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Third Tone Instruction in Standard Chinese

Teaching the Third Tone as a Low Tone to Beginner Students

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Title: Third Tone Instruction in Standard Chinese: Teaching the Third Tone as a Low Tone to Beginner Students
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Sammanfattning Learning tones is one of the major hurdles for students who learn Standard Chinese as a foreign language, and the most difficult part seems to be the third tone. This tone is typically described as a falling-rising tone, which is indeed the case when it is pronounced in isolation. However, when the third tone is followed by any other tone, it changes pitch contour to become either a low tone or a rising tone. Thus, in connected speech, the third tone is very rarely pronounced as a full falling-rising tone.

Modern phonological descriptions of Standard Chinese typically describe the third tone as a low tone. Since the surface variations of the third tone are well understood, the discrepancy between these two models (the falling-rising variant and the low variant) only deals with the underlying tone. The end result is the same, but the rules applied to arrive there are different.

In general, textbooks and teachers describe the third tone as a falling-rising tone, but in reality it is more often realised as a low done. It is hypothesised that this difference makes learning the third tone harder for students, increasing the risk of confusing tones, both in production and perception. It should therefore be beneficial to students if the third tone were to be taught as a low tone. The theory behind this argument is the first point of focus in this thesis.

The second part of this thesis is an empirical study to provide support for this argument. In a short laboratory study, 38 beginner students underwent one hour of tuition, focusing only on tones. The tuition identical for all groups, except that for the test group, the third tone was described as a low tone, whereas for the control group, it was taught as a falling-rising tone. It was shown that the test group performed significantly better than the control group with regard to third tone production and perception.

Nyckelord: Tone, Third Tone, Standard Chinese, Instruction, Chinese Phonology, Pronunciation

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1. Introduction

In this introduction, I will first sketch a background as to why I am writing this thesis and what it is about, and then define a number of objectives and a way to reach them anchored in that background. I will also briefly outline the remainder of this thesis to facilitate reading and understanding.

1.1. Background

Standard Chinese (commonly called Mandarin) has been taught in Sweden for a long time, but it has only begun to enter the mainstream during the 21st century. Today, Standard Chinese is taught not only at major universities and colleges, but it is also widely taught in secondary education. In 2010, the Swedish minister of education, Jan Björklund, said that in the future, he wants all Swedish upper secondary school students to have the opportunity to study Standard Chinese if they so wish (Viktorsson, 2010).

However, teaching Standard Chinese to Swedish students is a relatively unexplored area, at least compared with the teaching of major European languages such as English, French or German, and is therefore associated with certain problems, including challenging pronunciation and tones (Viktorsson, 2010). Indeed, the teaching of Standard Chinese as a foreign language in general is a relatively new field of research. Therefore, there is need for more research on how students acquire Standard Chinese as a foreign language, aiming towards increasing the efficiency of teaching methods leading to improved results for students, both in Sweden and elsewhere.

Personally, I started learning Standard Chinese in 2007, and as other learners coming from a non-tonal language environment, I encountered several problems pronouncing the tones. Most other areas of pronunciation did not present a problem for me, simply because I could distinctly hear what was correct and what was not. Not so with tones. In 2009, I discovered that I still pronounced the third tone incorrectly in some cases, not because I was unable to pronounce it the right way, but rather because I did not know how it was supposed to be pronounced.

I had confused the third tone with the second tone, meaning that more often than not, my third tones

turned into second tones even when they were supposed to be just low tones, as is the case most of the time. The fact that no-one corrected me for over two years made me curious. Was I alone with my predicament? Was the fault entirely my own?

Perhaps the responsibility of learning is always the student's, but later I learnt that I am far from alone in making this kind of mistake. Tones do indeed seem to present the biggest problem for most learners (Liu, Wang, Perfetti, Brubaker, Wu et al. 2011), the third tone being the most difficult (Lin, W.C.J., 1985). If tones in general are difficult to learn, it seems reasonable enough to assume that the third tone would be the most difficult, simply because of its tendency to completely change pitch contour depending on the tone of the following syllable. This is called third tone sandhi. This is in line with studies showing that confusion between the second and third tone is among the most difficult distinctions in Standard Chinese (Lee, Tao & Bond, 2010; Ye, 2002), not only for foreign learners, but also for native speakers (Shen, 1991), suggesting that it is a difficult phonological process. Such a complex phenomenon is not easily pinpointed and described, which explains the vast number of academic articles, papers and books dealing with the third tone and tone sandhi (see e.g. Cheng (1987), Shen (1989, 1990), Liao (1994), Shih (1997), Shen & Lin (2002)).

In 2011, I wrote a bachelor thesis on the subject of third tone instruction (Linge, 2011), which basically concluded that there are two major ways of looking at the third tone: either as a falling-rising tone or as an essentially low tone, but that only one of these methods is present in teaching material for beginners. I further discussed the theoretical merits of teaching the third tone as a low tone and concluded that it probably would be beneficial, but that more empirical research is needed. In this thesis, I will re-examine my previous analysis (see chapters three and four) and also support it with a small empirical study (see chapter five).

1.2. Objectives

As described above, the main purpose of this thesis is to explore if teaching the third tone as a low tone could be a superior alternative compared with the traditional falling-rising variety. To do this, we need to first understand the two alternatives. In general, there is a huge body of research not only on tones in general, but also on certain aspects of tones in Standard Chinese. Duanmu (2007) suggests that third

tone sandhi is one of the most well-described phenomena in Chinese phonology. These attempts at describing the third tone primarily discuss complex phenomena (such as long strings of third tones) and strive to analyse them as accurately as possible. Many linguists (e.g. Duanmu, 2007) uses a generative approach where a few well-defined rules are meant to generate all correct surface forms of the language. These analyses typically describe the third tone as a low tone.

As I have argued elsewhere (Linge, 2011), the educational situation is different. Textbooks are overwhelmingly favouring a traditional falling-rising variety and it is likely that the same is true for normal classroom practice, although this has not been showed empirically as far as I know. Exploring how other methods work is therefore relevant, not only because it might lead to an increased understanding of the third tone in an educational context in general, but also because it might lead to better teaching results for students in particular.

Based on the above reasoning, two objectives have been identified for this thesis:

1. Explore the theoretical and pedagogical difference between different versions of third tone instruction
2. Examine empirically the viability of teaching the third tone as a low tone rather than the traditional falling-rising variety

The first of these objectives has already been analysed in my previous thesis (Linge, 2011). The exploration of the theoretical and pedagogical differences between different versions of third tone instruction included here is therefore heavily based on the previous analysis, so even though it has been revised and updated, some sections still overlap. I have decided to include this analysis here in order to lend credibility to the empirical study that follows. I also think that in order to understand the essence of the empirical study, a detailed look at the two versions of third tone instruction is vitally important.

1.3. Delimitations

This thesis will focus on the third tone in monosyllabic and disyllabic words only. Thus, I am not going to enter the maze of complex rules that govern tone sandhi over more than two consecutive third tones, simply because these rules seldom apply and are mostly irrelevant for beginner students. For anyone

who wants to delve deeper into research in that direction, please refer to Duanmu (2007) for an overview of theories, and Cheng (1987), Liao (1994) and Shih (1997) for further details.

Neither am I going to look into phenomena that operate over larger domains than words, so for instance, the interplay between tone and prosody will not be examined; kindly refer to Shen (1990, 1989), Shen & Lin (2002) and Liao (1994) for more regarding this.

1.4. Outline

This thesis is divided into seven chapters as follows:

Chapter 1 is the introduction you are currently reading.

Chapter 2 deals with teaching pronunciation in general.

Chapter 3 introduces tones in Standard Chinese.

Chapter 4 expands the discussion about T3 as a low tone.

Chapter 5 describes the empirical study on T3 instruction.

Chapter 6 outlines the results from the study and discusses the outcome.

Chapter 7 contains a bibliography.

1.5. Terms and abbreviations

SC	Standard Chinese
T1/2/3/4	first/second/third/fourth tone
T3S	third tone sandhi
L/M/H	low/mid/high tone
SLA	Second Language Acquisition

2. Teaching pronunciation

The role of instruction in second language acquisition is far from clear-cut. Doughty (2003) offers an overview of the role of instruction in SLA (Second Language Acquisition), pointing out that several researchers (most notably Stephen Krashen) maintains that “the only contribution that classroom instruction can make is to provide comprehensible input that might not otherwise be available outside the classroom.” (Krashen, 1985, quoted in Doughty, 2003, p. 257) These are often theories based on universal grammar and according to these theories, instruction is either partly or completely useless apart from the added exposure it entails.

However, as Doughty (2003) points out, this approach is too extreme and the role of instruction in SLA is not a settled matter. The need for instruction is highlighted by the fact that an averagely talented child masters her own language without problems, whereas this is not the case for a majority of adult second language learners.

Furthermore, meta studies on the role of instruction (ibid) show that there is evidence to support that instruction is effective in certain circumstances beyond what is expected from the mere increase in exposure that teaching inevitably entails (see e.g. Saito K., 2011 for a study specifically about explicit phonological instruction, showing that it was helpful for comprehensibility). The problems with the results from these meta studies, however, is that it is hard to separate them from the environment in which they were produced (keeping variables constant in different classrooms, with different teachers and with different material is next to impossible). This has prompted some researchers to conduct these experiments in laboratory conditions only, an approach I have adopted in this thesis.

According to Towell and Hawkins (1994, p. 183), “instruction, negative feedback and a 'flood' of positive evidence are all ways in which learners' language can be modified, even if the results are less than permanent. At least for a time, learned linguistic behaviour enables the learner to appear to produce native-like language”.

Because of the above reasoning, this study is based on the assumption that instruction is indeed beneficial for second language acquisition.

2.1. Implicit and explicit knowledge

Assuming that instruction can be beneficial for language acquisition, the next problem we need to look at more closely is that of implicit and explicit knowledge. Briefly put, is it beneficial for students to be explicitly told about the various rules governing the target language (such as third tone sandhi, i.e. how tones change according to context)?

A teaching method based on implicit learning implies that the teacher exposes the students to relevant material, whereas an explicit approach means that the teacher describes the rules and direct students' attention to specific points of interest.

Important to both implicit and explicit learning is the noticing hypothesis, defined as follows by Richard Schmidt (2001, pp. 34-4): "SLA is largely driven by what learners pay attention to and notice in target language input and what they understand the significance of noticed input to be, [which is in contrast to a view where] unconscious processes do everything." If adults are left without instruction, they typically rely on language-processing strategies from their native language (Doughty, 2003), which is problematic in the case of tones if their native language is not tonal; see Kaan, Barkley, Bao & Wayland (2008) for more about the impact of native language on tonal perception. Moreover, noticing can be important, even if it is not immediately connected to understanding (DeKeyser, 2003).

Explicit teaching in SLA (such as error correction or explicit teaching of rules) has proved effective both in the laboratory and in the classroom, even though studies that compare these two approaches directly are scarce (DeKeyser, 2003). An additional problem with these results, although overwhelmingly in favour of explicit instruction, is that the studies were all of fairly short duration, which can be seen as bias against implicit learning, which typically requires exposure for longer durations of time (ibid).

2.2. The current study

In this thesis, I will follow the same argument as Doughty (2003, p. 298) when she states that "the goal of L2 instruction should be to organize the processing space to enable adults to notice the cues *located in the input*". Regarding tone instruction, my view is that if the students' native language is not

dependent on tones to the same extent as SC is, the students are not likely to notice or understand the importance of tones on their own. Some instruction is therefore essential.

In this case, instruction is highly useful because it helps the students notice the salient and relevant features of the tones. Since the lexical tones found in SC do not occur in Swedish (the native language of most participants in this study), it is my understanding that most learners need help noticing the importance of tones in general, but also the characteristics of the tones in SC in particular.

This is not a substitute for exposure to positive evidence, but without the ability to notice what is relevant in this input, students are less likely to benefit from the exposure. Thus, my conclusion is that explicit instruction is important and sometimes even necessary when teaching tones to students of Standard Chinese as a foreign language.

3. Tones in Standard Chinese

This chapter looks at how tones are described, both in languages in general and in Standard Chinese in particular. First, general principles and definitions of tone will be presented, followed by a closer look at how tone works in Standard Chinese, with the ultimate goal of presenting different ways of describing the third tone. In short, there are two ways of representing the third tone: as a falling-rising tone or as a low tone.

Even though the phonology of Standard Chinese has been widely studied, it is still a relatively young field, at least when compared with other major languages, such as English. Often, linguists do not agree on how to describe certain phenomena. Naturally, each language poses unique challenges for linguists trying to understand it, but it is important to note that for SC, even basic descriptions are disputed and cannot be taken for granted (Li, 2002). The description of the third tone is precisely such a basic and frequent element that linguists do not agree on how to best define.

Several studies show that the perception and production of tone is the most difficult challenge for students to overcome (Lee, Tao & Bond, 2010, and Liu, Wang, Perfetti, Brubaker, Wu et al. 2011), which makes tones even more interesting to study from a pedagogical point of view. Among the problems related to tone, the third tone is the most difficult obstacle to overcome for beginner students, partly because of its perceived similarity to either T2 or T4, depending on the context (Lin, W.C.J., 1985; Ye, 2002).

To see why this is so and to understand what causes this problem, we need to understand the nature of tone, both in languages in general and in SC in particular.

3.1. The nature of tone

According to Yip (2002), tone is a linguistic term for a phonological category distinguishing two utterances. This is also called lexical tone, because meaning is an integral part of tone and it is used to distinguish different words (lexis) that would otherwise be identical. According to this definition, non-speech such as birdsong and music are not examples of tone, because the difference in pitch is not used

to distinguish different words. Moreover, pitch changes representing mood or emotion (such as raising the pitch at the end of a sentence to show that it is a question in English) are not considered to be tones either. Even when using this narrow definition of tone, a majority of the world's languages are still tonal, including Standard Chinese (Yip, 2002).

According to Jongman and Wang (2006) and Yip (2002), tone is mainly determined by the fundamental frequency, f0, which is the rate of vibration of the vocal folds measured in Hertz. Pitch refers to the frequency the listener perceives. These are related, but not in a linear manner, so a doubling of f0 does not generate a corresponding increase in pitch (Duanmu, 2007).

Lexical tone can be described as a pitch pattern whose function is to distinguish syllables from each other, just like other features in other languages, such as voiced or voiceless sounds (e.g. the stops [d] and [t] in English and Swedish). However, while consonants and vowels are single segments, tones are supra-segmental, which means that they can be realised over more than one segment. Another difference is that tone is affected by the speaker's pitch range and is therefore always relative (high or low, for instance), whereas consonants and vowels can be defined in absolute terms by the place and manner of articulation (Jongman & Wang, 2006).

3.2. Tones in Standard Chinese

Standard Chinese is a tonal language in which tone has been shown to be as important as vowels in determining lexical access (Liu & Samuel, 2004). SC has a relatively simple sound inventory (ignoring tones, SC only has about 5% of the total number of syllables found in English, see Duanmu, 2007), which means that there is an unusually high number of homophones. The function of tone is to distinguish these from each other. Yip (2002) and Liao (1994) both point out that tone is not limited to pitch only, but that a range of other factors also help distinguishing tones from each other, such as amplitude, duration and murmur (Duanmu, 2007; Jongman & Wang, 2006).

Duanmu (2007, p. 225) lists five different ways of representing the tones in Standard Chinese using the syllable “ma”. For a graphical representation of the four tones, please refer to figure 1.

Table 1: Basic tone representation

	T1	T2	T3	T4
(a)	ma1	ma2	ma3	ma4
(b)	ma	ma	ma	ma
(c)	ma55	ma35	ma214	ma51
(d)	mā	má	mǎ	mà
(e)	mha	mar	maa	mah
	'mother'	'hemp'	'horse'	'scold'

The table above shows the traditional representation of the tones in isolation (i.e. tone sandhi is not considered). The first method (a) is simply a way of numbering the tones from 1 to 4, without any information about how the tones are supposed to be pronounced. These numbers are commonly used by students, teachers and linguists alike and are commonly abbreviated T1, T2, T3 and T4.

The second method, shown in (b), was designed by Chao (1968), who established a system of five tone heights, 1-5 with 1 denoting the lower end of the pitch range and 5 the higher end, but without any representation of tone length (Duanmu, 2007; Yip, 2002, Li & Thompson, 2008). According to the International Phonetic Alphabet, tones are represented by small pictures showing the change in pitch such as shown in (b). See figure 1 below for larger graphical representations of the four tones.

The third row (c) shows numbers instead of the above-mentioned pitch patterns. This method is useful when comparing how different tones are realised and is common in articles and books about the phonology of Standard Chinese. This thesis is no exception.

In the fourth method (d), tones are marked as diacritics according the Hanyu Pinyin system, which is by far the most common way of romanising Standard Chinese today, and is used in textbooks and classrooms alike. The last row, (e), shows a method that was also conceived by Chao and which uses no extra symbols or diacritics to mark tone. However, this system is not widely used today (Duanmu,

2007) and studies have shown it to be counter-productive (McGinnis, 1997).

Figure 1: Traditional tone representation

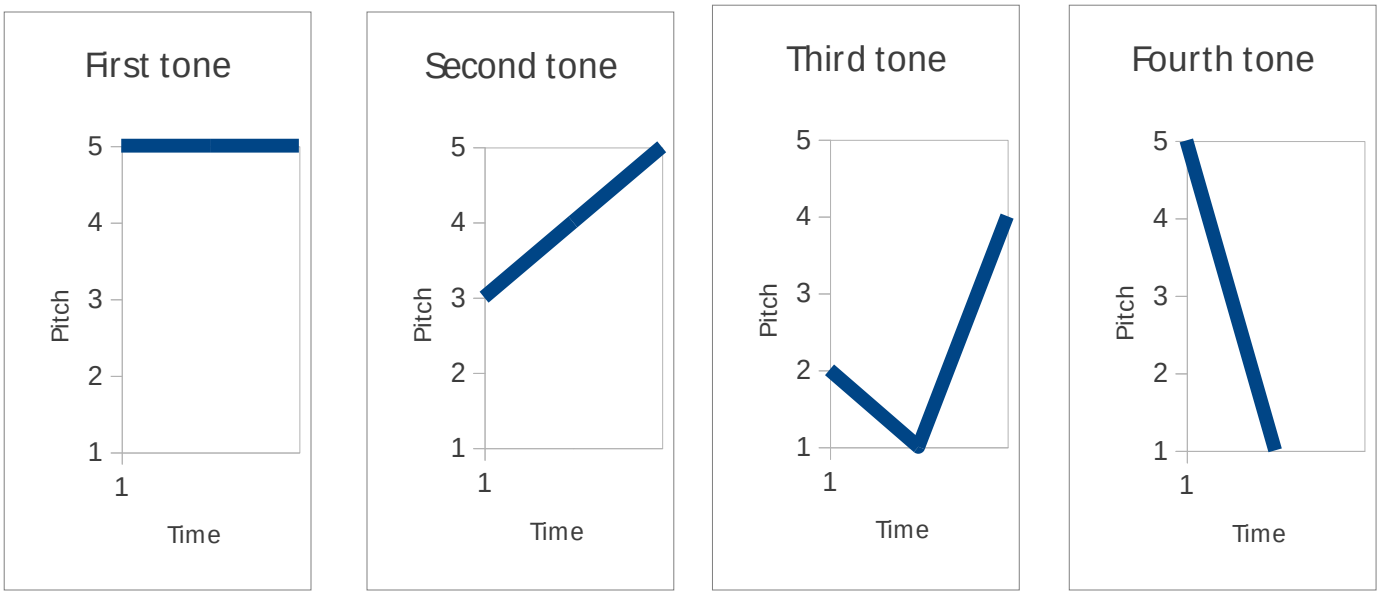


Figure 1: This is the traditional representation of tones, with duration on the x-axis and pitch on the y-axis. Note that this is merely a representation and is not meant to reflect actual pronunciation in detail.

In addition to the above-mentioned representations, tones are also commonly described using words such as 'low', 'low-falling' or 'low-rising', or in abbreviated forms using the letters L (low) and H (high). According to Yip (980) and Duanmu (2007), all tones can be reduced to combinations of H and L. For example, the first tone is high-level (HH) and the fourth tone is high-falling (HL) (Chao, 1968; Yip, 1980; Zhang, 1988).

These ways of representing the tones in SC have been widely used in language teaching, both in China and abroad. Even though they have proved to be flawed, they are still being used out of convenience and simplicity (Lin, H., 1998). There are many different models with their own special merits and flaws; for more about basic tone representation, please refer to Yip (1980, 2002), Duanmu (2007), Lin, C.W.C. (2002), Jongman & Wang (2006) and Liao (1994).

Before moving on to the third tone, we first need to define underlying tones and surface tones. An

underlying tone is the basic form of the tone, to which rules such as tone sandhi can be applied in order to arrive at the tones actually used in the language. The underlying tone is very basic and describes the tone in isolation. A surface tone, on the other hand, refers to the realised tone, affected by tone sandhi (Yip, 2002).

There is little dispute on how T3 is realised in disyllabic words followed by a single tone of any kind. What is interesting is discussing which underlying form should be used and which rules should be applied to reach the surface form. Unfortunately, there has been little research investigating what consequences the choice of underlying form has for tone instruction.

3.3. The third tone

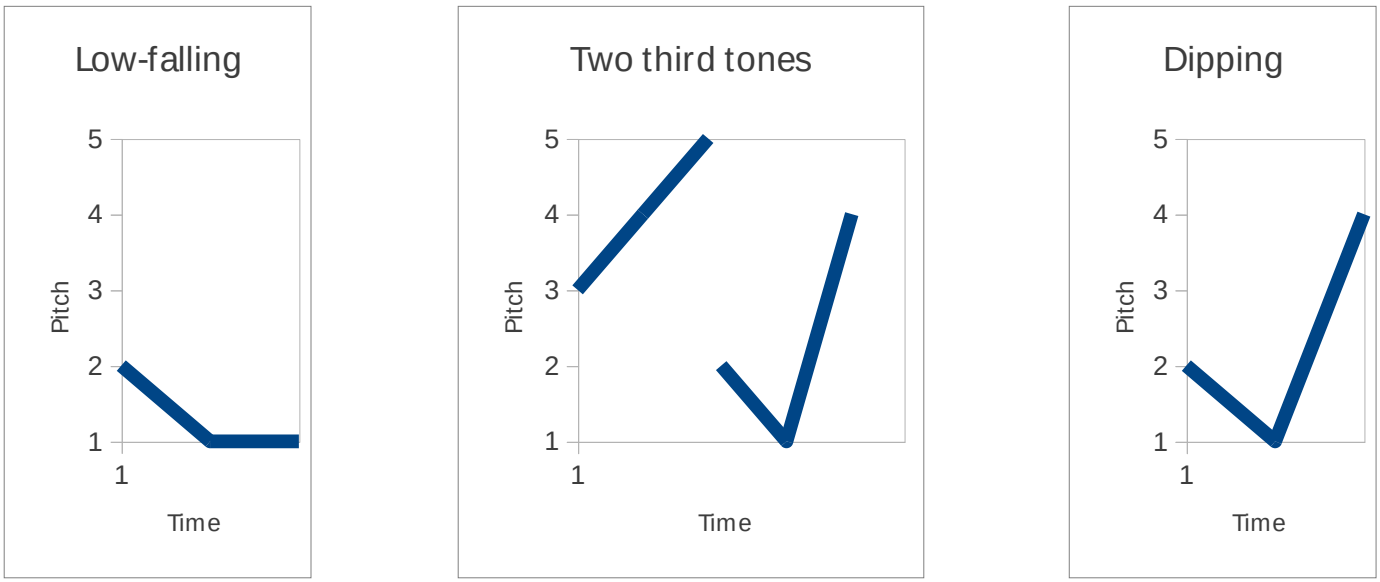
The focus of this thesis is the third tone, which has been identified as the main source of problems not only for foreigners learning Chinese (Lee, Tao & Bond, 2010; Lin, W.C.J., 1985; Liu & Samuel, 2004), but also for native speakers (Shen, 1991). The problem is that T2 and a full T3 have similar pitch patterns (both are concave, i.e. start with a fall (very slight in the case of T2) and end with a rise), even though they also differ in a number of ways (Shen, 1991). For instance, even though they both have drops in pitch at the outset, the rise in pitch occurs later for T3 than for T2 (Jongman & Wang, 2006; Liu & Samuel, 2004; Shih, 1997).

The third tone is surrounded with a lot of controversy and linguists do not seem to be able to agree on even very basic questions. According to Liu and Samuel (2004),“low falling” or “low”, “low dipping” or “low falling rising” have all been used to denote the third tone. Of the four tones in Standard Chinese, the third tone undergoes the most change depending on the subsequent tone. This phenomenon is called third tone sandhi (Yip, 2002).

At surface, T3 can be pronounced in three ways. First, there is the low, falling variety, usually described in terms of pitch levels as 21. This is the form that occurs in front of any tone except another T3 (Duanmu, 2007). Second, if a T3 is followed by another T3, the first is realised as a T2 described as 35 (a T3 thus modified might or might not be identical to an actual T2; different studies have yielded different results, see Liao 2004 for further details). Finally, in isolation or sometimes in final position,

T3 is at surface a dipping tone, presented as 214 (Liu & Samuel, 2004). Please refer to Figure 2 for a visual representation of the above descriptions.

Figure 2: Variants of T3 representation



3.3.1. Traditional T3 representation

The traditional T3 representation is that of a falling rising tone with pitch levels 214 (Chao, 1968). A large number of linguists have followed this tradition, even though their exact description of T3 might vary. For instance, Lee-Schoenfeld and Kandyboswicz (2008) describe underlying T3 as a tone passing through mid, low and high levels (i.e. similar to 214). They go on to suggest that the various surface representations then are the results of deleting one of the elements, so a rising tone is achieved if the medial L is removed, and a low, falling tone is the result if the final H is removed.

Traditional T3 sandhi rules

As previously mentioned, tone sandhi is a phonological process that occurs between syllables. Assuming that underlying T3 has a contour of 214, we need several rules to account for the fact that, at surface, T3 is seldom pronounced as 214. These then are the traditional T3 sandhi rules, found in a

majority of textbooks (Linge, 2011) and any number of books or articles dealing with tones in Standard Chinese (see e.g. Chao, 1968; Duanmu, 2007; Li & Thompson 2008).

1. If one T3 (214) is followed by any other tone (not another T3), the T3 is turned into a low falling tone (21). Thus, 214 →21 before 55, 35 and 51.
2. If one T3 (214) is followed by another T3 (214), the first turns into a T2 (35). Thus, 214 →35 before 214.
3. T3 can only retain its underlying contour when in isolated or final position.

3.3.2. T3 as a low tone

The third tone can also be described as a low or low falling tone (without the rise at the end that is found in the traditional model), usually written with the pitch levels 21. This representation will be used in this thesis from now on when denoting the low variant of the third tone.

A number of studies, papers and books have suggested that T3 should be treated as an essentially low tone. Liao (1994), who favours this representation, lists a number of other sources that treat T3 as a low tone: Hartman (1944), Hocket (1947), Kratochvil (1968) and Woo (1969). Further studies in the same direction include Lin, W.C.J. (1985), Shih (1986), Yip (1980), Lin (1998) and Duanmu (2007).

Modified rules for T3 sandhi

Naturally, if the underlying form of T3 is changed to a low tone, the tone sandhi rules need to change accordingly to match the surface forms. The process is quite simple since it merely assumes another point of departure, but with the same goal as in 3.3.1 above. The rules here are from Liao (1994):

1. If one T3 (21) is followed by another T3 (21), the first changes to a T2 (35). Thus, 21 + 21 →35 + 21.
2. If T3 (21) occurs in final position, a high element (4) may be added optionally, creating a falling-rising tone (214). Thus, 21 (final) →214.
3. Third, if T3 (21) occurs in isolated position, a high element (4) should be added. Thus, 21

(isolated) -> 214.

Note that when speaking or listening to SC, these rules do not need to be applied as often as the rules outlined in 3.3.1. The first rule above occurs frequently (roughly for one fourth of syllables in non-final position). The second rule is not really a rule, since it is optional in most cases. The third rule is an exception which is rare in natural speech, but over-represented in classroom teaching (please see Lin, W.C.J, 1985).

4. Discussing the third tone as a low tone

After the above examination of the two T3 variants (falling-rising and low), it is now time to compare them from a pedagogical perspective. After briefly summarising the discussion in the previous sections and comparing the merits and flaws of using the two variants, I will conclude the discussion and suggest a remedy.

It can be seen that T3 representation in textbooks more or less always follows the traditional method (Linge, 2011), whereas the case for academic literature is not as clear-cut; there are arguments in many directions, although it seems to me that modern sources more often than not describe the third tone as a low tone. If the third tone is so complex and can be described in many ways, why is it that most textbooks only use one and the same model? If describing T3 as a low tone was a new concept, it would be understandable, because the shift in approach might not yet have propagated and reached teachers and textbook authors. However, linguists have described T3 as a low tone since at least the earlier half of the previous century. One might think that there has been more than enough time for new ideas to spread since then.

Is it a conscious decision then, made by teachers and textbook authors who after comparing the two variants believe that the falling-rising variant is superior? It is of course difficult to answer that question without asking these people directly, but if careful consideration had been part of the selection process, there would be good arguments favouring the use of T3 as a dipping tone. By “good arguments” I refer to merits intrinsic to the traditional T3 approach, not advantages that are related to convenience, custom or ignorance.

Lin, W.C.J. (1985) and Lin, H. (1998) both argue that the prevalence of falling-rising T3 is not the result of carefully considered decisions, but rather that the traditional approach is still widely used despite of its flaws because of convenience. It requires no quantum leap of thought to think that the same might be true for authors of textbooks for beginners as well as language teachers. Another explanation might be that textbook authors and teachers are not necessarily linguists and therefore have a deeper understanding of other areas than developments in phonology. If they lack such an

understanding, they might revert to what they were taught in school, which is most certainly the traditional variant.

Describing a complex phenomenon to a beginner requires simplification, even over-simplification at times. Thus, it is necessary to sacrifice accuracy in favour of clarity and brevity. In all the textbooks I have looked at (Linge 2011), tone instruction only takes up a very limited amount of space, seldom more than one page, including pictures, graphs, etcetera. Therefore, the full story cannot possibly be divulged to students. Simplification is also necessary when teaching beginners in the classroom, because the amount of information they can process and understand is limited.

The question is then which form of simplification we should use when teaching the third tone. Presenting T3 as a dipping tone and as a low tone both require further explanations in terms of tone sandhi, but what are the consequences for tone instruction if one is chosen over the other? Does it make any difference?

4.1. The relevance of T3 representation

Before we compare and discuss the two models in more detail, let us first discuss the relevance of the question itself. Does it make any difference which model we choose? At first glance, or to the uninitiated reader, the distinction might seem arbitrary or academic, but in fact, the choice might be very important. For academic purposes, it will probably remain unclear which model is the best, and most likely, different models will be optimal for different situations and different applications.

However, students who have just started learning Chinese do not constitute an academic setting, nor are most students linguists, so evaluating the different methods from a linguist's point of view is unhelpful. Even if the surface tones in the end are the same, the method used to describe the underlying tones and the tone sandhi rules that give rise to the surface tones might be very important indeed for a student of Standard Chinese.

The effects of using traditional T3 representation have been widely studied, although that might not have been the explicit goal of these studies. In other words, since it is the dominating model in classroom practice, it seems reasonable to assume that most of the problems foreign learners

experience could at least in theory be the result of using this model.

Naturally, the problems might also be completely unrelated to any model and instead be inherent in the tones of SC (so that the difficulty with the third tone is simply because it is difficult in itself, as some studies suggest, e.g. Shen, 1991). Therefore, in order to provide contrast to the traditional way of teaching the third tone, the main focus henceforth will be to examine what the consequences would be if a low tone would be used instead of a falling-rising T3. This will then be tested in an empirical study.

The case for describing T3 as a low tone can be argued from two angles: pointing out the flaws of treating T3 in the traditional manner and detailing the benefits of presenting T3 as a low tone. Naturally, there are also several possible drawbacks of teaching T3 as a low tone and these will also be discussed.

4.2.Arguments regarding traditional T3 representation

First, there are some problems inherent in the treatment of T3 as a falling-rising tone. According to Lin, H. (1998) and Lin, W.C.J. (1985), the traditional representation of T3 has mostly been followed out of convenience, regardless of its flaws and imperfections. Another reason that traditional T3 representation is still prevalent is that most studies on the pronunciation of T3 have focused on text read aloud, which automatically generates a somewhat formal situation in which the native speaker will enunciate the words, thus increasing the possibility of a third tone acquiring the final rise, which is not present as often in more natural speech. Different results might have been yielded in these studies if natural speech would have been studied instead (Liao, 1994).

Lin, W.C.J. (1985) also points out that when teachers correct students' pronunciation of the third tone, they usually slow down their own speech, meaning that the tone suddenly occurs in its isolated form with the final rise (214). When speed is returned to normal, the 214 turns into 21 again, leading to great confusion on the part of the student. This is the result of unintended mixing of informal and formal speech (Kratochvil, 1968). Duanmu (2007) also points out that tone sandhi in general is dependent on the rate of speech, which might impair students' learning if the teacher is not aware of it.

Furthermore, it has already been established that T3 presents the biggest problem for foreign learners of

Chinese (Lee, Tao & Bond, 2010; Lin, W.C.J., 1985; Liu & Samuel, 2004). Lin, W.C.J. (1985) points out that learners of Standard Chinese tend to apply the traditional 214 of traditional T3 representation to natural speech, thus putting a focus on the final rise which is simply not the case for native speakers. This gives rise to the problem of T2 and T3 confusion, because both tones start with a slight dip followed by a rise.

4.3.Arguments regarding T3 as a low tone

The first and most important argument for treating T3 as a low tone is the fact that in normal speech, T3 is realised as a low tone in a vast majority of cases (Lin, W.C.J., 1985). Each time it occurs before a tone that is not another third tone, T3 is pronounced with the pitch contour 21, i.e. a low falling tone (Liao, 1994; Lin, W.C.J., 1985, Duanmu, 2007).

What about T3 in final position or in isolated monosyllables? The traditional way of treating T3 in final position is giving it the contour 214 (Chao, 1968), but there are several studies that show that the truth is not that simple. Instead, they favour T3 as a low tone even in final position (Liao, 1994; San, 2007; Shih, 1986; J. Shen, 1985 and X.N. Shen, 1990).

This data covers speakers of Standard Chinese from many different places, including Beijing, Shanghai and Taiwan. Duanmu (2007) reports that even well-educated speakers in Beijing more often than not use a low T3 in final position and only use the final rise (214) for emphasis or for extra clarity. Liao (1994) found that native speakers do not perceive the difference between 214 and 21 in final position to be phonologically significant.

There is little data suggesting that T3 can be realised as a low tone in isolated form, (Liao, 1994, Shih, 1986), but Duanmu (2007) points out that this is often the case for Taiwanese speakers of Standard Chinese. Liu and Samuel (2004) show that even if the rising part of isolated T3 is removed, the tone can still be perceived accurately by native speakers. In practice, this means that even if a student consistently pronounced the third tone as a low tone, it would be accurate even in final position, and understandable but not correct in isolated position.

However, one T3 following another T3 will still change into a T2, so one tone sandhi rule is still

needed (and it can also be argued that the isolated form also needs one rule of its own, stating that T3 in isolated monosyllables is realised with a rise at the end, 214).

Still, if T3 is described as a low tone, the sandhi rules become simpler and are applied much more rarely. For all cases except isolated forms, one single rule is enough to cover all surface variations. Compare this with the rules described in section 3.3.1, which have to be applied in a majority of cases.

It can also be argued that the missing high element in the underlying form makes isolated T3 or the occasional rise in T3 in final position unpredictable (compare with Lee-Schoenfeld & Kandyboswicz (2008), whose model incorporates all surface forms when certain elements are removed). Therefore, if accurate description of T3 is the only objective, it is not obvious which version is the optimal one. Still, however complete, such an analysis is probably too complicated to be included in an introductory lesson or in the first chapter of a beginner-level textbook.

Another argument for representing T3 as a low tone is that the difficulty in distinguishing T2 and T3 mostly disappears. The problem arises because there are two tones with similar contours that the student has to distinguish (or often fails to distinguish), 214 and 35. Without paying careful attention, it is easy to focus on the wrong part (the rise of T3, i.e. 14) and miss the essence (the lowness of T3, i.e. 21).

On the other hand, if T3 is described as a low tone, this problem disappears, because 21 and 35 are not similar at all. There might still be some problems because T3 can change into a T2, but that problem is intrinsic to Standard Chinese and not something we can influence by using different models to explain tone sandhi.

Lin, W.C.J. (1985) agrees with the above analysis, but also adds that there is another advantage in the classroom. He reports that students mistakenly think negatively about their ability to perceive tones (thinking that they are “tone deaf”), because the tone they hear is almost never what the teacher and/or the textbook say it is (they say it is 214 when in fact it is simply a low tone or occasionally changed to T2 if followed by another T3). This is related to the wide distribution of low T3s in natural speech, but adds a psychological aspect to the argument which should not be overlooked.

Furthermore, it can also be argued that tones in most cases keep their underlying form even when entering disyllabic words, and are thus generally predictable. Traditional T3, however, only keeps its underlying pitch contour in isolated and sometimes in final position, in all a small minority of cases (Liao, 1994). Describing it as a low tone would be more consistent with how the other three tones are described, which do not change in this way.

Finally, there are some possible drawbacks of treating T3 as a low tone. Instead of being confused with T2, It might now be confused with T4, since both have low elements and falling contours. However, as we have seen, the fall of the T3 is not phonologically significant and it is the fall rather than the lowness that defines T4. As Lin, W.C.J. (1985) shows in his study, some confusion between T3 and T4 might arise, but it is much less frequent than mistakes involving T2 and T3. It remains to be seen exactly how much of a problem T3/T4 confusion is.

In addition, teaching T3 as a low tone might feel awkward in some situations, because in isolation, this is not how the tone is typically pronounced and isolated tones are usually what are taught first. An additional rule needs to be applied in order to reach the surface form in isolated positions.

4.4. Conclusion

We have now studied the two different approaches in some detail and it is time to summarise the arguments and come to a conclusion. There seem to be scant reason for presenting T3 as a falling-rising tone (214 or MLH) in textbooks and, as we shall see, the few advantages of traditional T3 representation can be dismissed.

First, I agree that having a high element in the underlying tone makes the representation slightly more accurate, because the only thing that occurs is elimination of either the medial L to create a rising tone in front of another T3 (LH) or the final H in the case where another tone follows, leaving just a falling tone (ML). I consider this argument to be valid, but it is hardly helpful for new students, because the tone sandhi rules become quite complicated and have to be applied almost every time a third tone appears.

Second, I do not think that tradition itself can be viewed as an argument for using traditional T3. Most

textbooks use this version and it seems to be predominant in teaching in general, so being consistent might be an advantage. On the other hand, most students have no sense of what is traditionally correct and would not suffer if tone instruction deviated from this norm. Perhaps they would be confused if they changed studying environment, but hopefully they would already have acquired basic understanding of tones by then and be able to cope with different approaches to the same phenomenon.

As I have tried to show in this chapter, there are numerous advantages for representing T3 as a low tone when teaching, the wider distribution of low surface tones being the major argument, supported by a number of studies.

My conclusion is that representing T3 as a low tone is more accurate and generates easier tone sandhi rules that need not be applied as often. This does not mean that the academic debate regarding the third tone should end, but it seems that that the continued debate is not necessarily relevant for classroom teaching.

4.5.Suggested remedy

Regrettably, there is little empirical evidence showing what representation of T3 would yield the best study results. Lin, W.C.J. (1985) shows that using a low tone to represent T3 yields positive results across the spectrum (from beginner to advanced students) for teaching the third tone as low tone, both in the short-term and in the long-term. This study does not appear to have sparked any follow-ups.

Following the arguments above and assuming that the third tone is taught as a low tone, a few predictions can be made:

1. T3 production and recognition should improve
2. T2 and T3 confusion should decrease
3. T3 and T4 confusion might increase

To test these predictions, a study was conducted as detailed in the next chapter.

5. The empirical study

The study was conducted in November and December, 2011, with volunteers recruited mainly from university students and staff, with a bias towards the social sciences and languages. The volunteers were divided into smaller groups and were randomly assigned one of the two teaching methods: traditional T3 or low T3.

5.1.Methodology

5.1.1. Tone instruction procedure

Each lesson was conducted according to the following structure:

1. Introduction to the lesson and the teacher (myself)
2. Introduction to Chinese in general
3. Teaching of tones in Chinese (with limited practice)
4. Individual practice by students (with teacher help)
5. Practice in student pairs (with teacher help)

Deviations to the above were few and mostly the result of questions from individual students. Each part of the lesson was timed and was kept the same length for each group. The total time of instruction was 45 minutes with roughly half the time spent on introducing the tones and the other half spent on actual practice (first in the whole class, then individually, then in pairs).

5.1.2. The participants

Participants in this study were recruited at Linköping University's Department of Culture and Communication, and included both faculty staff, teachers and students. They were invited to participate in the study via e-mail (see appendix E) and the only requirement was that they were fluent in Swedish and that they had no prior experience of studying Chinese.

The test group consisted of 18 participants spread out over five sessions. The control group consisted of

20 participants and was also spread out over five sessions. The participants were assigned to a test group or control group mainly based on when their schedules allowed for participation in the study.

5.1.3. Teaching of tones in Chinese

Generally speaking, tones were introduced in a traditional manner, starting with an explanation of what tone is and why it is important in Chinese. Then, four basic syllables were introduced (the syllable /ma/ with four different tones), along with a few examples and instructions on how to pronounce the tones. The tones were also drawn into a pitch-duration diagram and the tone marks used for transcription was linked to this graph. In the test group, the students were told that the third tone was a low tone (drawn as 21, see appendix A). In the control group, students were told that the third tone was a falling-rising tone (drawn as 214, see appendix A).

Next, the concept of tone was expanded to include disyllabic compounds as well. In order to minimise the number of things the students have to learn, combinations of the same syllable /ma/ was chosen (meaning that most of the combinations do not represent real words in Chinese). Special attention was paid to the third tone and how it changes according to the tone of the immediately following syllable. Different tone sandhi rules were used for the test group and the control group, see section 3.3 for more details about these rules).

Individual practice was computer-based. First, students were instructed to listen to a recording of each of the individual tones and tone combinations and repeat after the recorded voice. They were also asked to repeat any combination they found difficult. Second, they were asked to listen to set of recorded tones and tone combinations and guess which tones they heard. These two individual practising methods were very similar to the final testing detailed below. Individual practise lasted for ten minutes.

Then, students paired up for continued practising. This time, they were asked to read combinations of tones and have their partner guess which tone combination was said. Then they changed roles. This way, they practised both pronunciation (production) and listening (perception). Practise in pairs also lasted for ten minutes.

During both these practice sessions, the teacher helped individual students and pairs of students to

correct pronunciation and answer questions. The teacher also prompted students to try difficult combinations, such as T3 + T2 or T3 + T4.

5.1.4. Testing the ability to produce and perceive

After the lesson, each student was asked to pronounce and record a list of syllables (see appendix B). Students were allowed to repeat combinations more than once if they felt that the first attempt was not satisfactory. In all, the pronunciation test consisted of twenty items, four monosyllabic and sixteen disyllabic for a total of 36 tones. That means that all possible combinations of tones were tested (excluding the neutral tone). The monosyllabic items came first, followed by the disyllabic ones, but apart from this, the ordering of the items was randomised, but the same for each student.

The second part of the test was started as soon as the recording was completed. In this part, students were asked to listen to a number of tones and tone combinations and note on a test sheet using tone marks which tone or tone combinations they heard. Each combination was read twice, followed by a five-second pause to allow students to record their answers on the test sheet. The audio recordings presented the syllables at a natural but not fast pace. Thus, the third tone was read as a low tone in all situations except isolated cases. Students listened individually with earphones, but no replay was allowed. The test again consisted of a short part with monosyllables (4) and then a much longer part with disyllables (56), which gives a total of 96 tones tested. Since the test took close to eight minutes, a pause of one minute in the middle was included.

5.1.5. Assessing the outcome of the tests

For the pronunciation test, the assessment of students' answers was made manually, but in random order to prevent bias towards any of the two methods. All recordings were analysed at least twice and a number was assigned to each answer corresponding to the closest tone in SC. If students chose to correct themselves, the last answer was regarded as the only answer.

This was then compared to the correct answers. In cases where it was impossible to hear a valid tone (such as a student producing a rising-falling tone, which does not exist in SC), the answer was simply marked as “wrong”.

For the listening test, assessment was more straightforward and simply consisted of a matching between students' answers and the correct tone marks. In case of unclear handwriting, the tone mark most closely resembling the written mark was recorded. If more than one or no tone mark was given for any syllable, or if the tone mark was illegible, the answer was treated as being "wrong". In cases where more than one answer was correct (at surface, T2+T3 and T3+T3 are pronounced the same way), both versions were equally correct answers.

5.2. Results

The results can be presented in many different ways, but let us first have a look at the overall picture. The following tables show averages for different aspects of the study (for a list of participant performance, please refer to appendix D). I will discuss the data presented in these tables more thoroughly in section 5.3.

First, in Table 2 we have the average for the two groups: traditional T3 (the control group) and low T3 (the test group). The groups average scores are given, both expressed as a percentage and in absolute points. The result has also been divided into pronunciation and listening for both these groups. The final column shows the difference between the two groups.

Table 2: Overview of averages

	Traditional T3	Low T3	Traditional/Low difference
Total score	52% (50.4 points)	71% (67.9 points)	+18% (+17.5 points)
Production	59% (21.4 points)	72% (26.1 points)	+13% (+4.7 points)
Perception	49% (29.5 points)	70% (41.9 points)	+21% (+12.4 points)

Second, the figures in Table 3 only show results for the third tone. That is, how often did students produce or perceive T3 correctly. Again, the results have been divided into the two test groups as well as a comparison between the two. The results for pronunciation and listening have also been separated.

Table 3: Averages of T3 only tone performance

	Traditional T3	Low T3	Traditional/Low difference
Total score	48% (11.9 points)	78% (19.4 points)	+30% (+7.5 points)
Production	56% (4.4 points)	75% (6.0 points)	+19% (+1.6 points)
Perception	44% (7.5 points)	79% (13.4 points)	+35% (+5.9 points)

Third, Table 4 shows results in the same way, but this time for all tones except T3, again listed by control and test group as well as pronunciation and listening.

Table 4: Averages of non-T3 tone performance

	Traditional T3	Low T3	Traditional/Low difference
Total score	54% (38.4 points)	68% (48.5 points)	14% (10.1 points)
Production	59% (16.4 points)	72% (20.1 points)	13% (3.6 points)
Perception	51% (22.0 points)	66% (28.5 points)	15% (6.5 points)

Finally, the results in Table 5 shows the rate of confusion of different tones. The first row shows T3/T2 confusion when the correct answer was T3, but students incorrectly gave T2 as the answer. The second row shows the opposite situation, where T2 was the correct answer, but T3 was given by the student. Similarly, the results for T3/T4 confusion have also been given.

Table 5: Averages for confusing T3/T2 and T3/T4

	Traditional T3	Low T3
T3 correct, answered T2	19%	10%
T2 correct, answered T3	24%	15%
T3 correct, answered T4	24%	8%
T4 correct, answered T3	8%	4%

5.3.Statistical analysis

There are many ways of comparing data between two tests groups, but in this study, I have chosen to use unpaired t tests to analyse the differences in performance between the test group and the control group. This kind of test is used to show whether a difference between unrelated groups is statistically significant or not. For more information about methods for statistical analysis, please refer to Hinkle, Weirsma & Jurs (2003). Using an unpaired t test, we can see that the difference is very statistically significant (the result is $p<0.01$, where any value below $p=0.05$ is considered to be statistically significant) and thus we can reject the hypothesis that the difference between the groups is simply because of random chance.

However, since no pre-test was conducted, the difference between the groups can be attributed to other factors; we cannot be sure that the superior results from the low T3 group are due to the difference in teaching method. Since other factors during the experiment were kept constant, only the participants themselves might skew the results. Perhaps participants in the test group just happened to be better at tone perception and production in general, regardless of the teaching method?

If this was the case, we would expect the results in the test group to exceed the results in the control group even when the third tone is not involved, i.e. for tones for which the teaching method was identical for the two groups. This is not entirely fair, because reduced complexity of tone sandhi rules might enable students to learn unrelated tones better because of a reduced overall mental load. Looking at the data for non-T3 performance, we see that this is indeed the case. The control group (traditional T3) received an average of 38.4 points for non-T3 tones and the test group (low T3) received an average of 48.5. This difference is also significant ($p<0.05$), suggesting that the control group was indeed better at tones in general.

The analysis does not end here, however. If we look at the T3 only data, we can see that the difference is much larger than for non-T3 data. The control group (traditional T3) received an average of 11.9 points for T3 only and the test group received an average of 19.4. Since we know that the test group performed better overall for tones other than T3, we can subtract this difference from the T3 data, which would then show effects not related to the students aptitude to learn tones in general.

Comparing the compensated data with an unpaired t-test still shows that the difference is very significant ($p<0.01$), thus indicating that the increase in the T3 performance of the test group (low T3) cannot be attributed to their overall better performance on tones in general.

6. General discussion and conclusion

In the introduction to this thesis, two objectives were specified:

1. Explore the theoretical and pedagogical difference between different versions of third tone instruction
2. Examine empirically the viability of teaching the third tone as a low tone rather than the traditional falling-rising variety

Regarding the first objective, two different varieties of the third tone were found (see chapters three and four), one falling-rising variety (called traditional T3) and one low variety (called low T3). These two were compared from a pedagogical and practical point of view and it was found that the there is substantial reason to believe that a low T3 variety would be beneficial for tone instruction purposes.

Regarding the second objective, an empirical study was carried out and it was shown that teaching T3 as a low tone did indeed significantly increase the overall performance of beginner students ($p<0.01$). Comparing only the results for tone production, the results were also significant ($p<0.05$) and the same was found for tone perception only ($p<0.01$). The difference between the two groups was significant even when compensating for the fact that the test group performed better overall.

One of the reasons to use a low T3 was to avoid the confusion that otherwise arises between T2 and T3. This confusion was indeed observed (in the control group, 24% of second tones were mistaken for third tones and 19% of third tones were mistaken for second tones (this should be compared with a random answer, which gives this particular mistake one third of the time). For the test group, this was less of a problem, with 15% of T2 mistaken for T3, and 10% of T3 mistaken for T2.

It was feared that teaching T3 as a low tone (21) instead of a falling-rising tone (214) would lead to confusion between T3 and T4 instead. In the control group, 24% of third tones were incorrectly given as fourth tones, most likely because students did interpret the low tone as a fall (perhaps because the associated T3 with a dip and not just the low part). The opposite mistake, i.e. mistaking a T4 for T3 was not common and occurred only in 8% of the cases. In the test group, both these mistakes were very uncommon (8% and 4% respectively). Thus, the use of the low T3 did not show the expected increase

in T3/T4 confusion, but instead helped participants more than the use of traditional T3. Unfortunately, the data is insufficient to analyse these mistakes more closely.

6.1. Limitations of the empirical study

The theoretical arguments for teaching T3 as a low tone are robust, but there are several limitations to the empirical results that would need further and more rigorous research to circumvent. Most of these limitations impose themselves because of practical problems.

First, it can be argued that the sample size is too small, even though the overall results are significant. More students would make possible a more detailed analysis of various kinds of mistakes and might generate more interesting conclusions about the nature of the two instruction methods.

Second, the participants were all complete beginners. The reason for this was that participants were not supposed to have been exposed to formal teaching in Chinese before. Still, it might be that participants showing up for the tone instruction are not representative of people who learn Chinese in general, thus limiting the implications of the current study.

Third, the time available was too short to conduct anything but a short-term study (one hour per session). It would have been far better to arrange several test sessions where students ability to produce and perceive tones could be properly assessed before and after the test. Then, the results could be either verified or rejected with follow-up tests. This would significantly increase the accuracy of the results.

Fourth, testing the perception and production of tones in a university language laboratory under controlled circumstances is not the same as speaking and understanding naturally occurring language (raising an issue of ecological validity, while escaping the wildly changing parameters of the classroom). Tone is a complex feature that might be influenced by things not covered by the present study.

Fifth, this study used only monosyllabic and disyllabic units, all based on one single syllable. This was done to eliminate pronunciation problems related to other features than tone. Still, tones behave slightly differently in different contexts and for different syllables, which also has a limiting effect on the present study. A more complete study would include other syllables incorporated into longer strings of

syllables.

Sixth, it is likely that mapping tones to lexical meaning in a natural environment is different from reading or writing tone marks on a test sheet. However, this difference should be equally applicable to both the control group and the test group.

Seventh, it is possible that I, when teaching the third tone, have presented the two variants in different ways. Naturally, I have done my very best to treat the two versions in exactly the same way, but the risk of my influencing the results should not be ruled out completely.

6.2. Further research

Based on the above-mentioned limitations, further research is needed to solidify the results found in this study. Although this study strongly indicates that teaching T3 as a low tone has some merits, it cannot definitely prove that this is the case. Some suggested aims for further research are as follows:

First, a more rigorous study done either over a longer period of time or with more students would provide more detailed results. The current study shows that teaching T3 as a low tone has merits beyond the theoretical, but further research is needed to study this teaching method in more detail.

Second, studying tone in a more natural environment would provide insight into the suggested advantage of teaching T3 as a low tone. If the results in this study can be confirmed to be relevant for naturally produced language and truly help students to better understand and produce Standard Chinese, only then can teaching T3 as a low tone be considered to be superior to the traditional approach.

Third, investigating further the problem of T3/T2 and T3/T4 confusion might provide further insights that would prove helpful when teaching beginner students. Even though this does not seem to be a problem in the current study, the data is too meagre to prove that conclusively. If the T3/T4 confusion is insignificant when teaching T3 as a low tone, then one of the major arguments against doing so disappears.

6.3.Implications

Even though the results from this particular study seem to be clear-cut, more research along the lines suggested above would be necessary before any major conclusions can be drawn. It does seem like there is a viable and indeed more effective way of teaching the third tone compared to the traditional falling-rising variety found in most textbooks and most classrooms.

Personal experience from teaching these two methods, both in this study and elsewhere, tells me that the low variety is more efficient, especially at the very beginning, since the tone sandhi rules becomes much easier to apply. This benefit has been clearly shown in this study and it seems likely that it would continue to be significant for longer durations of time. However, this is an educated guess and not something that is proven in this study. It might be that clear benefits are only obtained at the very beginning and that the choice of third tone presentation matters less and less the more the students learn.

Still, showing that it is possible to aid beginners' acquisition of both tone perception and production in this way is important. To conclude, my hope is that this study and future studies in this general direction will be of help when improving the way Chinese is taught in Sweden and elsewhere. This is one important step along the way, but there is yet much left to do.

7. References

Chao, Yuan-ren. (1968). *A Grammar of Spoken Chinese.* Berkeley: University of California Press.

Cheng, Lisa Lai. (1987). *Derived domains and Mandarin Third Tone Sandhi.* Online reference: https://openaccess.leidenuniv.nl/bitstream/ 1887/2458/1/349_029.pdf. Downloaded 2011/05/08

DeKeyser, Robert. (2003). Implicit and Explicit Learning. In In (ed.) Doughty, C.J & Long, M.H., *The Handbook of Second Language Acquisition.* Blackwell Publishing.

Doughty, Catherine J. (2003.) Instructed SLA. In (ed.) Doughty, C.J & Long, M.H., *The Handbook of Second Language Acquisition.* Blackwell Publishing.

Duanmu San. (2007). *The Phonology of Standard Chinese.* New York: Oxford University Press.

Hinkle, Dennis E., Wiersma, William; Jurs, Stephen G. 2003. *Applied Statistics for the Behavioral Sciences, Fifth Edition.* Boston: Houghton Mifflin.

Jongman, Allard; Wang, Yue. (2006). Perception and production of Mandarin tones. In *Handbook of East Asian Psycholinguistics.* Volume 1: Chinese. Cambridge, UK: Cambridge University Press.

Kaan, E., Barkley, C. , Bao, M. , & Wayland, R. (2008). *Thai lexical tone perception in native speakers of Thai, English and Mandarin Chinese: An event-related potentials training study.* BMC Neuroscience, vol. 9, no. 53.

Kratochvil, Paul. (1968). T*he Chinese Language Today: Features of an Emerging Standard.* London: Hutchinson University Library.

Lee, Chao-Yang; Tao, Liang; Bond, Z. S. (2010). *Identification of Acoustically Modified Mandarin Tones by Non-native Listeners.* Language and Speech, vol. 53, no 2.

Lee-Schoenfeld, Vera; Kandyboswicz, Jason. (2008). *Sandhi Sans Derivation: Third Tone Patterns in Mandarin Chinese.* U. Penn Working Papers in Linguistics, Vol. 4, no. 2.

Li, Charles N.; Thompson, Sandra A. (2008). *漢語語法(修訂版) [Mandarin Chinese – A Functional Reference Grammar (Revised Edition)]*. 臺北: 文鶴出 版有限公司.

Liao, Rong-rong. (1994). *Pitch contour formation in Mandarin Chinese: A Study of Tone and Intonation.* Ohio State University, doctoral dissertation.

Lin, Chris Wen-Chao. (2002). *X-Slots, Feature Trees, and the Chinese Sound* Inventory: A Twenty-First Century Take on Mandarin Phonological *Structure.* Journal of the American Oriental Society, vol. 122, no. 3.

林华 [Lin, Hua]. (1998). *“调素”论及普通话连读变调. [“Tonal Elements” and Tone Sandhi in Putonghua].* 中国语文 [Chinese Language]. 第 1 期, 31-39 页

Lin, William C.J. (1985). *Teaching Mandarin Tones to Adult English Speakers: Analysis of Difficulties with Suggested Remedies.* RELC Journal, vol. 16, no. 2.

Linge, Olle. (2011). *Teaching the third tone in Standard Chinese : Tone representation in textbooks and its consequences for students* . Lund University. Online reference: http://www.lunduniversity.lu.se/o.o.i.s?id=24923&postid=1979823. Downloaded 2012-03-26.

Liu, Si-yun; Samuel, Arthur G. (2004). *Perception of Mandarin Lexical Tones when F0 Information is Neutralized.* Language and Speech, vol. 47, no. 2.

Liu, Y., Wang, M., Perfetti, C., Brubaker, B., Wu, S., et al. (2011). *Learning a tonal language by attending to the tone: An in vivo experiment.* Language Learning, vol. 61, no. 4, pp. 1119-1141.

McGinnis, Scott. (1997). *Tonal spelling versus diacritics for teaching pronunciation of Mandarin Chinese.* Modern Language Journal, vol. 81, no. 2, p. 228.

Saito, K. (2011). *Examining the role of explicit phonetic instruction in native-like and comprehensible pronunciation development: An instructed SLA approach to l2 phonology.* Language Awareness, vol. 20, no. 1, pp. 45-59.

Schmidt, R. W. (2001). Attention. In P. Robinson (ed.), *Cognition and Second Language Instruction.* Cambridge: Cambridge University Press, pp. 3-32.

Shen, Xiao-nan. (1989). *Interplay of the four citation tones and intonation in Mandarin Chinese.* Journal of Chinese Linguistics, vol. 17, no. 1.

Shen, Xiao-nan. (1990). *The Prosody of Mandarin Chinese.* Berkeley: University of California Press.

Shen, Xiao-nan; Lin, Mao-can. (1991). *A Perceptual Study of Mandarin Tones 2 and 3.* Language and Speech, vol. 34, no. 2.

Shen, Xiao-nan; Lin, Mao-can. (2002). *Concept of tone in Mandarin revisited: A perceptual study on tonal coarticulation.* Language Sciences, vol. 13, no. 3-4.

Shih, Chi-lin. (1986). *The Prosodic Domain of Tone Sandhi in Chinese.* University of California, San Diego, doctoral dissertation.

Shih, Chi-lin. (1997). *Mandarin Third Tone Sandhi and Prosodic Structure.* In: Wang, Jia-lin (editor); Norval Smith (editor). *Studies of Chinese Phonology.* Berlin: Walter de Gruyter & Co.

Towell, Richard., Hawkins, Roger. (1994). *Approaches to Second Language Acquisition.*

Viktorsson, Sören. 2010. *Kinesiska är en pedagogisk utmaning.* [Chinese is a Pedagogical Challenge]. Skolvärlden. Online reference: http://www.skolvarlden.se/artiklar/kinesiska-ar-en-pedagogisk-utmaning. Downloaded 2012-05-10.

葉德明 [Ye De-ming]. (2002). *華語文教學規範與理論基礎* [Theoretical Foundations of Teaching Chinese as a Foreign Language]. 臺北：師大書苑 [Taipei: Shida Shuyuan].

Yip, Moira. (1980). *The Tonal Phonology of Chinese.* Massachusetts Institute of Technology, doctoral dissertation.

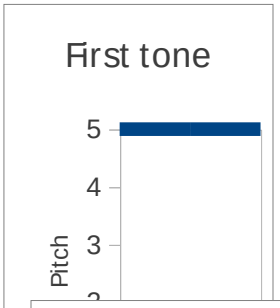
Yip, Moira. (2002). *Tone.* Cambridge: Cambridge University Press.

8. Appendix

8.1. Appendix A – Traditional T3 instruction

The following instructions were given to students in Swedish. The instructions were also given orally. In order to decrease the number of pages required, the following presentations have been altered slightly (scaled down and re-arranged) to be more efficient.

Enskilda toner

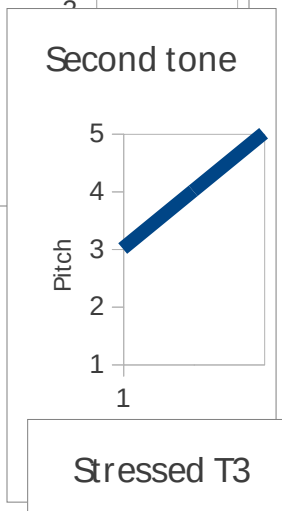


Första tonen är en hög, ganska lång ton.

Den skrivs som ett rakt streck över vokalen: **mā**

En ljudfil med tonen finns i “enskilda toner”.

Träna både på att lyssna och att uttala tonen!



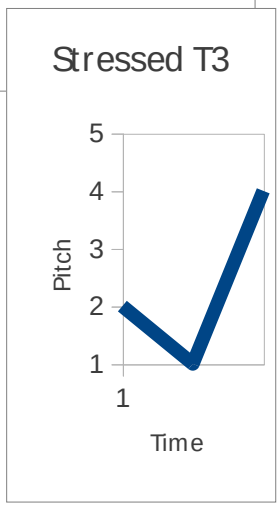
Den andra tonen är en stigande ton.

Den skrivs med ett uppåtgående streck: **má**

Tonen liknar hur vi på svenska ställer frågor: “Ja?”

En ljudfil med tonen finns i “enskilda toner”.

Träna både på att lyssna och att uttala tonen!



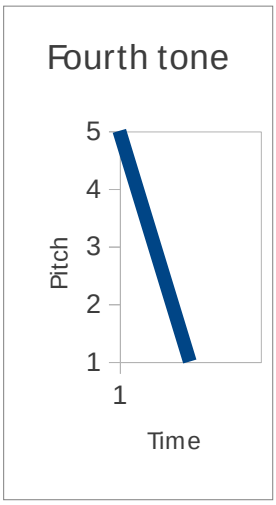
Den tredje tonen är fallande-stigande ton.

Den skrivs som ett litet v på vokalen: **mă**

Tredjetonen har “knarr”, ungefär som i “näe”.

En ljudfil med tonen finns i “enskilda toner”.

Träna både på att lyssna och att uttala tonen!



Fjärdetonen är en snabbt fallande ton.

Den skrivs som ett nedåtlutande streck: **mà**

Fjärdetonen uttalas ungefär som en svordom: “shit”

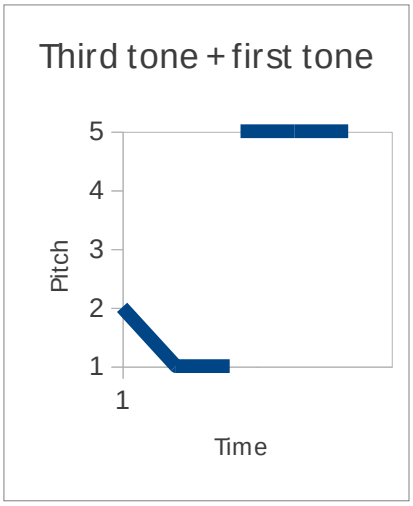
En ljudfil med tonen finns i “enskilda toner”.

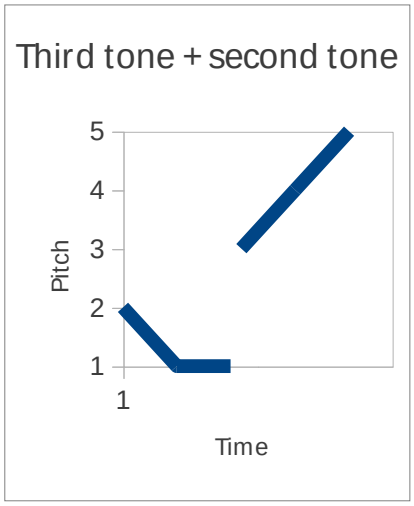
Träna både på att lyssna och att uttala tonen!

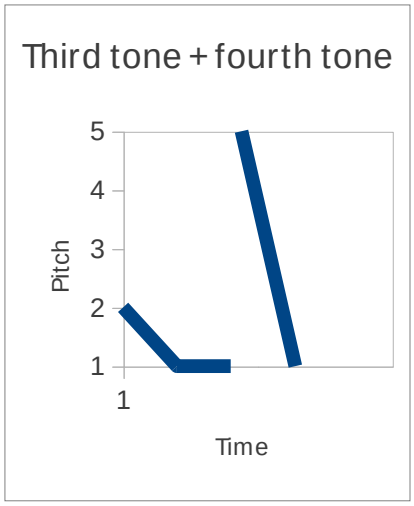
Tonkombinationer

De allra flesta tonkombinationer är helt enkelt två enskilda toner uttalade i följd. Till exempel blir en första ton följd av en andra ton helt enkelt en hög ton som följs av en stigande ton. Alla tonkombinationer finns som ljudfiler.

Tredjetonen är speciell eftersom den ändrar sig beroende på vad för ton som kommer efter. Det finns tre möjliga varianter. Till att börja med blir tredjetonen en låg ton när den följs av en första, andra eller fjärde ton. Tonen är alltså samma som tidigare men istället för att vända och gå upp stannar tonen längst ner.

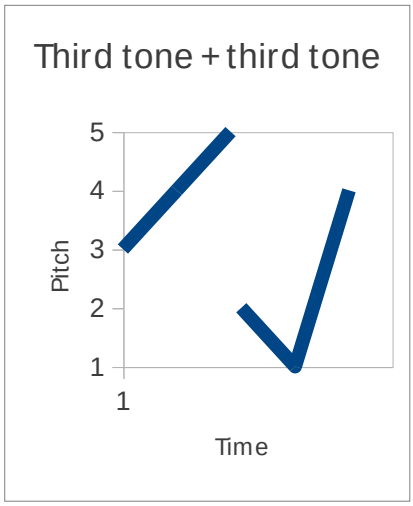






Sedan uttalas 3:e tonen som en 2:a ton om det kommer en till 3:e ton direkt efteråt, så **mă mă** uttalas alltså **má mă**.

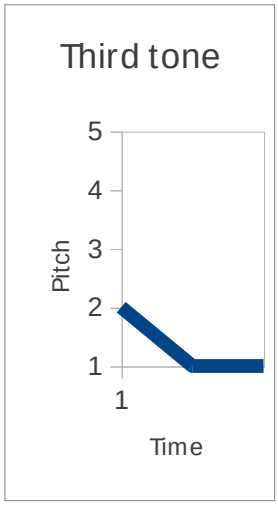
Den vanliga hälsningsfrasen **nǐhǎo** uttalas så här!



8.2. Appendix B – Low T3 instruction

The instructions for the test group was identical to the control group, except for the presentation of the third tone. To save space, graphs and descriptions identical to those in Appendix A have not been repeated here.

Enskilda toner



Den tredje tonen är en låg, fallande ton.

Den skrivs som ett litet v på vokalen: **mă**

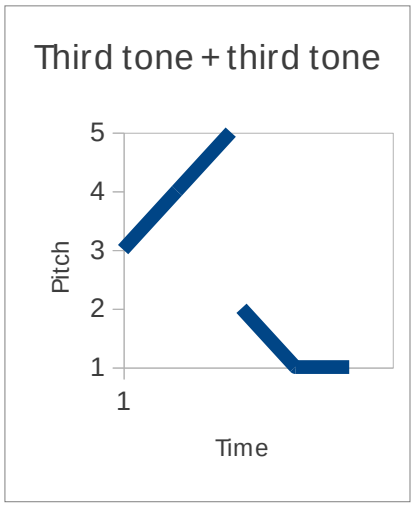
Tredjetonen har “knarr”, ungefär som i “näe”.

En ljudfil med tonen finns i “enskilda toner”.

Träna både på att lyssna och att uttala tonen!

Tonkombinationer

De allra flesta tonkombinationer är helt enkelt två enskilda toner uttalade i följd. Till exempel blir en första ton följd av en andra ton helt enkelt en hög ton som följs av en stigande ton. Alla tonkombinationer finns som ljudfiler. redjetonen är speciell eftersom den blir en stigande ton framför en annan tredjeton.



3:e tonen uttalas som en 2:a ton om det kommer en till 3:e ton direkt efteråt, så **mă mă** uttalas alltså **má mă**.
Den vanliga hälsningsfrasen **nǐhǎo** uttalas så här!

När 3:e tonen betonas särskilt eller uttalas helt självständigt får den en uppåtgående “svans”. Detta är vanligast i mycket tydligt tal. Glöm inte att det fortfarande är mycket viktigt att gå ner lågt först!

8.3. Appendix C – Practising and testing T3

The following instructions were handed out to students (in Swedish) along with oral instructions matching the written ones.

Övningar

Det är nu dags att träna mer på det du har lärt dig hittills. Tidigare i häftet finns förklaringar till hur tonerna ska uttalas och samtliga toner finns också inspelade så att du kan lyssna på dem igen. Övningstiden är uppdelad i två delar, en där du tränar själv och en där du gör det med din granne.

Öva på egen hand (10 minuter)

Det är meningen att du ska träna både på att lyssna och att själv uttala tonerna. Tveka inte att be om hjälp om det är något som är oklart eller om du tycker något är svårt.

Gör så här:

1. Lyssna igenom de inspelade tonerna och härma så noga det går. Om någon ton är extra svår, prova gärna flera gånger.
2. Lyssna på “förövning.mp3” och se om du kan höra vilka toner som sägs. Svaren ges direkt efter varje ton eller tonkombination.

De här övningarna varar i ungefär tio minuter, sedan är det dags att gå vidare. Du behöver själv inte hålla reda på tiden, så fortsätt träna till läraren bryter.

Öva tillsammans (10 minuter)

I nästa del är det tänkt att du ska träna på tonerna tillsammans med någon som sitter intill. Det är bäst att träna i par, men grupper om tre går också bra. Läraren kommer att gå runt och hjälpa till.

Gör så här:

1. Turas om att uttala tonerna och försök att få det så bra som möjligt, fråga läraren om du har några frågor
2. Turas om att uttala tonerna och låt din partner gissa vilka toner du säger. Detta fungerar både som hörförståelse och uttalsträning.

De här övningarna varar också i ungefär tio minuter, varefter det är dags för ett mer ordentligt test.

Test 1 - uttal

Spela in när du själv läser upp följande toner med stavelsen “ma”. Om du läser fel på någon är det okej att läsa igen, men säg till i så fall. Det går bra att fundera lite, men det är inte tillåtet att bläddra tillbaka och läsa instruktionerna.

Säg också till när du börjar med en ny del, så säg “del ett” först innan du börjar läsa tonerna, sedan “del två” innan du går vidare till nästa del.

Del 1	**Del 4**
mā	mà mă
má	má mà
mă	mă mā
mà	mă má
Del 2	**Del 5**
mà má	má mā
mā má	mă mà
má má	má mă
mà mà	mă mă
Del 3	
mà mā	
mā mà	
mā mă	
mā mā	

Test 2 - hörövning

I den här övningen kommer du att få lyssna på ett antal toner. Lyssna noga och skriv vilken eller vilka toner du hör. Markera tydligt med tonstreck över stavelsen, precis som tidigare: mā má mă mà.

Hörövningen är uppdelad i flera delar med en längre paus mellan del 4 och del 5.

Del 1	**Del 5**
A) ma	A) ma ma
B) ma	B) ma ma
C) ma	C) ma ma
D) ma	D) ma ma
Del 2	**Del 6**
A) ma ma	A) ma ma
B) ma ma	B) ma ma
C) ma ma	C) ma ma
D) ma ma	D) ma ma
Del 3	**Del 7**
A) ma ma	A) ma ma
B) ma ma	B) ma ma
C) ma ma	C) ma ma
D) ma ma	D) ma ma
Del 4	**Del 8**
A) ma ma	A) ma ma
B) ma ma	B) ma ma
C) ma ma	C) ma ma
D) ma ma	D) ma ma

8.4. Appendix D – Test results

Control group (traditional T3)

Sample	All	Non T3	T3 only
1	75	56	19
2	62	46	16
3	60	50	10
4	34	29	5
5	52	40	12
6	34	26	8
7	29	25	4
8	71	53	18
9	38	30	8
10	91	69	22
11	44	28	16
12	37	32	5
13	26	17	9
14	40	33	7
15	68	56	12
16	46	34	12
17	56	36	20
18	44	32	12

Test group (low T3)

Sample	All	!T3	T3
1	91	66	25
2	72	51	21
3	44	32	12
4	90	67	23
5	86	63	23
6	46	28	18
7	85	64	21
8	75	52	23
9	52	39	13
10	70	50	20
11	89	67	22
12	94	70	24
13	27	21	6
14	67	45	22
15	60	40	20
16	58	35	23
17	89	66	23

8.5. Appendix E – Recruitment information

The following information was used to recruit participants to the empirical study. The information was distributed primarily to students and staff at the Department of Culture and Communication, Linköping University.

Vill du veta hur häst, mamma och hampa kan låta nästan likadant på kinesiska?

你想知道為什麼中文的馬、媽與麻的發音聽起來都很像嗎？

Då är du varmt välkommen till denna lektion där toner i kinesiska kommer att förklaras och tränas. Utöver att lära dig grunderna om hur toner fungerar kommer du också att bidra till forskning ämnad att göra kinesiska lättare att lära sig. Lektionen varar i knappt en timme och alla deltagare bjuds på fika efteråt.

Alla som inte har läst kinesiska förut eller har kinesisk bakgrund är välkomna! Om du inte själv har lust eller tid kanske du känner någon som har det?

Undervisningen sker i språklabbet på Linköpings universitet i Key-huset (lokalen ligger innanför huvudentrén längst in till vänster). Dessa tider finns tillgängliga, men notera att du måste anmäla dig i förväg! Skicka ett mail till mig och tala om vilken tid som passar dig bäst (det är alltså samma innehåll alla gånger, så du behöver bara komma en gång):

[A list of available dates and times in late November and early December 2011 has been omitted]

E-postadress för intresseanmälan: olle@linge.se

Resultatet av den här undersökningen kommer att användas i mitt examensarbete och följer forskningsetiska principer. Till exempel är all data som samlas in anonym.

Har du några frågor är det bara att höra av dig!

Vänliga hälsningar,

Olle Linge