Karamanoğlu Mehmetbey Üniversitesi
Uluslararası Filoloji ve Çeviribilim Dergisi
Karamanoglu Mehmetbey University
International Journal of Philology and Translation Studies
Cilt / Volume: 6, Sayı / Issue: 1
Gönderilme tarihi / Received: 08.01.2024
Kabul tarihi / Accepted: 01.06.2024
DOI: 10.55036/ufced.1416651

Exploration of the Rhythmic Structure Patterns in Chinese

Çince'nin Ritmik Yapı Modellerine Bakış

Araştırma Makalesi / Research Article

Cihat AKBAŞ*

* Dr. Öğr. Üyesi, Milli Savunma Üniversitesi, Yabancı Diller Yüksekokulu, Bölgesel Diller Bölümü, İstanbul, Türkiye, e-posta: cihatakbas235@gmail.com, ORCID: 0000-0002-2071-7506

ÖZET

Bu makale, fonoloji alanında geniş çapta incelenmemiş bir konu olan Çincenin ritmik yapı modellerinin incelenmesini gerçekleştirmektedir. Çalışma, Çincenin özgün hece vurgusu özelliklerine odaklanmakta ve dilin ritminin şekillenmesinde vurgu ve ton arasındaki etkileşimi incelemektedir. Vurgu zamanlamalı dillerin aksine, Çince ritmi, tonal yapısından önemli ölçüde etkilenmekte ve hecelerin tonal nitelikleriyle iç içe geçmiş ayırt edici bir ritmik model oluşturmaktadır. Araştırma, Çincenin hece yapısının karmaşıklığını ortaya koymakta, ritmik birimlerin oluşumunda baş ses, ara ses, ana ünlü ve son sesin rollerini incelemektedir. Bu çalışma, Çincede vurgu, ton ve hece yapısı arasındaki ince etkileşimi kapsamlı bir şekilde anlamamıza yardımcı olmakta ve Çince fonoloji ve hece vurgusu üzerine daha ileri araştırmalar için temel bir perspektif sunmaktadır.

Anahtar Sözcükler: Çince Fonoloji, Ritmik Yapı, Tonlu Diller

ABSTRACT

This paper conducts a preliminary exploration of rhythmic patterns in Chinese, a topic that has not been extensively examined in the field of phonology. The study delves into the unique characteristics of Chinese prosody, emphasizing the interaction between stress and tone in shaping the rhythm of the language. Unlike stress-timed languages, Chinese rhythm is significantly influenced by its tonal nature, which creates a distinct rhythmic pattern that is intrinsically linked to the tonal qualities of syllables. The research highlights the complexity of syllabic structure in Chinese, exploring the roles of initial sound, medial sound, main vowel, and final sound in the formation of rhythmic units. This study provides a comprehensive understanding of the nuanced interplay between stress, tone, and syllable structure in Chinese, offers a foundational perspective for further research in Chinese phonology and prosody.

Keywords: Chinese Phonology, Rhythmic Structure, Tonal Languages

1. Introduction

1.1 In contemporary nonlinear phonology research, rhythmic structure refers to the pattern of stressed and unstressed syllables in speech, which is the alternating appearance of these syllables forms rhythmic units, creating a language-specific rhythmic pattern. It is generally believed that rhythmic structures are crucial in polysyllabic stress-timed languages but are less prominent, or rather, the nature and function of rhythmic structures in monosyllabic and tonal Chinese are not very clear (Wang Hongjun 1999: 133).

Why is this so? In polysyllabic stress-timed languages, the phonetic form of the word, which is the basic rhythmic unit, is controlled by a definite stress, forming a specific "word sound form." In Chinese, the basic rhythmic units are individual meaningful "characters" (monosyllables), whose phonetic forms are controlled by definite tones, but they do not have fixed stress features. The stress in pronunciation has a certain degree of flexibility and thus some ambiguity. However, this issue must be resolved. In fact, some scholars at home and abroad are actively discussing this. For example, many scholars believe that Chinese has two sets of prosodic systems: tone and rhythm, which interact with each other. So, how do these two systems interact? What is the rhythmic structure pattern of Chinese? This paper attempts to make a preliminary exploration of this. The so-called preliminary exploration has two meanings: (1) The attempt to establish only the basic framework of the Chinese rhythmic structure pattern, (2) The attempt to reveal only the typical features of the Chinese rhythmic structure. In short, this is not an exhaustive, detailed description.

1.2 When we focus our attention on this topic, the insights of some predecessors are worth considering. For example, Zhao Yuanren's (1979: 81–82) judgment on the "normal stress" in Chinese rhythmic structure is quite enlightening. To summarize, there are main two points: (1) Predictability. He discovered that the stress status of Chinese syllables depends on their position in the rhythmic unit. In two-syllable, three-syllable, and four-syllable combinations, if none are in the neutral tone, the final syllable is the heaviest, followed by the first syllable, with middle syllables being the lightest; if there are neutral tones (usually attached at the end of the rhythmic unit), then the last stressed syllable is the heaviest. Since the different degrees of stress of these non-neutral syllables are predictable, they do not serve as markers. (2) Trans-word nature. He pointed out that the stress pattern of words and phrases in Chinese is the same, without the distinctive features found in English. For example, in a two-syllable form, they are either "light (non-neutral) first, heavy last" or "heavy first, light (neutral) last." Examples of the former include "**天下** “Tiānxià” (under heaven), **起初**“qǐchū” (initially), **同事** “tóngshì” (colleague), **拒绝** “jùjué” (reject), **袖口** “xiùkǒu” (cuff), **代笔** “dàibǐ” (ghostwrite)"; examples of the latter include "**知道** “zhīdào” (know), **本事** “běnshì” (ability), **待会** “dàihuì” (later), **琢磨** “zhuómó” (ponder), **乡下** “xiāngxià” (countryside), **明白** “míngbái” (understand)." These examples are generally considered as words, but "**先嫁** “xiānjià” (marry first), **你输** “nǐshū”(you lose), **红痣** “hóng zhì” (red mole), **去学** “qùxué” (go to learn), **就走** “jiù zǒu” (then leave), **带笔** “dàibǐ” (bring a pen)" are all light-first-heavy-last, with the four tones the same as the six examples of

"light-first-heavy-last" mentioned earlier, yet they are clearly phrases. Zhao Yuanren's view gives us an insight: The rhythmic structure pattern of Chinese objectively exists.

2. The Characteristics of Stress in Chinese

In polysyllabic stress-timed languages, the acoustic basis of stress is primarily characterized by intensity, while in Chinese, every meaningful "character" (monosyllable) has a definite tone (pitch feature), but does not have fixed stress characteristics. The emphasis in pronunciation has some flexibility. So, what is the inevitable connection between these two aspects? In fact, the regulation of level and oblique tones in ancient Chinese poetry clearly demonstrates this connection. The requirements for the configuration of level and oblique tones in regulated verse include a rule that requires clear distinction in even-numbered positions, namely "*odd positions are free, and even positions are distinct*" *(found in "Qieyun Guide").* This means that in odd-numbered characters (first, third, or fifth characters), the level and oblique tones are flexible, while in even-numbered characters (second, fourth, or sixth characters), the level and oblique tones must be distinct. Mr. Wang Li (1979: 34) believes that from the perspective of rhythm, these two lines of verse are basically correct because syllables in odd positions are not on the rhythmic points and can be ignored; syllables in even positions are on the rhythmic points and need to be distinct. However, he did not explain why syllables on rhythmic points must have distinct tones. In fact, the so-called rhythmic points are the "lifted" positions in the rhythmic unit (metrical foot) where the voice is elongated and emphasized during chanting. From an acoustic perspective, when a syllable is elongated and emphasized, its tonal features become significant, which is precisely the foundation of Chinese rhythm construction. That is to say, the lifting and falling within the metrical feet of regulated poetry, crucially lies in the "pause" during recitation, which is not an actual pause, but an interval after every two syllables, forming a delay in speech. This delay makes the second syllable of the double syllable relatively longer, creating a contrast of length with the first syllable, and also necessarily emphasizes the second syllable, forming a contrast of stress. Thus, each double syllable in regulated verse forms a relative contrast of short and long, light and heavy, showing the "post-stress principle" of Chinese rhythm, constituting a regular alternation of lifting and falling (Wu Weishan 1987, 1988). It is worth noting that the lifting and falling (short-long and light-heavy) within these double syllables are not inherent features of the Chinese characters. They are produced by modulation under the constraint of rhythmic patterns during poetic chanting. Once removed from the rhythmic pattern, this contrast no longer exists. Therefore, we refer to this phenomenon as "rhythmic tonal variation" and this contrast as "relative light-heavy law."

Through the analysis of level and oblique tones, we can gain a clearer understanding of the "stress" in the rhythmic structure of Chinese: typologically, the "stress" in Chinese is not the same as the stress in polysyllabic stress-timed languages that is based on intensity. The "stressed" syllables in Chinese rhythmic structure, rather than being called "stressed syllables", are better described as "emphasized readings" primarily characterized by increased duration and prominent tones. In fact, numerous acoustic experiments and research in the past 20 years have confirmed this point: Zhao Yuanren (1979: 23) pointed out earlier that Chinese stress primarily expands the tonal range (pitch feature) and duration, followed by increasing intensity.

Xu Shirong (1980: 133) found that the main vowels become longer and the tones more distinct, or the position higher, after Chinese syllables are emphasized. Wang Shiyuan (1983) proved through acoustic experiments that the characteristics of Chinese tones mainly depend on the fundamental frequency (F0) in the frequency, as well as the duration (T) and intensity amplitude (db); the more sufficient these parameters, the more distinct the pitch features, and vice versa. Lin Maocan et al. (1984) proved that the normal stress in Beijing dialect two-character combinations acoustically manifests as the character sound having a longer length and a more complete tonal form. Yan Jingzhu et al. (1988) demonstrated that in non-neutral tone three-character combinations, the "medium-light-heavy" format is the normal stress pattern, which manifests as the F0 tonal range position continuously decreasing from the first to the last character, with the last character having the widest range and the most obvious decline in the lower limit of F0, having a more complete tonal type, longer duration, and not necessarily greater intensity. Wang Hongjun (2001) pointed out that a significant concept proposed by experimental phonologists in China in recent years is "tonal range", referring to the difference between the highest and lowest points of the tone, which is a major acoustic parameter in the manifestation of Chinese stress.

3. The Binary Opposition of Light and Heavy Tones

The essence of the Chinese light tone is its "lightness" and "tonelessness". The light tone is not a tonal type that serves as a distinctive feature, but it forms a contrast with the regular heavy tone (Wang Hongjun 1999: 249). Regarding the relationship between light and heavy tones in Chinese, some scholars have proposed a "four-level, three-grade" classification. For instance, Xu Shirong (1957) believes that the strength of Beijing Mandarin syllables can be divided into four levels: (1) heavy tone, (2) medium tone, (3) sub-light tone, (4) lightest tone. He suggests that "sub-light tone" and "lightest tone" could be combined into one "light tone" category for teaching convenience. Yin Zuoyan (1982) proposed that the intensity of Mandarin syllables could be divided into three levels: heavy, medium, and light, where light includes both sub-light and the lightest tones and emphasized the necessity of establishing a "medium" level. These two scholars essentially agree that Chinese syllable strength can be divided into four levels, which can be consolidated into three grades, emphasizing the existence of the "medium" level. From a descriptive perspective, such a division of Mandarin syllable strength is reasonable due to the gradual historical development of language and the continuum of language phenomena. However, if we focus on the phonological system, caution is required, as this necessitates the support of "distinctive features" backed by acoustic experiments to uncover the "underlying structure" of Mandarin Chinese tone strength in phonology, and further depict how this underlying "opposition" is projected in actual spoken language flow. Thus, the aforementioned "four-level, three-grade" proposition warrants further discussion.

Zhao Yuanren (1979: 23) believed that from a physical point of view, Chinese has many perceivable degrees of heavy tones, but from a phonological point of view, it is best to divide them into three types: normal heavy tone, contrastive heavy tone (i.e., focus heavy tone, belonging to the pragmatic category and not directly related to phonological structure), and weak heavy tone (light tone). He did not advocate for the existence of a "medium heavy tone"

in Chinese, considering the intensity variations of the normal heavy tone as variants of the same tonal phoneme. Recent years have seen acoustic research experts providing a wealth of experimental data that confirm Zhao Yuanren's views. Cao Jianfen (1995), through phonetic experiments and acoustic feature analysis, concluded the "binary opposition of heavy and light tones" in Mandarin Chinese. She categorized non-light heavy tones as "normal heavy tone type" (normal type), and those with light tones as "light tone type" (neutral type), considering the "heavy/light" opposition and "medium/heavy" opposition as two different types of opposition at different levels. Furthermore, she pointed out that regardless of the four elements of acoustic structure, the distinction function, or the level and stability of the heavy tone opposition, the "medium/heavy" opposition is just a relative contrastive difference within the normal heavy tone type, whereas the "heavy/light" opposition is the absolute difference between two different heavy tone types. According to Cao Jianfen's findings, the distinction between heavy and light tones manifests as:

1) Tonal Structure: Heavy tone syllables maintain their normal tones unchanged, while light tone syllables lose their original tones, losing the four-tone distinction, with a narrowed tonal range.
2) Duration Structure: Heavy tone syllables are significantly longer, while light tone syllables are notably shorter, only about 3/5 of heavy tone syllables.
3) Strength Structure: Heavy tone syllables have ample energy, while light tone syllables have much less energy, only about 40% of heavy tone syllables.
4) Timbre Structure: Heavy tone syllables exhibit a full timbre, while light tone syllables undergo a qualitative change (vowel centralization or loss of final sound).

Table 1: *Types of Stress in Chinese and Examples*

Stress Type	Description	Examples
Normal Stress	Regular stress pattern in most syllables	Standard syllable pronunciations
Contrastive Stress (Focus)	Stress used for emphasis or focus	Emphasizing a particular word or phrase for clarity or contrast
Weak Stress (Light Tone)	Reduced stress, often in unstressed syllables or grammatical particles	Light tones in grammatical structures, like modal particles or suffixes

4. The Identification and Distribution of Weak Stress Positions

4.1. The Distribution of Weak Stress Positions

The concept of "weak stress positions" in Chinese refers to the use of light tones, also known as "neutral tones". Linguists have varying opinions on which linguistic elements are typically pronounced lightly, but there is a general consensus on certain patterns. Below, I will summarize these patterns based on Zhang Bin's "New Compilation of Modern Chinese" (2002: 63) and other scholars' views:

4.1.1 On the Syntactic Level

a) The second syllable in reduplicated verb forms expressing an attempt, such as in "试试" shì shì (try), "尝尝" cháng cháng (taste), "**看看**" kàn kàn (look), "**走走**" zǒu zǒu (walk).

b) Directional complements following verbs, like "进来" jìnlái (come in), "**出去**" chūqù (go out), "**上来**" shànglái (come up), "**下去**" xiàqù (go down).

c) Locative particles following nouns, e.g., "**桌上**" Zhuō shàng (on the table), "**楼下**" lóu xià (downstairs), "**屋里**" wū li (inside the room), "**窗外**" chuāngwài (outside the window).

d) Resultative elements following verbs, such as "**气坏**" qì huài (get angry), "**吃掉**" chī diào (eat up), "**听到**" tīng dào (hear), "买着" mǎizhe (buying).

e) Plural suffixes, like in "**同学**们" tóngxuémen (classmates).

f) Modal particles at the end of sentences, for instance, "**多美啊**" duō měi a (how beautiful), "**出事了**" chūshìle (something happened), "对的" duì de (correct), "**行**吗" xíng ma (is it okay), "钢笔呢" gāngbǐ ne (where is the pen), "**回家吧**" huí jiā ba (let's go home).

g) Structural particles, such as in "鲜红的" xiānhóng de (bright red), "认真地" rènzhēn dì (seriously), "**高**兴得" gāoxìng dé (happily).

h) Aspect markers, like in "**躺着**" tǎngzhe (lying), "**吃了**" chīle (ate), "**去**过" qùguò (have been).

4.1.2. On the Morphological Level

a) The second syllable in reduplicated or duplicated words, e.g., "妈妈" Māmā (mom), "**叔叔**" shūshu (uncle), "**哥哥**" gēgē (brother), "**星星**" xīngxīng (star), "**宝宝**" bǎobǎo (baby), "**猩猩**" xīngxīng (orangutan).

b) The second syllable in bisyllabic simple words, like "**玻璃**" bōlí (glass), "萝卜" luóbo (radish), "**玫瑰**" méiguī (rose), "**牡丹**" mǔdān (peony), "**琵琶**" pípá (lute), "**葫芦**" húlu (gourd).

c) The second syllable in certain commonly used bisyllabic words, such as "明白" míngbái (understand), "事情" shìqíng (matter), "工夫" gōngfū (time), "告诉" gàosù (tell), "姑娘" gūniáng (girl), "耳朵" ěrduǒ (ear).

d) Noun suffixes, for example, "桌子" zhuōzi (table), "盖儿" gài er (lid), "石头" shítou (stone), "尾巴" wěibā (tail), "什么" shénme (what).

4.2. Characteristics of Weak Stress Positions

The opposition of normal and weak stress in Chinese rhythm is distinct. Rhythm, in this context, refers to the form, function, and position of elements within the prosodic structure (a combination of rhythm and syntactic-semantic elements). Whether a syllable is pronounced lightly or heavily in speech is not just a phonetic phenomenon; it's directly related to the amount of information carried by that syllable and its syntactic and semantic roles. Compared to non-light syllables, weak stress syllables exhibit the following characteristics:

a) Abstraction: Non-light syllables generally convey specific lexical meanings and carry the main information load. In contrast, light syllables have evolved to lose their lexical meaning to varying degrees over time and mainly serve as markers. On the syntactic level, these elements have evolved into grammatical markers (see 3.1.1), while on the morphological level, they are abstracted into affixes or reduplicated forms (see 3.1.2). Notably, certain compounds (e.g., "琵琶", "葫芦") and highly fixed bisyllabic common words (e.g., "姑娘", "耳朵") may differ in form, but share a common feature: the meaning of the word does not directly correspond to its constituent morphemes, or one of the morphemes no longer carries lexical meaning, with both morphemes together expressing a complete concept. In such cases, their phonetic form manifests as a "heavy-light" pattern, akin to the fixed "word sound forms" in some polysyllabic stress-timed languages.

b) Weakening: In the basic rhythmic unit, non-light syllables can vary in strength (light, medium, heavy), and not necessarily all serve as the main stress. They can carry "stress", while light syllables are generally pronounced lightly and cannot carry "stress".

c) Positioning: In the basic rhythmic unit, non-light syllables have a free position, which means they can appear at the beginning, middle, or end of the unit. However, light syllables do not enjoy this freedom. Zhao Yuanren (1979: 26) clearly stated that in most cases, weak stress (neutral tones) appears in enclitic syllables, immediately following a stressed syllable, with the tone of this stressed syllable determining the pitch of the weak stress syllable.

Table 2: *Binary Opposition of Light and Heavy Tones in Chinese*

Tone Type	Characteristics	Examples
Heavy Tone	Full tonal range, longer duration, ample energy	Regular tonal syllables in standard expressions
Light Tone	Reduced or absent tonal range, shorter duration, less energy	Light or neutral tones, often in grammatical structures or suffixes

5. The Patterns of Chinese Rhythmic Structure

In synthesizing the formats of stressed positions and the distribution of weak stress positions, the rhythmic structure of standard Chinese stress can be summarized into four positions. The variants of stressed positions and the potential distribution patterns of weak stress positions can be categorized into six types as follows:

Type 1: A single syllable word forming an independent rhythmic unit (metrical foot).

Type 2: Reduplicated or duplicated words: "星星" (star), "宝宝" (baby); two-syllable simple words: "玫瑰" (rose), "琵琶" (lute); the second syllable of two-syllable compound words pronounced lightly: "明白" (understand), "事情" (matter); two-syllable derived words with suffixes: "桌子" (table), "尾巴" (tail); one-syllable word reduplications: "试试" (try), "看看" (look); two-syllable combinations with directional or locative words: "进来" (come in), "窗外" (outside the window); two-syllable verbal complements: "气坏" (get angry), "买着" (buying).

Type 3: Two-syllable combinations without light syllables: "白菜" (cabbage), "训练" (training); two-syllable derived words with prefixes: "老师" (teacher), "小菜" (small dish).

Type 4: Three-syllable derived words with suffixes: "粉笔头" (chalk head); three-syllable combinations with structural particles: "毕业了" (graduated), "同学们" (classmates); three-syllable phrases with the last syllable pronounced lightly: "想明白" (think clearly), "拧耳朵" (twist ears).

Type 5: Three-syllable derived words with prefixes: "老百姓" (common people), "超声波" (ultrasound); three-syllable combinations without light syllables: "工农兵" (workers, peasants, and soldiers), "数理化" (math, physics, chemistry).

Type 6: Type 5 plus a lightly pronounced syllable: "老百姓的" (of the common people), "招待所里" (in the guesthouse).

From the above analysis, the structure of a Chinese rhythmic unit has four potential positions. The composition of a rhythmic unit must have a primary stress position, while the other positions may or may not be present. However, this is only a formal analysis. In practice, the phonetic process of any rhythmic unit goes through a process similar to "initiating sound →

leading sound → concluding sound", where the "leading sound" appears as the highlighted part of the tone. Formally, "empty positions" in speech are not actually "empty". Therefore, we agree with some scholars' analysis of the elements of Chinese rhythmic structure. For example, Duanmu San argued that the rhythmic structure does not necessarily manifest as an alternation of duration and intensity; the narrow definition of stress refers to long and heavy sounds, while the broad definition of stress can be just the highlighted component of the metrical unit. In a Chinese tonal language (a tonal language), there is necessarily only one highlighted component within a tonal domain, which determines the boundary of the tonal domain and is also a type of stress (Wang Hongjun 1999: 143).

Table 3: *Weak Stress Positions and Their Usage in Chinese*

Position	Usage Area	Examples
Second syllable in reduplicated verb forms	Expressing an attempt	"试试" (try), "尝尝" (taste)
Directional complements following verbs	Indicating direction of action	"进来" (come in), "出去" (go out)
Locative particles following nouns	Indicating location	"桌上" (on the table), "楼下" (downstairs)
Resultative elements following verbs	Indicating result of action	"气坏" (get angry), "吃掉" (eat up)
Plural suffixes	Indicating plurality	"同学们" (classmates)
Modal particles at the end of sentences	Adding modal nuance	"多美啊" (how beautiful), "行吗" (is it okay)
Structural particles	Providing grammatical structure	"鲜红的" (bright red), "认真地" (seriously)
Aspect markers	Indicating aspect of action	"躺着" (lying), "吃了" (ate)

6. The Positional Significance in Chinese Structures

6.1. Analysis of Chinese Syllabic Structure Patterns

Through the analysis presented above, we have seen the basic framework and typical features of the rhythmic structure patterns in Chinese. This naturally leads to an association: there is an inherent "similarity" between the rhythmic structure patterns of Chinese and its syllabic structure patterns. The description of Chinese syllabic structure patterns in academia is as follows:

In Chinese syllabic structures, there are four positions: the initial sound (**声母** shēngmǔ), the medial sound (**介音** jièyīn), the main vowel (**韵腹** yùn fù), and the final sound (**韵尾** yùnwěi). Except for the main vowel, which is indispensable, the other positions can be "empty". However, this may appear as an illusion, or for the convenience of spelling, the fact that "empty positions are not empty" should be noted. Acoustic experiments show that these "empty positions" do exist objectively. For instance, the majority of zero-initials (**零声母** língshēngmǔ) in Chinese do occupy the initial position and differ in nature from the initial-less syllables in Indo-European languages. This can be seen from the actual phonetic values of zero-initial words

and their reflections in phonetic changes within speech flow. Additionally, the final sound (韵尾) position, traditionally considered empty in syllables without final sounds, is also indispensable. These findings are supported by substantial experimental evidence. The medial sound (介音) also occupies a position, as demonstrated in most dialects and confirmed by studies on speech errors, which show that errors could involve either the initial sound plus the medial sound or the medial sound plus the vowel. Even in monophthongs like 'i', 'u', and 'y', the medial position is not vacant but occupied by the respective medial sounds. The reason they are not marked as long vowels is because Chinese does not have a contrast between long and short vowels; all vowels in monosyllabic rhymes are long. The only position that might be genuinely "empty" is the medial sound (second position), as in the examples 'ah' and 'ta'.

In summary, the pattern of Chinese syllabic structure has two features: (1) four potential positions, and (2) the fact that "empty positions are not empty" (except for the second position).

Table 4: *Patterns of Rhythmic Structure in Chinese*

Model Type	Description	Examples
Type 1	A single syllable forming an independent rhythmic unit	Single-character words
Type 2	Reduplicated words, simple two-syllable words, compound words with light second syllable, two-syllable words with suffixes	"星星" (star), "玫瑰" (rose), "明白" (understand)
Type 3	Two-syllable combinations without light syllables, derived words with prefixes	"白菜" (cabbage), "老师" (teacher)
Type 4	Three-syllable derived words with suffixes, combinations with structural particles, phrases with light last syllable	"粉笔头" (chalk head), "毕业了" (graduated)
Type 5	Three-syllable derived words with prefixes, combinations without light syllables	"老百姓" (common people), "工农兵" (workers, peasants, soldiers)
Type 6	Type 5 plus a lightly pronounced syllable	"老百姓的" (of the common people), "招待所里" (in the guesthouse)

6.2. Implications of Displacement Theory and Empty Position Theory

Turning our attention to syntax, we notice that certain common syntactic analysis methods or techniques, such as displacement theory with component displacement analysis and empty position theory with empty category analysis, provide many insights. They allow us to explore the hidden "codes" of Chinese structural patterns, i.e., the similarities between phonetic structures and syntactic structures.

Looking at displacement theory and component displacement analysis, component displacement analysis is a common grammatical analysis tool today. The term "movement" implies movement relative to a certain "prototype structure" and "prototype position". For example, if we assume that 'I have eaten dinner' and 'Dinner I have eaten' are two different structures (layer analysis shows this result), it is difficult to say which component has moved.

Only by recognizing one structure as the prototype can we say that a component in the other structure has moved. Typically, we consider 'I have eaten dinner' as the prototype structure with the basic structure pattern: NP1 + V2 + NP2 (V2 is a bivalent verb, NP1 is the subject/agent, NP2 is the object/patient). Therefore, we would determine that 'Dinner' in 'Dinner I have eaten' has moved, and this is considered a pragmatic transformation phenomenon.

Looking at empty position theory and empty category analysis, "empty categories" refer to certain syntactic component positions in a sentence where some words or phrases do not appear, meaning these component positions are "empty". For example, in the sentences 'My brother ate ( )', '( ) ate two apples', '( ) ate ( )', we infer 'my brother' or 'two apples' based on contextual cues. This type of empty category belongs to the "omission type empty category" (notated as "omission e"). There are also "displacement type empty categories" (notated as "trace t"), as in the example 'Dinner I have eaten', which can be notated as [S (Dinner j) I i ate t j]. The characteristic of "empty categories" is "empty" (empty), which can be considered as not existing. The key issue is how to view the "emptiness" of empty categories. Just like '0' is considered a natural number in mathematics, "empty" cannot be said to have no objective reality.

In conclusion, two facts are evident from the analysis above: (1) In the process of discourse understanding, we have a psychological basis for "prototype positions" in structure recognition; (2) Although certain sentences have "empty" syntactic components in some positions, these components are not "empty" in the process of discourse understanding. These "empty categories" have objective reality.

Table 5: *Syllabic Structure Patterns in Chinese and Examples*

Syllable Position	Characteristics	Examples
Initial Sound	The consonant or group of consonants at the beginning of the syllable	"b" in "白" (bái, white), "zh" in "纸" (zhǐ, paper)
Medial Sound	The glide that may come between the initial and main vowel	"i" in "宾" (bīn, guest), absent in "马" (mǎ, horse)
Main Vowel	The primary vocalic part of the syllable	"a" in "爸" (bà, dad), "o" in "我" (wǒ, I)
Final Sound	The consonant or group of consonants at the end of the syllable	"ng" in "冰" (bīng, ice), absent in "天" (tiān, sky)

7. Conclusion

In this paper, we have explored the rhythmic structure patterns in Chinese, emphasizing the importance of understanding the unique characteristics of Chinese prosody. The study has revealed that Chinese rhythm, unlike stress-timed languages, is significantly influenced by the tonal nature of the language. The rhythmic patterns in Chinese are not simply a matter of stress and unstress but are deeply intertwined with the tonal qualities of the syllables.

Our analysis has shown that the rhythmic structure in Chinese encompasses various levels of stress, from weak to strong, which are determined by the position of the syllables within the

rhythmic unit. This intricate relationship between stress and tone in Chinese provides a unique rhythm that is distinct from other languages.

Furthermore, the research highlights the complexity of the Chinese language's syllabic structure. The syllabic structure, comprising the initial sound, the medial sound, the main vowel, and the final sound, plays a critical role in defining the rhythm of spoken Chinese. Each of these elements contributes to the overall rhythmic pattern, demonstrating the rich and dynamic nature of Chinese prosody.

In conclusion, this study has underscored the significance of rhythm in understanding the phonological structure of the Chinese language. It provides a comprehensive analysis of how rhythm, tone, and syllable structure coalesce to form the distinctive rhythmic patterns of Chinese, offering valuable insights for linguists and language learners alike.

REFERENCES

Cao Jianfen (1995). *"Connected Speech Tone Change and the Opposition of Light and Heavy Tones",* Chinese Language, No. 4.

Lin Maocan, Yan Jingzhu (1980). *"The Acoustic Properties of Light Tones in Beijing Dialect",* Dialect, No. 3.

Lin Maocan, Yan Jingzhu, Sun Guohua (1984). *"A Preliminary Experiment on Normal Stress in Two-Character Combinations in Beijing Dialect",* Dialect, No. 1.

Lu Jianming, Shen Yang (2003). *"Fifteen Lectures on Chinese and Chinese Studies",* Peking University Press.

Wang Li (1977). *"Poetry and Ci Rhythm",* Zhonghua Book Company.

Wang Hongjun (1999). *"Non-linear Phonology of Chinese",* Peking University Press.

(2000). *"The Prosodic Word and Prosodic Phrase in Chinese",* Chinese Language, No. 6.

(2001). *"Syllable Monosyllabic, Tonal Convergence (Stress) and Grammatical Structure Type and Component Sequence",* Contemporary Linguistics, No. 4.

(2002). *"The Correlation between Prosodic Boundary and Prosodic Pattern, Grammar, and Pragmatics in Mandarin Chinese",* Collected Papers on Linguistics, Vol. 26, The Commercial Press.

Wang Shiyuan (1983). *"Experimental Phonetics Lectures",* Collected Papers on Linguistics, Vol. 11, The Commercial Press.

Wu Weishan (1987). *"What is the Basis of the Rhythm of Traditional Regulated Verse?",* Jiangxi Social Sciences *"Controversy"*, No. 6.

(1988). *"The Post-Stress Principle in the Rhythm of Ancient Poetry",* Journal of Shanghai Normal University, No. 1.

Xu Shirong (1957). *"Spoken Mandarin Chinese Phonetics",* Character Reform, No. 10.

(1980). *"Knowledge of Mandarin Phonetics",* Character Reform Publishing House.

Yan Jingzhu, Lin Maocan (1988). *"The Acoustic Performance of Stress in Three-Character Combinations in Beijing Dialect",* Dialect, No. 3.

Yin Zuoyan (1982). *"A Preliminary Examination of the Stress of Common Bisyllabic Words in Mandarin Chinese",* Chinese Language, No. 3.

Zhang Bin, ed. (2002). *"New Compilation of Modern Chinese",* Fudan University Press.

Zhao Yuanren (1979). *"Spoken Chinese Grammar",* The Commercial Press.

EXPANDED SUMMARY

This paper presents an in-depth exploration of the rhythmic structure patterns in the Chinese language, emphasizing the unique interplay between stress and tone. Unlike stress-timed languages, Chinese rhythm is profoundly influenced by its tonal nature, forming distinct rhythmic patterns closely intertwined with the tonal qualities of syllables. The study begins by discussing the various types of stress in Chinese - normal stress, contrastive stress, and weak stress - highlighting how these stress types impact the language's rhythm. Particularly, weak stress or light tone plays a significant role in the grammatical structure and morphology of the language. This interaction between stress and tone is a fundamental aspect determining the rhythm of Chinese.

Further, the research delves into the binary opposition of light and heavy tones in Chinese. Light tones, often used in grammatical structures or suffixes, contrast significantly with heavy tones, which are more prominent and energetic. This tonal contrast is a key factor in understanding the rhythmic structure of the language. An essential part of the paper is the identification and distribution of weak stress positions. The study illustrates how weak stress is utilized in various structural levels of the language. Weak stress is frequently found in grammatical structures, resultative elements, locative particles, plural suffixes, and modal particles. This section also addresses the impact of weak stress on the semantic structure of the language. In the fourth section, the paper categorizes and discusses different rhythmic structure models in Chinese, from single-syllable words to complex three-syllable combinations, detailing how each contributes to the language's flow and meaning.

The paper concludes with an analysis of the positional significance within the Chinese syllabic structure. It examines the syllabic structure's four main positions - initial sound, medial sound, main vowel, and final sound - and their contribution to the overall rhythmic pattern. Overall, this comprehensive study provides insightful perspectives on Chinese's unique rhythmic properties. It serves as a valuable resource for linguists, language learners, and enthusiasts, illuminating the complexity of Chinese's tonal and rhythmic features and their influence on the language's fluency and meaning.