems with consistent patterns of tone, intonation, and rhythm have the same melodic pattern and can be recited using the same method. The pitch melody follows the pattern of "flat low, flat high", and the duration follows the combination of "flat long, flat short". In terms of sound intensity, the final character of the sentence is increased to form a longer and more melodious drag.

(2) Comparative Analysis of Reading and Reciting Seven Character Poetry

The degree of integration between syllables in the recitation and recitation of seven character modern poetry is not the same. We divide the prosodic hierarchy of seven character modern poetry based on the duration of each syllable and the duration of pauses between syllables. Firstly, we mark the starting and ending positions of each syllable and sentence, and calculate the duration of syllables and pauses between syllables. Cluster analysis is conducted on the duration of pauses between syllables, and the categories of pause duration are divided into different levels of prosodic boundaries to divide the prosodic hierarchy of seven character poetry.

In the reading of seven character modern poetry, the rhythmic hierarchy is divided into four levels, with the first level being rhythmic sentences, with an average duration of 2.72 seconds. The second level is a prosodic phrase, in which a longer "Dou" appears. The prosodic sentence is divided into two prosodic phrases before and after to form a four/three structure. The average duration of this "Dou" is 0.26s, and the average duration of the prosodic phrase is 1.56s. The third level is the step, consisting of two or three syllables, with an average step duration of 0.76s and a pause between steps of 0.17s. The step structure is 2+2+3. The fourth level is syllables, and the duration of each syllable is not equal, and the length of pauses between syllables is also different. The average duration of syllables is 0.41 seconds

In the recitation of seven character modern style poetry, each sentence consists of four beats, with seven characters forming a 2+2+2+1 rhythm pattern. The four beats alternate in length, presenting the characteristic of "flat long and flat short".

Statistical analysis was conducted on the duration of the combination of flat and tonal rhythms in seven character modern poetry. Each sentence had a four beat rhythm pattern, exhibiting the characteristic of "flat and long with short tones", and the last words of the sentence were all delayed. The average duration of the flat combination is 2.32 seconds, which is several times longer than the duration of the oblique

combination. The trailing tone of the last character alone is one beat, and the average duration is 1.61 seconds. Each sentence of the seven characters forms an alternating combination pattern of "short + long + short + long" or "long + short + long + short".

The recitation of seven character modern style poetry is consistent with that of five character poetry. Regardless of the tone at the end of the sentence, there is a "drag tone". The vowel of the tone tone is extended, while the tone tone tone is usually added with words such as "um" and "oh" to form a "drag tone", creating a unique charm for ancient poetry recitation.

Reciting a seven character modern style poem, each line has ups and downs in pitch and melody, and the combination of pitch and rhythm presents a characteristic of "low pitch and high pitch". The fundamental frequency of the flat combination is 207Hz, the tone combination is 281Hz, and the last character of the sentence is 217Hz. The pitch is arranged in a staggered manner to form the melody of each sentence.

The sound intensity of each sentence in the seven character modern style poem also fluctuates, consistent with the characteristics of the five character poem, presenting a loud and long-lasting dragging tone at the end of the sentence. The sound intensity of the combination of tones and tones is slightly lower than that of the combination of tones. The sound intensity of the last character of the sentence is the highest, with an average of 75.3 decibels. The sound intensity of the flat combination is the lowest, at 69.2 decibels, and the sound intensity of the oblique combination is 72.1 decibels, which is higher than that of the flat combination.

The seven character modern style poetry is the same as the five character one, and the melody pattern of recitation is also the same if the tone, pitch, and meter are consistent. The same melody height can be used to recite seven character modern style poetry with the same sentence structure. The tone format of the four sentences of the same type of seven character quatrains is the same, and the melody corresponding to each basic sentence structure is consistent. The tone format of the four lines before and after the eight line seven character modern style poem is consistent, and the melodic pattern of its recitation is also consistent. Seven character poems with consistent patterns of tone, intonation, and rhythm have the same melodic pattern and can be recited using the same method. Similar to the five character recitation method, the pitch melody follows the pattern of "flat low, flat high", and the duration follows the pattern of "flat long, flat short". The final character of the sentence is increased in intensity and dragged, with fluctuations in pitch during the dragging.

4. CONCLUSION

By comparing and analyzing the phonetics of reading and reciting 20 poems, the rhythm characteristics,

pitch melody, intensity changes, and recitation methods of poetry reading and reciting were summarized. In the recitation of five character modern style poetry, each sentence has three beats, with five characters forming a 2+2+1 beat pattern. In the recitation of seven character modern style poetry, each sentence has four beats, with seven characters forming a 2+2+2+1 beat pattern. The three or four beats of both are alternating in length, presenting the characteristics of "flat long, flat short" and "flat low, flat high". The duration of the flat combination is several times longer than that of the flat combination. The final characters of the sentences recited in five character and seven character contemporary poetry, regardless of their tone, all have a "drag tone". The vowel of the tone tone tone character is extended, while the tone tone tone character is generally formed by adding characters such as "um" and "oh" to form a "drag tone". The drag tone has pitch fluctuations, increased intensity, and clear sound, forming a unique charm of ancient poetry recitation. In recitation, each sentence has fluctuations in pitch and melody, and sentence structures with the same pitch, tone, and rhythm have similar pitch and melody patterns. The basic method of recitation is to follow a three beat pattern for five character modern poetry, a four beat pattern for seven character poetry, double the dragging of the last syllable of the flat combination, and add a word extension at the end of the sentence to form a single beat. The sound intensity increases to form a dragging tone. Recite according to the characteristics of "flat long, flat short" and "flat low, flat high". Sentences with consistent flat and flat formats should be recited according to the same melody height and rhythm pattern.

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REFERENCES

- [1]Wang Enbao and Shi Peiwen: "Collection of Recitation of Ancient Poetry and Literature", Beijing: Beijing Language and Culture University Press, 1993.
- [2]Chen Shaosong: "Recitation of Ancient Poetry and Literature", Beijing: Social Sciences Literature Press, 2002.
- [3]Qin Dexiang: "Reciting Music", Beijing: China Federation of Literary and Art Circles Press, 2002.
- [4]Xu Jianshun: "On the Basic Methods of Recitation", "Reciting Classics, Loving China - Collection of Essays from the Chinese Recitation Week", 2009.
- [5]Ye Jiaying: "On the Aesthetic Characteristics of Chinese Old Poetry and the Tradition of Recitation", Literature and Culture, 2012, Issue 2, Page 4.
- [6]Zhao Minli: "On the Linguistic Characteristics of Traditional Recitation", Journal of Capital Normal University (Social Sciences Edition), 2013, Issue 6, p. 93.
- [7]Yang Feng: "Research on Traditional Chinese Recitation: From the Perspectives of Rhythm, Voice, and Breathing", Beijing: PhD Dissertation, Peking University, June 2012.
- [8]LIBERMAN, P. 1967. Intonation, Perception, and Language. Cambridge, Massachusettes: The MIT Press.
- [9]OHALA, J. J. 1990. Respiratory activity in speech. In Speech Production and Speech Modelling, ed. W. J. Hardcastle, A. Marchal, 23-53. Dordrecht: Kluwer Academic Publishers.
- [10]SHI, Feng, Jinyu Zhang, Xuejun Bai, and Zhaohong Zhu. 2010. Intonation and Respiration: a Preliminary Analysis. Journal of Chinese Linguistics 38(2): 323-335.