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Methods and Effects of Shadowing Using Online Authentic Videos on L2 Acquisition of Mandarin Chinese Tones

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Methods and Effects of Shadowing Using Online Authentic Videos on L2 Acquisition of
Mandarin Chinese Tones

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Abstract

Mandarin Chinese tones are notoriously difficult for second language (L2) learners. Previous research focuses on tone training methods that can help learners produce monosyllabic lexical tones, and studies about the production of multisyllabic lexical tones at the sentence level in spontaneous speech are limited. This study applies shadowing—a method where the learners repeat what they heard with as little delay as possible—to tone training and compares the effects of using authentic videos and textbook audios as shadowing materials for beginner L2 Mandarin learners' tone improvement at the sentence level. Fourteen students in elementary Chinese classes at an American university participated in the tone training activity for four weeks. The participants in the "authentic video" group received authentic videos as their training materials, while the "textbook audio" group was trained with textbook audios. The participants shadowed the materials twice a week, six times per session, at home in their free time. Tone accuracy was rated by Mandarin native speakers according to the pre-test and the post-test consisting of a read-aloud task and a one-on-one conversation. Qualitative and quantitative surveys were conducted to analyze learners' attitudes toward the shadowing activity and the materials.

The results indicate that learners in both groups showed significant improvements in their accuracy in spontaneous speech with no significant differences between the two groups. As for learners' attitudes, although the participants reported overall positive feedback on the shadowing activity regardless of the materials, authentic materials generated great interest from the participants and were more appealing to the learners. A strong correlation between learners' confidence in speaking and flexibility of the activity was also found. Based on the finding, pedagogical implications are discussed, including how to select suitable materials and shadowing instructions. For example, educators could introduce textbook audios first and gradually add

authentic materials. The findings provide Mandarin Chinese instructors an effective and engaging way to improve learners' tone production in spontaneous speaking. Incorporating shadowing activities into class has great potential to encourage learners' autonomy without occupying precious class time. The findings not only contribute to research on teaching Chinese as a second language and the related pedagogy but also shed light on the use of authentic materials in second language teaching and learning.

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Dedication

To my parents and my sister

Contents

Chapter 1

Introduction

1.1 Background of the Study

For many language learners, the primary goal of language learning is to communicate with native speakers. Mandarin Chinese is a tone language, which means that fundamental frequency (F0) convey lexical meaning along with vowels and consonants. Thus, producing correct tones can prevent miscommunication and misunderstanding. Given the importance of tones, many researchers have explored the acquisition of Mandarin lexical tones and various ways to improve L2 learners' lexical tones. Many laboratory experiments provided effective methods to help learners perceive and produce tones more correctly. However, most of the studies focused on isolated monosyllabic tones without investigating tone production in larger linguistics units such as phrases and sentences (Pelzl, 2019; Wang, 2012). Contextual tone productions are different from isolated monosyllabic tones since tones undergo changes with tone sandhi and different phonemic processes in a sentence (Chen, 2000; Tang et al., 2019; Xu, 1993), and disyllabic words pose greater challenges for learners than monosyllabic words (Chang & Bowles, 2015). Thus, an effective method to improve learners' lexical tones at the sentence level is worth investigating to truly facilitate learners' communication competency.

Shadowing, a method where the learners repeat what they hear with as little delay as possible, is a popular instructional technique for improving the listening and speaking skills of learners who study English as a foreign language (EFL). Some studies showed that it could improve learners' pronunciation and fluency (Foote & McDonough, 2017; Hamada, 2018; Haufe, 2013; Hsieh et al., 2013; Lin, 2009; Martinsen et al., 2017; Salim et al., 2020). However,

the focus of this earlier work was based predominantly on EFL or Indo-European languages; the effect of shadowing on other languages such as Mandarin Chinese was still unclear. Even though some studies have been devoted to exploring the use of shadowing on Mandarin Chinese speaking, the focus of those studies has been almost exclusively on controlled speech and general fluency. No empirical support for the positive effect of shadowing on Mandarin tones in spontaneous speech currently exists.

1.2 Aim of the Study

With the broad intention to fill the gaps of previous research and contribute to teaching Chinese as a foreign language, the primary goal of the study is to investigate the effects of shadowing on Mandarin tone in spontaneous speech. To deepen the understanding of the effect of shadowing, the study also explores the effects of authentic materials and textbook audios to discover which material better helps learners improve their tone accuracy. To design a more effective student-centered pedagogy, learners' attitudes toward the shadowing activity and the materials are also examined.

To achieve the aim, a mixed-method study involving native English speakers who are taking elementary Chinese classes at an American university was carried out. The participants, divided into the "authentic video" group and the "textbook audio" group randomly, underwent four-weeks of self-directed shadowing tone training activities. Each week, they practiced shadowing twice a week, six times per session, with the materials they received for the week. The pre-test and the post-test analyzed their tone improvement after the training. A semantic differential (SD) scale survey and open-ended questions were employed to reach a more holistic understanding of their attitudes toward the activity and the materials.

This study extends the scale of Mandarin lexical tone research from isolated tone

productions in controlled speech to multisyllabic tone productions in spontaneous speech. Examination of different shadowing materials strengthened the understanding of the dynamic aspect of shadowing activities. With the empirical evidence, this study aims to offer pedagogical implications for instructors to design a more effective and student-centered shadowing activity to elevate learners' lexical tone accuracy.

1.3 Organization of the Study

The thesis consists of seven chapters.

Chapter 1 introduces the background and the aim of this study to shed light on the significance of conducting the study. The organization of the study is presented.

Chapter 2 reviews previous research about L2 Mandarin tone perception and production. Whereas numerous studies provided evidence of some effective training of monosyllable tone productions, there has long been a need among Mandarin tone researchers for investigating contextual tone productions.

Chapter 3 discusses the existing scholarship about shadowing as a technique to improve language learners' pronunciation and fluency. The study in the field has grown and proliferated, but the research about shadowing effects on Mandarin tones in spontaneous speech has previously been absent. Based on the gaps of previous studies, the research questions are raised.

Chapter 4 addresses the methods adopted in the research. A quantitative study was conducted to investigate participants' improvement in tone accuracy. To examine participants' attitudes in a holistic view, a mixed-method study was adopted with the SD scale and open-ended questions.

Methods to analyze the data and results are provided in Chapter 5 and Chapter 6. Chapter

5 presents the procedure of analyzing the data. Learners' lexical tone accuracy was investigated with *t*-tests based on native speaker raters' judgment. Mixed methods were employed to enhance the understanding of learners' attitudes. Chapter 6 presents the results of the *t*-test and correlation with a graphic chart and table. Learners' comments on the shadowing activity are included as quotes for qualitative examination.

Based on the key findings, detailed discussion about tone improvement and learners' attitude is delineated in Chapter 7 in relation to previous relevant studies, and each research question is answered with a comprehensive interpretation. Learners' lexical tones in spontaneous speech improved after the 4-week shadowing activity regardless of what materials they used. Learners' attitudes were generally positive toward the activity with no statistically significant differences between the two groups. The importance of using the audio and video transcripts and flexibility is underlined in this chapter.

Lastly, Chapter 8 summarizes the key points and the contribution of the research. This study provides a promising method for Mandarin learners to improve their lexical tones at the sentence level. In addition, pedagogical implications are provided to give instructors practical insights to design an effective shadowing activity to facilitate learners' autonomy. Limitations and suggestions for future research are also considered.

<div align="center">Chapter 2</div>

Previous Research on L2 Teaching and Acquisition of Mandarin Lexical Tones

Pronunciation had not merited as much attention as syntax or vocabulary in the past, but pronunciation has received close attention in the research of second language acquisition in the past 20 years (Derwing & Munro, 2015). Martinsen, Montgomery, and Willardson (2017) shed

light on pronunciation instruction with its great impact on learners' opportunities to participate in a social, cultural, and professional context in the target language fully. As a tonal language, Mandarin conveys lexical meanings through tones. Thus, it is indispensable for L2 Chinese learners to master tones to communicate with native speakers without misunderstanding.

2.1 Features of Mandarin Lexical Tones

Mandarin Chinese consists of three elements: vowels, consonants, and lexical tones. The vowels and consonants are considered segmental elements, and tones are considered as suprasegmental elements (Norman, 1988). Both segmental and suprasegmental elements play a vital phonetic role in Mandarin Chinese word recognition (Lee, 1993). Mandarin lexical tones consist of different phonetic correlates: fundamental frequency (F0), amplitude, overall duration, and F0 turning point (Blicher et al., 1990; Chuang et al., 1971; Lin, 1965). Among all, F0 values are the primary acoustic parameters (Gandour, 1983; Howie, 1976; Liu & Samuel, 2004; Xu, 1993). The four tones in Mandarin Chinese contrast in pitch height and tone contour (see Figure 1), including the high flat tone (the first tone; T1), the rising tone (the second tone; T2), the falling-rising tone (the third tone; T3), and the falling tone (the fourth tone; T4); plus the light and unstressed neutral tone. As a tonal language, Mandarin uses pitch distinctions with segmental elements to distinguish lexical meanings. That is, lexical tones are phonemic, like vowels and consonants, which can decisively distinguish one word from another (Pelzl, 2018). For example, *ma* can mean mother (*ma1*), hemp (*ma2*), horse (*ma3*), or scold (*ma4*) with different tones.
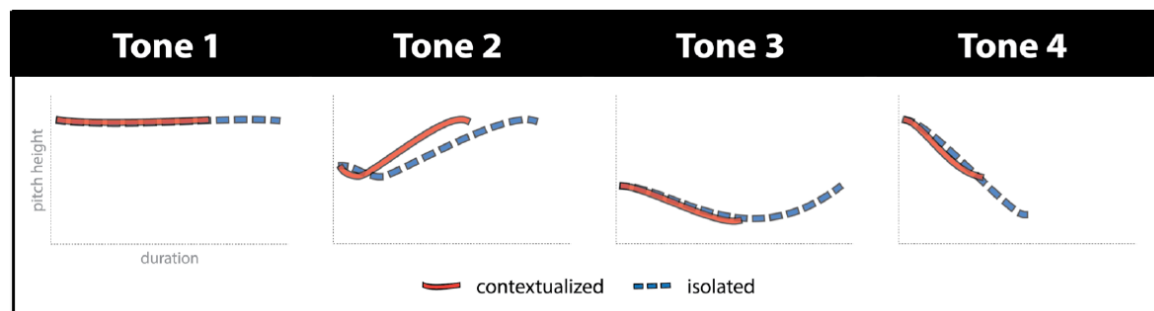
Figure 1 *The Four Tones in Mandarin Chinese*
Note: Adapted from *Second Language Lexical Representation and Processing of Mandarin Chinese Tones* by Eric A. Pelzl (2018)

Tones undergo contextual variations, especially the third tone, which is highly context-conditioned phonetic in its realization (Tang et al., 2019). When tone 3 is followed by another tone 3, the first one changes into a rising tone similar to tone 2, which is known as the tone sandhi process (Chen, 2000). Considering the sandhi feature, learners sometimes are able to master a single tone when pronouncing it alone, but have a hard time pronouncing each tone correctly in a sentence. Although contextual and other cues could compensate for the mispronounced tones for Mandarin sentence recognition in a quiet environment, lexical tones are essential cues in a noisy environment for listeners to comprehend sentences (Chen et al., 2014). Given the high possibility of a noisy environment in a real-world situation, learners must master tones to be understood.

2.2 L2 learners' perception and production of Mandarin tones

Factors such as linguistic experience, musical experience, pitch perception aptitude, and L2 proficiency can determine ones' tone perception and production (See Pelzl, 2019 for review). L2 Mandarin learners' first language (L1) has a great impact on their acquisition of tones (Lee et al., 2010; Wu & Lin, 2008; Xu et al., 2006) Tonal speakers have an advantage over non-tonal speakers when they learn a new tonal language, but they also encounter confusion between different tone features (Bent et al., 2006; Chang et al., 2017; Hallé et al., 2004; Hao, 2012;

Wang, 2006). For L1 English speakers, they have difficulties distinguishing Tone 2 and full Tone 3 even after years of learning (Chen, 1997; Hao, 2012; Kiriloff, 1969), and the percentages of correct pronunciation in Tone 2 and Tone 3 are lower compared to that in Tone1 and Tone 4 (Guo & Tao, 2008; He & Wayland, 2010). According to Wang et al. (2003), L1 Mandarin speakers mainly rely on F0 counters to distinguish tones, while L1 English speakers attend to absolute tone height as their phonetic cues.

Whereas many studies have shown the positive impact of previous music experience on tone learning (Cooper & Wang, 2012; Gottfried et al., 2004; Li & DeKeyser, 2017), pitch perception aptitude has a stronger contribution to the ability to obtain accuracy of tones (Bowles et al., 2016). People with higher tone aptitude can distinguish tone contours more accurately, leading to more successful tone learning outcomes (Bowles et al., 2016; Chandrasekaran et al., 2010; Wong & Perrachione, 2007). Studies have shown that perceptual training on tones can be transferred to the production domain (Bradlow et al., 1997; Wang et al., 2003; Wayland & Guion, 2004), which implies that successful tone learning requires mastery of both perception and production. Previous research has made a tremendous contribution to Mandarin tone scholarship; however, Pelzl (2019) pointed out that the limitation of these studies is that they solely examine tone category perception without exploring tone word learning. The relationship between these factors and tone word learning remains unclear and is worth investigating.

2.3 Mandarin tone instruction for English native speakers

Tones are the most challenging element for L2 Mandarin Chinese learners (Godfroid et al., 2017; Hao, 2012). Learners make errors on lexical tones six times more prevalently than phonetic errors (Chen et al., 2016). Since Mandarin lexical tones carry critical information for

discriminating word meaning, an effective method or instruction to assist learners to produce accurate tones should receive a thorough investigation.

One practical method to tackle the difficulties of tones is the use of multimodalities, which have received close attention from researchers in recent years. Deep learning is likely to occur when an associative network is formed from information delivered through multiple sensory modalities (Clark & Paivio, 1991; Mayer, 2001). Perceptual training with auditory input only and perceptual and production training with auditory and visual input both helped learners improve tone production accuracy (Wang, 2008). One study showed that those who received visual pitch contours with Pinyin romanization improved in tone recognition compared to those who received only pitch contours and those who received numbers with Pinyin (Liu et al., 2011). Similarly, Katz & Mehta indicated that audiovisual stimuli and feedback can improve a speaker's L2 speech sounds (2015). Instead of using tone contours on Pinyin as visual input, Chun et al. (2015) used the open source program Praat to show a real-time display of the pitch curves of the spoken words produced by the native speakers and the learners. The learners in her study showed significant improvements in the post-test after they compared their pitch curves with those of native speakers when practicing speaking. Chun et al. (2015) concluded that integrating the visual tonal information into auditory training has a positive effect on tone accuracy. Colors (Godfroid et al., 2017) and incidental learning video games (Wiener et al., 2019) were also found beneficial for L2 Mandarin tone learning; however, the outcome of multimodalities in learning cannot be generalized. Therefore, it is imperative to investigate the usage of multimedia in a certain instructional method (Godfroid et al., 2017).

Most of the previous studies involved students in meaningless pronunciation practice. The predominant use of isolated monosyllabic stimuli in tone research has posed limitations on

understanding tone perception in a variety of contexts (Pelzl, 2018; Wang, 2012). Given that

over 70% of lexical items in Mandarin consist of two or multiple syllables (Jin, 2011), studying

purely isolated tones can hardly provide a holistic view on tone learning. Chinese tones undergo

variations with different phonetic and phonological effects in contextual speech production (Xu,

1993). One study shows that disyllabic (DS) words are harder to learn than monosyllabic (MS)

words (Chang & Bowles, 2015). For example, learners tend to over-apply the tone sandhi rule in

inappropriate contexts and produce tone errors when they say sentences (Yang, 2016). In

addition, when speaking a sentence, learners must consider the context, lexical items, syntax, and

pronunciation simultaneously, which may distract their attention from tone accuracy. Therefore,

mastering tones in monosyllabic words does not guarantee that learners produce correct tones in

larger linguistic units.

Given the limitations of previous studies, Wang (2012) trained beginner Mandarin

learners with phrases and sentences produced by multiple native speakers to investigate an

effective way to help learners produce tones beyond isolated syllables. Pitch contours of the

native speakers on Sona Speech II Software were displayed with auditory input. Learners could

record and compare their productions and tone contours to that of the native speakers. The results

revealed that learners improved significantly at the post-test, suggesting that this auditory and

visual training method is effective for learners to improve their tones in larger linguistic units.

However, Wang also noted that the learners' tones were still far from being native-like after the

training, and the raters' scores may be influenced by overall fluency and other segmental errors.

Whereas most learners found the method helpful for their pronunciation, a learner points out that

it is frustrating to compare their pitch contour with the native speakers' ones when the pitches do

not match. Frustration leads to losing motivation in learning a second language, which sabotages

language learning achievement. Additionally, the sentences at the post-test were the same stimuli on the training. Since the context was controlled, the improvement was easier to achieve (Thomson & Derwing, 2015). Whether learners can extend their tone production into new sentences or in spontaneous speech remains unclear.

L2 pronunciation learning can be contextualized with meaningful repetition in a communicative context (Trofimovich & Gatbonton, 2006). Considering the lack of contextualized tone training in the previous research, this study uses communication-based input as tone training materials to examine whether learners can extend their tone perceptions into both controlled speech and spontaneous speech. Moreover, the intensive lab-based trainings done by previous research were not practical for Chinese pedagogy. Considering reality, this study designed tone training as an activity that students can complete in their free time.

2.4 Authentic materials for Mandarin tones

Integrating authentic materials in teaching and research of Chinese L2 pedagogy has proliferated in recent years, and the focus started to shift from written language to spoken language (Tao et al., 2018). Authentic materials are seen as a bridge between the classroom and the real world (Guariento & Morley, 2001). Despite the prevalence of authentic materials, researchers have not reached a consensus on the definition of authentic materials. The popular existing definitions of authentic materials in scholarship are the materials designed for native speakers instead of language learners (Nunan, 1989; Porter & Roberts, 1981) and the materials include real language produced by real speakers. Su (2021) developed a Discourse Authenticity Model (DAM) with eight discourse-based criteria: Shape L1, Not-for-L2 Language Teaching, Not-for-L1/L2 Language Teaching, Natural Dialogue, Spontaneous, Non-Fictional, Communicative Meaning, and Specific Context. According to DAM, artificial L2 textbook

dialogues are at Very Low Authenticity Level, advertisements are at Medium Authenticity Level, scripted fictional and non-fictional language are at High Authenticity Level, and spontaneous media and real-life language at Very High Authenticity Level. DAM is a valid and valuable system for educators to select teaching materials for L2 Mandarin learners to increase authenticity in language teaching. The model was designed based on discourse-based criteria. When selecting the materials, teachers should also consider other speaking features such as speed rate and lexico-grammatical complicity, which pose challenges to learners.

Gilmore (2011) conducted a 10-month classroom-based longitudinal quasi-experimental study to investigate whether authentic material helps Japanese learners develop communicative competency. The results show that the learners who received authentic materials outperformed the learners who received textbook materials in many communicative areas such as fluency and interactional competence. However, no statistically significant differences were found between the two groups in terms of their pronunciation in the oral interview. Gilmore noted that the short period of training and learners' advanced level might be the cause of their phonological production. The effect of authentic materials on beginners' pronunciation remains unexplored. To the best of my knowledge, almost no researchers have used authentic materials as Mandarin tone training materials, probably due to some challenging factors such as the high-variability input, contextual variability, the fast speed rate, and the noise in authentic materials.

Authentic materials feature high-variability phonetic input, which means that learners are exposed to multiple native speakers instead of a single speaker. Perrachione and colleagues' study (2011) showed that high-variability phonetic training was only effective for learners with stronger pitch perception competency. However, learners with weaker pitch perception competency perceived tones worse in a high-variability training environment. Wiener et al

(2020) found that high variability input alone did not facilitate beginner L2 Mandarin learners' tone production, but high variability input combined with explicit instruction resulted in more accurate tone productions. Gradually exposing learners with high variability input was recommended.

In addition to high-variability input from multiple speakers, authentic materials pose learners another challenge with their contextual tonal variability. Whereas tonal variability did not result in learners' success in tone learning in a short term, its long-term results and its effect on different types of learners and learning stages still remain uncertain (Chang & Bowles, 2015). Given the fact that learners may not be able to learn effectively with different kinds of varieties, tailoring the training method and adjusting the varieties are important for learners to have a greater gain in tone learning (Chang & Bowles, 2015).

Speed rate is a major challenge for L2 learners to access authentic materials, especially for the beginner L2 learners who have not been exposed much to native speakers' natural speaking speed. Thanks to the technology nowadays, speed adjusting tools are available on many video software and platforms. Slow-down tools can facilitate learners in recognizing both segmental and supramental elements in authentic rapid speech (Meinardi, 2009). Thus, learners should be able to adjust the speed rate base on their needs to gain better learning outcomes.

The differences between scripted and unscripted spoken discourses are as follows: the hesitation phenomena in unscripted spoken discourse, lexico-grammatical characteristics, and the phonological modifications of unscripted spoken discourse (Wagner, 2014). Some researchers have discussed the difficulties and shortcomings of using authentic language with beginner learners (Kmiecik & Barkhuizen, 2006; Peacock, 1997). However, Guariento and Morley indicate that full understanding of authentic materials is not necessary if learners extract the

information they need from the authentic materials and simplification of authentic materials can be justified for beginners (2001). Despite the difficulties, Wagner (2014) argues that teachers should incorporate unscripted texts instead of solely relying on scripted texts to facilitate learners' communication competency and to prepare them to engage in conversation outside of the language classroom. Similarly, Su and Tao (2014) also addressed the benefits of the combination of both conventional textbook materials and authentic materials. Without a doubt, scripted discourses provide slower, clearer articulation, but no study has proved that textbook audiotapes can facilitate L2 Mandarin learners' tone improvement better than authentic materials. Authentic materials have been used as shadowing materials in many EFL contexts and proved to improve learners' fluency and pronunciation (See Section 2 Shadowing for a detailed literature review). With the help of speed adjusting tools and captions, authentic videos' effect on tone learning is worth exploring.

Learners' attitudes toward authentic materials varied according to findings of different studies. Peacock (1997) found that authentic materials could boost students' motivation with higher involvement and on-task behavior, but learners also found authentic materials less interesting than artificial materials. In contrast to Peacock's finding, Akira (2013) found that beginner learners found authentic materials more enjoyable than artificial ones, and the difficulties of authentic materials surprisingly motivated learners to gain their language competency. The previous studies compared learners' attitudes toward authentic and artificial materials in related to listening tasks, but learners' attitudes toward different materials in tone training or speaking tasks remain unclear.

2.5 Summary of Literature Review on L2 Teaching and Acquisition of Mandarin Lexical Tones

As mentioned above, tone research has been limited to isolated monosyllabic items, constituting a mismatch between the classroom and the real world—L2 learners will encounter multisyllabic utterances in real-world communication. Little research has been done on tone productions in sentence-level and spontaneous speech. Additionally, the effect of authentic materials and artificial materials on tone training and learners' attitude toward each approach remains unexplored. In light of the limitation of previous research, this study aims to fill the gap by applying authentic videos and textbook dialogues as tone training materials to examine their effects on learners' tone perception and production. The study also aims to present a solution to solve the dilemma of using authentic materials in teaching L2 speaking.

Chapter 3

Previous Research on Shadowing

3.1 Definition of Shadowing

Shadowing, a popular instructional technique for improving EFL learners' listening skills, was originally a training technique for simultaneous interpretation (Hamada, 2019; Hu, 2014; Lambert, 1992). In 1992, shadowing was introduced into EFL contexts for listening by Tamai (Hamada, 2019). Shadowing is defined as "a paced, auditory tracking task which involves the immediate vocalization of auditorily presented stimuli, i.e. word-for-word repetition, in the same language, parrot-style, of a message presented through headphones" (Lambert, 1992). Based on Lambert's definition, Tamai, the pioneer of shadowing in the Japanese ESL contexts, redefined it as "an act or a task of listening in which the learner tracks the heard speech and

repeats it as exactly as possible while listening attentively to the incoming information" (Cited in Sumiyoshi, 2019).

Shadowing is an on-line task in which learners process the languages subconsciously with little time to access the meaning as they vocalize the speech stimulus nearly simultaneously (Foote & McDonough, 2017; Goldinger, 1998; Hamada, 2018; Salim et al., 2020; Shiki et al., 2010). In contrast, repetition is an off-line task that allows learners to be aware of metalinguistic meanings before repeating the speech chunk (Hamada, 2016).

These are examples of the differences between shadowing and repetition (Hamada, 2016; Murphey, 2001):

Shadowing (on-line)

Model: Boston is in America, in the north-east part of America.

Learner: Boston is in America, in the north-east part of America.

Repetition (off-line)

Model: Boston is in America,   in the north-east

Learner: Boston is in America   in the north-east

The examples show that learners repeat what they hear with little delay when shadowing. Shadowing is considered a highly cognitive and active activity as learners attempt to vocalize what they hear clearly and nearly simultaneously. Learners only have a little time to access the meanings and store the input while shadowing (Hamada, 2016). On the other hand, learners are able to store the input temporarily while repeating the speech chunk after it is fully spoken by the model (Hamada, 2016).

3.2 Types of Shadowing

Shadowing can be classified into different types. Based on the length of lag, Norman (1976) drew a distinction between phonemic shadowing and phrasal shadowing. In phonemic shadowing, learners repeat the sound without waiting for the completion of a phrase or a word, featuring "short reaction time between aural reception and vocal production" (Bovee & Stewart, 2008). In contrast, phrasal shadowing requires learners to not start repeating until a phrase or a chunk of meaning is completed. Schweda-Nicholson (1990) proposed a third kind of shadowing: "adjust lag shadowing". Learners start repeating after five to ten words are completed, which is more challenging than phonemic shadowing, but it does not require learners to stay conscious of the completion of meaning. Similar to Norman, Goldinger (1998) proposed immediate shadowing and delayed shadowing based on the length of lag. Immediate shadowing is to vocalize the sound immediately, whereas in delayed shadowing the learner mimics the sound by waiting for three to four seconds.

Other classifications are based on the focus of the training, including prosody shadowing, content shadowing, and silent shadowing, according to Someya (1996, as cited in Hiramatsu, 2000). In prosody shadowing, the learner attempts to mimic accent, intonation, and other prosodic features. In content shadowing, the learner pays close attention to both content and prosody simultaneously. In silent shadowing, the learner repeats the rapid speech delivered "at the speed of 180 words per minute or more" (Hiramatsu, 2000). Based on these classifications, Hiramatsu (2000) introduced another type of shadowing, conversion shadowing, which is the most difficult one compared to the previous three types. The learners must process three stimuli simultaneously: listening, repeating, and converting the meanings silently in the head. Conversation shadowing "may be envisioned as an acoustic image in the brain" (Hiramatsu,

2000). The above types of shadowing can all be used to improve learners' pronunciation with active listening skills.

Based on the portion of shadowing, Murphey (2001) classified shadowing into complete shadowing, selective shadowing, and interactive shadowing. Complete shadowing means repeating everything the speaker says exactly. Selective shadowing refers to repeating certain words or phrases that the listener chooses. In selective shadowing, learners have to engage in both phonetic listening and semantic reasoning to select the keywords to shadow (Hamada, 2019). Interactive shadowing is to repeat selective words and add some comments to be more interactive. Murphey (2001) gave clear examples of interactive shadowing:

Eriko: They um? they ah he is a member of basket club. yes

Wanda: ah really basketball club

Eriko: basketball club   So he is tired in home   yes so in home   at home

Wanda: aha okay   oh, really at home aha

Eriko: ah, yeah there is no sound   yes   it's quiet, so

Wanda: oh, really! it's very quiet?

In Murphey's study (2001), a non-native speaker and native speaker shadowed each other with feedback and comments. The results indicated that interactive conversational shadowing can enhance language acquisition through negotiation and intake.

Shadowing normally is performed without visual text. To improve learners' reading skills, Kuramoto et al. (2007) proposed text-presented shadowing. The learners can read the text first to comprehend the context, and they repeat while listening attentively to the pronunciation and reading the text at the same time.

These classifications focus exclusively on how the learners should practice shadowing. They provide very little empirical support for which method is more effective for learning a foreign language. Moreover, the types of shadowing materials were largely overlooked in previous research. Shadowing materials are crucial for language learners since they determine whether learners are able to follow along and whether learners improve their speaking production. Thus, this study attempts to examine the effectiveness of different types of shadowing materials on L2 learners to provide a useful guideline for instructors to select more effective shadowing materials.

3.3 Shadowing for Listening and Speaking

Although shadowing is a prevalent technique in the classroom, and some case studies show shadowing's efficacy on L2 learners, most case studies were limited to Japan and in an EFL context. A particularly salient reason for the limited research is because of its controversial audiolingual approach, which might lead to meaningless parrot-like repetition, contradicting the creative output encouraged in the language learning setting nowadays (Bovee & Stewart, 2008; Foote, 2015; Hamada, 2015). However, successful EFL learners reported that years of practice in imitation were vital in their pronunciation (Ding, 2007). Additionally, given that a typical class session seldom has enough dedicated time to practice pronunciation (Hamada, 2018), shadowing can serve as a technique that learners are able to complete autonomously.

Ample evidence has shown that shadowing can enhance learner's listening comprehension as it improves learners' phoneme perception skills (Hamada, 2011, 2016, 2019; Sumiyoshi, 2019). During shadowing, L2 learners' cognitive capacity only allows them to perceive phonological elements without understanding the meaning, leading to improvement of bottom-up listening skills and word recognition, which is usually blocked by top-down

processing focusing on the general meaning of a listening text (see Hamada 2019 for review). Another benefit of shadowing is that it allows learners to turn input into intake with increasing attentional allocations compared to purely listening (Murphey, 2001). To maximize the benefits of shadowing and to compensate for the disadvantages of shadowing, learners should learn the content of the listening text first before shadowing (Chen, 2014; Hamada, 2014), and they should self-assess their performance by listening to their own recording since they do not attend to their performance when shadowing (Hamada, 2015).

On top of the research on shadowing's effect on listening comprehension, considerable research attention has been devoted to the effectiveness of shadowing on EFL learners' speaking during the past 10 years. Shadowing was suggested as a strategy to alter adult ESL learners' fossilized pronunciation (Ricard, 1986). Research showed its efficacy of improving learners' intonation (Chen, 2014; Hsieh et al., 2013), fluency (Foote & McDonough, 2017; Harmon, 2014), comprehension (Foote & McDonough, 2017), and phonetic pronunciation (Hamada, 2018; Haufe, 2013; Martinsen et al., 2017) However, learners' accents did not show significant improvements after shadowing (Foote & McDonough, 2017; Hamada, 2017).

Despite ample evidence supporting shadowing's efficacy of foreign language learners' listening comprehension and speaking, most of the researchers used controlled materials for assessment, which allow participants to read the text. Although Foote and McDonough (2017) and Martinsen et al. (2017) both applied extemporaneous speaking tasks as assessments, the tasks were picture descriptions, in which students were allowed a long time to prepare the speech and possibly think about their pronunciation. In contrast, conversations and interviews require a shorter thinking time. Moreover, the learners in Foote's study (2017) didn't show improvements in their accents, and while the learners in Martinsen's study(2017) improved their pronunciation

in the extemporaneous speaking tasks, the differences did not reach statistical significance. To investigate whether shadowing helps learners improve their speaking in real-life situations, this research aims at filling the gap by employing spontaneous one-on-one conversation instead of picture description tasks on the pre-test and the post-test.

3.4 Shadowing Materials

Previous researchers used different materials for shadowing: some used textbook audio recordings (Hamada, 2018; Harmon, 2014; Hu, 2014; Lin, 2009), and some used semi-authentic (Martinsen et al., 2017) or authentic materials (Foote & McDonough, 2017; Mishima & Cheng, 2017). Foote and McDonough (2017) recruited sixteen advanced L2 English students in Canada to engage in a shadowing activity for eight weeks. They were asked to complete a minimum 10-minute shadowing task four times per week. The results showed that the participants significantly improved in their comprehensibility and fluency but not in their accents. Given the results, Hamada (2019) stated that using TV shows as the shadowing materials requires a higher level of English proficiency. However, the speed rate of TV shows is an important factor to determine whether the learners are able to comprehend or catch up. Another important factor is the content of the materials, which should yield to the i+1 principle (Sumiyoshi & Svetanant, 2017). Thus, researchers can use authentic materials with easier content for beginners to comprehend. Moreover, in addition to TV shows, other authentic materials such as commercials and interviews should also be examined with respect to their effects on beginning learners.

Reading the script while shadowing remains controversial among different researchers. Some researchers believe that learners can only focus on the audio input without a transcript (Hamada, 2019; Rongna, 2012), while some learners considered transcripts helpful when they were provided with the shadowing materials (Martinsen et al., 2017). However, no consensus has

been established since barely any research has examined the benefits of scripts. Considering learners' different learning types, this study provided the participants with transcripts, and they could choose to read them or not while shadowing. A survey was also conducted in the study to understand learners' perceptions of transcripts.

3.5 Learners' Attitudes Toward Shadowing

Learners found shadowing helpful for their listening and pronunciation, and they gained confidence in their performance (Lin, 2009; Mishima & Cheng, 2017). However, some learners considered shadowing repetitive and boring (Lin, 2009). Bovee and Stewart (2008) found that intermediate and advanced level EFL students believed that their listening skills and pronunciation had improved after completing the shadowing activity. However, some students complained that shadowing tasks were uncomfortable since they had to complete the task in the university computer rooms. This complaint is similar to students' negative responses in classroom shadowing activities about difficulties hearing the video (Martinsen et al., 2017), suggesting that students would prefer doing shadowing tasks at home or in a lab with privacy. Other students dislike the task because of its time-consuming nature, difficulties, and technical issues (Martinsen et al., 2017).

Foote and McDonough (2017) studied sixteen L2 English learners in a Canadian university about their opinions of the shadowing activity. Most of the students gave the shadowing activity positive feedback for its obligatory nature, helping them improve their pronunciation. Some students stated that learning about the story in authentic materials was fun. One student indicated practicing four times per week is too much. Given the complaint from Foote and McDonough s (2017)' study, I reduced the times participants had to practice shadowing in the experiment to make the tasks more enjoyable.

Martinsen et al. (2017) used semi-authentic videos as shadowing materials. The semi-authentic videos feature native speakers speaking in the country where the target language is dominant, but they were created for non-native language learners. The participants gave positive feedback on shadowing because of its authenticity and autonomy. However, the participants had mixed feelings toward the semi-authentic materials. Some participants disliked it because it was scripted; other participants preferred the material since the speakers speak slower than normal. In light of the findings, students' attitudes toward authentic materials are worth investigating.

The learners in the study of Martinsen et al. (2017) also noted that they like the autonomy of the lab exercises where they could control video playback to work on a particular part based on individual needs. In relation to learners' autonomy, Mishima and Cheng (2017) gave the participants the freedom to choose any TED speech they preferred to use for the shadowing activities, resulting in improvement of their prosodic control. By selecting their own materials, learners' autonomy was fostered. Learners' autonomy means that learners take responsibility for their own learning by using a set of strategies (Cotterall, 1995). Teachers should allow learners to choose their own materials, time schedule, and the use of transcripts to foster higher learners' autonomy, leading to more effective language learning outcomes (Yu, 2020). In Mishima and Cheng's study, they did not examine participants' perceptions of the videos they chose, and whether different TED speech videos make differences in participants' improvement of their speaking skills. Thus, whether learner's autonomy is related to attitudes toward the activity and tone improvement should be examined.

These studies showed that learners enjoyed shadowing in general. However, some of them still found it boring, regardless of whether the materials were textbook audio or authentic materials. Thus, it is important to compare two different materials to investigate closely how

learners view each material so the instructors can select appropriate materials for learners. Enjoyment is only one dimension of learners' attitudes. Speed, usefulness, and other criteria should also be considered to understand the different aspects of each material. Consequently, this study used the semantic differential (SD) method to get a holistic view of learners' attitudes on the shadowing materials. The SD method is a research technique measuring respondents' attitudes toward given objects with high reliability and validity (Klement & Chráska, 2015; Stoklasa et al., 2018). Proposed by Osgood (1957), the semantic differential scales allow the respondents to rate their attitude with pairs of bipolar adjectives (such as good–bad, fast–slow, etc.) (Stoklasa et al., 2018). With the SD method, participants' attitudes can be evaluated with reliable calculation, which can provide instructors a clear guideline to design a more effective and suitable shadowing activity for learners.

Hamada (2018) used the SD method to compare learners' attitudes to two different kinds of shadowing activities, Haptic-Shadowing and International Phonetic Alphabet Shadowing (IPA Shadowing). Haptic-Shadowing integrates haptic movement into shadowing, while IPA Shadowing provides visual reinforcement of auditory input with the phonetic alphabet. Hamada found that learners considered Haptic Shadowing to be fresher and more interesting than IPA Shadowing. Based on Hamada's SD method, I adjusted the adjectives list on the questionnaire according to the type of shadowing in this study in this study. In addition to comparing learners' attitudes toward two kinds of shadowing material, I also investigate correlations among each dimension with the SD scale to gain further analysis of the shadowing activities and materials.

3.6 Shadowing for Mandarin Pronunciation and Fluency

The focus of shadowing has been almost exclusively on English pronunciation and intonation. Since Chinese is a tonal language, the effectiveness of shadowing on tones is likely to

be different. To the best of my knowledge, only two research studies have investigated the effectiveness of shadowing on Chinese speaking skills. Chen (2014) designed a 15-minute in-class shadowing activity using Chinese language animation as the learning material for 15 days to investigate the improvement of learners' Chinese intonation. Whereas the nine intermediate and advanced Chinese learners improved their intonation after the practice, the materials they had been practicing with were the same, which did not indicate that their intonation improved in other reading materials or in their spontaneous speech. Likewise, Hu (2014) also used the same reading materials for practicing and a post-test. The participants' improvement was likely a result of intense practice instead of the efficacy of shadowing. To this end, this study aims to examine how shadowing can affect both controlled reading and spontaneous speech with different materials.

3.7 Summary of Literature Review on Shadowing

In sum, despite several studies reporting that shadowing leads to measurable improvement in learners' pronunciation, little has been done to study shadowing's efficacy on Mandarin Chinese tones, and few empirical studies support improvements in spontaneous speech. Additionally, no consensus has been reached about what materials should be used in shadowing activities. Different shadowing materials are necessary to be investigated to determine the most effective way to incorporate shadowing in class. Moreover, a reliable and valid method of measuring learners' attitudes toward shadowing activities would benefit L2 instruction to help instructors understand learners' needs and interests.

3.8 Research Questions

In view of the limitations of previous research, the research questions of this study are the following:

1. Which materials lead to greater improvement in L2 Mandarin Chinese learners' lexical tone productions at a sentence level: authentic videos or textbook audios?

2. What are the learners' attitudes toward shadowing as a tone training method?

3. How can methods of shadowing and the selection of shadowing materials be improved based on the learning results and learners' feedback?

Chapter 4

Method

4.1 Participants

Eighteen English native speakers were recruited from the University of Arkansas (6 males, 12 females). Among the original 18 participants, four participants dropped out before the first week of practice. The remaining fourteen participants (4 males, 10 females) completed the whole experiment. All participants were enrolled in one of the sections of Chinese 1003 (Elementary Chinese I) at the university. Due to a pandemic, the classes were delivered remotely. The course occurred three times a week, 50 minutes each session. The Chinese course focused on the four skills of Chinese and some common topics, which cover simple greetings, family, dates, and time. The mean age of the participants was 19.6 (range 18-28, $SD= 2.53$). Most of the participants started learning Chinese this semester, but three participants took Chinese classes in high school for half a year to three years ($M= 1.67$, $SD= 1.25$). None of them lived in a Chinese-speaking country before. Most of them (10) practiced speaking Chinese less than an hour per week. The participants were randomly divided into the "authentic video" group and "textbook audio" group. This study received approval from the IRB Coordinator of the institution (see Appendix A for the approval letter), and all participants signed the consent form

(see Appendix B). Participants were given extra class credits and the opportunity to draw gift cards for their participation in the study. After the experiment was completed, participants received the instructions and the materials from the other group for future practice.

4.2 Materials

Authentic videos and textbook audio recordings were used as the shadowing materials in the research. According to Meinardi (2009), the context of authentic materials should be relevant to learners' needs. The researcher chose the videos and recordings related to the topics the participants were learning, including talking about food and hobbies. The shadowing materials were all less than one minute, appropriately 70 to 100 words. The authentic videos were selected from YouTube, including a commercial (Medium Authenticity Level), interviews (Very High Authenticity Level), and a self-produced video (High Authenticity Level according to Su, 2021). According to Guariento and Morley (2001), simplification of authentic materials can be justified for beginners as long as learners extract the information to fulfill the learning goal. To reduce variables, the authentic videos were edited to match the word count of the textbook audio recordings. The edited videos are still consistent with plot and retain the pragmatic information to allow learners to comprehend the content of the videos. In addition, the researcher chose the textbook audios where speakers talk at a natural speed, which is almost as fast as that in the authentic videos. The number of speakers in the videos ranged from one to ten people, while only one to two speakers were in the audio recordings. All the shadowing materials were uploaded on YouTube for easier access and for the function of changing speed. The authentic videos include subtitles, but only a fixed image was presented in the textbook audios' videos. Each week, the participants received the transcript, including Chinese characters, Pinyin, and English translation, along with the link of the video or the audio. Despite the debate of using

scripts in shadowing research, Pinyin with tone contours was included in the transcripts to provide stronger audiovisual input (Godfroid et al., 2017; Liu et al., 2011; Wang, 2008). Before starting the activity, the participants were instructed on the shadowing activity with the researcher's demonstration and a video example of shadowing.

4.3 Procedure

In the research, a mixed-method study was implemented. A quantitative study was conducted to examine the effectiveness of shadowing on training learners' Mandarin Chinese tones and learners' attitudes toward the activity. The qualitative study collected learners' feedback on the training to have a better understanding of the quantitative findings. A pre-test, a post-test, and two questionnaires were used in the study.

4.3.1 Questionnaire – Language Learning Background

The participants were asked to fill in a questionnaire (Appendix C) via a Google form about their demographic information such as age, gender, major and minor, as well as their Mandarin learning experiences.

4.3.2 Pre-test

The pre-test consisted of two parts: a read-aloud test and a one-on-one conversation. Before the pre-test, participants signed up on a Google Document for a 10-minute time slot. The tests were conducted via Zoom and were audio-recorded for analysis. The researcher and the participants were in a quiet environment to ensure that no noise interfered with the study. In the read-aloud test, the participants were asked to read a short paragraph (83 Chinese words) presented with Pinyin marked with tones after a two-minute preparation. Simplified Chinese characters were also provided for reference. During the one-on-one conversation, the participants were asked ten questions by the researcher about their ages, their family, etc., which were the

topics they had learned in the elementary Chinese class. All recordings were named with numbers for confidentiality. The read-aloud questions and the questions asked in the one-on-one conversation can be found in Appendix D.

After the pre-test, the researcher explained the instructions for shadowing again and asked the participants to shadow a YouTube video to make sure the participants understood the process of shadowing.

4.3.3 Shadowing Activity

The four-week shadowing activity was conducted online outside of class. At the beginning of each week, the researcher sent the link of the shadowing videos to the participants along with the transcripts. The participants were asked to complete the shadowing exercise twice a week, with the same audio each week, shadowing the audio six times per session. The participants could choose to read the transcript or only listen to the audio. The flexibility of the rules was to encourage students to do shadowing based on their learning style. The speed of the materials could be adjusted for the first four times; however, the participants were asked to shadow the materials at a normal speed for the last two times. To ensure the participants completed the shadowing activities, they were asked to submit the final recordings from each session by the following Monday. The shadowing instructions and materials for the "authentic video" group can be found in Appendix E, and that of the "textbook audio" group can be found in Appendix F.

4.3.4 Post-test

The researcher conducted a one-on-one post-test of a read-aloud and one-on-one conversation (Appendix G) similar to the pre-test via Zoom. The read-aloud text was the same as the one in the pre-test for examining their improvement, and the text was not available for the

participants outside of the tests to ensure that they did not have a chance to practice. Different questions were asked in the one-on-one conversations to correspond to the topics they were learning at that time.

4.3.5 Questionnaire

The participants completed a questionnaire via a Google form about their thoughts on the shadowing activity after the post-test. The SD method was applied to understand participants' perceptions toward different aspects of the shadowing activity. Participants rated their perceptions by using values 1-7 on the SD scale for fifteen pairs of bipolar adjectives. The first section asked about participants' feelings toward the shadowing activity. The twelve items in the first section of the questionnaire were drawn from the three main dimensions according to Osgood (1957): Evaluation, Potency, and Activity. Evaluation can be interpreted as the positive or negative feeling (good-bad); Potency entails the strength of the concept (heavy-light); Activity can be characterized as the movement or action related to the concept (fast-slow) (Divilová, 2016; Osgood et al., 1957). These standardized dimensions represent a three-component model of the internal attitude structure (pleasure – tension – excitation) (Klement & Chráska, 2015). To evaluate participants' attitudes toward the shadowing activity comprehensively, words from all three dimensions were selected. Some of the pairs of adjectives were drawn from previous studies in which the SD method was applied (Hamada, 2018; Rzepka & Araki, 2016; Stoklasa et al., 2018):

- Evaluation: unpleasant-pleasant, boring-interesting, uncool-cool, useless-useful, valueless-valuable, confusing-clear, difficult-simple, outdated-new, rigid-flexible,
- Potency: stressful-relaxing, unfamiliar-familiar
- Activity: slow-fast

The following questions included their confidence in speaking Chinese after the activity (confident-unconfident), the helpfulness of using the transcripts (helpful-unhelpful), and the frequency of adjusting the audio speed (often-seldom). Three open-ended questions asked about their feelings toward the shadowing activity and the shadowing materials, and their suggestions for the shadowing activity. A study showed that qualitative surveys allow the researcher to have a better understanding of the quantitative findings (Paltridge & Phakiti, 2015). The questions were reviewed and revised by the professors in Applied Linguistics to ensure validity. The questions for the questionnaire can be found in Appendix H.

Chapter 5

Analysis

5.1 Lexical Tone Accuracy

5.1.1 Raters

Three Mandarin native speakers who reside in Taiwan served as the raters. They have college degrees, and they all reported having normal hearing. They all did not receive any training about teaching Chinese as a foreign language.

5.1.2 Stimuli

Since this study only focused on tone productions without examining linguistic, sociopragmatic, and discourse competence, the researcher cleaned and trimmed the recordings by removing questions, long pausing time, stammers, repetition, and English. Only participants' voices were left in the edited audio. Each edited audio consisted of the read-aloud test and the ten answers participants said. The researcher transcribed what the participants said word-by-word on

a Word document. The identities of the participants remained anonymous, and their assigned groups were not shown to avoid bias.

5.1.3 Procedure

The raters were given the transcripts along with the audios from each test of every participant. To ensure raters' agreement, the researcher had a video meeting with each rater. Considering the limitation of the previous study that raters' scores may be influenced by the degree of fluency and other segmental errors, the raters were told to listen to each audio file and mark the wrong tone with yellow shading on the transcript without considering other segmental and supramental elements. The researcher calculated the accuracy of each participants' tone production according to the number of mistakes raters marked. All the data was transferred to Excel and SPSS for further analysis.

5.2 Participants' Attitudes

The data of the SD scale was transferred to Excel and SPSS Software. Each question of the questionnaire was analyzed separately since they represent different aspects of the activity respectively. With the limit of the sample size, factor analysis was not applied in the analysis. The first question, "Please rate the shadowing activity based on how you feel," was about participants' attitudes toward the shadowing activity. The internal consistency reliability of the first question was 0.847, calculated by Cronbach's alpha. It indicated that the items were consistently measured with the reliability coefficient higher than the minimum alpha 0.70 (Paltridge & Phakiti, 2015). The analysis of participants' attitudes toward the shadowing activity consisted of four parts. First, the means on the SD scale are presented with a graph to present the general patterns of the two groups' perceptions. Second, the mean of each bipolar adjective pair was analyzed by the *t*-test to examine whether there is a significant difference between the two

groups' perceptions. Third, the means of each bipolar adjective pair were analyzed by *p*-value to determine whether participants' perceptions toward shadowing activity are significantly different from the medium of the SD scale. Fourth, the correlations among the bipolar adjective pairs were analyzed to identify different dimensions of perceptions. The means of the second to the fourth questions were calculated to analyze students' confidence in speaking after the activity and the use of the transcript and speed adjustment during the activity. After the perceptions were quantitatively analyzed, the open-ending responses were examined and quoted qualitatively to comprehend the quantitative data.

Chapter 6

Results

6.1 Lexical tone improvement

The intraclass correlations coefficient (ICC) of each test was calculated to ensure that raters reached an agreement with one another. The ICC value for the pre-test reached 0.79 (95% CI = 0.60-0.90, *p*<0.001), and the ICC value for the post-test reached 0.79 (95% CI = 0.62-0.90, *p*<0.001). The ICC and 95% CI of both tests ranged from moderate to high reliability (values between 0.5 and 0.75 indicate moderate reliability, values between 0.75 and 0.9 indicate good reliability) (Koo & Li, 2016), indicating raters had a general agreement. Thus, the mean scores of the three raters were all taken into calculation.

The analysis of skewness and kurtosis was calculated to examine the normality of data distribution. The results showed that the values of skewness and kurtosis are ±2.00 (pre-test skewness= -1.146, pre-test kurtosis= 1.399, post-test skewness= -0.749, post-test kurtosis= -

0.874), indicating that the values in the data sets are normally distributed (Roever & Phakiti, 2017).

The average accuracy of the pre-test was 90.95% (SD= 4.46), and the average accuracy of the post-test was 93.86% (SD= 2.97). The results from the paired-samples t-test showed that the improvement in participants' tones between the pre-test and post-test reached statistical significance at the p-value of 0.05 (t[13]= -2.207, p= 0.046; SD= 4.92) with a medium effect size, Cohen's d (0.59) (Cohen, 1988). The "authentic video" group's overall tone production accuracy improved by 2.55% on the post-test (SD=6.79), and that of the "textbook audio" group improved by 3.25% on the post-test (SD=2.44). The average percentages of improvement between the two groups were not significantly different (t[12]= -0.258, p= 0.8).

To investigate whether participants performed differently on the two tests, the improvement of accuracy on the read-aloud test and that on the spontaneous speech were analyzed respectively. The average pre-test accuracy on the read-aloud test was 90.04% (SD= 5.71), and the average post-test accuracy was 93.34% (SD= 4.23). The differences between the pre-test and the post-test on the read-aloud test were not statistically significant (t[13]= -2.026, p= 0.064; SD= 6.09) with a medium effect size, Cohen's d (0.54). The "authentic video" group's overall tone production accuracy improved by 3.04% on the read-aloud post-test (SD=8.48), and that of the "textbook audio" group improved by 3.55% on the read-aloud post-test (SD=2.86). The average percentages of improvement on the read-aloud test between the two groups were not significantly different (t[12]= -0.153, p= 0.8).

The average pre-test accuracy on spontaneous speech was 91.87% (SD= 3.72), and the average post-test accuracy was 94.37% (SD= 2.53). A significant difference between the pre-test and the post-test on spontaneous speech was found (t[13]= -2.180, p= 0.048; SD= 4.30) with a

medium effect size, Cohen's *d* (0.58). The "authentic video" group's overall tone production accuracy improved by 2.06% on the spontaneous speech post-test (*SD*=5.65), and the "textbook audio" group had improved by 2.95% on the spontaneous speech post-test (*SD*=2.76). The average percentages of improvement on spontaneous speech between the two groups were not significantly different (*t*[12]= -0.374, *p*= 0.71).

6.2 Participants' Attitudes

6.2.1 Participants' Attitudes toward the Shadowing Activity on the SD Scale

The means of participants' attitudes toward the two shadowing materials were calculated by using an SD scale (see Figure 2). Numbers closer to 1 mean that participants' perceptions are characterized by the words on the left, which represent more negative perceptions. In contrast, numbers closer to 7 indicate participants' perceptions are depicted by the words on the right, implying more positive perceptions. Numbers around 4 show that participants hold neutral feelings between the bipolar adjectives pair.
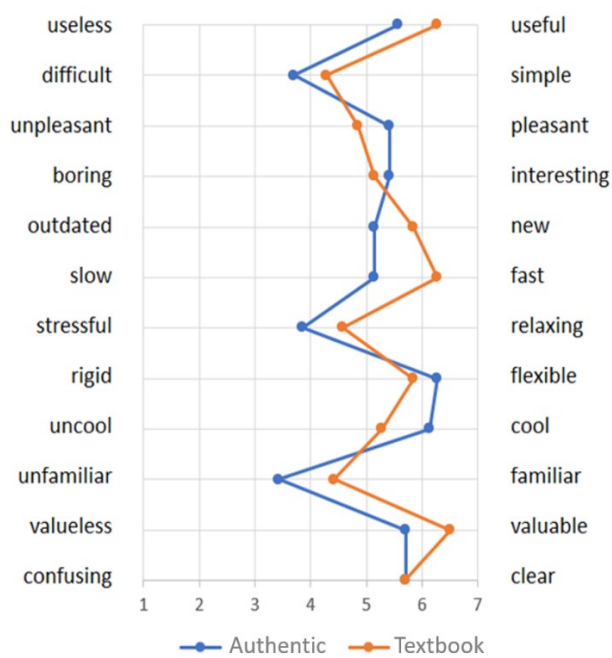
Figure 2 *The Means of the First Question of the Two Group*

The result (Figure 2) shows that the two groups had similar perceptions toward the shadowing activity according to its pattern, and their perceptions were positive in general. However, to decide whether there are significant differences between the two groups, the means were compared by *t*-test. The results show that there are no significant differences between each adjective pair for the "authentic video" group and the "textbook audio" group, $p > 0.05$, (see more details in Table 1), which indicates that the two groups had similar perceptions toward the shadowing activity.

Table 1
The Results of T-Test Comparing the Means of Two Groups

	F	Sig.	t	df	Sig. (2-tailed)
useful	0.548	0.473	-1.118	12	0.285
simple	0.034	0.857	-0.610	12	0.553
pleasant	0.009	0.927	0.649	12	0.529
interesting	0.531	0.480	0.374	12	0.715
new	0.529	0.481	-0.913	12	0.379
fast	0.276	0.609	-1.732	12	0.109
relaxing	0.074	0.790	0.390	12	0.704
flexible	2.739	0.124	0.617	12	0.549
cool	0.000	1.000	1.376	12	0.194
familiar	0.098	0.760	-1.089	12	0.298
valuable	0.977	0.342	-1.427	12	0.179
clear	0.023	0.882	0.000	12	1.000

Since there were no significant differences between the perceptions of the two groups, the one-sample test was calculated to analyze whether each adjective pair is significantly different from the midpoint of the SD scale (4) to examine whether participants' perceptions were significantly positive (see Table 2).

Table 2
The Results of T-Test Comparing the Means and the Medium of the SD Scale

	Test Value = 4					
					95% Confidence Interval of the Difference	
			Sig.	Mean		
	t	df	(2-tailed)	Difference	Lower	Upper
useful	5.980	13	0.000	1.92857	1.2319	2.6253
simple	0.000	13	1.000	0.00000	-0.9872	0.9872
pleasant	2.655	13	0.020	1.14286	0.2130	2.0727
interesting	3.479	13	0.004	1.28571	0.4873	2.0841
new	3.859	13	0.002	1.50000	0.6602	2.3398
fast	4.837	13	0.000	1.71429	0.9487	2.4799
relaxing	-0.806	13	0.435	-0.28571	-1.0513	0.4799
flexible	6.109	13	0.000	2.07143	1.3388	2.8040
cool	5.326	13	0.000	1.71429	1.0189	2.4097
familiar	-0.154	13	0.880	-0.07143	-1.0706	0.9277
valuable	6.869	13	0.000	2.14286	1.4689	2.8168
clear	4.463	13	0.001	1.71429	0.8844	2.5442

All the adjective pairs in the Evaluation dimension except *difficult-simple* were significantly different from the midpoint of the SD scale, $p \leq 0.05$. showing that the adjectives on the right describe participants' perceptions better. The results indicated that the participants had positive feelings toward the shadowing activity. However, three pairs of adjectives, *difficult-simple, stressful-relaxing*, and *unfamiliar-familiar,* were not significantly different from the medium of the SD scale. The pairs in Potency, *stressful-relaxing*, and *unfamiliar-familiar*, lean slightly toward the left even though there were no significant differences from the medium of the SD scale, which shows that participants thought the shadowing activity a little bit stressful and unfamiliar.

Since many adjective pairs are in the dimension of Evaluation, correlations among the adjective pairs were examined to group the adjective pairs into more specific dimensions for easier and deeper examination. There were significant correlations among *unpleasant-pleasant,*

boring-interesting, uncool-cool, which indicates participants' enjoyment in doing the shadowing activity, $p \leq 0.01$ (shown in Table 3). On the other hand, significant correlations appear among *useless-useful, valueless-valuable, confusing-clear*, $p \leq 0.01$ (shown in Table 4). No significant correlations were found among other adjective pairs.

Table 3
Correlations among Pleasant, Interesting, and Cool

		pleasant	interesting	cool
Pleasant	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	14		
Interesting	Pearson Correlation	.671**	1	
	Sig. (2-tailed)	0.009		
	N	14	14	
Cool	Pearson Correlation	.737**	.699**	1
	Sig. (2-tailed)	0.003	0.005	
	N	14	14	14
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4
Correlations among Useful, Valuable, and Clear

		useful	valuable	clear
Useful	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	14	14	
Valuable	Pearson Correlation	.882**	1	
	Sig. (2-tailed)	0.000		
	N	14	14	14
Clear	Pearson Correlation	.697**	.760**	1
	Sig. (2-tailed)	0.006	0.002	
	N	14	14	14
**. Correlation is significant at the 0.01 level (2-tailed).				

According to the correlations, I divided the Evaluation dimension into three parts and created five categories total for further examination:

- Evaluation of enjoyment: unpleasant-pleasant, boring-interesting, uncool-cool (highly correlated, shown in Table 3; $\alpha > .96$)

- Evaluation of educational value: useless-useful, valueless-valuable, confusing-clear (highly correlated, shown in Table 4; $\alpha > .86$)

- Evaluation of other aspects: difficult-simple, outdated-new, rigid-flexible

- Potency: stressful-relaxing, unfamiliar-familiar

- Activity: slow-fast

The correlations among each dimension were calculated by SPSS, and the results show that Evaluation of enjoyment and Evaluation of educational value were highly correlated, $r(40) = 0.461$, $p = 0.002$. In addition, moderate correlations were found between Evaluation of enjoyment and simplicity (difficult-simple), $r(12) = 0.643$, $p = 0.013$, and between Evaluation of enjoyment and Potency $r(26) = 0.448$, $p = 0.017$. No significant correlations were found among other dimensions.

6.2.2 Participants' General Attitudes on the Shadowing Activity

The three open-ended questions at the end of the questionnaire were analyzed to provide a nuanced interpretation of the shadowing activity. The first question asked the participants what they liked about the shadowing activity. The results showed that participants liked the shadowing activity in general. Both groups indicated that they liked the flexibility of the activity with comments such as "I liked that I was able to work at my own pace," and "I also liked how we could do it on our own time which reduced stress." Participants also considered the shadowing

activity a great opportunity to practice their speaking and tones outside of the class; some of them had noticed their progress in speaking during the shadowing activity. Additionally, participants indicated that the whole process of the activity was very well-organized with clear instructions, which corresponds with the quantitative findings that the correlation between clear instructions and the value of the activity is strong.

6.2.3 Participants' Opinions on the Shadowing Materials

In terms of the shadowing materials, more than half of the participants in the "textbook audio" group indicated that they like how natural the conversations were in the audio and they appreciated the opportunities to listen to how native speakers talk: "I liked how we listened to people speak at a more natural pace (super fast, but more realistic) than we do in class;" "I like getting a feel for how Mandarin is spoken between native speakers." On the other hand, participants in the "authentic video" group appreciated the authenticity of the videos with variable speakers: "I liked that we were shadowing real Chinese conversation."

The biggest difference between the comments of the "authentic video" group and the "textbook audio" group is that only participants in the "authentic video" group indicated that the videos were fun and interesting with comments such as "It was fun getting to hear a variety of people speak the language," and "They were funny and interesting." The results showed that learners found conversational-based dialogue with natural speed helpful regardless of its authenticity. However, authentic materials, which generated participants' interests, were more appealing to learners according to the qualitative results. Despite the entertainment of the authentic materials, without knowing the contents or the stories before watching them, a participant pointed out the oddness of the materials: "I like the materials, some of the videos

seemed a bit odd to me like the guy drinking tea and eating a biscuit, but overall, they were pretty fun to get to understand."

Participants from the two groups both indicated that the speed of the shadowing materials was fast, which occasionally led to difficulties catching up. Additionally, the noise and unfamiliar words in authentic materials posed difficulties for learners to follow the native speakers. A participant in the "authentic video" group commented: "They were speaking very fast and difficult for me to hear while simultaneously speaking and sometimes the music made it hard to hear. Also, a lot of the vocabulary was unfamiliar." However, they also appreciated that they could adjust the speed on YouTube and played back the parts where they had a hard time following the speakers. As one participant in the "authentic video" group commented, "For me, it really helped to play the videos at slower speeds the first round and the second time to play it normally. I would also listen to the full video first and replay the tongue twisty parts over and over again until I could say them without problems." In addition to autonomy, participants were able to notice their progress. Half of the participants indicated that shadowing became easier each time they practiced. However, a participant in the "textbook audio" group suggested that it would be easier to start with slower and easy ones as "stepping stones" and increase the difficulty over time.

The times that the participants adjusted the speed varied a lot according to the fourth question on the questionnaire: "Did you play the video/audio materials at a slower speed while shadowing?" The results revealed that 35% of participants indicated that they often adjusted the speed (score ≥ 6), while 35% of participants indicated that they seldom adjusted the speed (score ≤ 2) (M=3.92, SD=2.36), and no significant difference was found between the two groups, $t(12)$ = -0.32, $p = 0.75$.

6.2.4 Participants' Opinions on the Transcripts

Participants rated the pinyin transcripts highly helpful on the SD scale (*M*=6.78,

SD=0.57), and the answers in the open-ended questions also correspond to the quantitative

findings. Half of the participants wrote that they appreciated the pinyin transcripts, which helped

them follow the speakers and be aware of the tones with comments such as "The pinyin was also

very helpful for when they talked too fast," and "The pinyin was extremely useful, especially

while practicing as it allowed me to practice despite not being able to keep up with the normal

speed." Participants also had the freedom to choose whether they wanted to read Pinyin or purely

listen to the audio. No participants complained that pinyin was distracting, but a participant in

the "textbook audio" group pointed out that he replied on Pinyin more than listening because of

the fast speed of the audios: "I felt like this (fast speed of the dialogue) often led to me reading

the pinyin more than listening to the audio because instead of having time to process what I was

saying, my priorities were to keep up with the dialogue and then to make sure my tones were

correct."

In addition to the transcripts, subtitles were also available for the authentic videos, but not

for the videos of textbook audio. A participant in the "textbook audio" group suggested including

the subtitle of Chinese characters on the videos of textbook audio:

> *In some ways it felt like the super heavy focus on the pinyin was distancing/separating the characters away from the words in my mind. Like, ah well I know this pinyin means this, but I can't remember what the character associated with it actually looks like. It would be nice if during the video, the characters for the words would show up on the screen sentence by sentence as they are being spoken. (not as a wall of text unless the specific part they were on could be highlighted). That way during the second session recording, if the participant felt ready, they had the option to try to record themselves while reading the characters rather than just pinyin.* (Participant 4)

The results showed that participants appreciate the pinyin transcripts in general. However, some participants suggested some adjustments on how to present the transcripts.

6.2.5 Confidence in Speaking after the Shadowing Activity

The second question on the questionnaire asked the participants to rate their confidence in speaking Chinese after completing the shadowing activity. The average score is 4.92 (*SD*=0.73), only slightly better than the medium score of the SD scale, and there is no significant difference between the two groups' confidence, $t(12) = -0.35$, $p = 0.73$. The results showed that the shadowing activity slightly increased learners' confidence in speaking Chinese, but it did not boost students' confidence within four weeks of training.

To investigate whether participants' confidence has any correlations with other dimensions and elements, the correlation test was calculated. The results show that participants' confidence is highly correlated with the flexibility (rigid-flexible), $r(12) = 0.67$, $p = 0.009$, which means that a flexible tone training activity can help students gain more confidence in their Chinese speaking.

Chapter 7

Discussion

This study aims to investigate whether applying shadowing to tone training is effective to help L2 Mandarin learners improve their tones in spontaneous speech with authentic videos and textbook audios, and to understand learners' attitudes toward the activity and the material. The goal of the study is to develop an effective pedagogy based on the findings. Three research questions were asked. Section 7.1 addresses the first question about the two materials' effect on learners' tone improvement: 1) Which material leads to greater improvement in L2 Mandarin

Chinese learners' tone productions at the sentence level? Authentic materials or textbook audios?

Section 7.2 discusses learners' attitudes: 2) What are the learners' attitudes toward shadowing as

a tone training method? Additionally, pedagogy implications are proved in the next chapter to

answer the questions: 3) How can methods of shadowing and the selection of shadowing

materials be improved based on the learning results and learners' feedback? Five significant and

interesting findings emerged from this study:

1) Both authentic and artificial materials using in the shadowing activity helped learners improve their lexical tones at a sentence level, especially in spontaneous speech.

2) Learners had a positive evaluation of enjoyment and educational value regardless of which materials they used, but they held a neutral attitude toward the activity's potency and difficulties.

3) Authentic materials generated great interest from the participants and were more appealing to the learners.

4) Transcripts were helpful for the learners.

5) A high correlation between flexibility and confidence was found.

The details of the results are discussed in relation to previous studies in this chapter. Pedagogical

implications are provided based on the results to help teachers apply shadowing activities in class

effectively.

7.1 Lexical Tone Improvement

Lexical tones have been an enormous challenge for both L2 Mandarin learners and

instructors. Although previous lab-based research has provided evidence that different methods

help learners improve lexical tones in isolated syllables, the understanding of the methods of

improving lexical tones in multisyllables, especially in spontoons speech, is crucial for further

advancement of Chinese language pedagogies. The first research question examined whether practicing shadowing helps L2 Mandarin Chinese learners improve their lexical tone productions in sentences and which shadowing material is more effective. The results show that learners in both groups demonstrated significant improvements after the tone training activity regardless of the materials. After practice shadowing twelve times per week for four weeks, learners' tone accuracy was higher in the post-test than in the pre-test. This showed that shadowing is not only a method to improve learners' intonation and fluency in Indo-European languages (Foote & McDonough, 2017; Hamada, 2016; Martinsen et al., 2017), but an effective method for Mandarin lexical tone training.

A *t*-test was performed to compare the effectiveness of authentic materials and textbook audios. Interestingly, both groups improved their tones at the sentence level and no significant difference was found between the two groups. Several factors may have contributed to the tone improvement of both groups. One factor may be the assistive options provided for the participants to use. The visual input and speed adjustment tool on YouTube were possible facilitators in learners' tone improvement in addition to the shadowing technique, and they mitigated the difficulties of the fast speed in the authentic materials. The visual tone contours on Pinyin assist learners to recognize tones more accurately as previous studies showed (Godfroid et al., 2017; Liu et al., 2011; Showalter & Hayes-Harb, 2013). Although some researchers believe that shadowing is more effective without a written script because it distracts learners from listening to the audio input (Hamada, 2019), the findings of this study suggest that the benefits of audiovisual input outperform purely auditory input when it comes to Mandarin tone training. Moreover, learners were able to choose to read the transcript or not when they practiced

shadowing as in Martinsen's (2017) study. They could rely on audiovisual assistance first, and then choose to listen attentively later when they had perceived the tones of the native speakers.

Another factor may be the explicit training they had received in the Chinese class before the shadowing activity. Thus, the high-variability phonetic environment in the authentic materials seemed not to hinder learners' tone perceptions. As in Weiner et al.'s (2020) study, integrating explicit tone instruction into high variability input helped learners improve tone accuracy. However, it is important to note that the standard deviation of the post-test is larger in the "authentic video" group compared to the "textbook audio" group. Practicing shadowing with authentic materials helped some learners' tones improved tremendously, while worsening some learners' tones. Participant 1 improved 16% tone accuracy, but Participant 5 decreased 5% tone accuracy after the shadowing activity. As Perrachione et al. (2011) pointed out in their study, high-variability phonetic training was only effective for learners with stronger pitch perception competency, but it can worsen the tones of learners with weaker pitch perception competency.

It is interesting to find out that learners showed significant improvements in spontaneous speech but only had moderate improvements in the read-aloud task, which differs from Hu's (2014) findings that learners improved their lexical tones significantly in the read-aloud task after the shadowing practice. One explanation for this is that learners in Hu's study received the same stimuli in the tests and in the training. It was predictable that learners' tones would improve after practicing the same article multiple times. In contrast, this study used different stimuli in the training, and learners did not practice the read-aloud task outside the pre-test and post-test. Although no other studies have been done to examine the effect of shadowing on tone productions in spontaneous speech, the findings of this study echoed Foote's (2017) study, in which participants demonstrated significant improvements in their fluency and

comprehensibility, which are suprasegmental elements like tones, in the extemporaneous English speaking task. As most L2 learners' main purpose of learning Chinese is to communicate with native speakers, tone improvement in spontaneous speech is more essential than that in controlled speech.

7.2 Learners' Attitude

7.2.1 Materials

Learners in both groups had positive attitudes toward the activity regardless of which materials they used. Most of the participants had a high evaluation of enjoyment and educational value, which indicates that they enjoyed the activity and found the activity useful. The strong correlation between enjoyment and educational value also suggests that teachers should ensure learners enjoy the activity to see the educational value of the activity. It is interesting to find out that no one in the "textbook audio" group complained about the scripted dialogues as the participants in Martinsen's study (2017). Instead, they appreciate that they had the opportunities to listen to the native speakers' dialogue. The difference in learners' attitudes between this research and those in Martinsen's might be because of the learners' level. The learners in Martinsen's study were taking the fourth-year high school French, so they have already been exposed to many different scripted or authentic materials before; in contrast, the learners in this study were beginners, who had not had many opportunities to listen to native speakers speaking since they usually only listened to the dialogue in the workbook, since they were taking online classes at home during that time. Therefore, textbook audios may still be interesting for beginners but they may bore advanced learners. It is also important to note that only the participants in the "authentic video" group indicate in their open-ending questions that the videos

are interesting, suggesting that authentic videos are more attractive to the learners compared to the textbook audio even though the scores on their SD scale were close.

7.2.2 Potency and Difficulties

Even though learners had positive attitudes toward the tone training activity as evidenced by their evaluation of its enjoyment and educational value, learners found that the activity was not easy but was a bit stressful and unfamiliar regardless of which materials they used. Both materials contained some words they were unfamiliar with, but the participants in using authentic videos report different feelings about its difficulties. A participant indicated that she could understand the content because it corresponded to the lessons they were learning in class, but another participant was frustrated by the noise and unfamiliar words in the authentic videos. Given the correlation between enjoyment and simplicity, teachers should consider the difficulties of the vocabulary and contents when selecting the shadowing videos. However, some participants pointed out that they enjoyed the mix with familiar and unfamiliar words so they could not only understand the basic content but also learn new words. The primary point of the study was not about learning new words but acquiring tones, but future studies can examine how to help learners produce correct tones and gain lexical or sociocultural knowledge simultaneously through shadowing.

7.2.3 Transcripts

One participant in the "textbook audio" group pointed out that sometimes he relied on pinyin and did not listen carefully to speakers' tones, which goes along with Hamada's concerns that scripts may distract learners from paying attention to listening (2017). Nevertheless, most participants found transcripts very helpful to follow what the speakers were saying. The results aligned with Martinsen's (2017) study that the availability of the transcripts helped learners track

the shadowing. It also showed that every learner has different learning styles and different cognitive loads to receive multimodal stimuli. Thus, it is vital to give learners the choice to read transcripts or solely listen attentively to the audio based on their preference. In addition to tracking the audio, the visual tone contours on Pinyin might also help learners to notice the tones of the native speakers (Godfroid et al., 2017; Liu et al., 2011; Showalter & Hayes-Harb, 2013), leading to a better perception of tones.

7.2.4 Learners' Autonomy

The results align with Martinsen's study (2017), showing that learners enjoy the autonomy of the activity. The quantitative results indicated that how often learners adjusted the speed of the video varied, and the qualitative results also indicated that the learners appreciate that they can practice the part they needed to work on according to their own paces. The results indicated that giving learners the freedom to choose how many times they can adjust the speed helps fulfill individuals' learning needs. In addition to the speed adjusting choices, learners were able to choose the place and the time they practiced shadowing. Different from Martinsen's study, where the participants were required to go to the computer lab to complete the shadowing activity, the participants in this study were able to do the shadowing at home, which allowed them to practice more flexibly. Moreover, learners were able to choose whether to read the transcript and to adjust the speed. To increase learners' autonomy and flexibility, teachers can have learners choose their own shadowing materials at the end of the activity based on their interests and needs as one of the participants suggested in her response, which is also in line with Foote's (2017) and Mishima & Cheng's (2017) suggestion.

Even though learners did not increase their confidence in speaking significantly after practicing shadowing, it is interesting to realize the high correlation between flexibility and

confidence. Allowing learners to have more choices and tailor the learning strategies base on their learning needs and learning styles can increase their confidence in speaking. Learners also did not feel pressure being monitored when they spoke, so they could make mistakes and slow down when they needed. They also self-assessed their speaking by comparing their recording to that of the native speakers. By taking control of their learning process, learners can feel more confident in language learning and be more motivated to learn.

Chapter 8

Conclusions and Implications

8.1 Conclusions and Main Findings

In conclusion, this study compared the effect of textbook audios and authentic videos as shadowing materials on L2 Mandarin tone improvement. The results showed that learners significantly improved in their lexical tones in spontaneous speech regardless of what materials they used, and both groups reported positive attitudes toward shadowing as a tone training activity. The main findings regarding the research questions are:

Research question 1: Which materials lead to greater improvements in L2 Mandarin Chinese learners' lexical tone productions at a sentence level: authentic materials or textbook audios?

Finding: Learners in both groups demonstrated significant improvements in their accuracy in spontaneous speech with no significant differences between the two groups. The assistance of the transcripts and the speed adjusting tools could be the reasons why both groups benefited from shadowing. Authentic materials generated great interest from the participants and were more appealing to the learners based on the qualitative findings.

Research question 2: What are the learners' attitudes toward shadowing as a tone training method?

Finding: Both groups had overall positive attitudes on the shadowing activity regardless of the materials. Despite the higher evaluation of educational value and enjoyment, the participants reported neutral attitudes toward the potency and difficulties of the shadowing activity. The participants indicated the usefulness of the transcripts, and they enjoyed the flexibility of the activity.

Research question 3: How can methods of shadowing and the selection of shadowing materials be improved based on the learning results and learners' feedback?

Finding: Learners demonstrated positive attitudes toward the shadowing activity. However, the difficulties and potency learners encountered should be considered and alleviated. Some learners indicated it was too fast to follow and the unfamiliar words frustrated them. Moreover, the strong correlation between flexibility and confidence in speaking suggests that teachers should encourage learners' autonomy. The following section provides detailed pedagogical implications.

8.2 Pedagogical implications

The primary motivation of this thesis was to design a more effective L2 Chinese pedagogy based on the findings. The results of the experiment indicated that learners' lexical tones can be improved after four weeks of shadowing activities by using either textbook audios or authentic videos, showing that the effects of shadowing can be extended from improvement in intonation and fluency of L2 Indo-European languages (Bovee & Stewart, 2008; Foote & McDonough, 2017; Hamada, 2019; Lin, 2009; Martinsen et al., 2017; Mishima & Cheng, 2017)

to Mandarin Chinese lexical tones in spontaneous speech. Despite the fact that both materials had a positive effect on learners' tone improvement, they should be selected carefully and presented in an order that facilitates learning outcomes. Textbook audios should be introduced first for their lower phonetic varieties (Chang et al., 2017; Wiener et al., 2020) to serve as stepping-stones. Later, authentic materials can be introduced. At the end of the shadowing activity, teachers could allow learners to choose their own shadowing materials to foster learners' autonomy and motivation.

Given the important role they play in the shadowing activity, materials should be selected meticulously. Selecting authentic videos for beginner learners can be challenging, but it is feasible if teachers apply the following criteria. First, the content of the videos should correspond with the topics the students are learning in class so they are familiar with some of the vocabulary and content. Some learners indicated that they could understand the content of the videos since they already learned some vocabulary in class. When searching videos on YouTube, teachers can type some keywords and go through potential videos. Second, the speed should be moderate for learners to follow, and the speakers should speak clearly. Some hesitation and phonological modifications cannot be avoided in authentic materials (Wagner, 2014), so teachers should not feel stressed if some words in the video are not articulated clearly. Third, the music and background noise should not be too loud so the learners can listen to the tones clearly without distraction as one participant in the study complained about the background music of the videos. Fourth, if the video is too long or some parts are too difficult, teachers can use video editing software to trim videos and only leave the suitable part. Simplification of authentic materials for beginners is justified if it serves learners' interests and long-term language development (Guariento & Morley, 2001). When editing the video, the consistency of the plot should also be

considered so the learners will not feel the videos are incongruous. Fifth, given the high

correlation between the evaluation of enjoyment and evaluation of educational value, the

authentic videos should be interesting so the learners will value the usefulness of the activity.

Selection of authentic videos can take a lot of time. However, there are plenty videos that

teachers can delve into and turn into valuable materials for learners.

More difficult and unfamiliar words and syntax are also major characteristics of authentic

materials, which discourages many teachers from using them in class. However, since the

materials are used for tone training instead of listening comprehension, the lexical-grammar

difficulties do not hinder learners from acquiring tones. Moreover, in addition to providing

English translations in the transcripts, teachers can also provide a short introduction of the

content of the materials to make sure that students understand the dialogue and any unfamiliar

words. To alleviate the difficulties and unfamiliarity of the shadowing activity, teachers should

scaffold learners' ability to do shadowing before they practice themselves. Teachers can give

learners some tips to overcome the difficulties of following the speakers. For example, learners

can read the transcript and adjust the speed at the beginning. If the shadowing material is a

dialogue, teachers can ask the learners to shadow only one person at first so they will have time

to catch up and feel less stressed. This method also resembles having a conversation with a

native speaker. Most importantly, teachers should encourage students to raise questions when

they encounter any difficulties when practicing shadowing.

The results of this study underscored the importance of learners' autonomy, which plays

a vital role in learners' confidence in speaking. The participants were given the freedom to

choose their practice time and whether to use assistive options such as transcripts or speed

adjustments. They also self-assessed their tones by listening to their own recordings. Increasing

learners' autonomy does not mean that teachers can reduce their responsibilities to learners'

educational journey. On the contrary, teachers should facilitate learners by giving clear

instructions. As the results of the study suggested, clear instruction had a high correlation with

the usefulness of the activity. Moreover, asking learners to submit their shadowing once a week

kept learners accountable while not applying too much pressure on them. It is possible that

learners might not practice for the required time. Therefore, teachers should also reiterate the

value of the activity to motivate them to practice more.

8.3 Contributions of the Study

Situated in the context of Mandarin lexical tone learning, this study advances L2 Chinese

pedagogy in seven essential ways. First, this study extends the use of shadowing. Previous

studies had largely focused on the EFL context, but the results of this study indicated that

shadowing is also effective for Mandarin Chinese tones. Second, while previous studies showed

that some lab-based training could help learners improve lexical tones in monosyllabic words,

research on lexical tone productions in multisyllabic words was limited, especially in

spontaneous speech. This study provides an effective way for learners to improve their lexical

tones in their spontaneous speech, which is in line with the primary learning goal for the L2

learners: to communicate with native speakers with correct tones. Third, previous shadowing

studies did not discuss different types of shadowing materials, which are important core factors

that decide learners' success in shadowing. Thus, this study compared textbook audios and

authentic materials, aiming to find out which ones are more effective as shadowing materials.

The experimental evidence revealed that the shadowing activity with both materials had

measurable benefits for L2 Mandarin tone improvement. However, teachers ought to use

textbook audios as stepping-stones before exposing authentic materials to the learners.

Fourth, while the debate of whether to use transcripts was unresolved in shadowing scholarship, the results of the studies showed that transcripts may be necessary for the Mandarin tone shadowing activity. On one hand, the visual tone contours on Pinyin transcripts possibly contribute to the improvement of L2 learners' tones based on previous research (Godfroid et al., 2017; Liu et al., 2011; Showalter & Hayes-Harb, 2013); on the other hand, according to the results of this mixed-method study, learners addressed the helpfulness of the transcripts, which assisted them in following the native speakers and noticing the tone differences. Besides the benefits of the transcripts, it is important to give learners the freedom to choose whether they want to use the transcripts, which leads to the fifth key point of the study: learner's autonomy. The results of this study revealed a high correlation between flexibility and confidence in speaking, suggesting that the learners should be given a choice about how, when, and where they want to practice shadowing. During the shadowing process, they have room to make mistakes and self-assess their progress, which increases their confidence in speaking.

Sixth, pedagogical implications are provided based on the findings to guide teachers to design a useful student-centered tone training pedagogy, and they offer a promising solution for insufficient class time focused on pronunciation. When learners are unable to meet native speakers or language tutors in person due to online classes or social distancing, they can use this strategy to practice speaking by themselves by using online videos. If one day learners are no longer taking Chinese classes, they can still apply this shadowing technique to hone their Mandarin tones whenever and wherever they want.

Last, this study may offer pedagogical implications for many foreign languages. Since the results show that shadowing improved L2 learners' Mandarin tones, L2 learners of other tonal languages may also benefit from shadowing. The participants' attitudes toward the two materials

in this study could also implicate the attitudes of beginning learners of other foreign languages. Although textbook audio might not bore beginners, authentic videos have more potential to generate learners' interest. Additionally, the importance of authentic videos for L2 beginners is addressed in this study to encourage foreign language instructors to implement authentic materials in their beginning-level language lesson design. With the prevalence of authentic videos online and access to editing software, instructors can select appropriate videos and design an effective shadowing activity for lower-level learners. The criteria of selecting authentic videos for beginners proposed by this study is not only limited to L2 Mandarin but can serve as the guideline for other foreign languages' pedagogy to expose students with high-variability input and more realistic pronunciation produced in real-life conversation.

8.4 Limitations of the Study and Directions for Future Research

Some limitations in the research could be investigated in future research. First, the sample size of participants and native speaker raters was small. Future researchers could recruit more participants and raters to validate the generalization of the results. Second, the period of the activity was only four weeks, and the participants practiced twelve times per week. The impact of the practice period and practice times on tone improvement are worth investigating in future research. Extending the research to longitudinal studies with a much longer period would allow researchers to gain a deeper understanding of the potentials of shadowing activities.

Although this study supports the use of transcripts and speed adjusting tools based on previous research, participants in both groups did not indicate how often they used the transcripts and the participants in the authentic group did not indicate whether they read the transcripts or captions when shadowing. Further research can investigate the impact of these assistive tools on learners' improvement of lexical tones and cognitive capacity. Another area of research could

examine the impact of shadowing on the learners at different proficiency levels. Further research on how learners' attitudes toward the materials change as their proficiency level advances would also be of benefit. This study primarily focuses on the effect of shadowing on L2 Mandarin learners' lexical tones at the sentence level. Future studies could extend the scope to examine whether shadowing influences L2 Mandarin fluency and other areas contributed to communication competency such as pragmalinguistic or discourse competence. Since this study only examined Mandarin, future research could investigate shadowing's effect on other tonal or non-tonal languages to uncover the cross-linguistics benefits of shadowing.

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Appendix

Appendix A

UNIVERSITY OF ARKANSAS

To:	Ai Ling Lu BELL 4188
From:	Douglas J Adams, ChairIRB Expedited Review
Date:	10/14/2020
Action:	**Expedited Approval**
Action Date:	10/14/2020
Protocol #:	2008279856
Study Title:	Methods and effects of shadowing using online authentic videos on the acquisition ofMandarin Chinese tones
Expiration Date:	10/01/2021
Last Approval Date:	

The above-referenced protocol has been approved following expedited review by the IRB Committee that overseesresearch with human subjects.

If the research involves collaboration with another institution then the research cannot commence until the Committeereceives written notification of approval from the collaborating institution's IRB.

It is the Principal Investigator's responsibility to obtain review and continued approval before the expiration date.

Protocols are approved for a maximum period of one year. You may not continue any research activity beyond the expiration date without Committee approval. Please submit continuation requests early enough to allow sufficient time for review. Failure to receive approval for continuation before the expiration date will result in the automatic suspension of theapproval of this protocol. Information collected following suspension is unapproved research and cannot be reported or published as research data. If you do not wish continued approval, please notify the Committee of the study closure.

Adverse Events: Any serious or unexpected adverse event must be reported to the IRB Committee within 48 hours. Allother adverse events should be reported within 10 working days.

Amendments: If you wish to change any aspect of this study, such as the procedures, the consent forms, study personnel,or number of participants, please submit an amendment to the IRB. All changes must be approved by the IRB Committee before they can be initiated.

You must maintain a research file for at least 3 years after completion of the study. This file should include allcorrespondence with the IRB Committee, original signed consent forms, and study data.

cc: Danjie Su, Investigator

Appendix B

CHIN 1003 STUDENT CONSENT FORM

for Participation in Mandarin Tone Training Activities

I, Ai-Ling Lu, a graduate student at the University of Arkansas, am conducting a research project focused on instructional techniques for Mandarin tone training. I invite you to participate in this study because your involvement in such an activity can provide new insight into how this strategy influences your tones and could potentially help you pronounce the challenging Mandarin tones more easily. The information obtained through this study will be used in my MA thesis. However, information obtained in connection with this study will be coded in such a way that you will be anonymous and will not be identifiable in any reports that arise from this study. All information collected will be kept confidential to the extent allowed by law and University policy.

The activity will be conducted totally online. You will first complete a short online questionnaire focused on your demographic information such as age, gender, major and minor, as well as your Mandarin learning experiences. The tone shadowing practice lasts 4 weeks. It takes only 1- 2 hours per week on your own time, but it might help you improve your tones tremendously. You will be instructed with the correct way to do the shadowing practice. You will be given a video or an audio recording each week, and you need to submit your shadowing recordings twice a week. In each session, you will repeat after the modeled dialogue 6 times. At the beginning of each week, the investigator will send the materials to you. You will submit both recordings before next Monday. You will have two 10 minute one-and-one oral quizzes with the investigator. The score of the quizzes has nothing to do with your grade in the class.

Your information will be kept confidential to the extent allowed by law and University Policy. The data will be used for research and educational purposes, such as teaching, publications, and/or presentations. In any sort of publication or teaching demonstration, we will not include any information that will make it reasonably possible to identify you.

Your participation in this study is purely voluntary and if you decide not to participate or decide to withdraw from the research process, it will not affect your course grade nor your standing with the university. All students who do complete the whole study, however, will have the opportunity for a drawing of one of five $20 gift cards for Amazon. Additionally, the participants may get 2 extra credit points for their final grade of their Chinese course if the instructor approves it. If you decide not to participate in the activity, you still have the opportunity to get 2 extra credit points by doing the video project or having perfect attendance based on the syllabus given by your instructor.

If you have any questions or concerns about this study, please contact the investigator, Ai-Ling Lu by email at ailinglu@uark.edu, or the faculty supervisor, Danjie Su at danjiesu@uark.edu. If you have questions or concerns about your rights as a research participant, please contact Ro Windwalker, the University's IRB Compliance Coordinator, at 479-575-2208 or irb@uark.edu.

You are making a decision as to whether or not to participate in this study. Your signature indicates that you have read the information provided and have decided to participate. Your email address allows the investigator to contact you to process the research. By signing you do not, however, waive any of your legal rights.

_____   _____
Date   Signature of Student

                           _____
                           Print Name

                           _____
                           Email Address

_____   _____
Date   Signature of Investigator

IRB#: 2008279856 APPROVED: 14-Oct-2020 EXP: 1-Oct-2021

Appendix C

Pre-Questionnaire

1. Number (I will assign each participant a number)

   _____

2. Your age

   _____

3. Your gender
   □ F   □ M   □ Non-binary   □prefer not to say

4. Your major

   _____

5. Your year
   □ Freshman
   □ Sophomore
   □ Junior
   □ Senior
   □ Graduate
   □ Other _____

6. Have you learned Chinese before taking CHIN1003?
   □ Yes   □ No (skip question 7)

7. When did you learn Chinese and how long was it?

   _____

8. What are your reasons to study Chinese? (multiple answers)
   □ Personal Interest
   □ Career opportunities
   □ Usefulness
   □ Travel
   □ Language Requirement
   □ Parents/grandparents/relatives are native speakers
   □ Spouse/partner/romantic interest is a native speaker
   □ Adopted from the Chinese-speaking country
   □ Some friends speak Chinese
   □ Pre-college experience
   □ Similar to language previous studied
   □ Other_____

9. Have you lived in a Chinese speaking country?
   □ Yes   □ No (skip question 10)

10. How long did you live there?
    _____

11. Do you speak other foreign languages? Which languages?
    _____

12. How many hours do you practice speaking Chinese outside of class?
    □ Less than 0.5 hours
    □ 0.5-1 hour
    □ 1-2 hours
    □ 2-4 hours
    □ More than 4 hours

13. How many hours do you study Chinese and do the assignments for CHIN1003
    (practicing speaking not included)?
    □ Less than 0.5 hours
    □ 0.5-1 hour
    □ 1-2 hours
    □ 2-4 hours
    □ More than 4 hours

14. Have you applied shadowing as a language learning technique?
    (Shadowing is a language learning technique that learners repeat as close to simultaneous
    with the recording as possible.)
    □ Yes
    □ No

15. Have you applied shadowing to practice Chinese speaking or listening?
    □ Yes
    □ No (skip question 16)

16. To what did you apply shadowing?
    □ Speaking
    □ Listening
    □ Both

17. Do you watch Chinese TV shows/ movies?
    □ Yes
    □ No

18. Do you read Chinese books/magazines in your free time?
  □ Yes
  □ No

Appendix D

Pre-test

Read-aloud

李先生是学生。他家有四口人。他爸爸是医生，妈妈是英文老师。李先生的哥哥是律师。王小姐和她姐姐都是老师。王小姐有两个孩子，她的女儿和儿子都不是学生。今天是李先生的生日，王小姐请他吃中国菜。

Lǐ xiānsheng shì xuésheng. Tā jiā yǒu sì kǒu rén. Tā bàba shì yīshēng, māma shì yīngwén lǎoshī. Lǐ xiānsheng de gēge shì lǜshī. Wáng xiǎojiě hé tā jiějie dōu shì lǎoshī. Wáng xiǎojiě yǒu liǎng ge háizi, tā de nǚ'ér hé érzi dōu bú shì xuésheng. Jīntiān shì lǐ xiānsheng de shēngrì, wáng xiǎojiě qǐng tā chī zhōngguó cài.

One-on-one conversation

(The questions were asked by the researcher without presenting the text to the participants)

1. 你是美国人吗？
2. 你有哥哥吗？
3. 你妈妈是老师吗？
4. 你的生日是几月几号？
5. 今天星期几？
6. 你明天忙不忙？
7. 你喜欢吃中国菜还是美国菜？
8. 现在几点？
9. 你今年多大？
10. 你家有几口人？

Appendix E

Shadowing Instructions and Materials for the Experimental Group

Mandarin Tone Training Activity

The shadowing activity is a great technique to help you improve your tones. The activity lasts for four weeks (11/2-11/30). It will only take less than one hour each week.

At the beginning of each week, the researcher will send the link of the video to the participants. You will complete the shadowing exercise twice a week, with the same video each week, shadowing the video six times per session. On Thursday, the researcher will send an email to remind you to do the shadowing. You will submit two recordings before next Monday.

Shadowing Instructions:

1. Please read the English translation to understand the meaning of the dialogue.
2. Play the video once and read the pinyin transcript or subtitle.
3. Practice shadowing four times: Play the video while shadowing the recording (repeat what you hear with as little delay as possible). You can choose to read the transcript or subtitle while speaking if it helps you follow the video, or you can just listen carefully to the audio and imitate the speakers. Listen attentively and try your best to imitate the speakers. You can adjust the speed of the video if it is too fast.
   Example of shadowing: https://youtu.be/g0YWgbS9I7g
4. When you shadow the video for the fifth time, record yourself with any audio recording app. The speed of the video should not be adjusted this time.
5. Listen to your recording to be aware of how your pronunciation is different from the native speakers.
6. Record yourself again shadowing the video. The speed of the video should not be adjusted.
7. Send your last recording to ailinglu@uark.edu

Time to submit your recording

    Week 1: 11/9 (Monday)

    Week 2: 11/16 (Monday)

    Week 3: 11/23 (Monday)

    Week 4: 11/30 (Monday)

Example:

Week one (11/2-11/9)

Monday (11/2)- Participants receive Video A

By Friday (11/6)– Shadow Video A six times. Record the last shadowing. Name the recording: Your Number_Week 1_1

By Monday (11/9)– Shadow Video A six times. Record the last shadowing. Name the recording: Your Number_Week 1_2. Send the two recordings from Friday and Monday to the researcher.

Shadowing Activity Week 1

高中女生平常都喜欢做什么？

Gāozhōng Nǚshēng Píngcháng Dōu Xǐhuān Zuò Shénme?

What Do High School Girls Like to Do?

Video: https://youtu.be/L-rEO95tDC0

Chinese Characters

➢ 放学后不补习的话，你会去做什么放松一下？
➢ 痾…运动或跟同学聊天
➢ 唱歌
➢ 看YouTube
➢ 看电视剧
➢ 听音乐, 放空, 然后…看YouTube
➢ 放松喔…唱歌, 然后听音乐, 然后看小说跟画画
➢ 我会去运动或看书
➢ 通常是画图或是看 YouTube 吧
➢ 我们都直接回家
➢ 睡觉…或划手机
➢ 跟室友聊天

Pinyin

➢ Fàngxué hòu bù bǔxí dehuà, nǐ huì qù zuò shénme fàngsōng yíxià?
➢ Ē… yùndòng huò gēn tóngxué liáotiān
➢ Chànggē
➢ Kàn YouTube
➢ Kàn diànshìjù
➢ Tīng yīnyuè, fàngkōng, ránhòu kàn YouTube
➢ Fàngsōng o… chànggē, ránhòu tīng yīnyuè, ránhòu kàn xiǎoshuō gēn huàhuà
➢ Wǒ huì qù yùndòng huò kànshū
➢ Tōngcháng shì huàtú huòshì kàn YouTube ba
➢ Wǒmen dōu zhíjiē huí jiā
➢ Shuìjiào… huá shǒujī
➢ Gēn shìyǒu liáotiān

English Translation

➢ If you don't have to go to the after school, what would you do to relax?
➢ Exercising or chatting with classmates
➢ Singing
➢ Watching YouTube
➢ Watching TV shows
➢ Listening to music, spacing out, and… watching YouTube
➢ To relax…. singing, listening to music, reading novels and drawing
➢ I would exercise or read a book

- ➢ Usually drawing or watching YouTube
- ➢ We both go home directly
- ➢ Sleeping… or playing on my phone
- ➢ Chatting with my roommates

Source: JR Lee Radio. (2018, Dec 1). *高中女生平常都在做什麼？*[Video]. YouTube. https://www.youtube.com/watch?v=YJPQ5qzt_6o

Shadowing Activity Week 2
你喜欢喝咖啡还是茶？
Nǐ xǐhuān hē kāfēi háishì chá?
Do you like to drink coffee or tea?

Video: https://youtu.be/6cr621my9OI

Chinese Characters

➢ 你喜欢喝咖啡还是茶？
➢ 茶
➢ 茶
➢ 咖啡
➢ 都喜欢
➢ 都不喜欢,我喜欢喝水
➢ 你喜欢喝雪碧还是可乐？
➢ 可乐
➢ 雪碧
➢ 可乐
➢ 两个我都喜欢
➢ 你喜欢吃西餐还是中餐？
➢ 西餐
➢ 你喜欢北京还是上海？
➢ 北京
➢ 上海

Pinyin

➢ Nǐ xǐhuān hē kāfēi háishì chá?
➢ Chá
➢ Chá
➢ Kāfēi
➢ Dōu xǐhuān
➢ Dōu bù xǐhuān, wǒ xǐhuān hē shuǐ
➢ Nǐ xǐhuān hē xuěbì háishì kělè?
➢ Kělè
➢ Xuěbì
➢ Kělè
➢ liǎng ge wǒ dū xǐhuān
➢ Nǐ xǐhuān chī xīcān háishì zhōngcān?
➢ Xīcān
➢ Nǐ xǐhuān běijīng háishì shànghǎi?
➢ Běijīng
➢ Shànghǎi

English translation

➢ Do you like to drink coffee or tea?
➢ Tea
➢ Tea
➢ Coffee
➢ I like both
➢ Neither. I like to drink water
➢ Do you like to drink Sprite or Coke?
➢ Coke
➢ Sprite
➢ Coke
➢ I like both
➢ Do you like Western food or Chinese food?
➢ Western food
➢ Do you like Beijing or Shanghai?
➢ Beijing
➢ Shanghai

Source: Yoyo Chinese. (2014, May 6). *Chinese on the Street - Do you like to drink tea or coffee?* [Video]. YouTube. https://www.youtube.com/watch?v=Yxm6N_ZoTdo&t=0s

Shadowing Activity Week 3
一口咖啡, 一口饼干
Yìkǒu kāfēi, yìkǒu bǐnggān
A sip of coffee, a bite of the cookie

Video: https://youtu.be/sACxd7AuFmo

Chinese Characters

- 人, 要对自己好一点
- 就像保罗程说的
- 早上来一杯咖啡配孔雀
  饼干
- 这种吃法是一种享受
- 他还规定我们要一口咖啡一口饼干
- 一口咖啡
- 一口饼干
- 这种吃法不但很享受
- 还很放松

Pinyin

- Rén, yào duì zìjǐ hǎo yìdiǎn
- Jiù xiàng Bǎoluó Chéng shuō de
- Zǎoshang lái yìbēi kāfēi pèi
  kǒngquè bǐnggān
- Zhè zhǒng chīfǎ shì yì zhǒng xiǎngshòu
- Tā hái guīdìng wǒmen yào yìkǒu kāfēi
  yìkǒu bǐnggān
- Yìkǒu kāfēi
- Yìkǒu bǐnggān
- Zhè zhǒng chīfǎ búdàn hěn xiǎngshòu
- Hái hěn fàngsōng

English translation

- People need to be nice to themselves
- As Paul Cheng said,
- Drinking a cup of coffee in the morning with the
  Peacock cookies
- This way of eating is a pleasure
- He also suggested that we have a sip of coffee, a bite
  of the cookie
- A sip of coffee
- A bite of the cookie
- This way of eating is not only enjoyable
- But also relaxing

Source: 我的孔雀餅乾. (2014, Mar 4). 【*孔雀餅乾，我的餅乾*】*保羅程 的吃法 (咖啡篇)*
[Video]. YouTube. https://www.youtube.com/watch?v=5GjGA2h4TjU

Shadowing Activity Week 4
珍珠奶茶真的有珍珠
Zhēnzhū Nǎichá Zhēnde Yǒu Zhēnzhū
There Are Real Pearls in The Pearl Milk Tea

Video: https://youtu.be/YDHH_u8Mco0

Chinese Characters

➢ 老板，要一盒泡面，牛肉味的
➢ 然后再要一杯珍珠奶茶
➢ 泡面，珍珠奶茶
➢ 先生，我们这里泡面啊
➢ 免费送你开水的
➢ 我帮你泡好了拿给你啊
➢ 我在那边
➢ 谢谢啊！
➢ 先生，你的面好了
➢ 这是你的奶茶
➢ 慢慢用啊！
➢ 好
➢ 哇！珍珠奶茶真的有珍珠哦！
➢ 哇！牛肉味泡面都有牛肉！

Pinyin

➢ Lǎobǎn, yào yì hé pàomiàn, niúròu wèi de

➢ Ránhòu zài yào yìbēi zhēnzhū nǎichá

➢ Pào miàn, zhēnzhū nǎichá

➢ Xiānsheng, wǒmen zhèlǐ pàomiàn a miǎnfèi
   sòng nǐ kāishuǐ de

➢ Wǒ bāng nǐ pào hǎole ná gěi nǐ a

➢ Wǒ zài nà biān

➢ Xièxie a!

➢ Xiānsheng, nǐ de miàn hǎo le

➢ Zhè shì nǐ de nǎichá

➢ Mànman yòng a!

➢ Hǎo

➢ Wa! Zhēnzhū nǎichá zhēnde yǒu zhēnzhū o!

➢ Wa!

➢ Niúròu wèi pàomiàn dōu yǒu niúròu!

English translation

➢ Sir, I want a box of beef flavor instant noodles

➢ And then a cup of pearl milk tea

➢ Instant noodles, pearl milk tea

➢ Sir, we will give you water for free with your instant noodles

➢ I will bring it to you after it is done

➢ I'm over there. Thank you

➢ Sir, your noodles are ready

➢ This is your milk tea

➢ Take your time to eat

➢ Okay

➢ Wow! There are real pearls in the pearl milk tea!

➢ Wow!

There is real beef in the beef flavor instant noodles!

Source: 天天逗事. (2018, Apr 29). 天天逗事 喝珍珠奶茶真有珍珠，小伙子果断点了老婆饼 [Video]. YouTube. https://www.youtube.com/watch?v=rf_uTfM8NEw

Appendix F

Shadowing Instructions and Materials for the Experimental Group

Mandarin Tone Training Activity

The shadowing activity is a great technique to help you improve your tones. The activity lasts for four weeks (11/2-11/30). It will only take less than one hour each week.

At the beginning of each week, the researcher will send the link of the audio recording to the participants. You will complete the shadowing exercise twice a week, with the same audio each week, shadowing the audio six times per session. On Thursday, the researcher will send an email to remind you to do the shadowing. You will submit the two recordings before next Monday.

Shadowing Instructions:

1. Please read the English translation to understand the meaning of the dialogue.
2. Play the audio recording once and read the pinyin transcript.
3. Practice shadowing four times: Play the audio recording while shadowing the recording (repeat what you hear with as little delay as possible). You can choose to read the transcript while speaking if it helps you follow the audio, or you can just listen carefully to the audio and imitate what the speakers say. Listen attentively and try your best to imitate the speakers. You can adjust the speed of the audio if it is too fast.
   Example of shadowing: https://youtu.be/g0YWgbS9I7g
4. When you shadow the recording for the fifth time, record yourself with any audio recording app. The speed of the audio should not be adjusted.
5. Listen to your recording to be aware of how your pronunciation is different from the native speakers.
6. Record yourself again shadowing the audio. The speed of the audio should not be adjusted.
7. Send the last recording to ailinglu@uark.edu

Time to submit your recording

Week 1: 11/9 (Monday)

Week 2: 11/16 (Monday)

Week 3: 11/23 (Monday)

Week 4: 11/30 (Monday)

Example:

Week one (11/2-11/9)

Monday (11/2)- Participants receive Audio A

By Friday (11/6)– Shadow Audio A six times. Record the last shadowing. Name the recording: Your Number_Week 1_1

By Monday (11/9)– Shadow Audio A six times. Record the last shadowing. Name the recording: Your Number_Week 1_2. Send the two recordings from Friday and Monday to the researcher.

Shadowing Activity Week 1
周末
Zhōumò
Weekend

Audio: https://youtu.be/jvYWy5JYiZo

Chinese Characters

➢ 听说这部电影很有趣，我们晚上一起去看，好不好？
➢ 我觉得有一点儿累，我想回家休息。
➢ 你不要常常在家上网，看电脑，玩手机，应该去运动。明天我有空，我们可以一起去骑脚踏车。
➢ 可是我只想听音乐，睡觉。
➢ 后天去呢？
➢ 这两天天气有点儿冷，我们周末去，好吗？

Pinyin

➢ Tīng shuō zhè bù diànyǐng hěn yǒuqù, wǒmen wǎnshàng yìqǐ qù kàn, hǎobù hǎo?

➢ Wǒ juéde yǒu yìdiǎnr lèi, wǒ xiǎng huí jiā xiūxí.

➢ Nǐ búyào chángcháng zàijiā shàngwǎng, kàn diànnǎo, wán shǒujī, yīnggāi qù yùndòng. Míngtiān wǒ yǒu kòng, wǒmen kěyǐ yìqǐ qù qí jiǎotàchē.

➢ Kěshì wǒ zhǐ xiǎng tīng yīnyuè, shuìjiào.

➢ Hòutiān qù ne?

➢ Zhè liǎng tiān tiānqì yǒudiǎnr lěng, wǒmen zhōumò qù, hǎo ma?

English Translation

➢ I heard that this movie is very interesting. How about we go watch it at night?
➢ I am feeling a bit tired. I want to go home and rest.
➢ Don't often surf the internet, use the computer, or play on your phone at home. You should go exercise. I'm free tomorrow. We can go ride bikes together.
➢ But I just want to listen to music and sleep.
➢ How about the day after tomorrow then?
➢ The weather will be a bit cold these two days. Let's go on the weekends, okay?

Source: 淡江大學華語中心 (2019)。時代華語 I。台灣：正中書局。

Shadowing Activity Week 2
我们去看电影
Wǒmen Qù Kàn Diànyǐng
Let's Go Watch Movies

Audio: https://youtu.be/Qx_k4L4sGio

Chinese Characters

➢ 今天晚上，我们去看电影，好不好？
➢ 好啊！你想看美国电影，还是台湾电影？
➢ 美国电影，台湾电影，我都想看。
➢ 我们看台湾电影吧！
➢ 好啊！看电影可以学中文。晚上要不要一起吃晚饭？
➢ 好，我们去吃越南菜。

Pinyin

➢ Jīntiān wǎnshàng, wǒmen qù kàn diànyǐng, hǎo bù hǎo?

➢ Hǎo a! Nǐ xiǎng kàn měiguó diànyǐng, háishì táiwān diànyǐng?

➢ Měiguó diànyǐng, táiwān diànyǐng, wǒ dōu xiǎng kàn.

➢ Wǒmen kàn táiwān diànyǐng ba!

➢ Hǎo a! Kàn diànyǐng kěyǐ xué zhōngwén. Wǎnshàng yào bú yào yìqǐ chī wǎnfàn?

➢ Hǎo, wǒmen qù chī yuènán cài.

English Translation

➢ Let's go to the movie tonight, okay?
➢ Okay! Do you want to watch an American movie or a Taiwanese movie?
➢ I want to watch both American movies and Taiwanese movies.
➢ Let's watch a Taiwanese movie!
➢ Okay! We can learn Chinese by watching the movie. Do you want to have dinner together tonight?
➢ Okay! Let's eat Vietnamese food.

Source: 鄧守信, 王佩卿, 陳慶華, 黃桂英 (2015)。當代中文課程課本 1。台灣：聯經出版公司 。3-3

Shadowing Activity Week 3

请问一共多少钱

Qǐngwèn Yígòng Duōshǎo Qián? How

Much Is the Total Cost?

Audio: https://youtu.be/xxlj7x0HDpE

Chinese Characters

➢ 请问你要买什么？
➢ 一杯热咖啡，两个包子。
➢ 你要大杯，中杯，还是小杯？
➢ 大杯。 包子请帮我微波。
➢ 好的。请问外带还是内用？
➢ 外带。一共多少钱？
➢ 咖啡八十，包子四十，一共一百二十块。

Pinyin

➢ Qǐngwèn nǐ yào mǎi shénme？

➢ Yìbēi rè kāfēi,liǎng ge bāozi.

➢ Nǐ yào dà bēi, zhōng bēi, háishì xiǎo bēi.

➢ Dà bēi. Bāozi qǐng bāng wǒ wéibō.

➢ Hǎo de. Qǐngwèn wàidài háishì nèiyòng?

➢ Wàidài. Yígòng duōshǎo qián?

➢ Kāfēi bāshí, bāozi sìshí. yí gòng yì bǎi èrshí kuài.

English translation

➢ May I ask what you want to buy?
➢ A cup of hot coffee and two buns.
➢ Do you want large, medium or small?
➢ Large, and please microwave the steamed buns for me
➢ Ok, take out or dine in?
➢ Take out. How much is the total cost?
➢ Coffee is NT$80, buns are NT$40, a total of NT$120.

Source: 鄧守信, 王佩卿, 陳慶華, 黃桂英 (2015)。當代中文課程課本 1。台灣：聯經出版公司 。4-1

Shadowing Activity Week 4
牛肉面真好吃
Niúròu Miàn Zhēn Hǎo Chī
Beef Noodle Soup is Yummy

Audio: https://youtu.be/N7AKd1m-7w0

Chinese Characters

➢ 很多人都说，台湾有不少有名的小吃。
➢ 是啊！牛肉面，小笼包，臭豆腐，都很好吃。
➢ 你最喜欢吃什么？
➢ 牛肉面。牛肉好吃，汤也好喝。
➢ 这么好吃！我很想吃。
➢ 我知道一家有名的牛肉面店。我们一起去吃，怎么样？
➢ 太好了！
➢ 我们明天去 一定要点大碗的。

Pinyin

➢ Hěnduō rén dōu shuō, táiwān yǒu bù shǎo yǒumíng de xiǎochī.

➢ Shì a! Niúròu miàn, xiǎolóngbāo, chòudòufu, dōu hěn hǎo chī.

➢ Nǐ zuì xǐhuān chī shénme?

➢ Niúròu miàn. Niúròu hǎo chī, tāng yě hǎo hē

➢ Zhème hǎo chī! Wǒ hěn xiǎng chī.

➢ Wǒ zhīdào yìjiā yǒumíng de niúròu miàn diàn. Wǒmen yìqǐ qù chī, zěnme yang?
➢ Tài hǎo le!
➢ Wǒmen míngtiān qù yídìng yàodiǎn dà wǎn de.

English translation

➢ Many people say that there is a lot of famous street food in Taiwan.

➢ Yeah, beef noodle soup, xiaolongbao, and stinky tofu are all delicious.

➢ What is your favorite food?

➢ Beef noodle soup. The beef is yummy, and the soup is delicious.

➢ How delicious! I really want to eat it.

➢ I know a famous beef noodle soup restaurant. Let's go eat there. How does it sound?

➢ Great!

➢ Let's go tomorrow. We must order the large one.

Source: 鄧守信, 王佩卿, 陳慶華, 黃桂英 (2015)。當代中文課程課本 1。台灣：聯經出版公司 。5-1

Appendix G

Post-test

Read-aloud

李先生是学生。他家有四口人。他爸爸是医生，妈妈是英文老师。李先生的哥哥是律师。王小姐和她姐姐都是老师。王小姐有两个孩子，她的女儿和儿子都不是学生。今天是李先生的生日，王小姐请他吃中国菜。

Lǐ xiānsheng shì xuésheng. Tā jiā yǒu sì kǒu rén. Tā bàba shì yīshēng, māma shì yīngwén lǎoshī. Lǐ xiānsheng de gēge shì lǜshī. Wáng xiǎojiě hé tā jiějie dōu shì lǎoshī. Wáng xiǎojiě yǒu liǎng ge háizi, tā de nǚ'ér hé érzi dōu bú shì xuésheng. Jīntiān shì lǐ xiānsheng de shēngrì, wáng xiǎojiě qǐng tā chī zhōngguó cài.

One-on-one conversation

(The questions were asked by the researcher without presenting the text to the participants)

1.你是美国人吗？

2.你有姐姐吗？

3.你爸爸是医生吗？

4.你家有几口人？

5.你明天忙不忙？

6.你喜欢吃中国菜还是美国菜？

7.你周末喜欢做什么？

8.你今天早上喝了什么？

9.你觉得打球有意思吗？

10. 你今天晚上想做什么？

Appendix H

Post-Questionnaire

Your Number: _____

    A. Please rate the shadowing activity based on how you feel:
        (put a check mark **v** in the box)
        1. I think the shadowing activity is

	1	2	3	4	5	6	7	
useless								useful
difficult								simple
unpleasant								pleasant
boring								interesting
outdated								new
slow								fast
stressful								relaxing
rigid								flexible
uncool								cool
unfamiliar								familiar
valueless								valuable
confusing								clear

        2. Do you feel more confident to speak Chinese after the shadowing activity?

	1	2	3	4	5	6	7	
unconfident								confident

3. Was pinyin helpful for you during shadowing?

	1	2	3	4	5	6	7	
unhelpful								helpful

4. Did you play the video/audio materials at a slower speed while shadowing?

	1	2	3	4	5	6	7	
seldom								often

B. Please answer these questions with as much detail as possible (at least 3-4 sentences).

1. What do you like about the shadowing activity?	
2. Any suggestions on how to improve the shadowing activity?	
3. What do you think about the materials used in the shadowing activity?	