PROSODIC MARKING OF NEW AND GIVEN INFORMATION IN ENGLISH AND MANDARIN BY CHINESE SPEAKERS

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PROSODIC MARKING OF NEW AND GIVEN INFORMATION IN ENGLISH AND MANDARIN BY CHINESE SPEAKERS

ABSTRACT

Second language speakers have been found to face difficulties marking prosodic features of new and given information in English. English is a stress-based language, where lexical and sentence stress can reflect different meanings. On the other hand, Mandarin is a tone language in which differences in pitch (auditory perception of relative frequency) that refers to the highness or lowness of voice can give different meanings to words made up of the same vowels and consonants. Chinese learners who are learning English as a foreign language are likely to speak English with different intonation patterns from first language speakers, which can lead to misinterpretations of the message conveyed. However, there is a dearth of research on the prosodic marking of new and given information by Chinese English speakers and on the extent to which Mandarin might influence the marking of new and given information. To begin to fill this research gap, an empirical study of the prosodic features of English and Mandarin was conducted using a combination of qualitative and quantitative research methods to investigate the prosodic marking of new and given information in English and Mandarin by Chinese speakers. The speakers comprised five postgraduate students who were majoring in English. They were recorded reading two texts, one in English and the other in Chinese. Each text contained eight pairs of target words representing new and given information respectively. The recordings were then acoustically analysed using Praat. The results indicate that the patterns of marking of new and given information in English and Mandarin were similar. new information tended to have longer duration, higher F0, and a larger pitch range. However, the difference in pitch range between new and given information was found to be greater in English than in Mandarin.

Key words: English; Mandarin; New and given information; Information structure; Prosodic features

PENANDAAN PROSODIK MAKLUMAT BAHARU DAN TERDAHULU DALAM BAHASA INGGERIS DAN MANDARIN OLEH PENUTUR CINA

ABSTRAK

Penutur bahasa kedua menghadapi kesukaran untuk menandakan maklumat baharu dan terdahulu dalam bahasa Inggeris. Bahasa Inggeris adalah bahasa yang berdasarkan tekananleksikal, di mana variasi dalam tekanan leksikal dan tekanan di peringkat ayat dapat mencerminkan makna yang berbeza. Sebaliknya, bahasa Mandarin adalah bahasa yang menggunakan nada di mana perbezaan nada dapat memberikan makna yang berbeza pada suku kata yang terdiri daripada vokal dan konsonan yang sama. Penutur Cina yang mempelajari bahasa Inggeris sebagai bahasa asing kemungkinan besar menggunakan pola intonasi yang berbeza daripada penutur bahasa pertama. Ini boleh menyebabkan mesej yang disampaikan disalah tafsir Walau bagaimanapun, hanya terdapat segelintir kajian mengenai penandaan prosodi maklumat baharu dan terdahulu dalam bahasa Inggeris oleh penutur Cina dan juga mengenai sejauh mana bahasa Mandarin mempengaruhi penandaan maklumat baru dan diberikan. Untuk mengisi jurang penyelidikan ini, kajian empirikal mengenai ciri-ciri prosodi bahasa Inggeris dan Mandarin telah dijalankan dengan menggunakan kaedah gabungan penyelidikan kualitatif dan kuantitatif untuk mengkaji penandaan prosodi maklumat baharu dan terdahulu dalam bahasa Inggeris dan Mandarin oleh penutur bahasa Cina. Sampel kajian terdiri daripada lima pelajar pascasiswazah yang mengambil jurusan Bahasa Inggeris. Mereka dirakam semasa membaca dua teks: satu dalam bahasa Inggeris dan satu dalam bahasa Cina. Setiap teks mengandungi lapan pasang kata sasaran yang mewakili maklumat baharu dan terdahulu. Rakaman tersebut dianalisis secara akustik menggunakan Praat. Hasil kajian menunjuk bahawa pola penandaan prosodi maklumat baharu dan terdahulu dalam bahasa Inggeris dan Mandarin mempunyai persamaan. Maklumat baharu yang mempunyai tempoh masa (durasi) yang lebih panjang, F0 lebih tinggi, dan julat nada yang lebih besar. Walau

bagaimanapun, perbezaan nada antara maklumat baharu dan terdahulu didapati lebih besar dalam bahasa Inggeris berbanding dengan bahasa Mandarin.

Kata kunci: Bahasa Inggeris; Bahasa Mandarin; Maklumat baharu dan terdahulu; Struktur maklumat; Ciri-ciri prosodik

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A time will come to ride the wind and cleave the waves, I'll set my cloud-like sail to cross the sea which raves.

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CHAPTER 1: INTRODUCTION

This introductory chapter presents the research background, research objectives, research questions and the significance of the study. In the research background section, the research exhibits an overview of current research on information structure and a summary of the relationship between information structure and prosodic features is presented, followed by the research problem and research gap. This chapter also presents the research objectives and the significance of the present research. The final section provides an overview of the structure of the dissertation and the main content of each chapter.

1.1 Research Background

Language is a natural object that exists in the human mind and is an important part of the cognitive ability of human beings, which is a system of "encoding-decoding" and "expression-reception" of information that human beings are born with. The process of communication between people is the process of constantly transmitting information to each other. The information that is conveyed by the speaker and the information that is perceived by the listener can be collectively referred to as the information structure of language. Beginning in the 1960s, the focus in the field of Second Language Acquisition (SLA) shifted from a mess of information states to the study of distinguishing context-specific information states to facilitate effective information transfer, and with this, information structure became a research concern. It plays a very important role in the way people communicate, making communication effective, and has received much attention in the field of linguistics.

Prosody, as an important part of conveying information, is verbally closely related to information systems. Research on the prosodic markers of new and given information in Western countries started very early, but they were mainly focused on native English speakers. There is debate as to whether English as a Foreign Language (EFL) speakers can clearly distinguish the new information and given information. Most studies, however, have focused on explaining that second language speakers have difficulties marking prosodic features of new and given information in English (Gut et al., 2013; O'Brien and Gut, 2010) of it. This is said to be due to differences in pitch accent placement and the type of pitch accent they produce as well as in relation to the phonetic realization of these pitch accents (see 2.1). On the other hand, studies have also found that EFL speakers have the same performance as the First Language (L1) English speakers. For example, Cameroon English speakers make new information louder than given information in the discourse structure (Quafeu, 2010). while Chinese EFL speakers highlight new information in English utterance (Ding, 2016). Therefore, until now there has been no agreement on the discussion of how EFL speakers mark information states in English and further research and demonstration are needed.

Despite progress in the investigation of information structure related to prosody, there has been some controversy regarding the study of non-native speakers marking information status. Up to the present time, few of these studies of non-native speakers' prosodic marking of new and given information have covered Chinese EFL speakers. As English and Chinese are different language systems, with the former being an intonational language and the latter a tonal language, they have completely different sound structures or prosody. It is therefore not easy for Chinese EFL speakers to acquire or master some pronunciation features and prosodic features. Consequently, it is essential to pay attention to the way in which Chinese speakers mark the prosodic features of new and given information in English and Chinese. At present, however, there have been few studies

that concentrate on identifying the characteristics of English and Mandarin prosody in Chinese EFL speakers, and even fewer that focus on the similarities and differences between the two languages. Therefore, there is still a gap in this issue in SLA research and needs further exploration and concern. In response to this problem, the present study investigates the prosodic marking of new and given information on English and Mandarin by Chinese speakers and tries to find their similarities and differences.

1.2 Research Objectives

English is a stress-based language, with both lexical and sentence stress variations in pitch that can reflect different meanings in words (Cutler & Clifton, 1984). For example, in the word *object*, when the stress is on the first syllable, it is pronounced as /ˈɒbdʒɪkt/, which means *a thing*, and here it is used as a noun. However, when the accent is on the second syllable, it is pronounced as /əbˈdʒekt/, which is a verb that means *to disagree*. Mandarin, on the other hand, is a tone language, and therefore, has its intonation patterns, and differences in pitch can give different meanings to words made up of the same vowels and consonants. In the other words, the meaning of a word depends on the intonation reflected in the pitch. For example, *yi* in different tones has different meanings. *yī* (一, the first tone) means *the number one*; *yí* (姨, the second tone) means *mother's sister*; *yǐ* (已, the third tone) means *already*; *yì* (亿, the fourth tone) means *a hundred million*. Due to the different intonation systems of the two languages, Chinese EFL speakers often speak English with a different intonation from L1 speakers, who are always perceived as unnaturally speaking English. This can lead to a discrepancy between the message conveyed by the Chinese speakers of English and that received by the listeners. Therefore, it is necessary to find out how Chinese speakers of English prosodically mark information status in English and Mandarin respectively, and to be able

to explore whether there are any similarities and differences between English and Mandarin when Chinese speakers speak.

Based on this research gap, the objectives of this study are as follows:

1. To identify the prosodic markings of new information and given information in English and Mandarin of Chinese speakers.

2. To explore the differences and similarities of First language (L1), Mandarin and Second Language (L2), English when Chinese speakers mark the new and given information.

By comparing the prosodic features of new and given information between Mandarin and English, this study aims to explore the prosodic features of new information and given information in L2 English produced by Chinese EFL speakers, as well as the prosodic features of new and given information they exhibit in L1 Mandarin. The aim is to enhance the understanding of prosodic features of the new and given information in English and Mandarin and the possible influence of L1 Mandarin over English.

1.3 Research Questions

In relation to the objectives, the following research questions will be addressed:

1. How do Chinese speakers prosodically mark new and given information in English?

2. How do Chinese speakers prosodically mark new and given information in Mandarin?

3. To what extent are there similarities and differences between the way in which new and given information is marked in English and Mandarin by Chinese speakers?

1.4 Significance of the Research

While previous research on prosodic marking and information structure theory has explored German EFL speakers, Dutch EFL speakers, Malaysia EFL speakers, and so on, the large number of Chinese EFL speakers have long been neglected. Additionally, most of the research on prosodic characteristics of Chinese EFL speakers has focused on intonation patterns, and less research has been conducted on how Chinese EFL speakers prosodically mark given and new information. There are very few empirical studies comparing the similarities and differences between the prosodic features of Mandarin and English utterances. In language acquisition where the second language is English, EFL speakers are subject to the influence of native language transfer, which makes it difficult or impossible for them to acquire the prosodic patterns of the target language and unknowingly select the prosodic patterns in their L1 and transfer them to L2 to a greater or lesser extent. The difference between English and Mandarin prosodic patterns is often considered to be one of the main reasons. Therefore, this study can expand the scope of the current research on prosodic features and provide a reference for further research on Chinese speakers' prosodic features when marking given and new information.

There is no dispute that the goal of learning English is to communicate in English. In other words, it is to exchange information with people. The expression of prosodic features will inevitably affect the listener's capture of the main information, thereby affecting the communication effect. Research on the way Chinese EFL speakers mark information states is still in its infancy, so the empirical study is of great importance for

the pedagogical approach. By investigating the phonetic data of Chinese EFL speakers, some suggestions can be provided for English phonetics teaching in China. For example, English teachers maintain the ability to better understand English and Mandarin prosody and give instruction to students. This study may as well help teachers to reflect on their phonics teaching and enable them to strengthen their instruction on suprasegmental features. Therefore, it is very meaningful to conduct this research, which can analyse the prosodic characteristics of Chinese speakers when they encounter new information and given information both in English and Mandarin Chinese and explore whether Chinese has an impact on the prosodic features of their English speaking.

Prosody is crucial to communication and so speakers are also the beneficiaries. Due to language transfer, Chinese EFL speakers do not have an easy time mastering the rules of English prosody. The findings of this research will help them to understand and acquire the basic prosodic features of native speakers' speech, and they maintain the ability to use this kind of prosodic pattern to improve their other language skills, such as listening and speaking.

In summary, exploring the prosodic features of Chinese EFL speakers' new and given information in English and Mandarin is very meaningful, it not only can broaden the research of prosody on Chinese speakers but also can help Chinese EFL speakers gain effective instruction in marking prosodic features, which will allow them to convey or receive information accurately. This study also can provide English teaching in China with some enlightenment, particularly in the teaching of spoken skills.

1.5 Outline of the Research

The dissertation consists of five chapters, whose aim is to analyse the prosodic features of marking new and given information exhibited by Chinese EFL speakers in English and Mandarin utterances. The main task is for participants to read two pieces of material aloud and then analyse the recorded data.

This first chapter introduced the research background, gap and motivation for this study. The second chapter reviews the literature related to the study, while the third chapter explains the methodology used in this study, and the fourth chapter presents and discusses the findings of the study. Finally, Chapter 5 summarizes the findings in relation to the research questions and provides suggestions for further research.

CHAPTER 2: LITERATURE REVIEW

Research on information structure has gained popularity over the past few years. Researchers have been interested in learning more about prosodic marking in the new and given information. Similarities and differences in the prosodic marking of new and given information between the first language and the second language or foreign languages have also been of interest to researchers.

The following sections discuss the literature related to prosodic features and to information structures. First, a general overview of the definition of prosodic features is introduced, after that, the relevant empirical studies of prosodic features are exhibited, especially regarding English and Mandarin. The subsequent section focuses on the notion of information structure, more specifically, about new and given information. Next, empirical studies related to new and given information are reviewed. The final section is a review of empirical studies of prosodic features and information structure and illustrates how prosodic features interact with new and given information.

2.1 Definition of Prosodic Features

Prosody is one of the fundamental characteristics of human language, which is very complex and ubiquitous. Changes in prosody help the listener to better understand the semantic meaning of the speaker. Speakers' tone of voice, attitude and emotional personal characteristics are all reflected in the prosody, and it is through changes in prosody that the speaker expresses his or her thoughts. It can also reflect various features of the speaker or utterance, such as the form of the utterance, whether it is a statement, a question or a command; the emotional state or attitude of the speakers, whether they are happy, frustrated or angry; additional or underlying meanings of the utterance, where the

same sequence of words may convey completely different meanings in different tones; or other linguistic elements that may not be encoded simply through a choice of vocabulary or grammar, such as focus. Crystal (1986) proposed prosody (prosodic features) as a term used in suprasegmental phonetics and phonology, collectively referred to as variations in pitch, loudness, speed, and rhythm. Similarly, Gumperz (1982) defined prosody as a collective term for the variation in vowel length, variation in loudness, stress, intonation, and overall variation in the phonological register. In addition, Wells (2006) highlighted that prosody is a suprasegmental segment, which is closely related to suprasegmental features such as stress, tone, and intonation. Thus, in a broad sense prosody generally refers to variations in pitch, acoustics, speed, and rhythm, while in a narrower sense it refers to suprasegmental feature, which consists of three main aspects at the phonological level: stress (accent), rhythm and intonation, which are achieved through changes in acoustic parameters such as pitch, intensity, and duration.

Stress refers to a kind of prominence in words, phrases, or even certain components of a sentence, which is the basis for rhythm and intonation, and it is one of the most important aspects of linguistic expression. There are word accents and sentence accents. Word stress is a stressed syllable present in a single word, which can indicate the relative prominence or salience of a syllable. Ladefoged and Johnson (2014) stated that stress does not apply to individual vowels and consonants but to whole syllables and that stressed syllables are pronounced with greater energy than non-stressed syllables and are more prominent in the connected speech. Richards and Schmidt (2013) argued that stress is the placing of more emphasis on a syllable, making it stand out from the rest of the syllables in a word. Sentence stress is the accenting of words in a sentence, and it enables emphasis to be applied to specific words to highlight their importance. The present study focuses mainly on word stress, and thus, sentence stress will not be explained in detail in this chapter.

Rhythm refers to the perceived regularity of salient units in speech (Crystal, 2008) and is used to denote any regular repetitive motion. English is a stress-timed language. In English, stresses usually occur at roughly equal intervals. Sometimes the stress of alternative words is reduced or minimized to avoid stressed syllables being too close to each other and to maintain phonological rhythm (Ladefoged & Johnson, 2014). Compared to English, Chinese is more of a syllable-timed language, with the timing of adjacent syllables in the speech stream being approximately the same.

Intonation refers to a complex phonological phenomenon common to human spoken expression whereby people adjust the changes in pitch, weight, duration, pauses and other acoustic features of speech sequences to achieve the grammatical functions of sentences and to express other intonational meanings in the process of producing natural utterance. Intonation is the expression of the grammatical function of a sentence in spoken languages, such as a statement, a question, an exclamation, and so on. It is also the expression of the speaker's emotions, such as excitement, anger, happiness, disappointment, and so on. It is the conscious and unconscious adjustment of speech strings in connected speech as people realise the grammatical unit of the 'sentence' as a phonetic form of utterance. Trask (2004) defines intonation as follows:

> The use of pitch, and possibly of additional prosodic phenomena such as loudness, tempo, and pauses, over a stretch of utterance is generally longer than a single word for the purpose of conveying meaning. (p. 184)

This definition emphasises the use of pitch and melodic patterns that can serve to distinguish meaning, and it is to these pitches or melodic patterns that intonation refers to.

It is apparent that intonation is the largest unit containing both rhythm and stress since each intonation group contains both rhythmic groups and stressed and unstressed

syllables. Rhythm is developed from stress. Each rhythmic group contains both stressed and unstressed syllables. In a way, stress is a primary acoustic feature of intonation, because when measuring stress, its pitch value needs to be inspected.

Pitch, the most distinctive feature associated with prosody, is an auditory phonetic term that relates to the listener's perception of the relative height of the voice, and it is expressed as fundamental frequency (F0). F0 is the number of times per second that the vocal folds complete a cycle of vibration (Crystal, 1969; Clark et al., 2007) and is measured in hertz (Hz). Normally, females have a higher F0 than males. When someone is speaking, there is no steady-state pitch level. Variations in pitch can convey a variety of messages. There are two systems of pitch, pitch and pitch range. Pitch refers to the direction in which a pitch moves in a syllable as if it were falling, rising, or remaining horizontal. Pitch range is the distance between adjacent syllables or segments of utterances, determined on a scale from high to low (Crystal, 1975). In everyday conversation, speakers have a normal pitch level and stay in the normal part of the pitch range, but if they want to express strong feelings or involvement, they may deviate from the normal level or range differently. Ways of producing ultra-high or ultra-low speech, for example by suddenly raising or falling, gradually. The normal distance between adjacent syllables may become narrower or wider, and different languages exhibit different kinds or degrees of pitch variation.

Another acoustic parameter, intensity, refers to an auditory speech characteristic perceived by the listener as the loudness of the sound one hears, depending on the energy used by the speaker in producing the sound. It is measured in decibels (dB), which is related to the amplitude of vibration of the vocal folds, an increase in the amplitude of vibration will result in the impression of greater loudness. There is no absolute dB of a particular sound. The intensity of a sound varies depending on the linguistic context and

the characteristics of the sound segment. For example, open vowels are louder than close vowels, and in general, vowels make louder sounds than consonants. Also, the intensity will certainly vary considerably for different speakers, especially in different contexts and in different moods. For example, when a politician makes a speech, he/she will be very loud for everyone to hear what he/she is saying. Cruttenden (1997) declares that intensity, as a prosodic feature, is often difficult to assess because many factors influence the intensity of a syllable or sequence of syllables, depending on personality and context.

Duration is used to illustrate the length of a sound. Phonetically, it indicates the relative length of a sound or syllable when compared linguistically. Acoustically, the duration of a sound segment can be measured in milliseconds (ms) on a spectrogram with the aid of computer software. In general, in most languages, there is no absolute duration or duration range for a particular sound. In addition, the duration of a sound may vary depending on the speech context, for example, whether the syllable in which the sound segment is located is repeated or whether the syllable occurs immediately before a pause. The duration of a sound, or a syllable, depends on the speaking speed, that is if a person speaks fast and the total duration of the whole utterance is shorter than the total duration when he slows down his speech, then the average duration of each sound segment must be shorter than at lower speeds. In both English and Chinese, vowels are usually longer than consonants, so stressed syllables are longer than unstressed syllables. The duration of each English syllable in connected speech is generally more variable, whereas Chinese is somewhat fixed stems from its central crux that it is regarded as a syllable-timed language, which means that each Chinese syllable has the same duration.

According to Nespor and Vogel (2012), the prosodic hierarchy structure in English from top to bottom consists of mora, syllable, foot, prosodic word, clitic word, phonological phrase, intonational phrase and utterance. The prosodic structure of Chinese

is in some ways like the constituents of the English prosodic structure, but there are also differences. Although natural languages all have natural prosody, the full expression of Chinese tones to some extent obscures stress, resulting in a lack of obvious stress and non-stress between syllables in which Chinese has tones. As a result, foot based on stress assignment are not prominent in the hierarchy of Chinese prosodic structure (Li, 2012). Mora elements also belong to the non-emergent category in Chinese, manifesting themselves as implicit units and not participating in phonological processes. As function words or dummy words that are only attached to real words to form rhymes at the post-lexical level, clitic groups are also un-prominent in Chinese and have no corresponding place in the hierarchy of Chinese prosodic structure (Li, 2012). The levels of prosodic structure common to both English and Chinese are syllables, prosodic words, phonological phrases, intonational phrases and utterances. Mora, foot and clitic groups are important prosodic units in English, but they are not prominent units in Chinese because there are no long vowels and no multi-consonant clusters in Chinese, so they should be excluded from the structure of Chinese prosodic morphology. Accordingly, the present study focuses on the prosody of syllables in English and Chinese.

The purpose of this research is to analyse the characteristics of new and given information in English and Mandarin, with a focus on investigating the pitch and duration of the accented syllables of words that carry new and given information. Fry (1955) and Gay (1978) pointed out that the speaker also perceives an increase in pitch when stressing or repeating a word so that the word sounds heavier. Also, stressed words are longer in duration than non-stressed words. The principal acoustic manifestations of accent on syllables in English are a rise in the fundamental frequency and a lengthening of the duration (Bolinger, 1958; Lieberman, 1960). The ideographic function of Chinese stress is more complex, and its acoustic characteristics are not the same as those of non-stressed languages. Regarding Mandarin, Chao (1965) points out that Chinese stress is firstly in

the neighbourhood of expanding the pitch range and duration of the sound and secondly about increasing the intensity. Lin et al. (1984), in their analysis of normal stress in two-character groups of Beijing dialect, stated that the acoustic characteristics of normal stress are mainly a long length and a complete pitch pattern, and that intensity does not play a role in general. In Chinese, stress is closely related to pitch and duration, but it is also closely related to intensity when stressed (Guo, 1993). In Chinese, an increase in intensity or loudness is not the most important acoustic correlate of accent, the most important acoustic manifestations are changes in pitch and duration. In the light of these, this study concerns only the analysis of pitch and duration of new and given information of accented syllables.

2.2 Studies on Prosodic Features

Studies of the prosodic features of English have usually focused on the pitch, intonation patterns and the placement of nuclear stress. The alteration of pitch is closely related to the accent. One example is that Liberman (1960) investigated the acoustic correlates of pitch accent in American English, finding that the pitch of stressed syllables was higher than that of non-stressed syllables in the same sound. Another study that explored the relationship between accent and synthetic nonsense syllables, demonstrated that changes in F0 had a significant effect on the accent (Morton & Jassem, 1965). As research on the prosodic features of English grew, so researched EFL prosodic acquisition. For example, Juffs (1990) showed that the prosodic output of non-native speakers of English differs significantly from that of native speakers in terms of the position and length of pauses, the placement of accent, pitch, and expression. In a similar way, In a similar vein, Deterding (1994) found that the British English intonation model did not apply to Singapore English, where there was no clear nucleus, that is, no focus of

information, in the phrases. Similarly, Setter (2006), who investigated the syllable durations of Hong Kong Cantonese speakers speaking English, found that English-speaking Hong Kongers differed less in the relative syllable durations of tonic, stressed, unstressed, and weakened syllables compared to English speakers.

In contrast to the flourishing development abroad, research on the prosodic features of Chinese EFL speakers started late and was mostly theoretical until the 20th century, when it attracted attention with the development of research methods. Juffs (1990) investigated Chinese EFL learners' accent deviations in English reading tasks and categorised these accent errors into two types, one concerning accent placement and the other about accent realization. In the former, foreign language learners emphasise non-nuclear word accents for pitch movement in addition to nuclear syllables. In the latter, learners tend to recognise the main accent in terms of monotonic descent. Juffs (1990) argues that Chinese EFL learners seem to be unsure of the function of the main accent, either by indiscriminately applying pitch movement on each syllable or only on the last word of each intonation phrase, or by excessively lengthening the syllable to make the other prominent. Based on the Spoken English Corpus of Chinese Learners, Chen (2005) indicated that the negative expressions in spoken English of Chinese learners were mostly given an accent and mainly expressed in pitch prominence. In addition, a comparative analysis of the prosodic characteristics of English utterances in three speech speeds, fast, medium, and slow, revealed that the range of pitch variation narrows as the speed of speech increases and decreases (Li, 2010). In another study of Chinese speakers, Gao (2010) who investigated 23 Chinese students' oral English reading concerning the realization of prosody, found that Chinese EFL learners mostly raised the pitch value or changed the pitch contours direction, or increased the intensity in their English reading, but rarely used the method of lengthening the duration. She considers Chinese EFL

learners to have problems such as the misuse of pitch accent types and inappropriate tonal grouping, which in varying degrees can affect the achievement of prominence.

Research in the area of prosodic features in Mandarin Chinese is in its infancy, so relatively little has been done. Chao (1933) states that pitch variation refers to the variation of pitch register, pitch range, and the overall trend of pitch contour. Pitch register is the 'key' of pitch range, while pitch range is the range of pitch variables of different tones, the variation of which means its compression or expansion. The variation of the overall trend of pitch contour is reflected by the variation of the top pitch line and bottom pitch line. However, Xu (1999) demonstrated that there is no certainly global form for an utterance's intonation and that the surface F0 declination is influenced by the function of many aspects, such as the down-step caused by L tone, the new topic or focus of an utterance, and these effects are nearly identical. Shen (1994) held the view that the rhythmic form of Chinese is mainly related to the combination of syllable duration and the modulation of the bass line of the tonal range. Based on two perceptual experiments, Zhong et al. (2001) found that, according to the weight of contribution to stressed word perception, the acoustic cues were duration, pitch, spectral tilt, and energy, and showed that listeners' linguistic knowledge of stress in prosodic word significantly influences the result of stress perception. Chinese is a tone language, but the strength of syllables in an utterance is different from each other, such as some syllables are more stressed than others. In an intonation phrase, the first prosodic word tends to be more prominent perceptually, while that at the end is less prominent perceptually. The duration of syllables near the end is quite long, but these are not prominent perceptually, which means that prominence is more correlated to pitch than duration (Wang & Yang, 2003). Furthermore, Lin (2004) emphasised that accent influences changes in both fundamental frequency and duration, commonly represented by the movement of pitch contours and pitch rise (Wang et al., 2002). Lin (2011) compared the pitch accent of wide and narrow focus in Mandarin

and found that narrow focus realization enlarges the pitch range of the focus word, decreases the pitch of the preceding and following words, and maintains the pitch of the preceding word higher than that of the following word, thus producing a significant skewing effect in declarative sentences (Shih, 2000). Similarly, Lai et al. (2010) investigated the prosodic features of Mandarin Chinese for the notions of prosodic strength and stress and suggested that F0 is a reliable phonetic indicator of metrical structure in Mandarin Chinese, rather than duration. Collectively, these studies outline a critical role of pitch and duration in the prosodic features of Mandarin Chinese.

In addition to the previous studies on EFL prosodic features, a few linguists have also investigated the influence of the native language phonetic system on the process of second language acquisition. The results reveal that the L1 prosodic features of non-native English speakers may have a cross-linguistic influence on their L2, English. Different first languages, such as Bengali, Tamil and Hindi-Urdu (Pickering & Wiltshire, 2000), Singaporean Chinese (Lim, 2009) and Malay (Gut & Pillai, 2013), all show such results. In addition to this, Wenk (1985) found that the prosodic patterns of L1 French speakers were strongly influenced by their mother tongue at the primary stage of learning English, while at the intermediate stage of learning English the prosodic patterns became closer to English but still bore traces of their mother tongue; by the time they reached the advanced stage, the prosodic patterns of French speakers speaking English were hardly influenced by French. Wennerstrom (1994) examined the prosodic features of L2 English produced by speakers from three different countries: Spain, Japan and Thailand, and showed that, differing from native speakers who make full use of pitch variation and contrast to convey meaning, non-native speakers rarely use consistent pitch variation to indicate meaningful contrast in the same context. In addition, Wennerstrom (1998) also investigated the prosodic markers used by Chinese speakers in English and found that Chinese EFL learners indicated topic shifts by rising on phrase boundaries to connect constituents and

discourse structure and by compressing pitch contours. In the same way, Mimatsu (2000) conducted a comparative study of Japanese EFL learners and English speakers from the United Sates, and the findings revealed that Japanese EFL learners had less pronounced English accent pitch and a narrower pitch range than American speakers; similarly, Mennen (1998) and Pikering and Wiltshire (2000) in their study found that Japanese English learners and Indian English speakers had a narrower pitch range than native speakers separately. In sum, their findings suggest that the native language has a strong influence on the prosody and intonation produced by EFL, potentially affecting its prosody, boundary tones and pitch accents, hence also highlighting the importance of prosodic features in the learning of English.

Drawing on L1 and L2 approaches to prosody research, some linguists have turned their attention to the prosodic features in the spoken English of Chinese EFL learners. In her book, Chen (2008) very comprehensively analysed the intonation differences between Chinese EFL learners and native English speakers in relation to tonality, tonicity and tone that distinguish them from traditional British intonation. Her findings show that:

1) regarding pitch accent placement, Chinese EFL learners are incapable of distinguishing between stressed and unstressed syllables; they often shift pitch accents to non-stressed syllables.

2) Chinese learners lack a sense of English prosody in their reading.

3) There is a monotonous intonation pattern in the English utterances of Chinese EFL learners, with the absence of significant rise and fall.

4) Chinese EFL learners speak with an unnatural intonation in English. Their prosodic performance becomes worse when there are many words and complex structures in the sentences.

Most of the studies on Chinese EFL learners' prosodic level have focused only on their prosodic performance in English and compared it with that of native English speakers while neglecting to investigate the influence of their L1 Mandarin on L2 English. Therefore, to understand the cross-linguistic influence of Chinese EFL learners' L1 on L2, this study is intended to analyse the prosodic features of English and Mandarin and identify the similarities and differences between the prosodic features of the two languages.

2.3 Definition of Information Structure

In the second half of the 20th century, with the development of psychology and cognitive science, it was gradually recognised that language should be seen as a natural object in the human mind, an important part of human cognitive ability, and an inherent "encoding-decoding" and "expression-receiving" system of information. The process of communication between people is essentially the process of exchanging information with each other. In verbal communication, both parties in communication encode the information they want to convey into information units, which are units that allow new and given information to interact with each other and communicate information outside. This information unit is the information structure.

Research on the information structure can be traced back to the Prague School before the Second World War. Mathesius (1939) proposed the term theme and rheme. The theme is the starting point of an utterance in a known or at least certain context, which provides given information; the rheme is the utterance around the theme and is the core of the utterance, which provides new information. Subsequently, scholars of the Prague school have examined what they call the 'Communicative Dynamism' of the elements that make up a sentence within the framework of the Functional Sentence Perspective

(Vachek, 1966; Firbas, 2015), where they argue the communicative dynamics of a component to be high or low depending on the nature of the information it conveys. However, it did not receive much attention at the time, but these studies laid the theoretical foundations for the emergence of information structure theory.

Halliday continued and modified the views of the Prague School, and based on the thematic structure, explored the rules of linguistic structure and how it is organised into parts of speech, thus giving birth to the Information Structure theory, which received widespread attention. Halliday (1967) brought up the term 'information structure', as being related to the 'theme-rheme' structure, which is an aspect of the theme organization of the discourse, whereby the speaker organises the communicative act into a message block, which is the arrangement of information unit and determines the value of each component of each message block in the process of utterance advancement. In the idealised form, each unit of information consists of a given element and a new element. As the discourse proceeds in two ways, the information structure is naturally realised: the new thing marked by prominence and the given thing typically advancing the new thing. Halliday's reference to information structure refers to the dynamic organization of utterance information. Since then, similar names have been proposed from a dynamic perspective, such as 'information packaging' by Chafe (1976), in which he claims that information structure is the packaging of information and that to optimise communicative purposes, speakers often adopt optimal patterns of combining information so that listeners can better understand their speech. In other words, they place the information they want to present into a package. However, they are free to determine where each unit of information begins and ends and how it is organised. Furthermore, Lambrecht (1994) pointed out that information structures are components of sentence syntax in which propositional and lexico-grammatical structures, as conceptual representations of events, match and are consistent with the speaker's mental state when using and interpreting these

structures as units of information in each context. Although they have different names, they are similar in what they study, and information structure is by far the most widely used term in the field.

Based on the previous definition of information structure, it is clear that new information and given information are among the key items of information structure. As a matter of fact, they have not only been the focus of research related to information structure over the past decades but are also the main framework used in this dissertation. The given information represents what the sentence is about, which is the theme. The new information represents the rheme, which moves the utterance forward. In utterance or conversation, the way in which information moves forward is called communicative dynamism. The theme (new information) of the sentence has the strongest communicative dynamism, while the rheme (given information) has the lowest. The concept of the new and given information is systematically explained by Halliday (1967), who suggests that new information, although this is mostly the case, is not information that has not been mentioned, but information that the speaker wants to present to the listener as new content. Given information is information that can be recovered by instruction or context. He also noted that given information is the information that the speaker believes the listener can extract. Both the speaker and the listener perceive information as given because a component is contextually relevant, has already been mentioned, or is already exist in the listener's background knowledge. New information is information that is new, it may be something that has not been mentioned before, or it may be something that has already been mentioned, but which the speaker believes is not recognizable to the listener. He considers utterance as a complete semantic unit, and speakers always organise speech into information units consisting of new and given information. In the process of information transfer, the new information follows the given information. The essence of information transfer is the change from the new information to the given information. In the

information unit, the given information is dispensable, while the new information is essential. Halliday also emphasises that the new and given information cannot be understood out of context and that the information is delivered with communicative needs in mind.

Halliday's account of the new and given information is primarily a functionalist interpretation of information construction and has provided a good basis for later research on the subject. However, some linguists have offered their views on this new/given dichotomy of information structure.

Chafe (1976) builds on Halliday, who defines the two concepts in terms of psychological consciousness, arguing that given information is the knowledge that the speaker considers exists in the listener's awareness at the time the words are uttered, while new information is what the speaker expects is introduced into the listener's consciousness through his or her words. In contrast to Halliday, Chafe believes that there are three different types of information states, which are given information, accessible information, and new information. According to him, the given information is already in the listener's consciousness and in an active state. Accessible information is there the content of speech changes from a semi-active state to an active state. New information is where the content of speech changes from an inactive state to an active state. However, as the distinction between active and inactive states was very vague before, Chafe does not point out a clear difference and his theory is difficult to put into practice. Prince (1981) argued that new and given information are only two poles of information value in discourse, with a transitional situation in between, and goes on to propose 'inferable' information.

Unlike the definition of the new and given information from the speaker's point of view given by the people mentioned previously, Clark et al. (1977) proposed the

concept of 'given-new contract' from the listener's viewpoint, they stated that the listener or reader processes a sentence by dividing it into a known part and a new-knowledge part. The known section of the sentence consisted of information that is already familiar from the context, previous information which includes other sentences just displayed and background knowledge. The new-knowledge section contains, as the name implies, unfamiliar information. Listeners first search their memory for information that corresponds to the given information and then update their memory by integrating the new information. This integration is usually done as a refinement of the given information.

A growing number of scholars have studied and given their views on the definition of new and given information. Regardless of how they define them, a wide variety of studies have shown that almost all scholars have developed Halliday's definition of new and given information to some extent by changing the perspective, for example from speakers to listeners, or by adding some other relevant terminology in terms of consciousness or communication. On this basis, it can be said that Halliday's study of the new and given information is at the root of a great deal of subsequent research.

2.4 Studies on Information Structure

There are a limited number of empirical studies on information structure, a large proportion of which relate to prosodic features, a point to which the next section will be devoted. Other studies tend to discuss the relationship between information structure and syntax, translation, discourse analysis, and foreign language teaching.

Several studies discuss the combination of information structure and syntax. For example, Belletti (2004) pointed out that the theme and focus of left periphery and low periphery structures may have different properties. For instance, the focuses of left

periphery structures are generally contrasting focuses, whereas they in low periphery structures are generally informational focus. Through the comparison of theme and focus of English and Chinese, Zhang (2020) stated that the parametric hypothesis of information structure in the low periphery is thus proposed to analyse different patterns of syntactic projection of information structure in the English and Chinese low periphery, and the unique strong information structure principle is advanced to explain the interaction of information structure in the left periphery and the low periphery. Birner and Ward (2009) discussed the interface between syntactic and information structures, explaining the various ways in which new information can be distinguished from known information. Li (2014) discussed the mobile location of Chinese syntax from the perspective of information structure, argued that different linguistic forms have different communicative functions, different communicative functions need different linguistic forms to express them, and the syntactic forms expressed in the specific use of language are the result of structure-function interaction. Bi and Pan (2019) investigated the send-type and the steal-type double object constructions in Mandarin and mentioned that though different in the ways of their syntactic structuring and indefiniteness realization, these two types share the same syntactic composition, which is the bi-verbally construction, and their generations are both information-driven. When syntax and information structure form an interface, information structure can contribute to the research of syntactic cartography and expand the scope of syntactic analysis. Conversely, the methods of syntactic analysis provide formal analytical tools for the study of information structure and facilitate the further development of information structure research.

Besides, scholars have begun to study the application of information structure in translation. Baker (1992) gave a detailed introduction of English information and argued that the linear arrangement of linguistic components serves as a piece of information but not a series of grammar or phrases. It has a great influence on the organization of a clause.

Therefore, the word order in the clause must be adjusted to ensure a smooth information flow in the discourse. However, Baker's discussion focuses on the characteristics of English but involves other languages less. Huang (2002) believes that, in English and Chinese translation, it is very important to understand the information focus of Chinese and reproduce them in English. She proposed that the translator maintained the ability to use markers, intensifiers, emphatic structures and word order to mark the information focus. Ding (2005) attempted to do the research into translation from the perspective of communicative information quantity and indicated that accurately conveying of semantic focus of the source text is the prerequisite of bilingual switching in translation, in addition, both the appropriate understanding of the information distribution of the source text, the optimization of the overall information in terms of completeness and logic of the text is significant in dealing with issues concerning cohesion and coherence in translation. It would thus appear that information structure and translation are also closely linked. By using the theory of information structure to analyse and understand the original text, it is possible to accurately grasp the information in the original text and therefore make a more appropriate translation.

In addition to the previous studies, some research investigated the discourse information structure. Laswell (1948) proposed the '5W' mass media mode. He believes that the discourse is composed of the '5W' model, and it includes: Who says what, To whom, In what channel, With what effect. Brown et al. (1983) inherited the three-point model of Prince's information structure, on the basis of criticizing Halliday's new-given information dichotomy, pointed out a three-point model of discourse information, including evoked information, current information, and displaced information. Roberts (2012) believed that the universal phenomenon of human discourse is the information structure of the discourse, and its information structure does not depend on the specific syntactic structure or other norms in a specific language aimed at realizing related

functions. Accordingly, he came up with the idea that the discourse information structure is composed of 'questions' and 'answers' and their hierarchical relationships. In his view, an assertion in a discourse is an answer to a question.

There are also studies that explore the relationship between information structure and foreign language teaching. Through an analysis of classical argumentative English writings on thematic structure as well as a contrastive analysis of a sample writing by an English native speaker and argumentative writings by some Chinese students, Chen (2009) showed that information structure is important in argumentative writing. Besides writing, information structure is also used in listening. Based on the information structure theory of systemic functional grammar, Wang and Zhou (2011) explored how an examinee can quickly figure out the new information involved in the listening passages. Their results showed that the partition of given and new information, the highlighting of new information and the prominence of information focus can reduce or lower the burden of short-term memory. The application of information structure to foreign language teaching has had a positive impact on it.

2.5 Studies on Prosodic Features of Information Structure

The study of prosody and the study of information structure belong to two different fields: the former is the domain of phonetics, while the latter is in the field of pragmatics. For a long time in the past, they were two parallel lines. More and more linguists are realizing that prosody conveys more than just words, so they are beginning to investigate how prosody contributes to the transmission of information, which naturally brings together the study of information structure and the study of prosody. There are a limited number of empirical studies of the prosodic features of information structure, and it appears from their content that they fall into two main areas: 1) research on the prosodic

features of one language and 2) discussion of comparative research on prosodic features between different languages. This section focuses on these two parts of the review.

For individual languages, some scholars have studied the prosodic marking of the new and given information in Dutch (van Donzel & Koopmans-van Beinum, 1995), Japanese (Swerts et al., 2000), and other languages, showing that native speakers assign accents to new information, compared with given information. The very same findings also appear in the research on English (Halliday, 1967; Chafe, 1976; Brown et al., 1983), where L1 English speakers put a pitch accent on new information but not on given information. In addition to their results, Lam and Watson (2010) observed that non-repeating nouns (which is new information) were longer than repeating nouns (which is given information) in English and the difference was significant, but their intensity and F0 data did not differ significantly. Watson et al. (2008) found that native English participants have a shorter duration and lesser pitch movement for non-predictable words (new information) while having lesser intensity for important words (given information). Experimental results by Fowler and Housum (1987) indicated that English speakers distinguished new words from old words by shortening old words, where the new words represent new information, and the old words imply given information. Moreover, Horne (1991) found no significant difference between American English speakers in the pitch accent patterns of the new and given information, whereas British English speakers use a wider range of F0 when marking new information. The type of pitch accent can also distinguish between new and given information in English, with Pierrehumbert and Hirschberg (1990) and Brown et al. (1983) suggesting that the standard pitch accent for new information in English has a high pitch accent, whereas given information has a low pitch accent. For Chinese EFL learners, studies have found shorter reaction times for comprehension when the new information has a pitch accent and the given information does not have, which helps the speakers and listeners in communicating (Wang, 2005).

Not many studies have been conducted on the study of prosodic features of the Chinese language in terms of information structure. For instance, Wang and Yang (2003) marked ten Mandarin Chinese read-aloud discourses with accents and old and new information, found that new information was reread to a higher degree than old information, that old information was also reread when it was in a contrasting or focal position in the sentence, and that it was mainly nouns that loaded the new-old status of information. Based on spontaneous corpus data, Pan et al. (2005) examined acoustic data for the given, new, and contrastive information in Taiwanese Mandarin and found that the F0 range was larger, and the duration was longer in noun phrases carrying new or contrastive information relative to the given information. However, in subsequent perceptual experiments, they found that listeners were unable to identify and distinguish between new and known information. Li et al. (2014) analysed the perception of neutral tone words in different information structures through acoustic psychology experiments and found that pitch played a greater role than duration in the perception of a neutral tone, except for a neutral tone whose underlying tones were the falling tone, and that the range of F0 between neutral syllables and their opposing non-neutral syllables was correlated. Li (2017) looked at the realization of disyllabic neutral tone words as well as their non-neutral tone counterparts in five different information structures: Isolation, Broad Focus, On Focus, Post Focus Near and Post Focus Far and studied the phonetic encoding schemes of neutral tone. She discovered that the acoustic features of a neutral tone syllable are heavily related to information structure, the tone of its previous syllable, and the citation tone of its own, among which, pitch and duration are the most related ones. The very important findings regarding the prosodic features of the new and given information in Chinese are that Chen and Braun (2006) investigated the prosodic realization of messages in standard Chinese and showed that the rheme has a longer duration as well as a larger range of F0 than the theme, which means the duration of new

information is longer and the F0 range of new information is greater. Furthermore, Ouyang and Kaiser (2015)'s study of corrective and non-corrective words in Mandarin found that the new information responded to lengthened duration and increased F0 range, and only occurred in non-corrective words, whereas it did not occur in corrective words.

As the analysis of one language has become more developed, comparative studies of prosodic patterns in marking information structures with different languages have been conducted. Several studies of prosodic strategies for marking new and given information across languages have found that Chinese learners of English (Juffs, 1990), Austrian learners of English (Grosser, 2011), and Spanish learners of English (Ramírez-Verdugo, 2002) tend to make both new and given information prominent compared to native speakers of English, rather than highlighting only new information as native speakers do. They are accustomed to using the same markup for all elements and ignore the information status in the discourse structure. As an example, to investigate how non-native speakers use prosody to mark information features, Wennerstrom (1994) explored the pitch of new and given information in L1 and L2 English speakers and found that L1 speakers produced a higher pitch on new information than on given information, while L2 speakers used the same pitch regardless of information status.

In addition, Swerts et al. (2002) carried out a comparative analysis of the stress system of noun phrases in Italian and Dutch and found that Dutch speakers use stress to mark the new information but not the given information, unlike Dutch speakers, Italian speakers do not use stress to mark information status. They also conducted a perceptual experiment to investigate the characteristics of stress in terms of the degree of perception and found that, in Dutch, single contrastive information was a majority proportion of which stressed, and the given information was the least stressed, but they did not find out how the level of stress in Italian was related to the information status of the context. Rasier

et al. (2010) investigated the way both L1 and L2 speakers of French and Dutch mark information states, and they found that French speakers whose L2 is Dutch generally do not change the distribution of stress according to the information state of the word being spoken, while Dutch speakers whose L2 is French generally resemble the native French data more, but they always overuse the French stressed accents, which makes their accent patterns appear to be more responsive to word information status than those of those whose L1 is French. Their pilot perceptual experiments showed that the stress patterns of the speakers whose L2 is Dutch are difficult to recognise by L1 listeners.

Others made a comparison of prosodic features used in the utterance of English and other languages. For example, Ramírez-Verdugo (2002) explored the intonation characteristics of the information states of the two language groups during conversation with native Spanish speakers whose L2 is English and speakers of standard British English from the corpus. The results showed that native speakers mark information features by changing intonation, with the pitch of new information falling and the pitch of given information rising, whereas non-native speakers do not emphasise information states by changing them in this way and, in addition, their focus generally is given information rather than new information. Ramírez-Verdugo (2002) suggested that this may be a direct consequence of interlingual shifts. Gut and Pillai (2014) measured syllable duration, rise and pitch of English and Malay, and found that the prosodic features from their Malay data were very similar to those in the English data generated by Malay L1 speakers. This pattern has also been reported in the research which compared the prosodic characteristics of English as L2 learners and their L1 when marking the information status.

There have been many studies on other language about their information structure and prosodic features, but at the prosodic level, there is very little on the information

structure in China, especially for comparisons between English and Mandarin. For instance, Han (2015) comparatively analysed the information strategies of the marked information structure of Chinese English learners and native English speakers. The findings showed that, compared to Chinese EFL learners, in marking given information, native English speakers have shorter timing, but there is no significant difference in pitch and intensity between the two groups. He (1999) did a contrastive study of stress and light stress between English and Chinese, which analyses the identical physical nature and different acoustic signs of stress and light stress in English and Chinese. She pointed out that stress and light stress play different roles in these two languages. In English, stress is the basis for the rhythmical structure of speech, and it is closely linked to the grammatical structure and semantic structure of a sentence, while in Chinese, light stress is more important than stress, and is closely related to grammatical and semantic structures.

Most of those in China have studied one aspect of information structure, such as information focus or pitch, or have compared Chinese EFL speakers with native English speakers. Although there have been many studies on information structure in the world, there are very few on Chinese EFL speakers, especially those focusing on the similarities and differences between English and Mandarin, which is the research gap in this study. Prosodic features are very important acoustic features, and different pitches and durations may convey different messages, so prosody is closely related to information status. Therefore, there is a need to study the prosodic characteristics of Chinese EFL speakers.

2.6 Summary

From the predictor variables discussed previously, the following picture emerges: Most of the studies were based on the theme-rheme theory of the Prague school and Halliday's information theory. In general, this chapter is a brief overview of the current

status of knowledge in the field of prosodic features, information structure, including the parallel process of L1 and L2 speakers shown in some empirical studies.

Most previous studies into prosodic features of information structure were aimed at native English speakers. In relation to the English speakers who are Chinese, few studies make a parallel comparison of information status between English and Chinese.

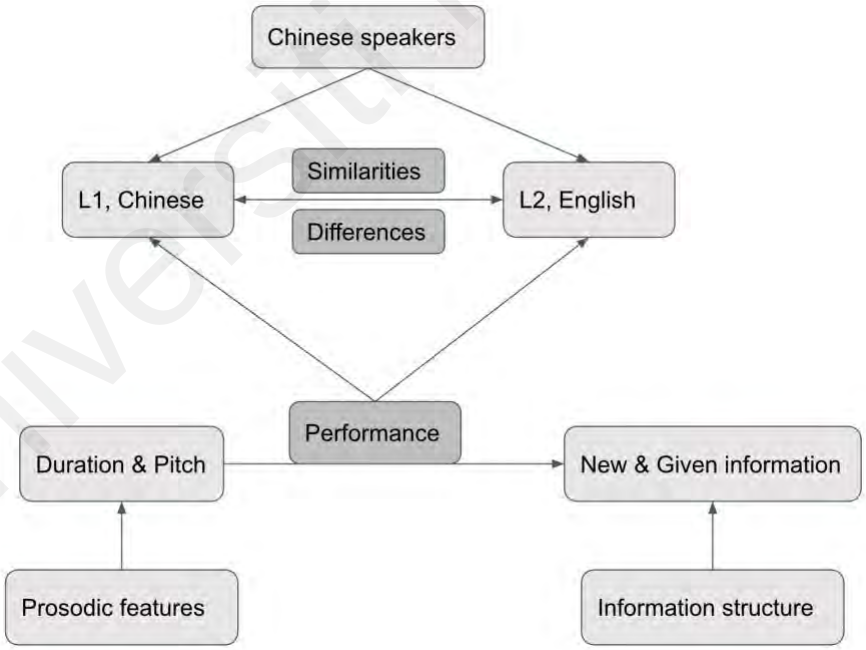
Based on the previous studies related to the prosodic marking of information states, the two objectives of the present study were to investigate the characteristics of Chinese speakers in marking new and given information in English and Mandarin and to explore whether there are cross-linguistic influences between the two languages.

CHAPTER 3: METHODOLOGY

This chapter provides a description of the methodology used in this study. Firstly, the conceptual framework of this study illustrated. Secondly, the selection of the participants and the research materials used in the study are explained. Following this, the process of data collection is presented, and method of data analysis is explained. Finally, results of the pilot study are discussed.

3.1 Conceptual Framework

Based on the previously mentioned literature review and the research aims of this study, the conceptual framework of this study is shown in the following diagram.



Among the previous studies, we found few studies to make a parallel comparison of information status between such widely used English and Chinese acoustically. In the present study, the interplay between new and given information accentuation patterns in speech was examined. This study adopted an acoustic phonetic approach to analyze

English materials and Chinese read text produced by Chinese EFL speakers. Distinct from previous study, the findings of the present were presented and examined via spectrograms. Based on the literature, this study focused on the acoustic characteristics linked to the marking of new information, pitch change and duration. As described in Chapter 1 this study aims to explore and compare the prosodic features of Chinese EFL speakers on new and given information in their L2 English and L1 Mandarin. More specifically, this study will demonstrate how Chinese EFL speakers represent duration and pitch in achieving the delivery of new and given information in both English and Mandarin.

3.2 Participants

To address the three research questions, language production data were elicited from five postgraduate students from Universiti Malaya (UM) who were from China. A convenience sampling was used to collect the participants. In order to enable participants to meet a similarly criteria to a certain extent, as well as to be able to recruit participants more conveniently, the researcher decided to collect participants from the faculty which the researcher belongs to, which is the Faculty of Languages and Linguistics. In January 2020, a recruitment email was sent to all postgraduate students in the Faculty of Languages and Linguistics, UM with a brief introduction to this study and relevant recruitment information. A Google forms link was included in the email, which is a questionnaire. The purpose of the questionnaire was tantamount to elicit basic information of the participants, such as their undergraduate major, Putonghua Shuiping Ceshi (Mandarin Proficiency Test) score and IELTS score. The email also stated that those who completed this questionnaire were considered willing to be participants in this research.

Over the following months, 27 students completed the questionnaire. As indicated by the results of the questionnaire, 26 of the 27 students who completed the questionnaire were female, so the participants in this study were identified as female. Furthermore, of these 26 female students, very coincidentally, 11 were from Hebei Province, China. As there are many dialects in China, it was important to select participants from the same region in order to reduce the influence of the dialect on the Mandarin language and to ensure that all participants had a similar language environment. Therefore, the participants need to be selected from these 11 Chinese EFL speakers from Hebei province. Based on the results of the questionnaire, nine of these eleven participants were Master in English Language Studies students at the Faculty of Languages and Linguistics, UM. Therefore, the participants in this study were identified as nine Chinese EFL speakers who are female from Hebei province, China, who were all doing their Master's in English Language Studies degrees at the Faculty of Languages and Linguistics. After contacting them via WeChat (the WeChat number they had filled in the questionnaire or gave by email), they all expressed their intention to be participants in the research. Two of them took part in the pilot study as participants, which will be mentioned in 3.5. However, when discussing further the timing of the data collection with the participants, the researcher found that two of them were unable to record the audio for technical reasons, so they were excluded from this study. The remaining five Chinese students were involved in the main study. And they have the same or similar background: the similar gender; the same province they come from; similar IELTS scores and Putonghua Shuiping Ceshi scores and so on.

In summary, the participants in this study were five Chinese EFL speakers who were studying for a Master of English Language Studies at the Faculty of Languages and Linguistics, UM. They also majored in English in their undergraduate studies in China. In addition, they range in age from 19 to 25 with an average of 23 years old. All of them

have studied English since elementary school from the age of around eight, and the duration that they studied English at school is more than ten years. Their IELTS results were above band 6.0 when they enrolled in the Faculty of Languages and Linguistics. Three of the participants scored band 6.5 and two scored band 6, and thus, based on the IELTS band description it can be assumed that the participants have an intermediate level of English proficiency. Band 6.0 of IELTS is seen as competent users of English who have an effective command of the language and have the ability to use and understand reasonably complex language, especially in familiar situations, despite some inaccuracies, improper use and misunderstandings (IELTS, 2020). This level of proficiency in English was required for the present study has a particular reason, which is that participants will need to be able to read the English text aloud fluently. The participants are all native Mandarin speakers from the Hebei Province, which is a coastal province in the North China region. Furthermore, in order to control for participants whose Mandarin was at the same level, five participants who had at least a Putonghua Shuiping Ceshi of 2A were selected, three of them had obtained 2A and two 1B. The Putonghua Shuiping Ceshi, which means the Mandarin Proficiency Test, is an oral test of standardization and proficiency in the use of Putonghua. In terms of pronunciation, Grade 2A signifies that the test taker's pronunciation can be considered a standard form of Mandarin, with natural intonation and fluent expressions when reading aloud and talking spontaneously (Ministry of Education of the People's Republic of China, 2015). Table 3.1 demonstrates the personal information of the five participants. As all the participants were told that their names would not be presented for privacy, their names will be shortened as "P" with a different number following the code to show each individual student.

Table 3.1: Brief information of participants who were recorded

Name	Gender	Age	Province (China)	Program	IELTS score	Putonghua Proficiency Test score	Duration of learning English	Current residence
P1	Female	23	Hebei	MELS	6.5	2A	>10 years	China
P2	Female	23	Hebei	MELS	6	2A	>10 years	China
P3	Female	23	Hebei	MELS	6.5	1B	>10 years	China
P4	Female	22	Hebei	MELS	6	2A	>10 years	China
P5	Female	24	Hebei	MELS	6.5	1B	>10 years	China

*MELS: Master in English Language Studies

Besides, all of them did not have any experience of living in other countries before they came to Malaysia, and they use mainly English in their current master's courses. At the time of the data collection, they were in China, this is due to the travel restrictions issued by the Malaysian government stemming from its central reason for the Coronavirus 2019 (COVID-19) outbreak.

3.3 Materials

To answer the research questions, the materials adopted for this present study comprise two texts written by the researcher oneself, one in English and the other in Mandarin. In order to make a parallel comparison between the prosody markers of new and given information in Chinese and English, the study needed to design reading materials with the same meaning. However, due to the differences in English and Mandarin grammar, the two texts cannot be identical translations of the same content. Instead, the same story has been retold in a slightly different way. Each text has eight words that appear at least twice. When they appear for the first time, they are considered new information, while they are found to be given information when they appear in the following sentences (see 2.4). For example, in the sentence in Example (1), Amanda in

the first sentence and Nelson in the second sentence are the first occurrences, and thus, they are considered new information, while the same words in the third sentence are defined as given information.

> (1) **Amanda** is a smart and attractive young woman. When she went to Lily's house to play, she met **Nelson** by chance. **Amanda** fell in love with **Nelson** immediately. (From Appendix A)

The English text (see Appendix A) consists of eleven sentences of 131 words, which is about the love story of Amanda and Nelson. Each sentence of the text has limited words, and its difficulty is within the capability of the participants being involved in this research. None of the words in the text are beyond the scope of study of English majors. For students who have obtained a score of 6 or even higher in IELTS, every word is very familiar. In this way, participants can understand all the sentences they need to read aloud and avoid unnecessary mistakes or pauses due to the presence of unknown words in the text.

Table 3.2: Words chosen for analysis in the English text

New Information	Given Information
Amanda [əˈmændə]	Amanda
Lily [ˈlɪli]	Lily
Nelson [ˈnelsn]	Nelson
magpies [ˈmæg˛paɪs]	magpies
lipstick [ˈlɪpstɪk]	lipstick
eleven [ɪˈlevn]	eleven
mother [ˈmʌðə(r)]	mother
delicious [dɪˈlɪʃəs]	delicious

Following Gut and Pillai (2014), the stressed syllable of the target words has a short vowel and a sonorant consonant (either a nasal or a /l/) and neighbouring vowel. The accented syllable is accompanied by one or more unaccented syllables. The

underlined eight syllables in Table 3.2 are the target words in English text, which will be specially chosen for the subsequent data analysis procedure.

The Chinese text (See Appendix B), consisting of ten sentences of 210 Chinese characters, is also a love story about a couple. Stress is an essential prosodic character in all languages, but it is not always the same in all languages. In English, stress is not only part of the phonological structure, which distinguishes the meaning of the lexical nature of words that are partly composed of the same phoneme, but it is also the basis for the rhythmic structure of intonation and discourse and is one of the main tools of English phonological expression. For this reason, English is classified as a stressed language. However, different languages have different forms of stress and play different roles. Mandarin Chinese is a tonal language with a unique stress pattern, rich in variations of stress. The two types of stress in Chinese phonetics are word stress and sentence stress, but this study focuses on the pitch and duration of stressed syllables. There is still a lot of controversy in the neighbourhood regarding the form of stress in Chinese words. It is generally agreed that light stress exists in Chinese, but there is still much disagreement as to whether there is a certain stable pattern of word stress, which is pre-stressed or post-stress, and whether there is a light stress format. The only one that scholars agree on is the 'stress-light' format in neutral tone words, in which words are pronounced with the first syllable being a stressed tone and the second syllable being an unstressed tone. For example, the word "*头发 (tóu fa)*", means *hair*. Based on this, the second Chinese character of these eight target words in the Chinese text is a neutral tone. And because Chinese has four tones, the first syllables of these eight words are equally allocated to the four, which are two of each tone. Furthermore, in ensuring that the target word accurately reflects the pitch and duration of the new and given information, the position in the sentence of the target words representing the new information and given information, as well as the syntactic position, is identical. For instance, in example (2), the target word

“林子 (línzi-forest)” for the new information and that for the given information are in the same position in the sentence, both at the end of the clause; they are also in the same syntactic position, both being objects in the sentence.

(2) 咪咪的爸爸也很喜欢这个女婿，他送给了他们一片**林子**，这是一片收成很好的**林子**，能让咪咪和木匠以后生活无忧。(From Appendix B)

(Mimi’s father also liked this son-in-law very much, and he gave them a forest, which is a very good forest. It will enable them to have a worry-free life in the future.)

Table 3.3: Words chosen for analysis in the Chinese text

New Information	Given Information
咪咪 (mīmi-Mimi,name)	咪咪
妈妈 (māma-mother)	妈妈
媒人 (méiren-matchmaker)	媒人
林子 (línzi-forest)	林子
女婿 (nǚxu-son-in-low)	女婿
奶奶 (nǎinai-grandma)	奶奶
栗子 (lìzi-chestnut)	栗子
木匠 (mùjiang-carpenter)	木匠

Table 3.3 lists the target words in the Chinese text, and the underlined syllables are the stressed syllables. The first two (“咪” and “妈”) are both first characters with the first tone, the next two (“媒” and “林”) are both the second tone, the two (“女” and “奶”) immediately following are the third tone, and the last two (“栗” and “木”) are the fourth tone.

3.4 Procedure and Instruments

The recordings of the participants were conducted during the first semester of 2020/2021 at Universiti Malaya. Participants were contacted after the results of the questionnaire were obtained and they all agreed to be participants in this study. Through the communication via WeChat with the participants, they were informed of the recording process and requirements and determined the time for the recordings. Due to the impact of the COVID-19 epidemic, as mentioned in 3.1, none of the participants was living in Malaysia, so the recording process was conducted online throughout, using WeChat voice call. Recordings were recorded via Praat (Boersma & Weenink, 2020) with a sampling frequency of 44100Hz.

On arrival at the appointed time, the researcher initiates a WeChat voice call, and first introduces the process to the participants, in which they were requested to read the English text and the Chinese text aloud. Before the recording session officially started, the participants were asked to give their agreement by signing the "Participant Consent Form" (See Appendix C) before the recordings. Participants were asked to install the Praat on their computer, and then the participants were instructed on how to use the Praat to record and how to save the recording files. The Praat installation link was sent to the participants by the researcher via WeChat file transfer. In order to reduce the effect of external noise on the quality of the recording. When participants read the texts aloud, they were asked to keep doors and windows closed and to turn off sources of noise such as air conditioners and electric fans.

First, the English text was handed out to the participants by WeChat File Transfer. They had ten minutes to read it and familiarise themselves with it thus helping them to read it more fluently. Then they would record the English text using Praat by themselves. While they are recording, the WeChat voice call is muted to avoid noise affecting the

data. After completing the recording of the English one, the Chinese text was sent to them, again, they were given ten minutes to prepare, and they then recorded themselves. The participants were not explicitly required to prepare for the text and were not told the true purpose of the two texts. Participants can consult a dictionary or use other ways to understand unknowing words for reference. They could also read aloud, or just read silently to prepare. They were required to pre-read the texts several times before the final recording. In this way, their recordings could be considered their best version without many pronunciation problems due to their unfamiliarity. After the recording, the sound files were saved in WAV format into the computer and were sent to the researcher via WeChat File Transfer. Recorded files were restored to the computer for data analysis. Praat would be used to illustrate some acoustic manifestations of prosody.

3.5 Data Analysis

This section chiefly clarifies the process of dealing with sound files, which consists of annotation, data extraction and data analysis. The first stage was annotation. After collecting the data, all the sounds were annotated in Praat. All the annotated files were then saved as TextGrid files in line with their sound files, which have four tiers and are named Word, Syllable, Duration and Pitch. Second, all the files were annotated by word and syllable, after that syllable duration and pitch maximum and minimum were extracted. The extraction of syllables in English text was according to the Maximal Onset Principle (MOP), which means that depending on the syllabic structure allowed in each language, the consonants in a polysyllabic word must first be subsumed into the rhyme in the process of syllabification. In Chinese, one character is one syllable, which means that extracting the target syllable is extracting a character in target words. The next step was to measure the duration and pitch of each pair of new information and given

information in the recording. The duration was extracted from the syllables in the second tier and the values were then recorded in the third tier, the duration tier. The reason for measuring the pitch maximum and minimum was to obtain the pitch range of the target syllable, and their values were recorded in the fourth layer, the pitch layer. Figure 3.1 illustrates how the target words were annotated in tiers in Praat. The immediate next step is to use a script to extract 10 equal F0 values for the target syllable, this is to compare the average F0 value for the new information and the given information, which were used to create the pitch contour of the target syllables. The final step was to record the measured duration and pitch values in a Microsoft Office Excel sheet, which was used to obtain the average duration, pitch range, and average pitch range. Then the data was analysed by SPSS. paired-sample *t-test* (two tails) was carried out to examine if there was a significant difference in the duration and difference of pitch range between the new and given information in English and that in Mandarin.

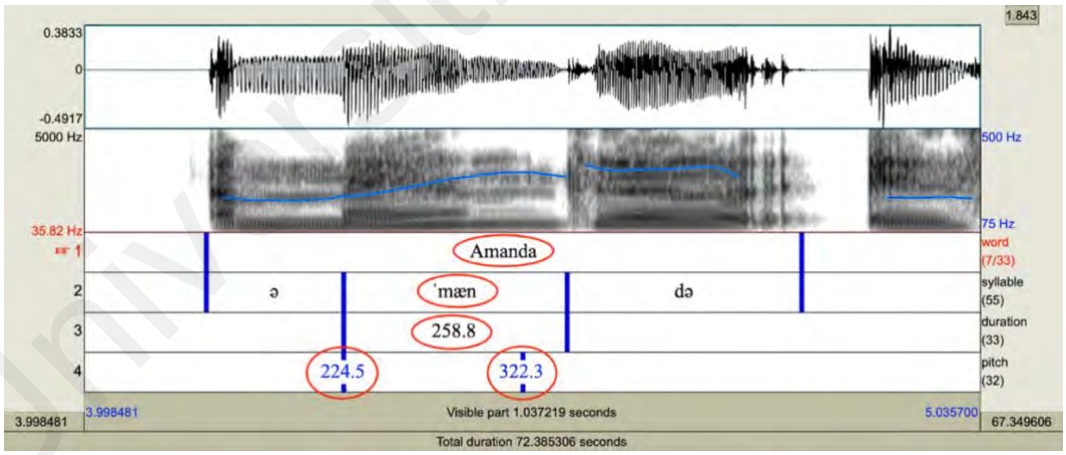


Figure 3.1: An example on measurements the duration and pitch of the target word by an L1 Chinese speaker of English

As shown in Figure 3.1, sound files containing new and old information were annotated in four tiers as follows:

(1) Word tier: transcribe and mark the target words in the utterances. This tier enables the boundary of the target words to be determined. The word carrying new information is marked as “xx1”, while the given information is marked as “xx 2”.

(2) Syllable tier: chunk the words into segments with phonetic symbols or Pinyin fonts. This can define the boundaries of the target syllable in order to gain the duration and pitch value.

(3) Duration tier: record the duration of pitch accent syllables, which is used to compare whether there is a difference in the duration of the new and given information.

(4) Pitch tier: record the pitch maximum and minimum of pitch accent syllables. This is used to compare the pitch range of the new and given information.

3.6 Pilot Study

Prior to conducting the formal study, the researcher conducted a pilot study with the aim of determining the time required for the recording procedure and whether there were any problems in the study research design. The pilot study was conducted for a period of three weeks in the month of March 2021. Two female participants who met the same criteria as the five participants in the official study were selected. They are also students of Master of English Language Studies at the Faculty of Languages and Linguistics, with an average age of 24.5. Similarly, they are from Hebei Province, China, and during the pilot study period, one of them stayed in Malaysia and one in China. However, due to the 2020 Malaysia Movement Control Order (MCO) restrictions on travel, the recording process was conducted online for both. Both had a score of 1B in the Putonghua Shuiping Ceshi. For the IELTS score, one reached a score of 6, another one is 6.5. And they have been learning English for over 10 years and have not lived in any

country other than Malaysia. Information on participants in the pilot study is shown in Table 3.4.

Table 3.4: Brief information of participants who were recorded in the pilot study

Name	Gender	Age	Province (China)	Program	IELTS score	Putonghua Proficiency Test score	Duration of learning English	Current residence
PSP1	Female	26	Hebei	MELS	6	1B	>10 years	Malaysia
PSP2	Female	23	Hebei	MELS	6.5	1B	>10 years	China

*MELS: Master in English Language Studies

The two texts of the pilot study were also designed by the researcher. The English text (see Appendix D) contained 134 words in 11 sentences and was very similar to the text in the official study. Table 3.5 lists the target words of the English texts in the pilot study.

Table 3.5: Words chosen for analysis in the English text in the pilot study

New Information	Given Information
Amanda [əˈmændə]	Amanda
Lily [ˈlɪli]	Lily
Nelson [ˈnelsn]	Nelson
marriage [ˈmærɪdʒ]	marriage
lipstick [ˈlɪpstɪk]	lipstick
eleven [ɪˈlevn]	eleven
mother [ˈmʌðə(r)]	mother
delicious [dɪˈlɪʃəs]	delicious

The Chinese text (see Appendix E) is a love story about a girl and a carpenter in a village, with nine sentences of 181 Chinese characters. Eight target words were assigned evenly to the first character of the four tones. Table 3.6 shows the target words of the Chinese text.

The entire recording process was completed online. The same approach is used as in 3.1 in the previous section to confirm the recording time with these two respectively.

The researcher then set the meeting time via Microsoft Teams and sent out an invitation email to the participants. The recording process was carried out individually by the researcher with each participant. The researcher briefed the participants on the recording process and then asked them to fill out the participant "Consent form" (see Appendix C). First, the researcher presented the English text to the participants via a sharing screen and the participants were given ten minutes to familiarise themselves with the text. Then they read the text aloud and the researcher used Praat on another laptop to record it. The Chinese text was also recorded in the same way. For data analysis, participants' recordings were analysed in the same way mentioned in 3.4.

Table 3.6: Words chosen for analysis in the Chinese text in the pilot study

New Information	Given Information
姑娘 (gū niang-girl)	姑娘
姐姐 (jiě jie-sister)	姐姐
木匠 (mù jiang-carpenter)	木匠
胭脂 (yān zhi-blush)	胭脂
绸子 (chóu zi-silk)	绸子
裁缝 (cái feng-tailor)	裁缝
女婿 (nǚ xu-son-in-low)	女婿
嫁妆 (jià zhuang-dowry)	嫁妆

The data from the pilot study showed that the prosodic patterns in the Mandarin data of Chinese speakers were very similar to those in their English data. As the data for one participant of the word "裁缝 (caifeng)" in the Chinese text could not be extracted, this word is not discussed here. In both sets of data, in most cases, the duration of the new information was longer than that of the given information, and the pitch range of the new information was larger than that of the given information.

The pilot study showed that the whole recording process took about half an hour, but there were certain problems. For one, the target word "wedding ring" in the English

text was used incorrectly; the correct word would have been “wedding ring”, but this word did not meet the criteria of the English text, so this sentence in the English text was modified and the target word was replaced with “magpies”. Secondly, the initials of the target syllables in the Chinese text are not all consonants, and not every syllable of them is preceded by /n/, /m/ or /l/. To minimize the problems caused by the different consonants in the two texts, the researcher redesigned the Chinese text so that the initials of the target syllables are all sonorant consonants, which is /n/, /m/ and /l/. Thirdly, the quality of the recording was problematic. The quality of the recordings can directly determine the accuracy of phonetic annotation, which in turn can affect phonetic analysis. After this problem was identified, the researcher invited participants to re-record, to communicate via WeChat voice call instead of Microsoft teams meeting, as well as instructing participants to download Praat and record through it, asking them to record by themselves.

By modifying the three issues identified in the pilot study, the research design was made more complete. The two Chinese students from the pilot study were no longer involved in the official study. They were asked to keep the content confidential for the time being to prevent participants in the official study from knowing it early and affecting the reliability of the study.

3.7 Summary

This chapter provided details of the research design and methodology of this research. The participants of the study are first introduced. The design process of the materials is then described. The section on research procedures and instruments presents a full description of how the study collected data and what instruments were used. It then explains how the data was analysed. Prior to the official study, a pilot study was conducted to correct the deficiencies in the study design through the issues identified.

With the completion of data collection, the next chapter presents the findings and discusses them in response to the research questions.

CHAPTER 4: FINDINGS AND DISCUSSION

In this chapter, the study present and discuss the data to the three research questions identified in the Introduction, which it was reproduced here for ease of reference:

1. How do Chinese speakers prosodically mark new and given information in English?

2. How do Chinese speakers prosodically mark new and given information in Mandarin?

3. To what extent are there similarities and differences between the way in which new and given information is marked in English and Mandarin by Chinese speakers?

This chapter, consisting of five sections, the findings are presented followed by a discussion of these findings. First the findings of the duration of new and given information of English by Chinese speakers are presented, followed by the findings of the pitch of their new and given information. Next, the duration and then the pitch of new and given information of the same Chinese speakers in Mandarin are presented. Finally, the findings on the prosodic features of information structure between Mandarin and English of Chinese EFL speakers are compared.

According to Ouyang and Kaiser (2015), the information structure in Mandarin is not expressed through the F0 contour, but through their pitch range. Hence for the pitch part, the pitch range and the average F0 value were described. In the analysis, a mixture of quantitative and qualitative analyses was employed (see 3.5).

4.1 Duration of New and Given Information for English

The calculating results of duration for the new and given information carrying syllables in English are presented in this session. In the following figures and tables of this and the following sections, “P1” refers to participant 1 in the present research, “P2” refers to participant 2, and so on. Besides, target syllables are indicated by capital letters in the words.

As can be seen in Figure 4.1, the syllable ‘MAN’ that carries new information (the bars in light blue) had longer durations than the one in given information (the bars in dark blue), which is reflected in all five participants. The difference between the duration of new information and given information was obvious.

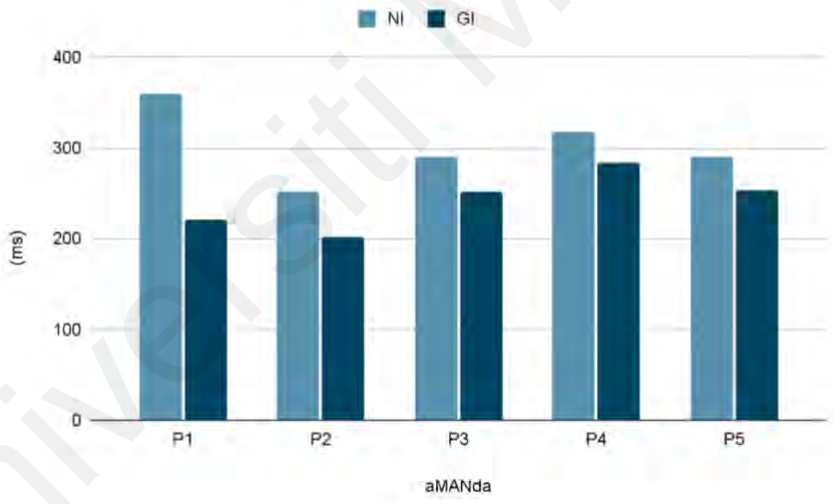


Figure 4.1: Bar chart of duration (in ms) of the target syllable “MAN(Amanda)” marking new and given information in English

Mirroring the results of duration for syllable ‘LI’, four participants had a longer duration on new information, as can be seen in Figure 4.2. On the whole, this suggests that the speakers had shorter given information on syllable ‘LI’ compared with new information, although the difference in duration is small. This is with the exception of P5 where the duration of given information was longer than new information.

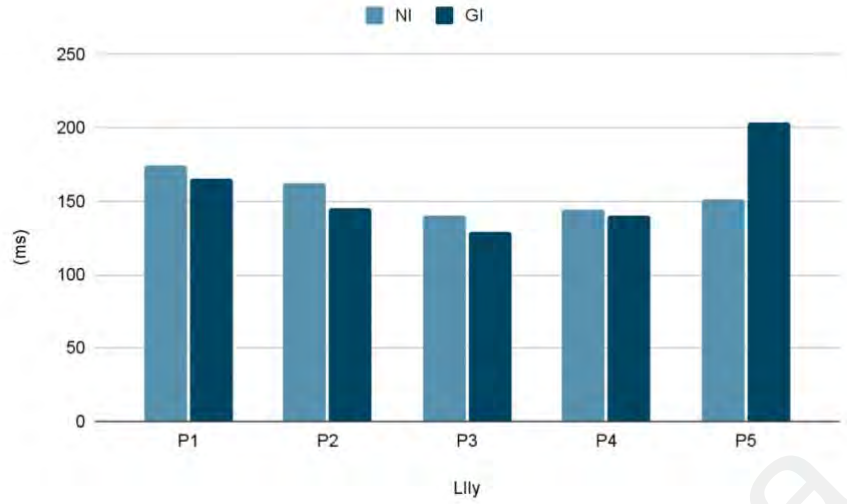


Figure 4.2: Bar chart of duration (in ms) of the target syllable "LI(Lily)" marking new and given information in English

Figure 4.3 shows the duration of new and given information of the syllable 'NEL'. P4's result was removed from the analysis the recording was unclear. Four participants yielded the same result in that their new information had a longer duration than given information. The result of the syllable 'NEL' result was the same as the syllable 'MAN', which is that the speakers tend to prolong new information on syllable 'MAN'.

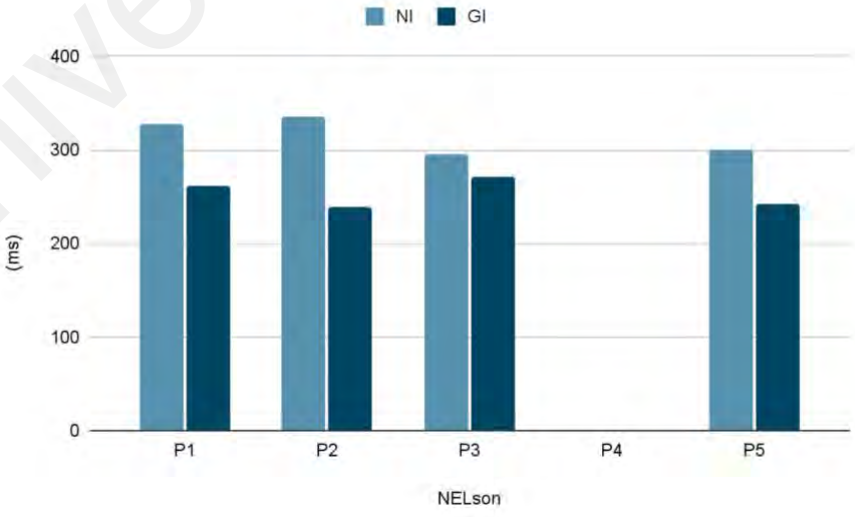


Figure 4.3: Bar chart of duration (in ms) of the target syllable "NEL(Nelson)" marking new and given information in English

Figure 4.4 shows the duration of the syllable 'MAG', where it can be seen that the duration of the syllables marking new information were longer than those marking given information for all five participants, although one of them had a very small difference between the two.

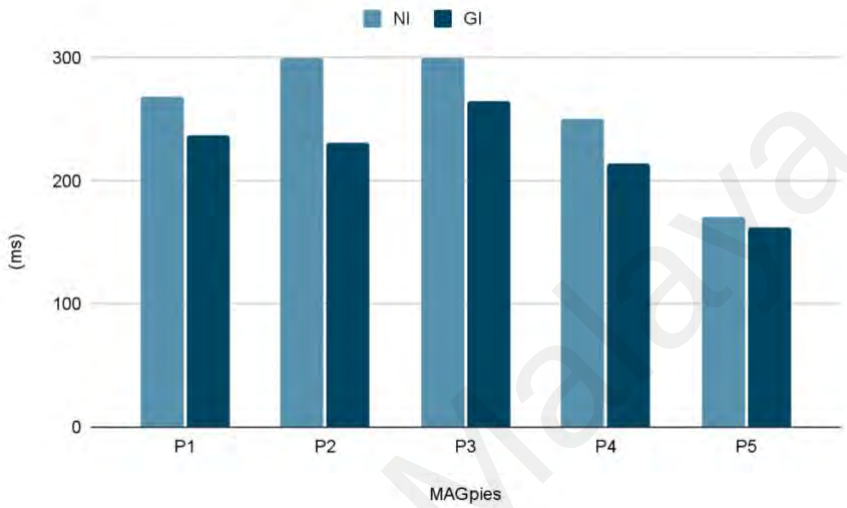


Figure 4.4: Bar chart of duration (in ms) of the target syllable "MAG(magpies)" marking new and given information in English

Figure 4.5 shows the duration of new and given information of syllable 'LIP'. All four participants had a longer duration on the syllable marking new information, but one of them had a small difference of 7ms between new and given information. Another participant (P3) had almost equal duration on both new and given information with a difference of only 1ms.

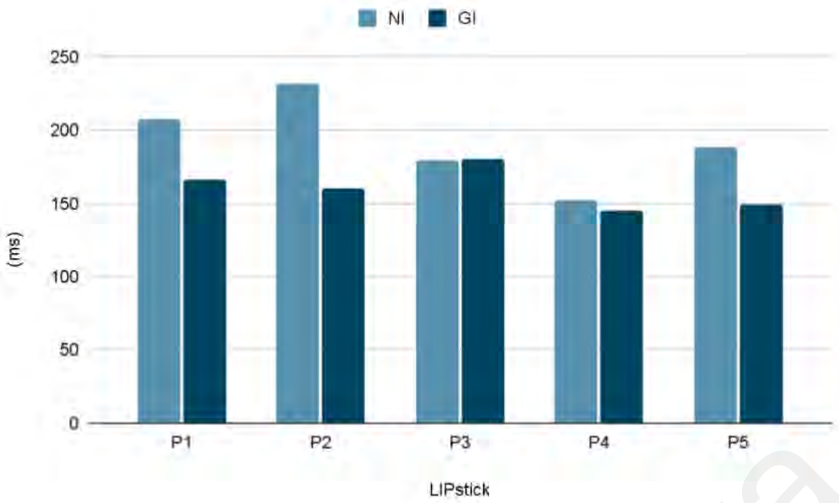


Figure 4.5: Bar chart of duration (in ms) of the target syllable "LIP(lipstick)" marking new and given information in English

The duration of the syllable 'LE' results in a slightly different performance than the previous syllables. As shown in Figure 4.6, it is more often the case that the duration new information was shorter than given information, three participants showing such a result. The remaining two participants had a very similar duration between new and given information, with the former being only slightly longer than given information.

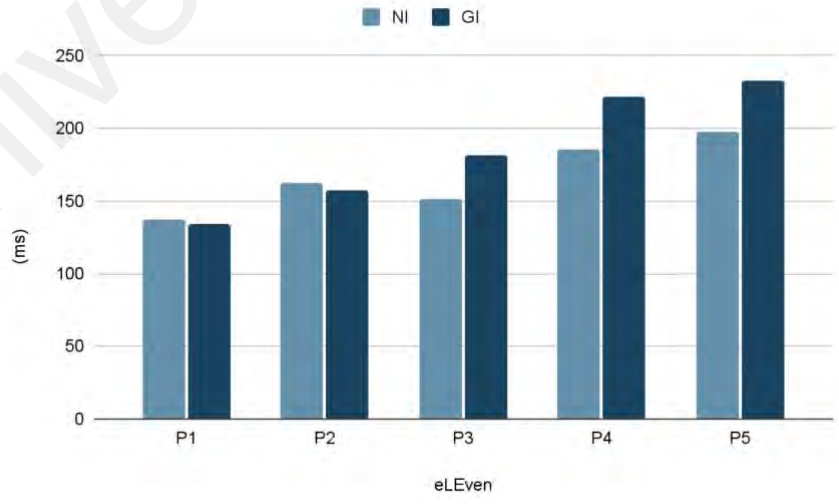


Figure 4.6: Bar chart of duration (in ms) of the target syllable "LE(eleven)" marking new and given information in English

Figure 4.7 shows the duration of the target syllable 'MO' on new and given information. Each participant had a longer duration on the syllable marking new information than given information, but three of had a smaller difference between the two: 10ms for P3, 2ms for P4, and 12ms for P5. Overall, it can be said that the duration of new and given information for the syllable 'MO' is consistent, with all the participants using a longer duration on the syllable marking new information.

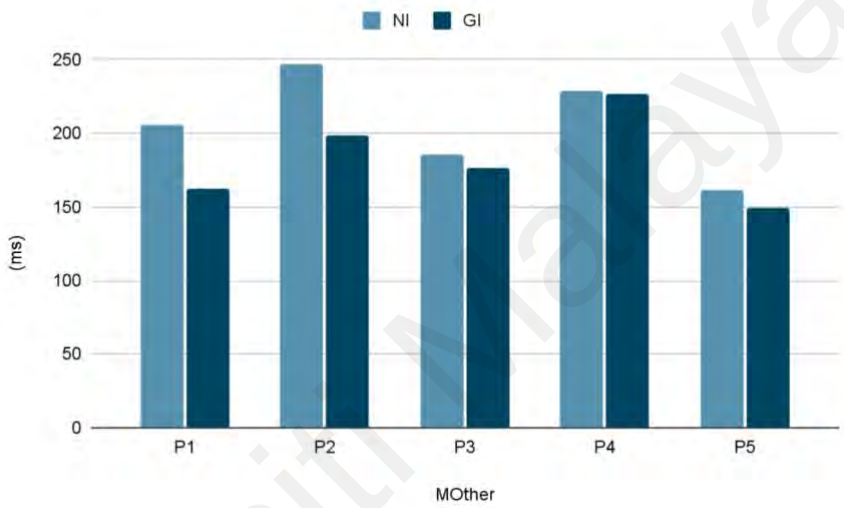


Figure 4.7: Bar chart of duration (in ms) of the target syllable "MO(mother)" marking new and given information in English

For the syllable 'LI', data from P1 had to be excluded from the analysis, because she failed to produce the word carrying given information clearly. It can be seen in Figure 4.8 that two of the participants had longer duration on new information than given information, with one difference is not that obvious, where new information was 151ms and given information was 144ms. The remaining two participants' new information was shorter than given information, but their differences was very small, where the difference for P3 was 5ms and P4 8ms.

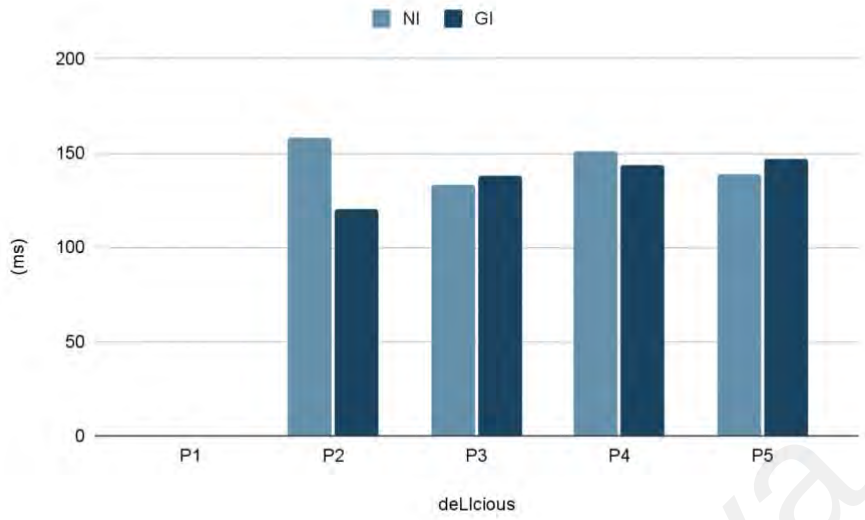


Figure 4.8: Bar chart of duration (in ms) of the target syllable "LI(delicious)" marking new and given information in English

By and large, it can be seen from Table 4.1 and Figure 4.9, when comparing the average duration of the accented syllables in new and given information, it was found that a majority proportion of the syllables in given information were shorter, such as the syllables 'MAN', 'NEL', 'MAG', 'LIP', 'MO' and 'LI' (*delicious*). In contrast, for the syllable 'LI (*Lily*)' and the syllable 'LE', the duration of given information was slightly longer than that of new information, but the difference for syllable 'LI' was minimal.

For the average duration of most target syllables, new information tended to have a longer duration. In general, the syllable duration decreased when they marked given information. Thus, it could be said that the Chinese speakers in this study had the tendency to increase the accented syllable's duration to make new information prominent in the utterances when they were speaking English. To get to know whether this difference in duration between new information and given information in English is significant, the duration of new information with that of given information for 38 target syllables were compared using a paired-sample *t-test*, where a significant difference was found between the two: $t(37)=4.059$, $p<.05$. Thus, it appears that Chinese speakers do tend to extend the

duration syllables carrying new information to distinguish it from given information when speaking English.

With reference to Fowler and Housum (1987), Watson et al. (2008) and Lam and Watson (2010), their findings for L1 English speakers all presented that the L1 English speakers use longer durations when marking information states to highlight new information in order to distinguish it from given information. In relation to this, it can be argued that Chinese EFL speakers did sometimes use duration to distinguish between new and given information similar to those of native English speakers. However, this was not always done consistently, and this then is consistent studies which showed that non-native speakers do not always distinguish between new and given information (Wennerstrom, 1994). At the same time, the findings are not exactly like Gao (2010) who so revealed that Chinese EFL speakers do not use lengthening of new information and shortening of given information to differentiate between information states in most cases, which he attributed to the influence of negative transfer from the participants' mother tongue, Chinese.

The possible explanations behind the significant differences between new and given information data for Chinese EFL speakers are the accompanying: educational background of the participants. As mentioned in 3.2, the participants in this research have similar language foundations, they began learning English in grade one of the elementary schools around the age of seven or eight and have been learning English for almost 15 years up to now. Moreover, their English was at a relatively higher level, they majored in English in both undergraduate and postgraduate studies. English majors tend to be actively receptive to a wide range of information from the United Stated or the United Kingdom, and long-term exposure to this education will change their pronunciation characteristics, making them more similar to native speakers. The implication from this

is that a high emphasis on English pronunciation in the teaching of English as a foreign language can go a long way towards improving the English pronunciation characteristics of second language speakers who are able to use duration features appropriately to mark new and given information in utterance.

Table 4.1: Average duration (in ms) of the target syllables marking new and given information in English

Type of information	aMANda	LIly	NELson	MAGpies	LIPstick	eLEvem	MOther	deLIcious	Average
New information	302 (40)	154 (14)	315 (20)	258 (53)	192 (30)	167 (25)	206 (34)	145 (11)	217 (64)
Given information	242 (32)	157 (30)	253 (15)	222 (38)	160 (14)	186 (42)	183 (31)	137 (12)	193 (39)
Difference	60	-4	62	36	32	-19	23	8	24
Significance	p=.000								

(Note: Standard Deviation in parentheses)

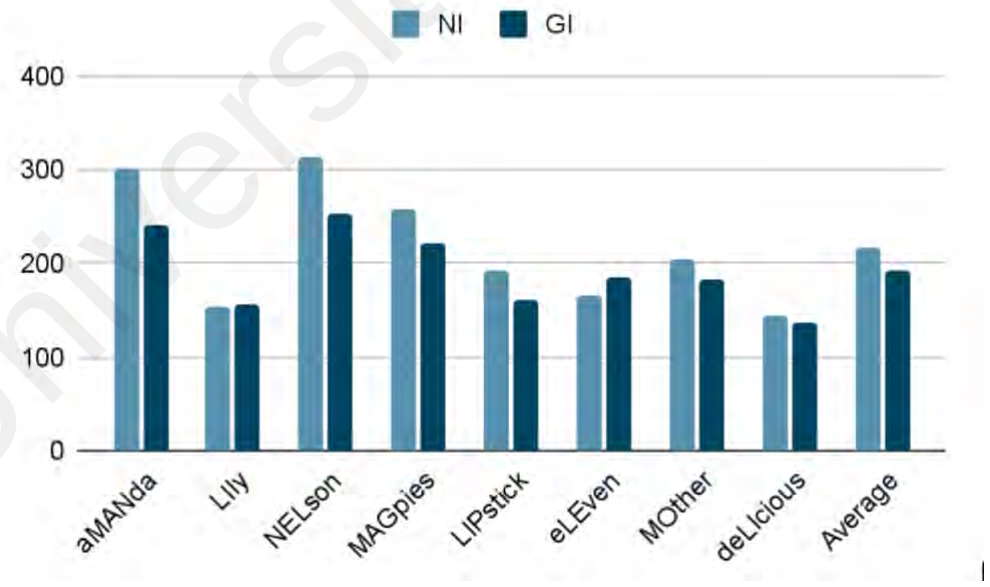


Figure 4.9: Bar chart of average duration of the target syllables marking new and given information in English

4.2 Pitch Patterns of New and Given Information for English

Having considered duration, the results of the pitch range and pitch curve of the speakers in accent syllables within the new and given information bearing word are now presented. The extracted results of the pitch analysis for the target syllables in English material of the participants are presented in the pitch range tables and pitch contour figures. Vaissière (1983) showed that pitch range is one the most common ways of achieving pitch in English, so in this research pitch range and average F0 will be used instead of exact values to describe a more objective presentation of pitch characteristics on new information and given information. The results of pitch characteristics will be discussed separately according to different syllables. From the analysis of pitch by using Praat, the maximum and minimum pitch values of each participant's target syllables in the word were obtained. Then the pitch range was calculated. Pitch curves are based on the data extracted by a Praat script, the ten pitch values were extracted from ten points in proportion. Then pitch curves were made in the line chart.

Since there was a total of five participants and each participant extracted data consisting of eight target words, there were a total of 80 corresponding maximum and minimum pitch values. However, the syllable 'LI' of participant 1 and the syllable 'NEL' of participant 2 were excluded because the recordings were unclear. There were 38 pairs of pitch data for the English material, half of which was new information and half of which was given information. First of all, the descriptive statistics of the pitch range values are shown in the respective tables to show the comparison and contrast between new information and given information. These statistics include the pitch ranges of new information and given information, the average values of the pitch range of new information and given information. Then the pitch curve graph carrying the new and given information is displayed in the line graphs.

Table 4.2 shows that for the average pitch range of syllable 'MAN', new information is 90Hz while given information is 60Hz. It is apparent that the average pitch range of the syllable carrying the new information is greater than that of the given information. While for each participant, four of the five present the same results where new information has a greater pitch range, only one participant (P5) produced a different result, with the pitch range of the new information being smaller than that of the given information, but the difference is not big, which is 11 Hz. This suggests that, for the syllable 'MAN', most participants assigned the new information a bigger pitch range.

Table 4.2: Pitch range (Hz) of the target syllable "MAN(Amanda)" marking new and given information produced in English

Pitch range	P1	P2	P3	P4	P5	Average
New information	101	75	71	140	64	90
Given information	30	64	43	92	73	60

As shown in Table 4.3, the pitch range of the syllable 'LI' carrying the new information and the given information are varied. For three participants (P1, P2 and P5), the pitch range for new information was smaller than that for the given information. The new information for P3 and P4, on the other hand, had a larger pitch range for the given information. On the whole, the average pitch range for new information was only slightly more than that for the given information.

Table 4.3: Pitch range (Hz) of the target syllable "LI(Lily)" marking new and given information produced in English

Pitch range	P1	P2	P3	P4	P5	Average
New information	15	3	40	58	29	29
Given information	22	13	17	21	41	23

For the pitch range of syllable 'NEL', as shown in Table 4.4, two (P1 and P5) showed had a wider pitch range on the new information compared to the given

information. Overall, the average pitch range for new information was bigger than for given information.

Table 4.4: Pitch range (Hz) of the target syllable "NEL(Nelson)" marking new and given information produced in English

Pitch range	P1	P2	P3	P4	P5	Average
New information	60	20	35	-	27	36
Given information	30	64	43	-	15	24

Table 4.5 shows the results for the new information and the given information of pitch range for the syllable 'MAG'. As shown, the average pitch range of new information was bigger than that of the given information. Among five participants, three had a bigger pitch range for new information while two (P2 and P5) had a smaller pitch range.

Table 4.5: Pitch range (Hz) of the target syllable "MAG(magpies)" marking new and given information produced in English

Pitch range	P1	P2	P3	P4	P5	Average
New information	37	26	43	93	18	44
Given information	31	45	21	21	21	27

Table 4.6 shows that the syllable for new information of 'LIP' had a larger average pitch range than the given information. In terms of individual production, only one (P4), had a smaller pitch range on new information, with a small difference of 2Hz between the pitch range of new information and given information. On the other hand, four participants (P1, P2, P3 and P5) had a larger pitch range on new information. Overall, it can be observed that when Chinese EFL speakers pronounced the syllable 'LIP', they tend to assign a wider pitch range to the new information.

Table 4.6: Pitch range (Hz) of the target syllable "LIP(lipstick)" marking new and given information produced in English

Pitch range	P1	P2	P3	P4	P5	Average
New information	175	179	134	41	26	111
Given information	13	21	21	43	19	23

From Table 4.7, the syllable 'LE' has a greater pitch range of new information than that of the given information, which is reflected in the data for each participant, as well as for the average pitch range. It can be noticed that when producing the syllable 'LE', Chinese speakers tend to assign a greater pitch range to the syllable carrying the new information compared to the given information.

Table 4.7: Pitch range (Hz) of the target syllable "LE(eleven)" marking new and given information produced in English

Pitch range	P1	P2	P3	P4	P5	Average
New information	37	92	40	84	41	59
Given information	14	13	26	61	19	27

As shown in Table 4.8, the difference between the average pitch range between new and given information's for the syllable 'MO' is only 2Hz. For each participant, two (P1 and P4) had a wider pitch range on new information, while the remaining three (P2, P3 and P5) had a wider pitch range on given information.

Table 4.8: Pitch range (Hz) of the target syllable "MO(mother)" marking new and given information produced in English

Pitch range	P1	P2	P3	P4	P5	Average
New information	74	35	23	47	5	37
Given information	23	84	27	34	6	35

Table 4.9 shows that the average pitch range of new information for the syllable 'LI' is more than that for the given information. However, two participants (P3 and P5)

had a pitch range for the new information that is larger than the given information, and the other two (P2 and P4) participants had a pitch range for the given information that is larger than the new information.

Table 4.9: Pitch range (Hz) of the target syllable "LI(delicious)" marking new and given information produced in English

Pitch range	P1	P2	P3	P4	P5	Average
New information	-	9	41	62	129	60
Given information	-	12	30	70	42	38

The results show that, for all target syllables, the average pitch range value of new information tends to be more than that of given information. For the 38 target syllables, the pitch range of the new information was larger than that of the given information for 24 syllables (63%), while the pitch range of given information is larger than that of new information for the remaining 14 syllables (37%). Out of five speakers, three tended to have a bigger pitch range on the word representing new information. The findings indicate that although there was a tendency to have a larger pitch range on the new information, this is inconsistently done. In other words, Chinese speakers in this study were not consistent in the way they mark the pitch range of new and given information in English. A paired-sample *t-test* indicated that the difference is statistically significant: $t(37) = 3.582$, $p < .05$.

A visualization of the pitch contour of new information (light blue lines) and given information (dark blue lines) extracted from the Praat demonstrates that the syllable marking new information had a higher average F0. The pitch contour of target syllables in the English text is shown in Figures 4.10 to 4.17.

As shown in Figure 4.10, four of five participants had a higher average F0 of new information of syllable 'MAN', only one (P2) had a higher average F0 of given information.

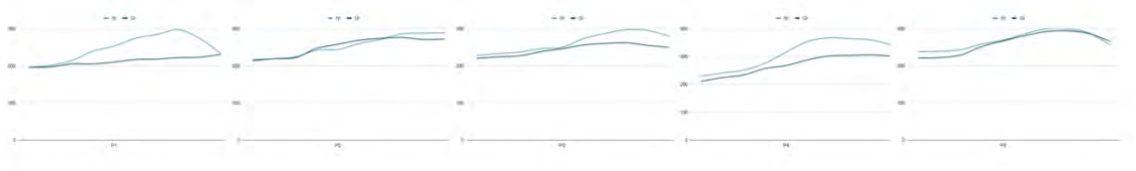


Figure 4.10: Pitch contour of new and given information in aMANda

Figure 4.11 illustrates the F0 curves for the syllable 'LI', for four of all five, the average F0 for new information was higher than the given information. Only P1 had a lower average F0 on new information.

Figure 4.11: Pitch contour of new and given information in LIly

For the syllable 'NEL' as can be seen in Figure 4.12, apart from one pair of data exclusion, all four results showed that the average F0 of new information was higher than that of given information.

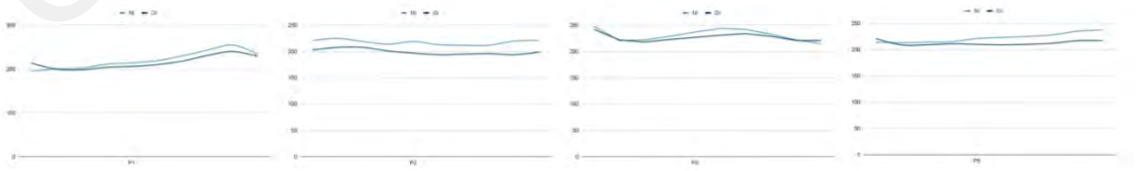


Figure 4.12: Pitch contour of new and given information in NELson

The pitch performance of the syllable ‘MAG’ varied among participants, as shown in Figure 4.13, where there is only one (P1) present that new information had a higher average F0 than given information.

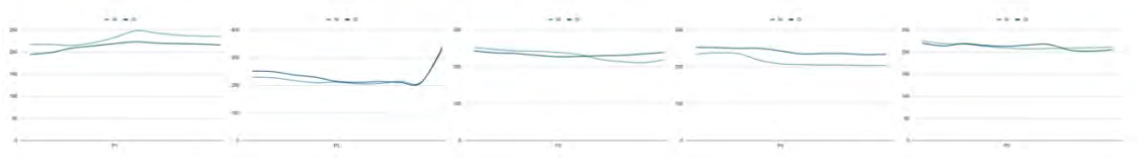


Figure 4.13: Pitch contour of new and given information in MAGpies

From Figure 4.14, four speakers showed that the average F0 of new information for the syllable ‘LIP’ was higher than that of given information.

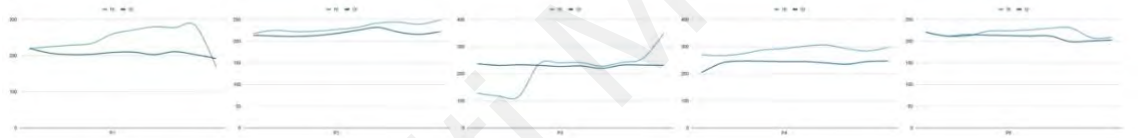


Figure 4.14: Pitch contour of new and given information in LIPstick

For the syllable ‘LE’, as shown in Figure 4.15, the average F0 of new information was higher than given information for all participants. The syllable ‘LE’, which can be said to carry new information, tended to have a larger F0.

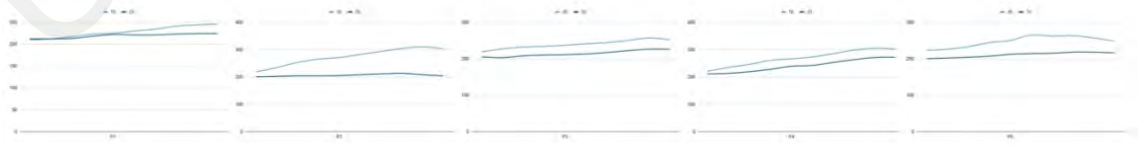


Figure 4.15: Pitch contour of new and given information in eLEven

The pitch curve of the syllable 'MO' shows in Figure 4.16, for four participants, the new information had their average F0 demonstrating a higher curve than for given information.

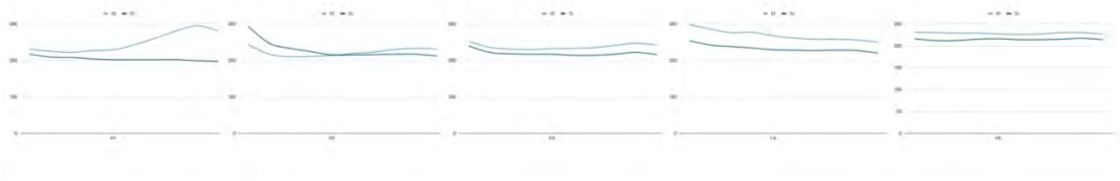


Figure 4.16: Pitch contour of new and given information in MOther

For the syllable 'LI', with data from P1 excluded, two (P2 and P3) possessed a higher average F0 value on new information, compared with given information.

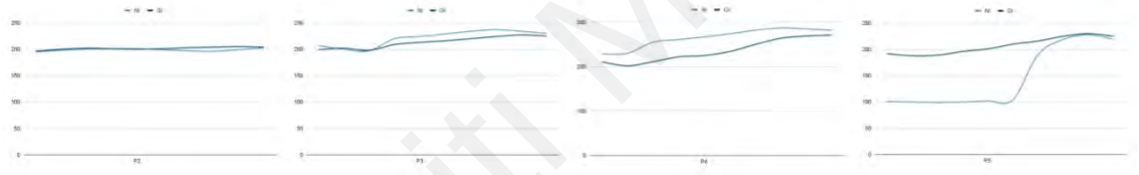


Figure 4.17: Pitch contour of new and given information in deLIcious

Overall, in the figures of pitch contours, out of a total of 38 target syllables, 28 syllables (74%) had higher average F0 value for new information rather than for given information, these results suggest that there is a difference between the F0 of new information and given information for the Chinese EFL speakers this study.

The results of the current study are similar to those in Gao (2010) with similar results. Gao (2010) found that Chinese EFL speakers can make certain use of the prosodic feature of the pitch to realise the prominence of main information in English passage reading, they mostly raised the pitch values and increased the pitch ranges in their English reading aloud to achieve prominence. Furthermore, Wang (2005) clearly identified several ways of prominent syllables in English, with extended durations and elevated

pitch values being two of them. The findings of the previous research on English indicate that the larger pitch range (Tench, 1996) and the higher F0 value (Tench, 1996; Vaissière, 1983) are common features of English for highlighting the new information.

In the same way as the duration data for English texts, the pitch data demonstrated the same findings, with Chinese EFL speakers performing very similarly to native English speakers in marking new and given information. Reasons for the similarities may mainly be put down to the well English level of the participants, as mentioned in the previous section. Another reason may be the existence of explicit instruction in phonetic lessons. According to the *Teaching Guide for Undergraduate English Major* published in 2020, the English major course in China's university needs to include an English phonetics course. The aim is to introduce students to English phonetics and intonation in a systematic way so that they can learn and practice the pronunciation of English, the patterns of speech flow, the functions of intonation, and basically use English phonetics and intonation correctly to read aloud, express ideas and communicate. For the participants taking part in the current research, all of them have received systematic teaching of prosody during their undergraduate years in English major, which supplies the participants with a clear picture in mind on English prosody. As a result, they mark new and given information in English in a similar way to native English speakers, using prolonged duration, extended pitch range, and increased F0 value to be prominent for new information.

However, the guide requires that English majors have only one semester of English phonetics and phonology courses. The teaching of English phonetics and phonology is relatively minimal compared to the three academic years of English reading courses. More importantly, EFL speakers' pronunciation habits are formed at an earlier stage in the English learning process but are rarely taught about English prosody at that

time, meaning that they miss the best opportunity to develop good pronunciation patterns. Most Chinese students' English learning patterns are motivated by examinations. Reading and writing account for a large proportion of the final grade in English exams. Therefore, both primary and secondary school teachers and students are inclined to focus on learning what will help them score higher in exams, such as reading and writing. In this situation, they concentrate more on learning vocabulary and grammar than on spoken English, let alone the prosodic features of English. Therefore, by the time students reach the university level, their English pronunciation habits have been established and it is a huge challenge to come back to English phonetics and phonology to change and improve their spoken English. Thus, the higher level of English proficiency of Chinese EFL speakers could be one of the explanations for their similarity to native English speakers in marking the prosodic features of the new and given information, but it would require more advanced research to investigate.

4.3 Duration of New and Given Information for Mandarin

The two previous sections analysed the prosodic features of new and given information in English, answering the first research question posed in the research. The present section and the next section attempt to analyse the prosodic features of new and given information in Mandarin to answer the second research question raised in the research. This section begins with an exploration of the duration features in Mandarin. Similar to the method for the analysis of duration of English material, descriptive statistical analysis and paired-sample *t-test* were employed here to explore the duration feature of native Mandarin speakers between their new information and given information.

In Figure 4.18, the vertical bar showed the duration features extracted from the target syllable 'MI'. P3's recording was excluded. New information had a longer duration than the given information for all four participants. The difference in duration between new information and given information was noticeable.

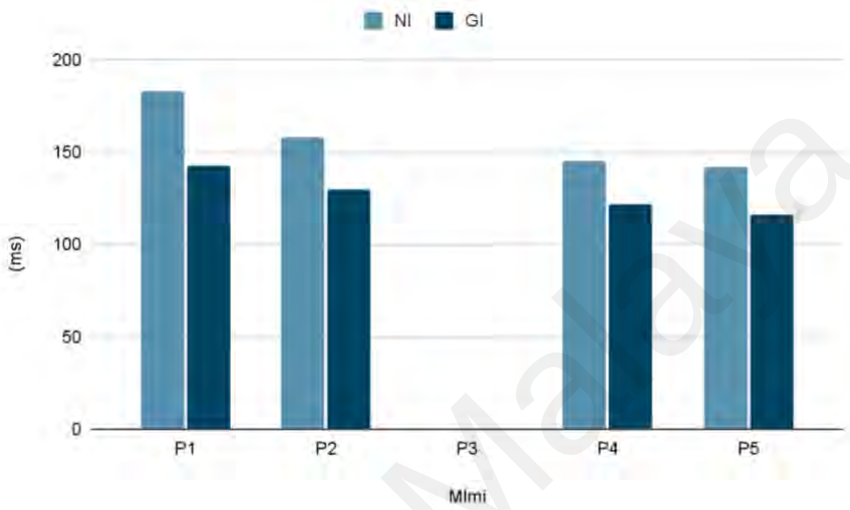


Figure 4.18: Bar chart of duration (in ms) of the target syllable "MI(Mimi)" marking new and given information in Mandarin

As seen from Figure 4.19, for the syllable 'MA', the difference between the duration of new information and given information was slight for all participants, but they performed in a different way. Compared with given information, P1 and P2's new information had a longer duration, P3's new information was equal to given information, and the remaining two (P4 and P5)'s new information was marginally shorter.

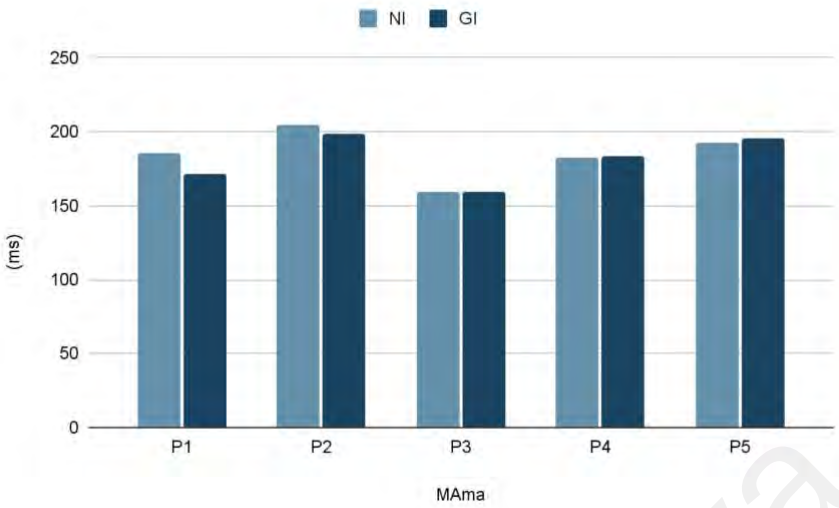


Figure 4.19: Bar chart of duration (in ms) of the target syllable "MA(mama)" marking new and given information in Mandarin

Figure 4.20 provided an overview of the duration characteristics of the syllable 'MEI', as shown, new information was longer than given information for all five participants. Overall, it can be assumed that the participants used a longer duration when speaking the syllable 'MEI' to highlight new information.

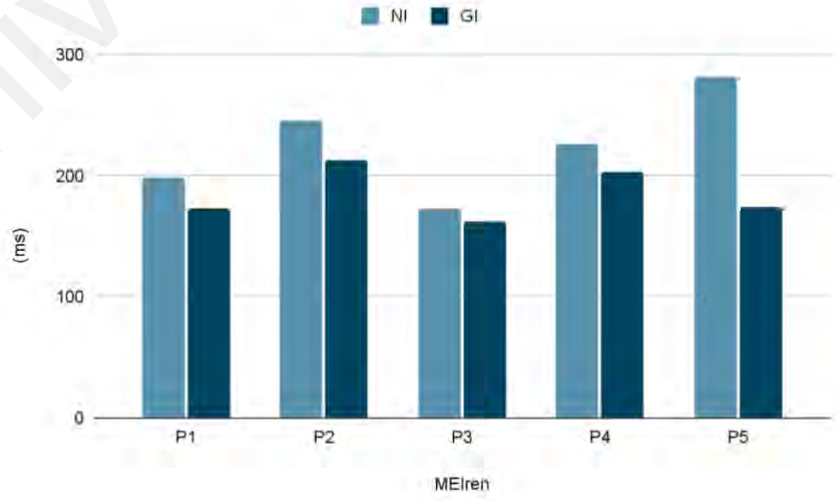


Figure 4.20: Bar chart of duration (in ms) of the target syllable "MEI(meiren)" marking new and given information in Mandarin

Due to the exclusion of P3 and P5's pronunciation, there were only three pairs for syllable 'LIN'. Figure 4.21 demonstrates that new information was longer than given information for three participants.

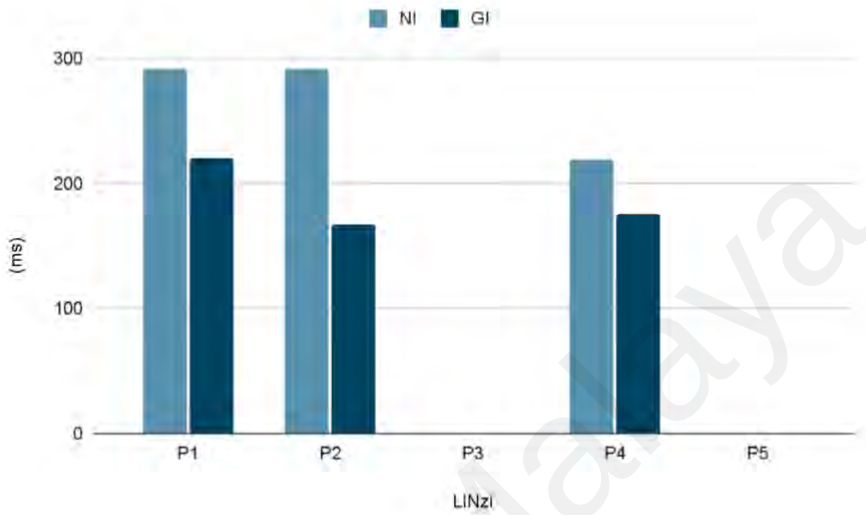


Figure 4.21: Bar chart of duration (in ms) of the target syllable "LIN(linzi)" marking new and given information in Mandarin

As can be seen from Figure 4.22, for the syllable 'NV', the duration of new information was longer than that of given information, although the difference between P1's new information and given information was not so great. on the whole, it may be concluded that Chinese speakers in this study tended to have a longer duration on new information of the syllable 'NV'.

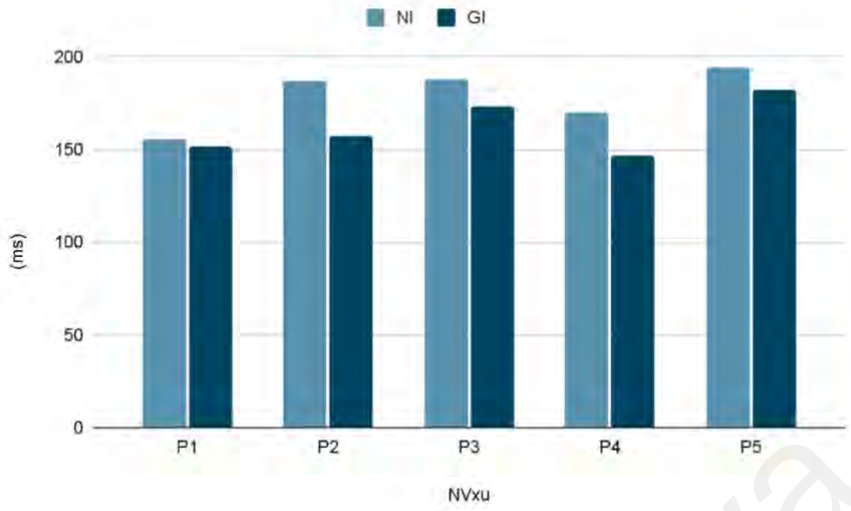


Figure 4.22: Bar chart of duration (in ms) of the target syllable "NV(nvxu)" marking new and given information in Mandarin

The performance of the syllable 'NAI' was not the same as that of the syllable 'NV', even though their first syllable were both the third tone. As can be seen from Figure 4.23, three (P2, P3 and P4) marked new information longer than given information, two (P1 and P5) marked given information longer than new information. The difference between P1's new information and given information was very close.

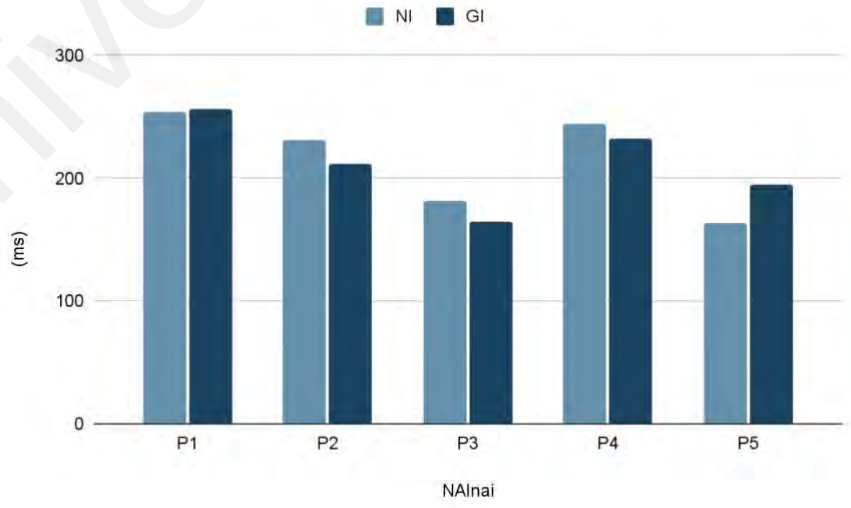


Figure 4.23: Bar chart of duration (in ms) of the target syllable "NAI(nainai)" marking new and given information in Mandarin

From Figure 4.24, for the syllable ‘MU’, it can be found that the duration of new information was longer than given information for all five speakers, and the difference was obvious. Overall, the Chinese speakers in this study were inclined to prolong new information rather than given information when marking the information status of syllable ‘MU’.

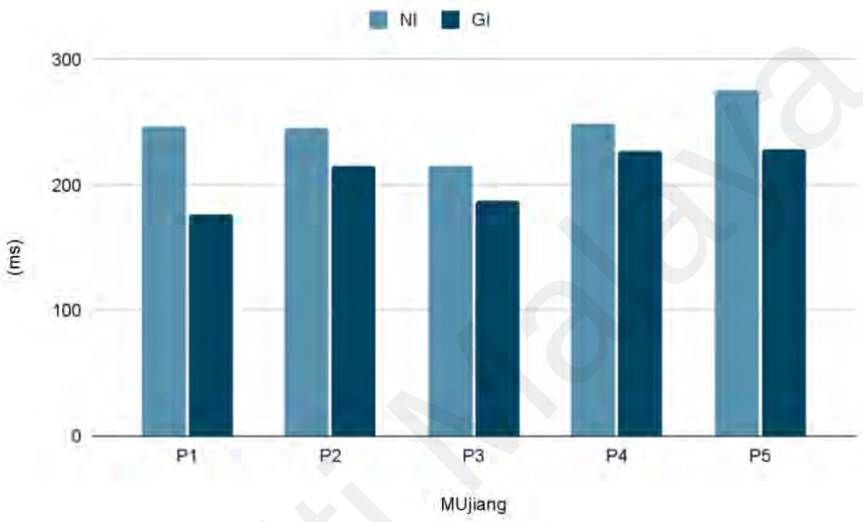


Figure 4.24: Bar chart of duration (in ms) of the target syllable “MU(mujiang)” marking new and given information in Mandarin

The duration characteristics of the syllable ‘LI’ were presented in Figure 4.25. Same as the syllable ‘MU’, which was also the fourth tone, the syllable ‘LI’ had new information of greater duration for all five speakers, compared with the given information. On the whole, this points out that Chinese speakers in this study made new information longer than given information when they spoke the syllable ‘LI’.

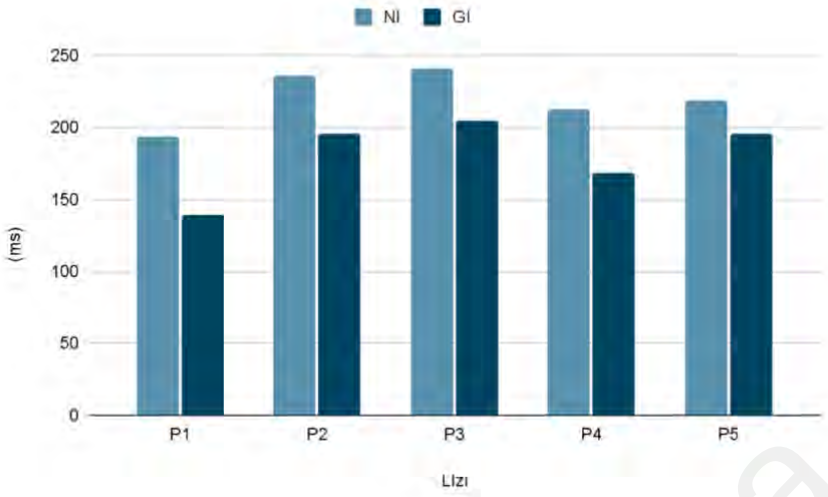


Figure 4.25: Bar chart of duration (in ms) of the target syllable "LI(lizi)" marking new and given information in Mandarin

As shown in Table 4.10 and Figure 4.26, the average duration was arranged by the four tones, the average duration of new information for all syllables from five speakers was longer than given information. The same result was available for each syllable, which was that their new information was longer than given information. The paired-sample *t-test* indicated the difference was significant: t (36) =5.963, p<.05. These demonstrated that when Chinese speakers mark duration on new information and given information in Mandarin, there was a significant difference between them. In other words, Chinese speakers in the study knew how to mark new and given information on the duration of Mandarin. The result was consistent with what Chen and Braun (2006) found that the native Mandarin speakers consistently put more time on new information than given information. The same conclusion was also obtained by Ouyang and Kaiser (2015), who found that new information had a longer duration than the given information.

Table 4.10: Average duration (in ms) of the target syllables marking new and given information in Mandarin

Type of information	MImi	MA ma	MEI ren	LIN zi	NVxu	NAIn ai	MU jiang	LIzi	Average
New information	157 (19)	185 (17)	225 (42)	267 (42)	179 (16)	215 (40)	246 (22)	221 (19)	212 (39)
Given information	128 (12)	182 (17)	185 (25)	188 (28)	162 (15)	212 (35)	208 (24)	181 (27)	181 (29)
Difference	29	3	40	79	17	3	38	40	31
Significance	p=.000								

(Note: Standard Deviation in parentheses)

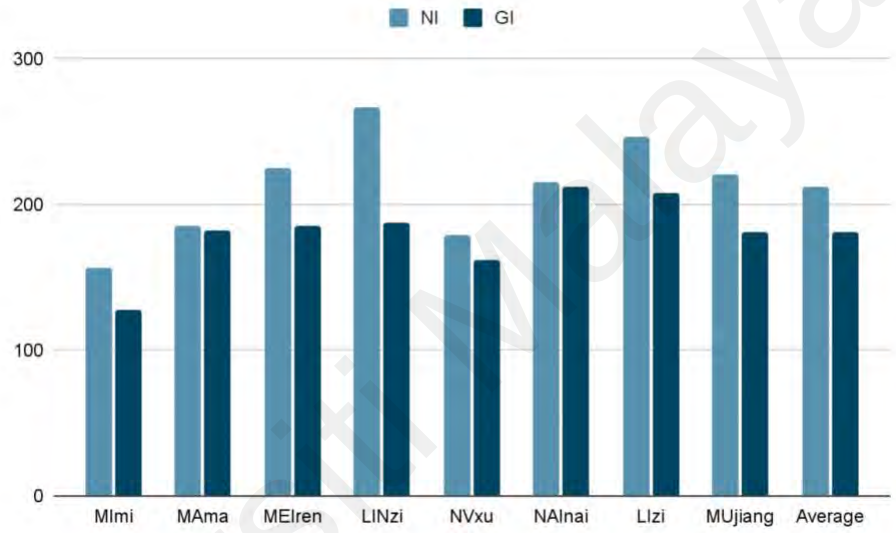


Figure 4.26: Bar chart of average duration of the target syllables marking new and given information in Mandarin

For four tones of Mandarin, the results showed that Chinese speakers assigned a longer duration to new information than that to the given information. The difference in duration between new and given information was very pronounced for the neutral tone words whose first syllable is the second or the fourth tone, but less for the neutral tone words whose first syllable is the first tone or the third tone. The difference was probably since the second tone was ascending, and the fourth tone was descending in Mandarin, whereas the first tone was flat, and the third tone was descending followed by ascending. Since the small number of syllables in different tones made it difficult to obtain certain

regularities, only a brief overview was given herewith. A larger number of target words will be required in future research to obtain a certain regularity for the different four tones.

4.4 Pitch Patterns of New and Given Information for Mandarin

The results of the fundamental frequency analysis for the target syllables in the present study were presented in the following parts. With the exclusion of the syllable 'MI' and the syllable 'LIN' from participant 3 and the syllable 'LIN' from participant 5, there were 37 syllables. In the same way as the analysis of the pitch range of the target syllables in English, the pitch range of each syllable in Mandarin for new and given information was shown first, followed by the graphs of pitch curves to observe the F0 values.

From the pitch range in Table 4.11, the average pitch range of new information for the syllable 'MI' was larger than given information. Individual production also followed this trend, with new information of three participants (P2, P4 and P5) had a larger pitch range than given information. Only one (P1) had a smaller pitch range of new information than given information. Overall, the participants in this study perhaps mostly attributed a greater pitch range to new information when marking the information status of the syllable 'MI' in Mandarin.

Table 4.11: Pitch range (Hz) of the target syllable "MI(Mimi)" marking new and given information produced in Mandarin

Pitch range	P1	P2	P3	P4	P5	Average
New information	20	37	-	22	18	24
Given information	30	6	-	19	9	16

As is shown in Table 4.12, the syllable 'MA' acted as different information status from different participants showing different pitch ranges. Three speakers (P1, P2 and

P3) showed that new information had a larger pitch range than given information, while the remaining two (P4 and P5) showed that given information had a greater pitch range than new information. Overall, as for the average pitch range of the syllable 'MA', Chinese speakers in this study were inclined to highlight the new information by a larger pitch range.

Table 4.12: Pitch range (Hz) of the target syllable "MA(mama)" marking new and given information produced in Mandarin

Pitch range	P1	P2	P3	P4	P5	Average
New information	15	37	25	48	30	31
Given information	7	18	17	50	36	26

As it can be seen from Table 4.13 of syllable 'MEI', the average pitch range of new information was smaller than given information. There was also a little variation in the performance of the speakers, with two (P1 and P5) of new information having a larger pitch range than given information, and the remaining three (P2, P3 and P4) had a larger pitch range for given information than new information.

Table 4.13: Pitch range (Hz) of the target syllable "MEI(meiren)" marking new and given information produced in Mandarin

Pitch range	P1	P2	P3	P4	P5	Average
New information	50	32	15	45	21	22
Given information	46	42	20	55	15	36

As presented in Table 4.14, for three participants, new information of the syllable 'LIN' all had a larger pitch range than given information. In general, the same result was achieved for the average pitch range, where have new information was in a wider pitch range rather than the given information.

Table 4.14: Pitch range (Hz) of the target syllable "LIN(linzi)" marking new and given information produced in Mandarin

Pitch range	P1	P2	P3	P4	P5	Average
New information	51	42	-	88	-	60
Given information	12	19	-	71	-	34

According to Table 4.15, the average pitch range of the syllable 'NV' for new information was slightly bigger than that of given information, the difference was 3Hz. Four speakers (P2, P3, P4 and P5) showed that new information had a bigger pitch range than given information, although the difference for P2, P3 and P5 was small. One (P1) had the opposite result, whose given information had a smaller pitch range than given information.

Table 4.15: Pitch range (Hz) of the target syllable "NV(nvxu)" marking new and given information produced in Mandarin

Pitch range	P1	P2	P3	P4	P5	Average
New information	20	27	10	52	22	26
Given information	27	26	8	32	20	23

In Table 4.16, from the extracted pitch range of the syllable 'NAI' of new and given information, it can be found that the average pitch range was smaller for new information than that of given information. Five participants' production is different, with one (P1)'s new information being bigger than given information, three (P2, P3 and P5) 's given information being bigger than new information, and one (P4)'s new information having the same pitch range as given information.

Table 4.16: Pitch range (Hz) of the target syllable "NAI (nainai)" marking new and given information produced in Mandarin

Pitch range	P1	P2	P3	P4	P5	Average
New information	46	16	19	38	13	26
Given information	29	55	28	38	32	36

From Table 4.17, it is obvious that new information of the syllable 'LI' had a bigger pitch range, compared with the given information. Each participant presented the same results, with the pitch range of new information being bigger than that of given information. On the whole, it can be noted that Chinese speakers in this study tended to expand the pitch range of new information rather than given information when they use the syllable 'LI'.

Table 4.16: Pitch range (Hz) of the target syllable "LI(lizi)" marking new and given information produced in Mandarin

Pitch range	P1	P2	P3	P4	P5	Average
New information	120	136	97	144	109	121
Given information	84	118	68	121	76	93

According to Table 4.18, it can be seen that the average pitch range of new information of the syllable 'MU' was bigger than given information. This was also reflected in the data from the four participants (P1, P2, P3 and P4). One participant (P5), however, was different, with given information having a greater pitch range than new information.

Table 4.17: Pitch range (Hz) of the target syllable "MU(mujiang)" marking new and given information produced in Mandarin

Pitch range	P1	P2	P3	P4	P5	Average
New information	96	79	33	102	94	81
Given information	39	30	19	15	122	45

As shown in the previous tables, the pitch range worked out from the statistics of native Mandarin speakers, most of the target syllables had a greater pitch range on new information. The pitch range of new information was larger than that of given information in 25 of the total number of target syllables (in the proportion of 68%), the pitch range of given information was larger than that of new information in 11 of the target syllables (in the proportion of 30%), and the pitch range of new information and given information was equal in one case. This implies that although Chinese speakers were not uniform in marking the pitch range of new and given information in Mandarin, the majority were assigning a larger pitch range to new information. A paired-sample *t-test* showed that the difference between new information and given information is significant: $t(36) = 2.808$, $p < .05$. Therefore, it can be derived that the Chinese speakers expanded the pitch range of new information more than given information when marking the information status in Mandarin.

The visualised pitch contour of new information and given information are shown in Figures 4.27 to 4.34. According to the results of the syllable 'MI' in Figure 4.27, following the exclusion of P3, the average F0 of new information was higher than that of given information in three (P2, P4 and P5). In addition to which, although the average F0 of new information for P1 was lower than that of given information, the difference between the two was not great.

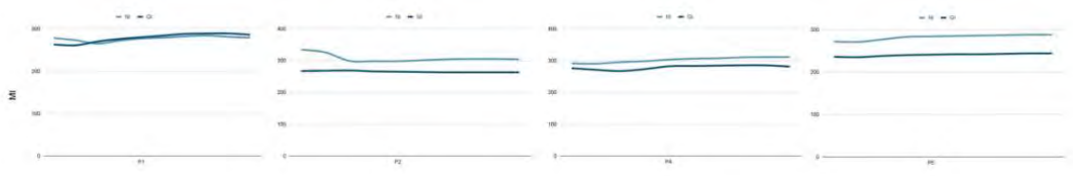


Figure 4.27: Pitch contour of new and given information in MImi

Based on the statistics of the F0 of new and given information for the syllable 'MA', as shown in Figure 4.28, it can be found the average F0 for all five participants

was greater for new information, compared with given information. On the whole, it can be assumed that new information for the syllable 'MA' had a greater F0 than given information in Mandarin native speakers' reading in this study.

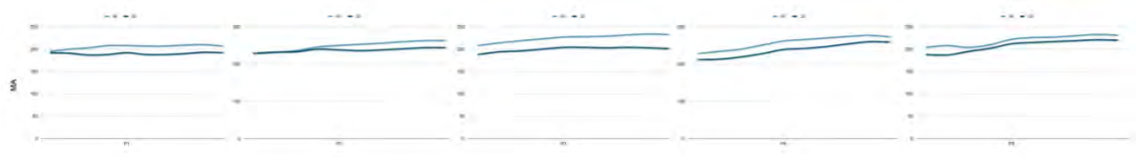


Figure 4.28: Pitch contour of new and given information in MAma

For the neutral tone words whose accented syllable were the first tone, as shown in Figures 4.27 and Figure 4.28, the average F0 for new information was greater than given information for eight of all nine data, accounting for 89%. It suggests that Chinese speakers in this study tended to assign a higher average F0 to new information for neutral tone words whose first syllable was the first tone.

According to Figure 4.29, the pitch contour of the new and given information for the syllable 'MEI' was very similar, with data from three participants (P2, P3 and P5) demonstrating that the new information possessed a higher average F0, while the other two (P1 and P4) showed that given information had a higher average F0 than new information.

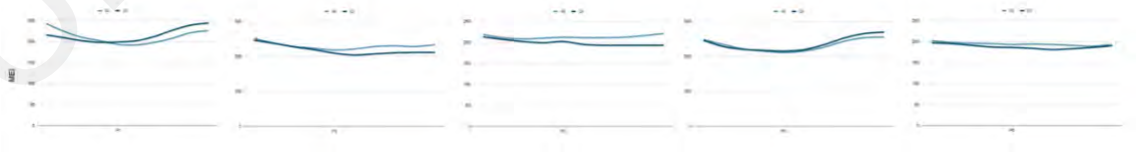


Figure 4.29: Pitch contour of new and given information in MEIren

In spite of the fact that there were merely three pairs of data for the syllable 'LIN', it can be seen in Figure 4.30, of whom all had the same result, the average F0 for new information was higher than that for given information.

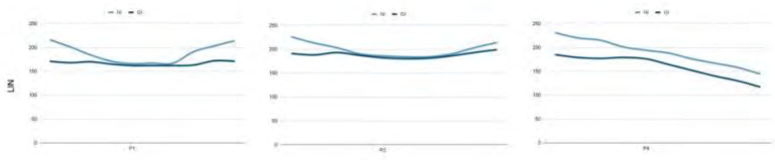


Figure 4.30: Pitch contour of new and given information in LINzi

As can be seen in Figures 4.29 and Figure 4.30, for the neutral tone words that the first syllable was the second tone, new information had a greater average F0 reflected in six of all eight data, with 75% of the total. Overall, Chinese speakers in this study tended to give a greater average F0 to new information than to given information in the words that the first syllable was the second tone.

Figure 4.31 illustrates the pitch curve for the syllable 'NV' carrying new and given information, with data from two (P1 and P4) of the five participants showing a higher average F0 for their new information, as compared to the given information.

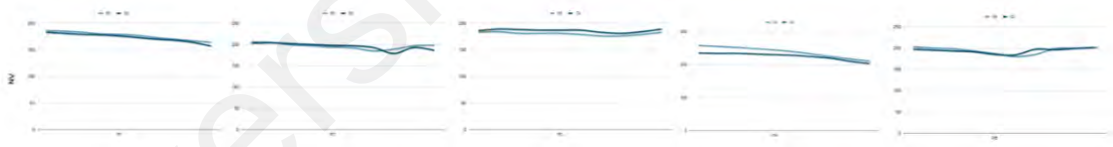


Figure 4.31: Pitch contour of new and given information in NVxu

According to Figure 4.32, three speakers (Pd1, P3 and P4) demonstrated that the average F0 was higher when the syllable 'NAI' appeared as new information as opposed to when it appeared as given information.

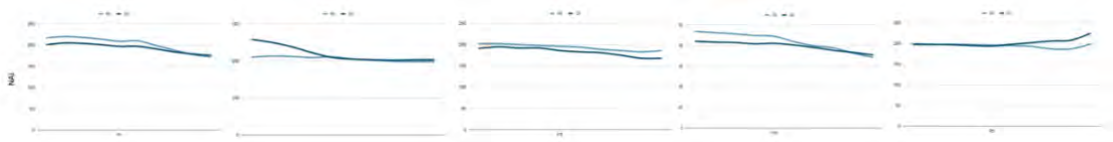


Figure 4.32: Pitch contour of new and given information in NAInai

When the neutral tone words that the first syllable was the third tone carry information status, according to Figure 4.31 and Figure 4.32, the average F0 of new information was higher than given information in half cases, accounting for 50%. On the whole, this suggests that Chinese speakers in this study did not always augment the F0 of new information when they encountered a neutral tone word in which the first syllable is the third tone that appears as new information.

Figure 4.33 presented the pitch contour of the syllable 'MU', with four participants (P1, P2, P3 and P4) having a higher average F0 for new information than for given information.

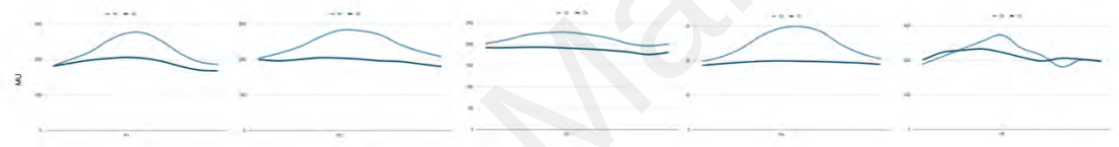


Figure 4.33: Pitch contour of new and given information in MUjiang

As illustrated in Figure 4.33, P1, P2 and P4 clarified that the syllable 'LI' appeared as new information with a higher average F0 than the given information.

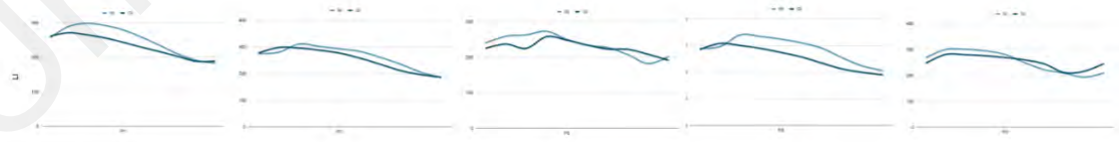


Figure 4.34: Pitch contour of new and given information in LIzi

According to Figure 4.33 and Figure 4.34, the neutral tone words that the first syllable was the fourth tone of Mandarin possessed a higher average F0 when they appeared as new information reflected in seven of the data, representing 70%. Overall, it

indicates that Chinese speakers in this study were inclined to highlight new information rather than the given information by increasing the average F0.

For Mandarin pitch, 25 of the 37 target syllables had a higher F0 value for new information, with a proportion of 68%. In the overall view, the average F0 of the syllable carrying new information was greater than that of the syllable carrying given information, which shows in Mandarin reading of Chinese speakers. There was a possibility that the information structure of Mandarin reflected on the pitch. From the pitch range and the average F0 data of Mandarin, Chinese speakers used the expanded pitch range and the raised average F0 to prominent the new information in utterance.

The result was consistent with the mainstream research on the pitch feature of information structure in Mandarin before. There seems to be no disagreement in the linguistic field in the neighbourhood of the pitch of new and given information in native speakers' utterances. Halliday (1970) noticed that in communication, new information was often accented while given information is not, which may manifest in pitch as the pitch level of new information was higher than that of given information. Scholars who have conducted research on Mandarin had come to the same view. Chen and Braun (2006) directly compared new and given information (referred to as "rheme" and "theme" in their study) and found that the new information had a larger pitch range than the given information. Ouyang and Kaiser (2015) conducted research into Mandarin, ending with similar conclusions. In the non-corrective condition, the pitch range for given information was smaller than that for new information, but in the corrective condition, this distinction did not exist (they studied not only new information and given information, but also corrective words and non-corrective words). Their findings on average F0 differed from pitch range, thus, they argued that the average F0 did not provide reliable clues in the neighbourhood of the information status of Mandarin.

Only a brief description can be given here for the representation of the pitch range and the average F0 of the neutral tone words that the first syllable was different tones in Mandarin, due to the too few target words. For the neutral tone words that the first syllable was the first tone, new information had a larger pitch range and a higher F0. There was no uniform result for the neutral tone words that the first syllable was the second tone and the third tone. For the neutral tone words that the first syllable is the second tone, half syllables showed a large pitch range of new information, and most syllables showed a higher F0 of new information. As for the neutral tone words that the first syllable is the third tone, half syllables showed a large pitch range and a higher F0 of new information. Furthermore, the neutral tone words that the first syllable was the fourth tone also demonstrated that new information had a greater pitch range and a higher F0 for most cases. However, the difference between the pitch range of new and given information was small for the neutral tone words that the first syllable was the first tone and the third tone, whereas the difference was greater for the neutral tone words that the first syllable was the second tone and the fourth tone.

4.5 Similarities and Differences of Prosodic Features of New and Given Information between English and Mandarin

This section tries to discuss the similarities and differences of prosodic features of new and given information between English and Mandarin, which is the answer to research question three: To what extent are there similarities and differences between the way in which new and given information is marked in English and Mandarin by Chinese speakers? The similarities and differences between English and Chinese from the perspective of duration and fundamental frequency (F0) will be discussed.

In Table 4.1 (see 4.1), for English, the average duration of new information was longer than given information for six target syllables, and the overall average duration was also longer for new information than for given information. The average duration for Mandarin was illustrated in Table 4.10 (see 4.3), with the average duration of each target syllable being longer for new information, and the overall average duration also being greater for new information than given information. In the aspect of duration, new information in English and Chinese presented a lot in common. The most salient shared feature was focus positioned on the new information carrying part, Chinese speakers tended to lengthen the duration of new information to make new information salient in both English and Mandarin. There were no apparent differences in the duration characteristics of new and given information between English and Mandarin from Chinese speakers.

According to the tables in 4.2 and 4.4, both for English and Mandarin, there was an expansion of the pitch range occurring on target syllables carrying new information. But compared with Chinese, English had a larger pitch range expansion. The average pitch range of new information in English was 57Hz and that of given information was 32Hz, with a difference of 25Hz. The pitch range of new information in Mandarin was 49Hz and that of given information is 39Hz, with a difference of 10Hz. As mentioned in 2.1, the change in pitch in Chinese was what distinguishes the meaning of words, and each word was pronounced with a particular pitch or tone, which tends to change its meaning or grammatical category once it was replaced by another tone. The meaning of English words did not change according to the pitch of the word, what important often was the intonation, which was the overall change in pitch of the whole sentence. Different intonation patterns were associated with different usages and meanings. However, tone and intonation were not always mutually exclusive in a specific language. In fact, tonal languages also had intonation, as was the case with Chinese. Although Chinese was

primarily a tonal language, it also used a wide variety of intonation patterns. In a contrasting manner, distinct from English intonation, Chinese intonation was superimposed on the four tones. The overall tonal range of Chinese tones was relatively narrow due to the strict limitations of the tones themselves and the tendency for unaccented syllables in the Chinese stream to acquire equal stress. In contrast, English tones had a wider tonal range as they were not restricted by the tones. This was confirmed by the findings of this study. As for the Average F0, new information syllables were higher than counterparts of given information in both English and Mandarin. The probability that the average F0 of new information was greater than given information was somewhat higher in English than in Mandarin, at 74% for English and 68% for Mandarin. In general, pitch range and F0 value contributed to making the new information prominent in both English and Mandarin. A large pitch expansion and a higher F0 were more likely to appear on the target syllables of English than Mandarin. These were in line with the properties of the two languages: English is pitch-accent, while Chinese is tonal.

The results showed that Chinese speakers marked prosody in their L2 English data in a very similar pattern to that of their L1 Mandarin. In both data sets, new information had a longer duration, a larger pitch range and a higher F0 than given information. Since Chinese EFL speakers showed prosodic features on the English data that were very similar to those of native English speakers, the reason for this may be that the participants in this study had a higher level of English, as mentioned in the previous sections. However, this was not sufficient to explain the very similar way in which Chinese EFL speakers prosodically mark new and given information in both languages, English and Mandarin.

One explanation was that Chinese EFL speakers' L2 English had been influenced by their L1 Mandarin, which was known as the language transfer, referring to the

influence of the mother tongue on foreign language learning, making it one of the topics of greatest interest to linguists and psycholinguists. Studies of language transfer basically cut across all the aspects of language learning, from phonetics to grammar even to culture. Lado (1975) introduced the concept of language transfer, that was, learners relied extensively on their acquired mother tongue during the second language acquisition and often transferred the linguistic form, meaning and culture associated with the mother tongue to the second language acquisition. The differences between the first language and the second language affected learners' acquisition of the second language. Similarities between learners' L1 and L2 may help them to learn their L2, which was the positive language transfer, while differences between the L1 and L2 may have a negative impact on L2 acquisition, which was the negative transfer (Ellis, 1985). The study showed that there were multiple patterns of language transfer, from the structure of one language of the speaker directly to another, and indirectly affecting the pattern of the second language (Odlin, 2003). Gut and Pillai (2014) found that the duration and pitch performance of new and given information was very similar between Malay and English for native Malay speakers, and they suggested that Malay speakers may be transferring their L1 Malay patterns directly to L2 English. Chinese belongs to the Chinese-Tibet language, whereas English belongs to the Indo-European Language, which is two completely different language systems. The two languages differ greatly in many aspects of phonology, grammar and vocabulary, so native language transfer in English learning is manifested in many aspects. This research showed that the way Chinese EFL speakers mark new and given information in Mandarin may be directly transferred to their L2 English. For example, as shown in Figures 4.1 and 4.10, Chinese EFL speakers marked the duration of new and given information in English and Mandarin in similar ways, with the average duration of new information being longer than that of given information, and the difference between the duration of new and given information in English and Chinese

being significant. Furthermore, similar pitch characteristics were found in the English and Mandarin data of Chinese EFL speakers, for example, the pitch range of new information was larger, and the average F0 value of new information was higher than that of given information in both English and Mandarin. However, further research is needed to confirm whether this is indeed the case. Therefore, the conclusions can be drawn that Chinese speakers had similar prosodic features in marking new and given information in English and Mandarin may be due to their L1 Mandarin to L2 English language transfer.

CHAPTER 5: CONCLUSION

This chapter focuses on the description of the main findings of the study. Limitations of this study and recommendations for further research are then mentioned. By measuring the acoustic features in terms of both duration and fundamental frequency, this study examined the prosodic features of Chinese EFL speakers' new and given information in English and Mandarin for an empirical study.

5.1 Major Findings

Using an empirical method, the study explored the characteristics that Chinese EFL speakers mark new and given information about English and Mandarin. Based on the analysis, the characteristics of prosodic marking of new and given information by Chinese EFL speakers of English and Mandarin are found. Then the acoustic features of new and given information in English and Mandarin by Chinese speakers are discussed and compared. The major findings of this study are listed as follows.

1. How do Chinese speakers prosodically mark new and given information in English?

The results from the English data indicate that the Chinese EFL speakers in this study marked information status using duration and pitch. Although not always consistent, duration tended to increase to mark new information. Where pitch is concerned, new information tended to have a greater pitch range and a higher average F0.

2. How do Chinese speakers prosodically mark new and given information in Mandarin?

Generally speaking, syllables marking new information in Mandarin were produced with a longer duration and by expanding their pitch range as well as increasing the average F0. Due to the number of test words, the correlation between the duration and pitch of different tones of Mandarin was not explored in this study3. To what extent are there similarities and differences between the way in which new and given information is marked in English and Mandarin by Chinese speakers?

In both English and Mandarin, duration and pitch play an important role in the salience of new information. The same pattern emerged in English and Mandarin: Compared with given information, new information is reflected through lengthening duration, expanding pitch range and increasing average F0. Although new information in Mandarin was tonally extended, as was the case in English, the new information in the English material was accompanied by a larger pitch range expansion. In other words, the difference in pitch range between new and given information is greater in English than in Chinese.

5.2 Implications

It is well known that speakers of different languages have different intonation and prosodic habits. It is very difficult for native Chinese speakers to master the prosodic features of another language after they have already mastered the prosodic features of their mother tongue. More importantly, the differences between Chinese and English in prosody, especially in intonation, are obvious. For speakers, this kind of difference leads to the phenomenon of prosody transfer, which is detrimental to their intonation acquisition. The results of this study may, to some extent, fill a gap in the study of Chinese EFL speakers' prosody and provide some insights into EFL teaching.

The traditional methods of teaching phonetics need to be improved. Teachers should improve their own knowledge of the prosodic features of English so that they can use prosody correctly and become accurate demonstrators of it, to improve the teaching of phonetics. When teaching students English phonetics, they need to pay attention to teaching English prosody and provide clear guidance on information structure and prosody.

In addition, Chinese EFL speakers need to be aware of the importance of prosodic features in English and pay more attention to the different features between the two language systems, Mandarin, and English. Chinese speakers need to improve their prosodic strategies not only in terms of prosody but also in terms of speaking and listening skills. The different language skills interact with each other, and speakers' mention of their speaking and listening skills will enable them to avoid incorrect prosodic patterns and pragmatic mistakes in communication.

5.3 Limitations

Due to the constraints of time and the level of research, there are inevitably some limitations to this study. And it is because of these limitations that subsequent research will be conducted or that these limitations will become issues that need to be addressed. This section therefore presents the limitations of this study and some suggestions for further research in the future.

In terms of the research materials, this study covers only eight words that embody the new and given information, which is relatively few. Furthermore, in the Chinese material, there are only two words for each tone, making it difficult to discover the rules of different tones in Chinese for both the new and given information. This also suggests

that future research should increase the number of target words, which would help to validate some of the findings.

In terms of participants, the participants in this research were five Chinese master's students from the Faculty of Languages and Linguistics with English proficiency levels that were higher than might be expected for Chinese tertiary students who are not English majors. Thus, the results may well be different if less proficient participants were used. The study also comprised a small sample from one level of education. Thus, future studies should look at bigger samples of Chinese EFL speakers from different. Gender differences in EFL speakers also need to be considered, as this may be one of the important variables in the study of English and Chinese prosody. The particular reason for the circumstance is that EFL speakers at different levels and of different genders differ somewhat in their use of prosodic features to mark new and given information.

This research is only a preliminary study of the prosodic features used by Chinese EFL learners to mark new and given information. More questions will need to be answered in future research. Undoubtedly, future studies will be more in-depth based on the present study.

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