Applying the strategic self-regulation model to tone acquisition in Mandarin: a case study

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APPLYING THE STRATEGIC SELF-REGULATION MODEL TO TONE ACQUISITION IN MANDARIN: A CASE STUDY

by

Adele L. Touhey

A Dissertation
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ABSTRACT

This dissertation examines the experience of college-level American native English-speaking students who are learning elementary Mandarin Chinese as a foreign language acquire tone. Oxford (2011)’s Strategic Self-Regulation (S²R) Model is used to analyze the findings in a cross-case analysis. The findings showed that students in this study employed a variety of language learning strategies across all dimensions (cognitive, affective, and sociocultural-interactive), with the highest number of tactics being categorized as metacognitive and affective strategies. The results indicated that fostering a positive classroom environment can contribute to reduced learner anxiety and overall increased positive emotions related to tone acquisition. This contributes to learner motivation and positive beliefs about oneself as a learner.

Key words: SLA, Chinese as a foreign language, tone pedagogy, self-regulation
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References
Key Terms List

1. Affect consists of beliefs, emotions, attitudes, and motivation (Oxford, 2016)
2. Affective strategies: In the S²R Model they refer to activating supportive emotions, beliefs and attitudes and generating and maintaining motivation.
3. Chinese as a foreign language (CFL); refers to the teaching and learning of Mandarin as a subsequent language
4. Cognition refers to the mental process or faculty of knowing, including aspects such as awareness, perception, reasoning, and certain kinds of judgements (Oxford, 2016)
5. Cognitive strategies: In the S²R Model they refer to using the senses to understand and remember, activating knowledge, reasoning, conceptualizing with details, conceptualizing broadly, and going beyond the immediate data.
6. Mixed methods; combining both qualitative and quantitative methods in one research design
7. Native English Speaker/Speaking (NES): someone who identifies as having English as their first language or mother tongue
8. L1: first language
9. L2: second language; technically this may refer to any language other than one’s L1
10. Language Learning Strategies (LLS): (Oxford, 1990) defines LLS as “specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to new situations” (p. 8). In the S²R Model they refer to general metastrategies, metacognitive strategies, meta affective strategies, meta sociocultural-interactive strategies, affective strategies, cognitive strategies, and sociocultural-interactive strategies.
11. Metastrategies for general planning and control: In the S^2R Model they refer to planning, implementing plans, paying attention, obtaining and using resources, orchestrating strategy use, monitoring, and evaluating.

12. Metaknowledge: Knowledge of six distinct areas related to cognition, affect, and sociocultural interaction (person knowledge, group or culture knowledge, task knowledge, whole-process knowledge, and conditional knowledge).

13. Metacognitive knowledge: Metaknowledge as applied to cognition.

14. Metacognition: Metacognitive knowledge plus metacognitive regulation (the use of metacognitive strategies).

15. Meta-affective knowledge: Meta knowledge as applied to affect.


17. Meta sociocultural interaction (SI) knowledge: Meta-SI knowledge is the form of metaknowledge that is directed toward the cultural and communication dimension of L2 learning (Oxford, 2016) Meta-SI knowledge plus meta-SI regulation (the use of meta-SI strategies).

18. Metacognitive strategies: In the S^2R Model they refer to planning for cognition, implementing plans for cognition, paying attention to cognition, obtaining and using resources for cognition, orchestrating cognitive strategy use, monitoring cognition, and evaluating cognition.

19. Meta-affective strategies: In the S^2R Model they refer to planning for affect, implementing plans for affect, paying attention to affect, obtaining and using resources for affect, orchestrating affective strategy use, monitoring affect and evaluating affect.
20. Meta sociocultural-interactive (SI) strategies: In the S²R Model they refer to planning for contexts, communication, and culture, implementing plans for contexts, communication, and culture, paying attention to contexts, communication, and culture, obtaining and using resources for contexts, communication, and culture, orchestrating strategies for contexts, communication, and culture, monitoring contexts, communication, and culture, and evaluating contexts, communication, and culture.

21. Second Language Acquisition (SLA): the field of study concerning the learning of languages other than one’s first language or mother tongue

22. Strategy (in the S²R Model): Specific goal directed actions that a given learner employs in a particular sociocultural setting for particular learning-related purposes and needs. (Oxford, 2011)

23. Sociocultural-interactive strategies: In the S²R Model they refer to interacting to learn and communicate, overcoming knowledge gaps in communicating, and dealing with sociocultural contexts and identities.

24. Sociocultural interaction refers to the interaction of the three layers of culture: social, historical, and imaginative (Oxford, 2016)

25. Tactics: Specific manifestations of a strategy or metastrategy by a particular learner in a given setting for a certain purpose (Oxford, 2011)

26. Tonal Competence: the ability to effectively use the 4 tones of Mandarin Chinese in a way that is acceptable to a hearer.
Chapter 1: Introduction

This study examines two adult learners and one instructor in the context of an elementary Mandarin Chinese class at the university level to better understand the relationship between tone acquisition, a challenging aspect of Mandarin for learners whose native language is English, and language learning strategies used by the learners both in and out of class.

1.1 Problem Statement

Mandarin Chinese (henceforth Mandarin)\(^1\) is a tonal language. Essentially, this means that a pitch is attached to each syllable, which helps to distinguish word meaning, making it a crucial feature of the language. As Orton (2013) writes: “a syllable without a tone is a purely abstract unit in Chinese, as spoken syllables cannot be divorced from tones” (p. 16). English does not have lexical tone, and therefore when a native English speaker learns Chinese, tone often presents a challenge to learners “despite long and dedicated labors” (Pelzl, 2019, p.51). This problem has not gone unnoticed among researchers in this area, yet learners continue to struggle with tones.

It is well documented that mastery of the tonal system is one of the most challenging aspects of Mandarin for learners of non-tonal language backgrounds, although the reason for that is not always clear. (Chao, 1930) first identified a means to write tones and later developed a tonal spelling system (Gwoyeu Romatzyh) to facilitate Westerners who were trying to learn Mandarin. (Miracle, 1956)

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\(^1\) Throughout this study, the term “Mandarin” is used as a synonym for Putonghua 普通话, or “the common speech,” which in 1956 was adopted by the government of the People’s Republic of China as official name of the standardized spoken form of modern Chinese.
1989) noted that students have problems with tones both in their individual contour and tonal register while (S. Shen Xiaonan, 1989) believes that students have problems with register only. (Q. Chen, 2001) notes that the “acquisition of the Mandarin tone system has long been observed as one of the most difficult challenges for English-speaking adult learners” (p. 1). (Baills et al., 2019) write about this and give examples of other studies that identify this issue as well: “for speakers of non-tonal languages, acquiring these lexical tones has been shown to be particularly difficult (e.g. Wang et al., 2003).” While this list is not exhaustive, it shows that for essentially the past century tonal competency has proved to be a challenge for learners of non-tonal language backgrounds.

(Orton, 2013) emphasizes the importance of improving tone pedagogy. She provides four strong reasons why tones matter: unintelligibility by the learner as a hearer, issues with vocabulary retention, unintelligibility by the learner as a speaker, and negative effects on learner motivation. Research shows oral skills are poorly mastered not only because they are challenging but also because they are poorly taught or ignored and not taught at all, with a major emphasis on isolated tones based on modeling. Evidence for this is also found in textbooks which often introduce the Pinyin and tonal systems early on and virtually ignore them after first semester Chinese. Therefore, it is clear that there is room for improvement when it comes to the teaching and learning of tones among learners of Chinese as a foreign language (CFL; refers to Mandarin Chinese). One area that has not been deeply explored that may prove to be effective for improving learners’ ability to acquire tones is helping learners utilize various language learning strategies (LLS).

1.2 Significance of the Study

This study investigates how tone in L2 Mandarin is taught and learned through the lens of strategy theory. This theory, which is described in detail in section 2.1, involves three core
dimensions through which language learning takes place: cognitive, sociocultural-interactive, and affective. The goal is to begin to understand the relationship between learner affect (emotions, beliefs, attitudes and motivation) and affective strategies listed in the S²R Model (Oxford, 2011) and oral production of Mandarin tones. Affective strategies are important because language learning can be stressful, and emotions, beliefs, and attitudes can have an impact on L2 learning outcomes. Proficiency will also be taken into account as a factor in this study.

Previous research has focused more on the cognitive and sociocultural-interactive aspects of strategy use in language learning. Because the existing body of research lacks a deep understanding of the role of affect in L2 language learning, this study provides an opportunity to gain insight into this area, which was one of the main goals of this study, in addition to seeing both the cognitive and socio-cultural interactive dimensions as well.

Another reason this study is necessary is that CFL learners’ tonal competency and attitudes towards tone have not been thoroughly investigated qualitatively. As will be shown in the literature review, by and large the research in CFL is quantitative. This necessarily leaves out many perspectives including giving a voice to the students. Therefore, the kinds of strategies that learners use and their attitudes towards learning tones in Mandarin will also be explored in this study via their own words in interviews. Therefore, this study is an opportunity to answer these questions, which will ultimately lead to improved CFL teaching and learning. In sum, there several reasons why this is significant: strategy use studies in non-EFL/ESL contexts is scarce and the S²R Model has not been used yet as applied to the learning of Mandarin, there is a need for qualitative designs in CFL literature, and finally, a new model emerging in strategy theory.

When surveying strategy use for language learning research EFL studies are the most prevalent, followed by research in European languages. There are relatively few strategy studies
focusing on Asian languages and even fewer focusing on Chinese as a foreign language, and virtually none with native English-speaking learners as participants (Ma et al., 2017). What’s more, the CFL strategy studies that have been conducted have focused largely on writing strategies for CFL learners. Indeed, they have proven to be quite successful. The most widely referred to study in the literature is that of (H. H. Shen, 2005) who studied encoding and retrieval strategies among learners from beginner to advanced proficiency levels. This study’s findings were confirmed by (J. Wang et al., 2009). (Sung, 2011) published a study about strategy use in writing achievement of CFL learners and noted that there is still a lack of studies in CFL strategy theory for students of the spoken language (p. 67). Thus, the present study examines strategy use in CFL in a previously unexplored area: strategy use for oral proficiency, specifically focusing on tones among CFL learners who are native English speakers.

Secondly, this study will employ a case study design and is therefore qualitative in nature. Aside from a very recent study by (Bryfonski & Ma, 2020) and a quantitative study by (A. W. Liu, 2014), most research in CFL tone pedagogy is quantitative only. Quantitative studies use statistics to test a hypothesis. While these studies are valuable for objective information, they leave out the perspectives of the learners. This study focuses directly on the perspectives of two learners.

Finally, although strategy use has been studied for the past several decades, (Hsiao & Oxford, 2002; O’Malley et al., 1985; Oxford, 1990; Stevick, 1976), a new model has emerged in the past several years. (Oxford, 2016) proposed The Strategic Self-Regulation (S2R) Model of Language Learning. Because of its infancy, there are an extremely limited number of studies utilizing this model, and none currently exist within the area of CFL. Within this model, the dimension of affect,

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2 The most numerous studies in East Asian language learner strategy use have been done in Japanese as a foreign language (JFL). For more reading see Grainger, 2005; Mori, 2007.
or students' emotions, beliefs and attitudes as well as motivation, is included. Very little research has been done in this area outside of some data on learner anxiety. Therefore, this study will employ the S²R Model as a conceptual framework, and more information on the development and assumptions of the model are given in section 2.4.1. Oxford (2011) argues that research on proficiency level, affect, self-descriptions, and strategy use would greatly benefit the L2 research community.

1.3 Purpose Statement

The purpose of this study is to understand the adult NES CFL learners’ perspectives about their experience learning tones and will be analyzed through the lens of the S²R Model. The reason for focusing on tone is that Mandarin Chinese is a tonal language, and tones present a great challenge to learners of non-tonal language backgrounds “despite long and dedicated labors” (Pelzl, 2019, p. 51). Chen (2001) writes “acquisition of the Mandarin tone system has long been observed as one of the most difficult challenges for English-speaking adult learners” (p. 1). Orton (2013) emphasizes the importance of improving tone pedagogy by citing 4 strong reasons why tones matter: unintelligibility by the learner as a hearer (listener), issues with vocabulary retention, unintelligibility by the learner as a speaker, and negative effects on learner motivation.

This qualitative study seeks to learn more about the frequency and type of tactics, affective strategies, and meta-affective strategies used by English-speaking learners of Mandarin when learning and using tones as well as the relationship between learning tones and affective strategies. It is important to include qualitative methods to shift the focus from performance to understanding the experience of the learner.
1.4 Research Questions

This study is guided by the following research questions:

1. What language learning tactics, strategies, and metastrategies do CFL learners report when learning tones independently?

2. What language learning tactics, strategies, and metastrategies do CFL learners implement during synchronous, online instruction? What teaching strategies does the instructor use to facilitate tone learning during synchronous, online instruction?

3. What are students’ emotions, beliefs, and attitudes toward mastering the tonal system?

Chapter 2: Literature Review

This chapter focuses on relevant literature. It begins with an overview of the theoretical background guiding this study. This is followed by an explanation of tone in Mandarin Chinese so that a linguistic background is given for the reader who may not be familiar with this aspect of the language. Following that, reasons why tones present a challenge to NES are presented. It follows that research done to explore this problem is next. Since the problem is not yet resolved, a new framework--strategy theory in the form of the S²R Model--is proposed as a means of further working toward a solution to challenges NES face when learning tones in L2 Mandarin. An overview of strategy theory literature is given, as well as description of the model. Finally, a summary is presented which identifies the specific study at hand.

2.1 Strategy Theory

Language learning strategies (LLS) have been studied in connection with language learning achievement for several decades. The reason for this is that LLS have been positively associated with increased proficiency and learning outcomes (J.-Y. Lee, 2019). Mori (2007) notes that the main
finding in SLA strategy research is that the most successful learners use strategies more frequently and with more variety than unsuccessful learners. The theory behind how and why LLS work for learners is interdisciplinary and combines a multitude of other theories including complexity theory, behaviorism, sociocultural theory, activity theory onto a cognitive base (Griffiths & Oxford, 2014). Its purpose is to help researchers and language learners understand and improve language learning.

Oxford (1990) defines LLS as “specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to new situations” (p. 8). In order to measure strategy use reported by learners, a questionnaire used for identifying LLS among learners, the Strategy Inventory for Language Learning (SILL) was developed, and the latest versions published in Oxford (1990). The complete SILL measures 6 categories based on Oxford's taxonomy: cognitive, metacognitive, memory, compensation, affective, and social. Oxford identifies cognitive, memory, and compensation strategies as directly interacting with the language via mental processes (Sung, 2011). Metacognitive, affective, and social strategies are indirect because they are more organizational and have to do with the planning of how to use language rather than actual language usage (Sung, 2011). This taxonomy has been used in a multitude of studies about language learning strategy and is considered to be the most comprehensive taxonomy to date in SLA research. There are two versions of the SILL: one for foreign languages other than English and an ESL/EFL version. The SILL is described in detail in section 3.2.1.1.

Because the SILL and other Likert scale-based questionnaires, which have served as the main means of data collection for several decades, are more quantitative in nature, in recent years researchers of L2 LLS have begun to use qualitative methods as well. Woodrow (2005) (as cited in Griffiths and Oxford, 2014) emphasizes that more qualitative methods will triangulate data and strengthen the research base. Oxford (2016) wrote that “mixed designs are increasingly important
in L2 learning strategy research” (p. 232). Therefore, the number of both qualitative and mixed methods studies in strategy theory is increasing. The present study aims to add to that conversation by providing a pragmatic perspective through a qualitative study of LLS in a non-Indo European language.

2.1.1 The S²R Model. More recently, Oxford (2011, 2016) wrote a comprehensive book about the history and nature of strategy theory with practical applications for how to conduct research using what she calls The Strategic Self-Regulation (S²R) Model of Language Learning. In this book she defines self-regulated L2 learning tactics as specific, goal-directed actions that a given learner employs in a particular sociocultural setting for particular learning related purposes and needs (p. 33). Oxford cites Schunk & Ertmer (2000) to define self-regulation in learning, on which the S²R Model is based:

“Self-regulation comprises such processes as setting goals for learning, attending to concentration on instruction, using effective strategies to organize, code, and rehearse information to be remembered, establishing a productive work environment, using resources effectively, monitoring performance, managing time effectively, seeking assistance when needed, holding positive beliefs about one’s capabilities, the value of learning, the factors influencing learning, and the anticipated outcomes of actions, and experiencing pride and satisfaction with one’s efforts.” p. 631

The S²R model is based on the principle that learning requires a mediator; in other words, lack of language learning strategy knowledge is a barrier to being able to successfully learn the actual language. The instructor should guide and inform learners not only of language content but also of strategies for learning the language. Chamot (2008) reported that explicit strategy instruction
is more effective than implicit strategy instruction embedded in classroom activities without explanations and modeling.

Students may not even be aware of their LLS use, or they may not use LLS at all. Oxford (2016) refers to Vygotsky’s notion of the Zone of Proximal Development (ZPD) whereby a learner working with a more knowledgeable other (such as a tutor or teacher) can achieve learning outcomes. Oxford (2016) describes two strong assumptions of the S\textsuperscript{2}R Model:

1. Almost everyone can learn an additional language effectively by employing appropriate strategies, assuming some basic interest in learning the language and sufficient time.
2. Strategies can be learned through mediation or assistance. Not every student has strategic expertise at the outset. Expertise in employing language learning strategies “is not present in every learner; it needs to be developed” (Gu, 2010, p. 1; as cited in Oxford (2011))

In the S\textsuperscript{2}R Model, Oxford discusses several categories of knowledge and strategies: metaknowledge, dimensions, metastrategies. The six types of metaknowledge include person knowledge, group or culture knowledge, task knowledge, whole-process knowledge, and conditional knowledge. The three dimensions are cognitive, affective, and sociocultural-interactive. Cognition refers to the mental process or faculty of knowing, including aspects such as awareness, perception, reasoning, and certain kinds of judgements (Oxford, 2011). Affect consists of beliefs, emotions, attitudes, and motivation (Oxford, 2011). Sociocultural interaction refers to the interaction of the three layers of culture: social, historical, and imaginative (Oxford, 2011).
Figure 1

Types of Metaknowledge and How They Interact with the Three Dimensions of the $S^2R$ Model

<table>
<thead>
<tr>
<th>Types of metaknowledge</th>
<th>Dimensions of L2 learning in which metaknowledge operates</th>
<th>Cognitive dimension</th>
<th>Affective dimension</th>
<th>Sociocultural-interactional dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE 1: Person knowledge (can refer to knowledge of self or of another person) (Narrower)</td>
<td>TYPE 2: Group or culture knowledge (Broader)</td>
<td>Knowledge of one's own or another's cognitive level, cognitive learning style, goals, and related strengths and weaknesses</td>
<td>Knowledge of one's own or another's emotions, motivations, and related strengths and weaknesses</td>
<td>Knowledge of one's own or another's social interaction patterns, social learning style, related strengths and weaknesses, and the sociocultural setting</td>
</tr>
<tr>
<td>TYPE 3: Task knowledge (immediate L2 learning task) (Broader)</td>
<td>TYPE 4: Whole-process knowledge (longer-term, future-time orientation) (Broader)</td>
<td>Knowledge of the cognitive demands of the immediate L2 learning task</td>
<td>Knowledge of the affective demands of the immediate L2 learning task</td>
<td>Knowledge of the sociocultural-interactive demands of the L2</td>
</tr>
<tr>
<td>TYPE 5: Strategy knowledge - Knowledge of strategies and metakstrategies</td>
<td>TYPE 6: Conditional knowledge of when, where, and why to use a given strategy, drawing on the other types of metaknowledge</td>
<td>Knowledge of cognitive strategies</td>
<td>Knowledge of affective strategies</td>
<td>Knowledge of sociocultural-interactive strategies (SI) strategies</td>
</tr>
<tr>
<td>(cognitive, affective, and SI strategies and metacognitive, meta-affective, and meta-SI strategies)</td>
<td></td>
<td></td>
<td></td>
<td>Knowledge of when, where, and why to use a sociocultural-interactive strategy or a meta-SI strategy for a given purpose in a specific setting</td>
</tr>
</tbody>
</table>


The details of the metastrategies are presented visually in Figure 1. Looking at Figure 1, one can see all the levels of the $S^2R$ Model and how they are interlinked. The metastrategies include both general and specific categories. Metastrategies for general planning and control include
planning, implementing plans, paying attention, obtaining and using resources, orchestrating strategy use, monitoring, and evaluating.

**Figure 2**

*General Metastrategies and the Strategies within each Dimension of the S²R Model*


General Metastrategies include planning, implementing plans, paying attention, obtaining and using resources, orchestrating strategies, monitoring and evaluating. These can be applied to any of the three dimensions. Dimension-Specific Metastrategies therefore include the above General
Metastrategies in each of the following three dimensions: sociocultural-interactional, cognitive, affective. Strategies are defined by Oxford (2011) as specific goal-directed actions that a given learner employs in a particular sociocultural setting for particular learning-related purposes and needs. Tactics are the way a metastrategy or strategy is applied in a given context.

Looking at Figure 1 above, within the metastrategies bubble are those metastrategies as applied to the three dimensions (cognitive, affective, and sociocultural-interactive), creating metacognitive strategies, meta-affective strategies, and meta-SI strategies. Metacognitive strategies help the learner manage the cognitive dimension through planning for cognition, implementing plans for cognition, paying attention to cognition, obtaining and using resources for cognition, orchestrating cognitive strategy use, monitoring cognition, and evaluating cognition. Meta-affective strategies include planning for affect, implementing plans for affect, paying attention to affect, obtaining and using resources for affect, orchestrating affective strategy use, monitoring affect and evaluating affect. Meta-SI strategies include planning for contexts, communication, and culture, implementing plans for contexts, communication, and culture, paying attention to contexts, communication, and culture, obtaining and using resources for contexts, communication, and culture, orchestrating strategies for contexts, communication, and culture, monitoring contexts, communication, and culture, and evaluating contexts, communication, and culture.

Finally, at the strategy level exists cognitive, affective, and sociocultural-interactive strategies. Strategies in the S²R Model may be defined slightly differently than in general English usage. Oxford (2011) defines them as specific, goal-directed actions that a given learner employs in a particular sociocultural setting for particular learning-related purposes and needs (p. 24).” Cognitive strategies include using the senses to understand and remember, activating knowledge, reasoning, conceptualizing with details, conceptualizing broadly, and going beyond the immediate
data. Affective strategies refer to activating supportive emotions, beliefs and attitudes and generating and maintaining motivation. Sociocultural-interactive strategies include interacting to learn and communicate, overcoming knowledge gaps in communicating, and dealing with sociocultural contexts and identities. Within each strategy are tactics, which are “the way or ways the learner applies the strategy at a specific level in a given situation to meet immediate requirements (p. 24).”

2.1.1.1 The Affective Dimension. Traditionally the role of affect in L2 learning has been ignored, with cognition being viewed as the dominant force in L2 learning which dates back to Socrates and Kant. Macaro (2006) states affect is part of cognition, but Oxford (2011) attempted to include affect in the cognitive dimension in the S2R model and found that it is not theoretically possible. Researchers who have noted a lack of L2 studies including affect are Jacobson and Faltis (1990) as well as previous work by Oxford (1990, 1996, 2001). The idea that affect is not related to language learning can be refuted by taking a look at the ways in which affective strategies assist emotions, beliefs and attitudes in L2 learning. Research shows learners are successful in overcoming stressful challenges related to L2 learning using meta-affective strategies and affective strategies (Oxford, Meng, Zhou, Sun, and Jain, 2007). Oxford further argues that no one can learn a language without motivation, positive attitudes and beliefs, and supportive emotions (2011).

The main function of affective strategies are to create optimistic emotions, beliefs, and attitudes and to spur and maintain motivation. Wen (1996, 2003) coined the term meta-affective strategy in work with Chinese EFL learners. Meta-affective strategies listed above, include the synergistic relationship between meta-affective knowledge (which includes the six types: person, group/culture, task, whole person, strategy, conditional) and meta affective regulation. One example would be a learner setting a goal to find ways to stay engaged in learning and practicing Mandarin
tones even when it gets difficult to do so. Affective strategies include activating supportive emotions, beliefs, and attitudes and generating and maintaining motivation. Some tactics that may be included in these strategies are a learner using positive self talk to help them succeed in an oral presentation in Mandarin.
2.1.1.2 Affect and SLA. Affect is also the least studied dimension within this model and in L2 learning in general. Bown & White (2010) make a case for affect being an “up and coming” area to study within the field of SLA. While some may reject it outright, other studies have shown how crucial a role affect can play. Bown (2006) found that learner’s beliefs about who controls language learning can affect learning outcomes. What has been studied is on learner anxiety/language anxiety which is a special form of anxiety in which the learner is afraid of performing in the L2. It is linked to damaged self-concept, reduced personality, lowered self confidence, and a lowered sense of agency (Horwitz, 2007; Oxford 2011). Shepherd (2006) notes that the signs and symptoms can include tense muscles, a sinking sensation, dry throat, palpitations, twitching, sweating, and stammering. This is important for L2 learning because research has shown that it negatively affects listening comprehension, vocab retention, oral production, test scores, class grades (Gardner, Tremblay, Masgoret 1997). It can also result in reduced willingness to communicate in the L2 (MacIntyre 2003) as well as students even skipping class, forgetting assignments & engaging in other avoidance behaviors (Oxford 2011). White (2005) noted that for distance learners this could be an especially important aspect of L2 learning to research since they are affected the most by it without any classroom or teacher to support them in a face to face context. Hauck and Hurd (2005) note that this is true and yet these learners have no way to combat it. However, Dewaele et al. (2008) found that higher Trait Emotional Intelligence was linked to learners being less affected by language anxiety; therefore these students would have reduced deficits caused by language anxiety.

Oxford (2011) notes that self-esteem, self-efficacy, and self-concept are tied to affect and ultimately performance outcomes for L2 learners and that through the use of affective strategies the L2 learner can overcome these hurdles and be successful. Self esteem is defined by Oxford (2011) as the emotional self perception of competence or self worth in a given area or more generally.
Higher Self esteem is not always linked to positive performances; some L2 learners feel good even when they perform poorly while others feel bad about themselves despite good learning outcomes. More research needs to be done to understand this, and this is part of what makes this area of research so interesting. Self-efficacy according to Oxford (2011) is the L2 learner’s level of confidence that they can successfully complete a task. This is related to agency, or the belief in one’s control over outcomes. Bandura (1997) states that self-efficacy is influenced by past experiences of success or failure, modeling (observing a peer’s success or failure), social persuasion, and the learner’s belief that their level of anxiety is related to their ability to perform well. Finally, self-concept is the self perception of competence in a given area, such as learning a new language.

Other factors that influence learner affect are beliefs about L2 learning and learner attitudes. Horwitz (2007) found that two common beliefs learners had that led to learner upset were the fear of making mistakes and the incorrect notion that you can become fluent in a language with about two years of non intensive coursework. Finally, attitudes concerning L2 learning, the teacher, the language (attitudes about prestige, sound system, writing system, grammar, metaphors, communicative value, etc.), the culture, and native speakers can be viewed as positive or negative and influence L2 learning. However, Oxford (2011) believes that even attitudes can change and through the use of LLS the L2 learner can deal with their emotions that may be negatively affecting their learning outcomes or blocking them from achieving language goals.
If affect does in fact play an important role in L2 learning, then affective strategies would be useful for all learners. They could prove to be especially useful for several types of learners. For example, White (1995) noted the ways in which distance L2 learners are adversely affected by not having a face to face class or teacher to work with and highlighted the importance of affective strategies for this population. Oxford (2011) also notes that affective strategy use is important for beginners, learners with more emotional learning styles, learners who have anxiety or depression, and learners in any phase of culture shock.

### 2.2 Mandarin Tones

Mandarin is a typical tone language where the pitch contour over a syllable can distinguish word meanings; this is known as lexical tone (Duanmu, 2007, p. 225). In CFL classrooms, traditionally the tones are presented as a set of 4 with a “5th” neutral tone. The set of 4 tones are as follows: a high flat tone (阴平) is known as “first tone” (第一声), a rising tone (阳平) is known as “second tone” (第二声), a low dipping tone (上声) is known as “third tone” (第三声), and a falling tone (去声) is known as “fourth tone” (第四声). The fifth tone has no set range in pitch, and this is referred to as the “neutral tone” (轻声). Table 1.1 provides an illustration of the typical example used in beginner levels of Mandarin language teaching using Hanyu Pinyin\(^3\) (henceforth Pinyin) romanization which uses a combination of initial and final sounds to form syllables. Take m [m] as the initial and a [ɑ] as the final. These are both sounds that exist in English

\(^3\) Hanyu Pinyin 汉语拼音 has been the official romanization system of the People’s Republic of China since 1958 (Duanmu, 2007).
as well, which makes this an easy example for American native English speakers to understand. These two sounds combine to form the segmental “ma” [mɑ]. Now each tone (suprasegmental) can be applied to this combination to form 5 distinct morphemes:

**Table 1**

*Overview of Mandarin Tones with Examples*

<table>
<thead>
<tr>
<th>English Tone Name</th>
<th>Pinyin</th>
<th>Character</th>
<th>IPA</th>
<th>English Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>first tone (1)</td>
<td>第一声</td>
<td>mā</td>
<td>[mɑ˥]</td>
<td>mother</td>
</tr>
<tr>
<td>second tone (2)</td>
<td>第二声</td>
<td>má</td>
<td>[mɑ˧˥]</td>
<td>hemp</td>
</tr>
<tr>
<td>third tone (3)</td>
<td>第三声</td>
<td>mǎ</td>
<td>[mɑ˨˩˦]</td>
<td>horse</td>
</tr>
<tr>
<td>fourth tone (4)</td>
<td>第四声</td>
<td>mà</td>
<td>[mɑ˥˩]</td>
<td>to scold</td>
</tr>
<tr>
<td>neutral tone (5)</td>
<td>轻声</td>
<td>ma</td>
<td>[mɑ]</td>
<td>interr. particle</td>
</tr>
</tbody>
</table>

The above examples show that the same segmental features carrying varying suprasegmental features can create five distinct morphemes. According to (Duanmu, 2007) Mandarin has 402 syllables excluding tone and 1,294 syllables including tone. These numbers show that tone helps distinguish syllables in Mandarin. Note that syllables are not equal to words since not all monosyllabic units in Mandarin are words and there are also numerous homophones in Mandarin where the same segmental and suprasegmental features exist with the only differences being orthography and/or semantics⁴.

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⁴ One example of this is “lán” which can be part of the word for “blue” lánšè 蓝色 or “basketball” lánqíú 篮球 where the two morphemes /lan/ are both second tone but have different characters and meanings.
2.3 Why Tones are Challenging for CFL Learners

Many studies have looked into creating a hierarchy of difficulty of tonal acquisition both with perception (Kiriloff 1969, Elliot 1991, Sun 1997, Liu et al. 2011, Blicher et al. 1990) and production (Shen 1989, Miracle 1989, Leather 1990, Elliott 1991, Chen 1997, Sun 1997, Lundelius 1992, McGinnis 1997, Chen 2001). Basically, these studies investigated whether or not certain tones present a greater difficulty than others to learners. In 2012, Yang did a review of these studies in which he showed that the study results were not extremely consistent. In terms of perception, Tone 4 was often found to be the easiest and Tone 2 the most difficult. In terms of production, Tone 1 is reportedly the easiest in many studies, often followed by 4, and then Tones 2 and 3 are generally seen as the harder tones regardless of order, with Leather (1990) stating they are equally difficult for learners to produce. Therefore, there is definitive agreement that tones are a challenge for CFL learners despite some variance in exactly how. The cause of these difficulties is discussed in the following sections.

2.3.1 The Influence of L1 English on L2 Chinese. Orton (2013) writes that “psycholinguistic research on the brain of Chinese speakers shows that they process tone with the sounds” (p. 16). Similarly, Li & Thompson (1981) describe Mandarin tones as being associated with a syllable. This means that both the segmental features of the sound (the initial and final) and the suprasegmental features (the pitch) are processed together in the native Mandarin speaker’s brain. More concretely, using examples from above, 马 mǎ and 马 mà are two entirely different words that are easily distinguishable for a native speaker of Mandarin. However, native English speakers may not see it this way. Wang, Jongman, and Sereno (2001) attribute this to the fact that in a native Chinese speaker’s brain, tones are processed in the left hemisphere, while in an American NES’s
brain tones are processed bilaterally. Unlike native Chinese speakers, native English speakers do not necessarily view the segmental and suprasegmental features of Mandarin as inseparable. Therefore, 帽 mà and 马 mǎ could be easily confused both in production and comprehension by learners of Mandarin who are not as sensitive to the tones as a native Mandarin speaker would be. Essentially, to a NES, tones are not as meaningful as they are to a native Chinese speaker. English, unlike Mandarin, is a stress-timed language where suprasegmental features such as intonation can flow over one or more syllables to add pragmatic, not lexical, distinction. This means that the same syllable can be said in English with varied pitches and retain its meaning. For example, a neutral “no” versus an angry “no” retains the same semantic value, but the pragmatic function is different. L. Lee & Nusbaum (1993) identified that native English speakers process segmental and suprasegmental features as different kinds of information. The segmental features are coded semantically, and the suprasegmental features are coded pragmatically. Therefore, a non-tonal L1 such as English has a negative influence on intake and assimilation of tones (W. Chen, 2013).

2.4 Previous Research in CFL Tone Acquisition

Research done in CFL tone acquisition has focused on many specific aspects such as error analysis (Yang, 2016), pinyin tone formats (Blicher et al., 1990; Y. Liu et al., 2011; Lundelius, 1992; Mcginnis, 1997) pitch gesture (Baills et al., 2019), feedback (Bryfonski & Ma, 2020), perception (A. W. Liu, 2014). Others, like (Zhang, 2015), found a significant relationship between American learners’ L2 Mandarin learning and their motivation. However, there are few studies exploring strategies used for tone production and perception specifically in the affective dimension. These are

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5 Shen (1989) argued that register influences tonal competency of CFL learners.
all cognitive based strategies and the research body is lacking in understanding the emotions, beliefs, and attitudes of the learner and how that may play a role in their ability to achieve tonal competency.

2.4.2 Strategy Use Among CFL Learners. W. Chen (2013) identified a crucial gap in the literature surrounding tonal acquisition. She stated that many studies have focused on the sequence of tonal acquisition and the accuracy of reproduction; however, no studies thus far have examined how students remember the tones when learning new vocabulary. Oxford (2011) notes that cognition and affect are inseparable, and therefore if we are doing cognition studies, we must also conduct studies on affect as well.

Ma et al. (2017) in conducting a systematic review of the literature found several studies exploring strategy use in CFL learners. These studies focused mainly on learners whose native languages were not English (F. Liu, 2012; Qian, 2010; Wu, 2008). Wu and Chen (2006) found a correlation between listening competence and cognitive, metacognitive, and emotional strategies. Zhou & Xie (2007) found that intermediate students used judgment in reading tasks to assist them in word-separation.

Another review, this one focusing solely on LLS in CFL, is that of Jiang & Cohen (2012). This study examined all LLS literature in both English and Chinese. It is clear from this paper and a look into LLS research in general that many different terms have been used to describe the various strategies identified in SLA. Therefore, the research, in addition to being limited, is also inconsistently labeled. Chinese speaking strategy research is found largely only in Chinese publications and focuses on learners of different language backgrounds or in CFL versus CSL (Chinese as a second language) environments Jiang & Cohen (2012, p. 21). Oxford’s (1990) SILL has been used for most of this research, which means that the current study will be comparable. However, Jiang & Cohen (2012) remark that due to the limited number of studies available,
generalizations are difficult to make and thus more studies of CFL learners “engaged in task-based interactions” would be beneficial (p. 22).

2.4.3 Mixed Methods and Qualitative Designs. By and large, the research in CFL pedagogy is quantitative only (Ma et al., 2017). Recently, two studies have been conducted to understand a more comprehensive picture of the teaching and learning experience. A. W. Liu (2014) conducted a unique study in which teachers’ and students’ perceptions about tone pedagogy were explored and found that there are very specific strategies for which students essentially depend on teachers to acquire tones. For example, it is common to use drill techniques and mimicking in CFL classrooms. However, there is very little the learner is aware of or is encouraged to do on their own outside of the classroom. Because this was only one study, the findings require further investigation.

Another very recent study is that of Bryfonski & Ma (2020) who employed a mixed-methods design to explore the effects of implicit versus explicit feedback. The findings were surprising to even the instructor and students themselves; they found that learners in an implicit feedback group outperformed learners in an explicit feedback group due to the fact that explicit feedback sometimes increased learner anxiety and frustration. Therefore, the present study aims to contribute to this fledgling usage of mixed methods designs and deepen the understanding of the student’s perspective. As will be shown in the following section, this design is also emerging in strategy research.

2.5 The Purpose and Framework of This Research

Tones in Mandarin are a feature that one cannot ignore when learning to speak the language. However, many NES learners of CFL struggle in acquiring tones. Much of the research conducted in CFL tone pedagogy has focused on measuring proficiency or testing the efficacy of individual strategies without involving the learner in the process. In fact, learner perspectives,
emotions, beliefs, and attitudes have been largely ignored by both teachers and researchers in the field of SLA. Using strategy theory, specifically the S2R Model of Language Learning, the present study examined strategy use among NES CFL learners during their first year in an elementary level Chinese course.

The S2R Model was used in this study because it takes into account three major domains of language learning: cognitive, sociocultural-interactive, and affective. Because tones are so crucial when learning Mandarin, and yet they also are so particularly challenging for learners, they can be barriers to fluency in Mandarin for NES learners of CFL. This can trigger a language learning crisis. As Oxford, Meng, Zhou, Sun, and Jain (2007) wrote: “Usually the affective side of L2 learning is ignored, or failures and crises are hushed up and made to seem shameful. Open discussions about L2 crises would help struggling learners recognize that they are not alone and that they can transcend crises” (p.24). Therefore this study provides a space where learners can openly share their struggles, as well as successes, and what strategies they use to persevere when learning the tonal system of Mandarin.

The research questions asked in this study are answered via the questionnaires and interviews with participants as well as observation data from classes during the participants’ first year of university-level study of Mandarin. These research questions tie the framework directly to tone by investigating what (if any) strategies are used by learners both individually and in class and whether or not they are mediated by the instructor. They are still kept general enough to account for other strategies within all dimensions (cognitive, sociocultural-interactive, and affective), although the focus of this study is on the affective dimension.
To better understand the relationship between tonal competence, students’ emotions, beliefs, and attitudes towards learning tones and themselves as learners, and LLS use by these learners, the following research questions guide this study:

This study is guided by the following research questions:

1. What language learning tactics, strategies, and metastrategies do CFL learners report when learning tones independently?
2. What language learning tactics, strategies, and metastrategies do CFL learners implement during synchronous, online instruction? What teaching strategies does the instructor use to facilitate tone learning during synchronous, online instruction?
3. What are students’ emotions, beliefs, and attitudes toward mastering the tonal system?

These research questions were developed to find out what LLS students use in the process of learning tones as well as to take a deep look into the affective dimension of L2 learning.

**Chapter 3: Methodology**

This chapter provides an overview and rationale of the study design, research context, information about the participants, and how data were collected and analyzed.

**3.1 Overview of the Design**

While there is no standard format for conducting and writing up a case study, there are several suggested approaches found in the literature. The present study is based on the work done by Creswell (1998), Wolcott (1994), and Yin (2009).

Creswell (1998) describes a cyclical approach to data collection and writing where the researcher moves back and forth from data collection and report writing. This was done as the data
was collected and the outline of the project began to take shape. Throughout the writing process the project evolved along with data collection.

Wolcott (1994) suggested relating categories to analytic frameworks in literature by contextualizing the data with that framework. This was done as the data was constantly referenced with the S2R model in mind. Tables, charts, diagrams, and cross-case comparisons were also suggested by Wolcott (1994) which are incorporated into this design and write up as well.

Yin (2009) describes a “Linear-Analytic Approach” to the final write up of a case study. The overall format of the study follows this outline: discussion of the problem, the methods, the findings, and the conclusions, with a theory used as a framework and within that various hypotheses or propositions can be explored. The embedded design, or how exactly the data are presented, is through presenting multiple cases with an overall cross case analysis. Research questions and their answers are based on the case study database. This is the way the present study is written up in the following chapters.

3.2 Design Rationale

This is a case study. It is therefore primarily qualitative in nature, although some descriptive statistics are used in analyzing the data. Creswell (2013) defines a case study as an exploration of a bounded system or case over time through in-depth data collection where the case study researcher uses multiple forms of data rich in context to build the in-depth case. Yin (2009) states that a case study is a fitting design when the researcher deliberately wants to cover contextual conditions that might be highly pertinent to the phenomenon of study. Here, the phenomenon of study is strategies for learning tone in the context of an elementary level Mandarin college course
at an American university where the contextual conditions are extremely pertinent to the phenomenon of study.

One major factor in deliberately choosing to do a qualitative study for CFL research is that by and large, the existing studies are quantitative. While it can be argued that in terms of measuring accuracy or language achievement, quantitative methods are best, it is equally important to look into the qualitative aspect of language learning and ask the people who are involved. This not only gives the learners agency in the research, but also enlightens the researcher since information about students’ emotions, beliefs, and attitudes cannot be observed. Through the interviews in particular, it is possible to ask students and the instructor about their experience teaching and learning tone, respectively, and what, if any, strategies they use both inside and outside of the classroom.

Although still sparse, qualitative and mixed methods studies are emerging in CFL literature. Liu (2014) did conduct qualitative studies on learner and instructor perceptions of L2 tone pedagogy. A recent study on tonal acquisition by learners of non-tonal language backgrounds done by Bryfonski and Ma (2020) used a mixed methods design, and the qualitative data in their study was a key factor in the results, actually showing contradicting information to the students’ self-reporting. This highlights how vital qualitative research, especially interviews, can be and how needed it is in the field of tone learning and CFL.

This case study is an exploration of one Chinese class at a public American university in the Northeast focusing on tone learning through interviews with the instructor, questionnaire data from five students, in depth interviews with two of those students, as well as class observations. The phenomenon being studied is the use of language learning strategies specifically to learn lexical tone in Mandarin, and it is being studied through the lens of the $S^2R$ model with a focus on how affective strategies play a role in tone learning. This case is bounded by the enrollment in the class
as well as the time: this was during the students’ first year taking Chinese at this university so all of
the students are at elementary level. As will be shown in further detail in the following section, the
student cases explored in this study all had similar language learning backgrounds in terms of having
language learning experience, which further deepens this case.

### 3.3 Research Context

On how to describe contexts in case studies, Stake (1995) writes:

To develop vicarious experiences for the reader, to give them a sense of "being there," the
physical situation should be well described. The entryways, the rooms, the landscape, the
hallways, its place on the map, its decor. There should be some balance between the
uniqueness and the ordinariness of the place. The physical space is fundamental to
meanings for most researchers and most readers." (p. 63)

However, Stake was writing in an era largely before computers, before e-learning, and
obviously before the COVID-19 pandemic.

The focus of the class during the first year in Elementary Chinese is introduction to
characters, basic grammar structures, vocabulary, pronunciation, and most pertinent for this study:
the tonal system of Mandarin.

### 3.4 Participants

Recruitment began by reaching out to Chinese language instructors at American universities
in the northeastern part of the U.S. An email was sent to over a dozen instructors to ask if they were
interested in participating\(^6\). Although about three instructors replied to the emails and asked

\(^6\) Recruitment script and materials can be found in Appendix F.
questions, only one ended up agreeing to participate and forwarding the script to the class. Since one instructor and five students agreed to participate, this ended up being one of the defining features of the bounded case. For the purposes of this study, the instructor will be referred to as Teacher Li or 李老师, and the five students will be referred to as Tom, Sara, Oscar, Jane, and David.

Participation in this study was entirely voluntary and in accordance with IRB standards\(^7\). IRB exemption was granted since no identifying information was collected. The risks to this population were very minimal as all participants fully understood what they were asked to do, which was to respond to an online questionnaire which would take about 10 minutes of their time, and at the end of the questionnaire they indicated whether or not they were willing to participate in a follow up interview. Although all but one student did, ultimately only two students made it to the interview portion of the study. However, the students who completed the questionnaire also participated in class observations.

Participants were able to discontinue participation at any time without consequence. The potential benefits to the participants included contributing to a growing body of research on tonal acquisition, an increase in self-awareness about language learning beliefs and strategies, and they will also potentially learn new strategies that they can employ to benefit their learning and teaching even after the study has ended.

This study was conducted fully online due to the regulations from the IRB during the COVID-19 pandemic; the questionnaires were completed on Google Forms and the task and interview portions were completed on Zoom\(^8\). Online observations of classes were conducted. Also,

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\(^7\) Examples of consent form and IRB exemption can be found in Appendix G.

\(^8\) Archibald et al., (2019) tested the feasibility of using Zoom conferencing for data collection and found it to be highly satisfactory for most participants. Within the context of CFL tone studies there is precedent for using online data collection methods (see Liu 2014; Bryfonski & Ma, 2020).
in this way the researcher can avoid interfering with classroom time in a traditional educational context. Additionally, students were able to remain entirely anonymous if they wished to participate in the class observations, but not in the questionnaire or the interview portions of the study although all names of the instructor and students have been changed in this paper to protect their anonymity. It was made clear to the students throughout the study that their responses had no bearing on their grade nor their relationship with their instructor, so they could share openly. Likewise, the instructor was told that the researcher would be the only one to view the responses and therefore she could also share openly and honestly.

Participants in this study were elementary\(^9\) level learners of Mandarin and the instructor of this course. In total, five\(^{10}\) student participants completed the study questionnaire, two students identified as male and three identified as female. The age range was from 19-35. All participants were born in the US, self-identified as native English speakers, and reported using English 70-100% of the day\(^{11}\). Two participants had reported previous travel to China, but neither had stayed more than one month. Prior to entering this course, some students had studied Mandarin in high school in a face to face format. Other textbooks used included *New Practical Chinese Reader, Eyes on China,* and *A New China.* Other materials used outside of class to practice Mandarin include: Mandarin Blueprint, Babbel, Duolingo, YouTube, Busuu, although it should be noted that half of the participants reported using no outside materials whatsoever indicating that their language learning resources were directly and solely sourced from class and the instructor. Two participants from this

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\(^9\) While some students reported learning Mandarin for up to 3 years prior to this class, they were all enrolled in their first year of a university level Chinese course.

\(^{10}\) Originally 9 students completed the questionnaire. One student was excluded because she is a heritage language learner and previously lived in China. Another student was excluded because he listed his first language as Tagalog.

\(^{11}\) Other languages included Mandarin, Japanese, and French which were all language learned in middle school or later.
pool agreed to meet for an interview and submitted class notes on tone learning. Their cases will be described in detail.

The instructor is a native Mandarin speaker. She was born and raised in China, and had been living in the US for three years at the time of the study. She welcomed me to her class for observations and was also interviewed in depth about her teaching style and philosophy on teaching tone to native English speakers. Her case and the case of the two students who participated in the interviews are described in detail and analyzed in the following sections.
The language learning backgrounds of participants differed from one another as well as with the researcher. The age and gender of participants also differed. In sum, there are similarities between the researcher and the participants in terms of positionality, but there are also many opportunities to understand unique perspectives.

3.4.1 李老师/Teacher Li. 李老师/Teacher Li had completed undergraduate training in China to be a teacher of Chinese language to native Chinese students. She then taught Chinese as a Second Language to students studying abroad in China before moving to the US where she now serves as a teacher of the Chinese language.

3.4.2 Student 1: Jane Jane was a 20 year old female at the time of the study in her senior year at the university. She was born in the US, and considered her first language to be English although she had previously studied French, Japanese, and Korean in addition to Mandarin. She reported spending 70% of the day speaking English and 30% of the day speaking Japanese when the study was conducted. She had never spent any time in a Mandarin-speaking country, and she had been studying Mandarin for less than one year. Chinese was not a required course. Jane reported that for her, listening was the most difficult skill in acquiring Mandarin. Outside of class, she reported using Duolingo, following a Twitter account that shared Chinese sentences every day, and she also watched some Chinese YouTube channels.
3.4.3 Student 2: David  David is a 35 year old male, non-traditional student. He previously served in the military before beginning his studies. He reported speaking English 90% of the day, Japanese 5% of the day and Mandarin 5% of the day. He had never spent any time in a Mandarin-speaking country, and he had been studying Mandarin for less than one year. David reported that for him pronunciation of sound in Mandarin was the most difficult aspect of acquiring Mandarin. Outside of class, David reported using YouTube, Arch Chinese, and Chinese Grammar Wiki as supplemental resources for learning Mandarin.

3.5 Data Collection and Instruments  “Qualitative researchers take pride in discovering and portraying the multiple views of the case.” (Stake p. 64, 1995). Case studies are meant to portray a well-rounded view of a phenomenon bounded by time, space, or another dimension. Therefore, having multiple data sources is vital not only for validity and reliability, but also to provide a rounded portrait of the entire bounded system (Creswell & Miller, 2000).

The data for this study were collected via questionnaires, class observations, interviews, and examining of artifacts (the textbook and class notes provided by the students). These instruments are described in detail in the following section.

3.5.1 Instrumentation: Questionnaire12 The background questionnaire via Google Forms was presented to the participants in order to collect demographic data and language background information. This questionnaire recorded participants’ age, gender, reason for studying Mandarin, number of years studying Mandarin, exposure to the language, desire to become fluent in Mandarin, self-reported proficiency level, and level of enjoyment in learning Mandarin.

The emotion rating scale is presented by Oxford (2011) to explore the range of emotions on four continua as the learner experiences them in a language learning context.

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12 A copy of the questionnaire to be used is available in Appendix A.
A copy of the SILL modified for this study can be found in Appendix C. This questionnaire is based on Rebecca L. Oxford’s Strategy Inventory for Language Learning (SILL) version 5.1 for English speakers learning a new language which was first published in 1989. Since it is for CFL learners in this study, it has been modified specifically for Mandarin but retains the same instructions, statements, and scoring system. The SILL was modified to be more specific to Mandarin since in this study the focus is only on CFL; therefore, any time the SILL mentions “the new language” it has been changed to “Mandarin.” An example of a change would be taking the original sentence from the SILL: “I initiate conversations in the new language” and modifying it to be: “I initiate conversations in Mandarin.” These modifications have made the SILL more clearly defined so students who may be studying other languages will remember to remain focused on Mandarin only. Because the core of each question has been retained and the adjustments have been made to all necessary questions it does not pose a risk to the validity or reliability of the instrument. The questions were also randomized. Unlike the suggestion in the original SILL, the participants did not score it themselves; rather it was used as a precursor to inform the interviews.

This questionnaire used a Likert based scale with ratings from 1 (never or almost never) to 5 (always or almost always). An example of an item on the SILL is “I look for patterns in the language.” The SILL has been tested against other forms of strategy classification models and was found to be the most consistent in identifying students’ patterns of strategy use (Hsiao & Oxford, 2002). The items found on the questionnaire are directly related to metastrategies or strategies. These are asked about in detail in the interview.
3.5.2 Instrumentation: Interviews The interview questions were based on two things: following up on the questionnaire to deepen the understanding of the participants’ responses and one portion will ask the same questions as the BALLI, an instrument developed by Elaine Horwitz in the 1980s\textsuperscript{13} which explores student and teacher beliefs about their language learning abilities and aptitudes. This is referenced by Oxford (2011) in discussing the affective dimension. The present study asked questions adapted from the BALLI such as “Do you believe that some people possess a special aptitude for language learning?” but was not a Likert scale rated measure, rather an opportunity to respond “yes” or “no” with optional elaboration. While the BALLI remained the same for both the instructor and student participants, the instructor did not participate in the Questionnaire portion since the S\textsuperscript{2}R model is based on self regulated learning and is aimed at students, not instructors. Therefore, the interview questions for the instructor were modified to include asking about her background as an instructor, her teaching philosophy, and her experience teaching tones in this particular class and what strategies she uses during class time.

\textsuperscript{13} See Kuntz (1996)
3.5.3 Procedures. Elementary learners agreed to participate in both a questionnaire and an interview. Virtual observations of the class were also conducted and recorded. They were then transcribed and analyzed. Observations were done during the initial teaching of tones at the beginning of the semester of the first course in the two semester sequence. The observations included a recording of a one on one session for an exam each student took with the teacher. Students who participated in the online survey were invited for an interview via email. The interviews were conducted via Zoom. Students provided the instructor with class notes from around the time they first learned tone. Interviews were structured the same for both students who participated. The instructor interview was modified to exclude any irrelevant questions based on the online questionnaire which the interviewer did not fill out\textsuperscript{14}. From the initial correspondence to the end of member checks, the data collection (and beginning of analysis) period was just over one calendar year.

The researcher was in contact with the instructor of the course for just over a year. During this time data from students was collected, observations were conducted, and member checks were carried out. Also, throughout the process of collecting data and analyzing the data, the researcher consulted peers to get feedback on specific problems or questions that arose. This included discussions on including negative cases so as not to cherry pick responses that support what the researcher may be looking for. Triangulation of data also helped with this as there was a large database formed from multiple interviews, multiple observations, artifacts submitted by students, and questionnaires. “With triangulation the researcher can guard against the accusation that a study’s

\textsuperscript{14} Interview questions for the student participants can be found in Appendix X. The instructor interview questions can be found in Appendix X.
findings are simply an artifact of a single method, a single source, or a single investigator’s bias” (Patton, 1990 as cited in Anger & Machtmes 2005).

3.6 Data Analysis

Creswell (2013) describes the “data analysis spiral” (p. 182) wherein data analysis is a process intermingled with data collection and report writing; “moving in analytic circles rather than using a fixed linear approach.” Indeed data collection and analysis and writing in this case study were intermingled with the researcher frequently turning back to the data matrix. Phase One included reviewing the audio files and transcribing the data. Phase Two involved conducting member checks by sending the transcribed data to participants who were able to adjust anything. Also during this phase, memos from class observations were double checked, and those recordings were listened to again not for transcription purposes, but to take more detailed notes.

The coding approach began deductive using the S²R model as a means of potential codes for the data to fit into; however, it was anticipated that ultimately the coding would be abductive since new codes and themes would emerge that were outside the scope of S²R. This is exactly what happened. The initial deductive coding process began when the researcher went through each transcript and highlighted, looking for “patterns of regularities” (Creswell, 2013) specific to the S²R model. The goal in this phase was to see what students’ reported experiences and data from the observation fit into the S²R model and to categorize as much of the interview and observation data into the conceptual framework of the model within each of the three dimensions (cognitive, affective, and sociocultural interactive). To reiterate, General Metastrategies include planning, implementing plans, paying attention, obtaining and using resources, orchestrating strategies, monitoring and evaluating. These can be applied to any of the three dimensions. Dimension-Specific Metastrategies
therefore include the above General Metastrategies in each of the following three dimensions: sociocultural-interactional, cognitive, affective. Strategies are defined by Oxford (2011) as specific goal-directed actions that a given learner employs in a particular sociocultural setting for particular learning related purposes and needs. Tactics: the way a metastrategy or strategy is applied in a given context.

A specific tactic can be related to either a metastrategy or strategy within each dimension. In Oxford (2011) she provides charts detailing each dimension, a metastrategy or a strategy, and then an example showing the actual tactic used by the learner as it relates to that metastrategy or strategy. She also notes the basic function of each metastrategy and strategy, which essentially serves to provide more information on the purpose of the tactic. Table 2 presents meta-affective strategies with possible basic functions and examples of related tactics. For example: in the affective dimension one can find the metastrategy of Organizing for Affect and the tactic could be “I make sure to have music on in the background [when studying a language] because it relaxes and motivates me.” All interview and observation data were read repetitively to repeat this process until the data were all thoroughly and properly categorized. See Table 2 below for a full list of meta-affective strategies with possible basic functions and examples of related tactics.
### Table 2

**Meta-Affective Strategies and Examples of Related Tactics**

<table>
<thead>
<tr>
<th>Metastrategy</th>
<th>Basic Function</th>
<th>Example of Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying Attention to Affect</td>
<td>Broadly</td>
<td>“I consider my attitude toward the language course and the teacher.”</td>
</tr>
<tr>
<td></td>
<td>Sharply</td>
<td>“I watch for physical signs of stress regarding language studies.”</td>
</tr>
<tr>
<td>Planning for Affect</td>
<td>Setting affective goals</td>
<td>“I want to learn to relax when doing listening exercises.”</td>
</tr>
<tr>
<td>Obtaining and Using Resources for Affect</td>
<td>Obtaining and using technological resources for affect</td>
<td>“I find blogs and websites in order to help reduce my anxiety about language learning.”</td>
</tr>
<tr>
<td>Organizing for Affect</td>
<td>Organizing the environment for affect</td>
<td>“I make sure to have music on in the background because it relaxes and motivates me.”</td>
</tr>
<tr>
<td>Implementing Plans for Affect</td>
<td>Putting the plan into action</td>
<td>“I meditate before my exam.”</td>
</tr>
<tr>
<td>Orchestrating Affective Strategy Use</td>
<td>Orchestrating strategies for current use and future instrumental needs</td>
<td>“In order to develop my speaking skills, I personalize them for now, and I think about my future job.”</td>
</tr>
<tr>
<td>Monitoring Affect</td>
<td>Monitoring use of affective tactics and strategies</td>
<td>“If I start getting bored, it means I need to come up with a new strategy or take a break.”</td>
</tr>
<tr>
<td>Evaluating Affect</td>
<td>Evaluating affective progress and states</td>
<td>“I was a nervous wreck before the listening test, but the strategies I used helped me calm down a lot.”</td>
</tr>
</tbody>
</table>

This is meant to show explicitly how she categorized each strategy or metastrategy, its function, and an example of a tactic from data she collected. It is important to point out that any metastrategy or strategy can have multiple functions. Actual data from the present study will be presented in a similar table in section 4.4.

Similarly, Table 3 presents affective strategies with possible basic functions and examples of related tactics. For example, if in the data a student had said, “I think of all the ways I can use Chinese after I graduate” that would be categorized into the affective strategy of Generating and Maintaining Motivation. All interview and observation data were read repetitively to repeat this process until the data were all thoroughly and properly categorized. See Table 3 for a full list of affective strategies with possible basic functions and examples of related tactics.
Table 3

Affective Strategies and Their Basic Functions with Examples of Related Tactics

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Basic Function</th>
<th>Example of Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activating Supportive Emotions, Beliefs, and Attitudes</td>
<td>Using positive self-talk</td>
<td>“I tell myself it is fine for me to not understand everything in Amharic yet.”</td>
</tr>
<tr>
<td></td>
<td>Expressing feelings or being in touch with feelings</td>
<td>“I write in my journal almost daily to describe my language learning experiences and express my feelings about them.”</td>
</tr>
<tr>
<td>Generating and Maintaining Motivation</td>
<td>Increasing extrinsic motivation by considering instrumental use of the L2</td>
<td>“I think of all the ways I can use Chinese after I graduate.”</td>
</tr>
<tr>
<td></td>
<td>Increasing intrinsic motivation</td>
<td>“I always look for something of cultural interest in the Spanish homework.”</td>
</tr>
</tbody>
</table>


This is meant to show explicitly how she categorized each strategy or metastrategy, its function, and an example of a tactic from data she collected. Actual data from the present study will be presented in a similar table in section 4.4.

This quote from Stake (1995) guided and informed the way the data were analyzed:

We can look for patterns immediately while we are reviewing documents, observing, or interviewing--or we can code the records, aggregate frequencies, and find patterns that way. Or both. Sometimes we will find significant meaning in a single instance, but usually the important meanings will come from reappearance over and over. Both categorical aggregation and direct interpretation depend greatly on the search for patterns. Often the patterns will be known in advance, drawn from the research questions, serving as a template for analysis. Sometimes, the patterns will emerge unexpectedly from the analysis (p.78)
The transcripts of both the interviews and the observations were analyzed by reading through them multiple times and comparing them to the charts listed in Oxford (2011), looking for similarities and patterns. In the first iteration, the focus was on identifying tactics that could be grouped into affective strategies and then meta-affective strategies. This was repeated for the sociocultural interactive and cognitive dimensions. All three dimensions were included for thoroughness and clarity. The transcripts were reviewed again to identify any misplaced or overlooked items. It was at this stage also that the researcher shared ideas with peers about how to identify these metastrategies, strategies, and tactics to get feedback.

Naturally, some data did not fit neatly into the categories outlined in the S2R model. Therefore, new codes began to emerge. Phase Four saw the building of these new codes into larger themes across cases as well as the beginning of the write up. This was when, in conjunction with reading Yin (2009), the researcher decided to showcase the two student experiences in a cross-case analysis. Also borrowing from Stake (1995) and Denzin (1989), many of the larger passages from student interviews have rich “thickly”\superscript{15} written detail which is why in the following sections larger excerpts will be analyzed in depth, often showing multiple themes in one vignette. During this phase the researcher also sought feedback from peers on her work and consulted senior researchers, and referred to the literature frequently (Creswell, 2013; Stake, 1995; Yin, 2009; Spradley, 1980). Finally, triangulation of data was done by comparing the observations with the reports from the instructor and interviews with students as well as with the SILL and questionnaires. To answer RQ1 and RQ3 (\textit{What language learning tactics, strategies, and metastrategies do CFL learners report when learning tones independently?} and \textit{What are students’ emotions, beliefs, and attitudes toward

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{15} “Thickly written” detail is described as evoking emotionality, voices, feelings, actions, and meanings of interacting individuals.
\end{itemize}
\end{footnotesize}
mastering the tonal system?) interview data and questionnaire data were used. To answer RQ2 (What language learning tactics, strategies, and metastrategies do CFL learners implement during live instruction? What teaching strategies does the instructor use to facilitate tone learning during live instruction?) questionnaire data and observation data were used.

For RQ1 some quantitative analysis was done. The SILL scores of each participant were totalled and the mean SILL score was calculated. This is displayed in a table in section 4.2.1.

Chapter 4: Results

This section presents the results from the questionnaire, interviews, and classroom observations. The section begins with the broadest analysis of the teacher and classroom data, followed by the questionnaire data from all five student participants, then an in-depth look at the cases of two students Jane and David. Finally, it ends with a summary of the research questions highlighting the major findings. This is followed by a discussion in Chapter 5.

4.1 Teacher and Classroom Data

4.1.1 Teacher Li/李老师

Teacher Li was a friendly teacher who had a positive attitude towards learning and her students. She made it clear from the first class that as long as students put in some effort by doing the homework and showing up for the tests, they would be able to earn an A in her class. She often spoke directly to the fact that language learning can bring up some anxiety for new learners. Here is one example of Teacher Li talking directly to her students on the first day of class:

Teacher Li: *I think probably most students will be nervous when speaking Chinese in class. I really want to say, ‘Don’t be nervous.’ Okay I know I know you will make*

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16 These students' names have been changed to protect their confidentiality.
many mistakes, so that’s why you are here, that’s why I’m here. Yeah? I
also-actually am an English language learner. I make many mistakes while
teaching you, but you can understand me, yeah? When you, when you speak you
make many mistakes, but don’t worry, I can understand you. Do not be afraid of
making mistakes.

Teacher Li even encouraged the students when it came to assessment. When talking about
their first oral exam she says directly to the students:

Teacher Li: But don’t worry don’t be nervous it’s our first time doing the speaking exam, so
as long as you open your mouth and read you will get good grade.

Teacher Li also praised her students frequently. This was evident in the class observations
and even during an oral exam. Here is an example of her reporting on how to praise students during
an interview:

Teacher Li: ...I do encourage them encourage them let them let them notice,
they have progress every day.

Interviewer: So what do you say to them like what are the- how do you encourage them?

李老师: I say oh oh... One way just praise them directly let them know. “Wow
you
know you have already mastered the skills of how to say ‘Chinese’ ” and
uh uh...sometimes if they write down the character very correctly I will say,
“Oh, you know for some Chinese Chinese people write this characters wrong
but now you mastered. You are better than them!” Just praise them, yeah
praise them directly. Just directly. Let them know what point you have
progressed.

Interviewer: So specific encouragement.

Teacher Li: Yeah yeah and I will ask them “Oh guess how many characters you know
now.” Students actually they don’t know. They don’t know. I know. They don’t know. They will say, “20?” “50?” I will say, “You know 100” They go, “Oh!” So I let them.

Interviewer: And they-yeah okay.

Teacher Li: Let them realize. So. Just this way. No better way.

Teacher Li believed that having a good understanding of multiple languages is beneficial to language learning; in fact, when asked what she believes the most important part of language learning is, she replied “the sense to compare the mother language and the target language.”

For this reason, she also believed that there is value in having non-native speaker teachers teaching the elementary levels of Chinese and having native speaker teachers teach more advanced levels. Looking at the following vignette in detail she described her experience as a trained Chinese teacher who is also a native speaker and has experience teaching both other native Chinese speakers as well as foreigners:

李老师: Actually I think [NNS] should teach elementary. I should teach advanced level. You know. So that's my-If so, so that's yeah that's my idea. Nontive...Non native speakers I think should teach lower level learners. Yeah. But for me I'm a native speaker so you know my English is not good. So...um...yeah let me think. Yeah. So. Okay, so for, so my my English is not as good so sometimes I need students oh to “please repeat your question”. Okay okay so “explain what what you mean” so I will explain. And for lower levels, I need to compare much about Chinese and English. So I...now I think ok, I record of my my old teaching. So I don't think the teaching effectiveness is good, but now, when I came to the USA, so I think now my English is much better, much better so now, I have a ...deeper understanding of English and uh Chinese, so I will use this understanding to teach my students. So that means my students will have a deeper understanding of Chinese and English. So they will “Oh, this makes sense; that's why Chinese use this way” “Oh that makes sense.” So this...this understanding probably will not directly improve their speaking and and uh...listening, but they will think: “Oh, Chinese is not as hard as I think, as I thought” you know, they will give them confidence to continue to learn Chinese. So if [a NNS] do this job at speaking, I think they will do better job than me.
Here, Teacher Li acknowledges that having a deep understanding of the language of your students and the target language is helpful. She notes how when her English was not as good she would have problems understanding her students, which was also observed at times during this study in the synchronous class sessions. More importantly, Teacher Li describes here how especially at elementary level it is crucial to be able to answer students’ questions about “why” Chinese is this way or that way. As she says, it may not directly relate to their tones improving, but, and relevant to the affective dimension of learning, it may give the students confidence and encourage them and help them maintain motivation to continue learning Chinese, which, one could argue, will lead to their tones improving.

When it came to making corrections on students’ pronunciation, specifically directing their tones, Teacher Li did this very frequently. She reportedly did not know why some students seem to do better with pronunciation than others, and at the time of the interview she had not found a method besides using hand gestures that she felt works well. This hand gesture and mimicking Teacher Li tone teaching strategy combination was the most common way Teacher Li tried to initially teach and correct tones in class. She would gesture the tone contour and also tell the students “higher” or “lower” to direct their pitch. She described her philosophy on this in detail here in this excerpt from an interview:

Teacher Li: The most hard part like you say is the tones. So I like to use.; I will tell my students I just tell them: “okay your first tone: too low. Please high, as high as you can I just tell them high. High High High High High.” So, and second tone I let them know: “lower” Beginning. For for foreigners for second tone beginning of the second tone always high, so I just let them know lower as low as you can. I just remind them “as low as you can” and for the third tone just make a turn. I just speak and let them to imitate. And the last tone the problem is the ending. The ending is very high. I say “I am ending very low” so I tell them “ending is very low; as low as you can.” So for the pronunciation, no good method, just correct until they master the skills. So I think it takes one month if I say “lower” oh they can be low. You know
at the beginning I say “lower” they don’t know how to, how can be low. So it takes one month if I say lower they will try again and they will know how low. I say higher they can oh higher. **So one month they can master oh how high is high how low is low.** Okay and after one month I will focus on now if I just ask them pronounce single, single character or single word, that means 2 characters they pronounce perfect like native speaker. High ok high and low ok very good. **But in the sentence, even if the sentence includes five characters...whoa...the tones...still not good.** So after one month I will focus on sentence. Sentence ok let’s practice. Ok so each tone, each word tone I ask them to pronounce the full one so that means longer. **It’s not a natural natural speech because for natural speech it’s very short, very short, not as long as this.** So very short. I just ask them please speak slowly. Don’t speak fast. Don’t speak. So students speak very slow and master the tones in the sentence in the long sentence. **For some students I don’t know why actually I am also curious about this research topic, some students master very quickly but you know they don’t have any tones background. Some oh they cannot master well. Oh I don’t know why.**

Here, Teacher Li described her method of correcting students’ tones in class. She mentions several important points. The first is that she does not know why some students who have no experience with tonal language learn faster than other students. To her, it seems random, and she has no good means of assisting them. She also notes that students are not speaking naturally when it comes to the rhythm. She expresses the struggle to balance teaching the students accurate tones. For her it is difficult because the students struggle with finding the correct pitch in a natural rhythm in Mandarin, and this results in students speaking very slowly. This is significant because if the instructor has no explicit teaching strategies for teaching tone, and according to the S²R model the teacher acts as a mediator for learning LLS and it has been shown that students benefit from a mix of explicit and implicit strategies, then how can students consistently and systematically learn tones?

There were several implicit strategies used, however. The most common implicit strategy was Teacher Li correcting students by saying “higher” or “lower” to guide students on how to adjust the pitch of their voice for the tone to be correct. For example, 1st tone is high and flat, and if a
student was not saying it at as high of a pitch as she felt was accurately representing first tone, she
would tell the student “higher, higher. As high as you can go.”

Another very frequently used implicit strategy which Teacher Li used was hand gestures
that mimic the contour of each tone. So for example, if a student did not start at a low enough pitch
when saying a syllable that carried 2nd tone, Teacher Li would tell the student “lower, lower” and
mimic the tone contour with her hand like the model in Figure 3 (below). Then she would ask the
student to repeat after her.
Figure 3

An Example of Using Hand Gestures to Mimic Tone Contour

Note: From Exploring the Effects of Imitating Hand Gestures and Head Nods on L1 and L2 Mandarin Tone Production (pp. 2179-2195) by Zheng, Hirata, and Kelly, September 2018, Journal of Speech, Language, and Hearing Research. Copyright 2018 American Speech-Language-Hearing Association. The model above is showing the tone contour for 2nd tone, which is a rising tone.

In the following vignette, Teacher Li described her view on the importance of mastering tones and the importance of Mandarin:

Teacher Li:  *Um. How to say so, uh just my personal idea. Was uh I think there is a critical time for mastering the tones: Beginning, I think the first three or half years. Uh How to say yeah...the...Yeah So the first three months or...half year when students start to learn Chinese if past this time even students will take more effort more time to correct tones and effectiveness not good. So first three first three months if you let them...how to say...if you focus on, focus on pronunciation they can master very well. So I’m not-that doesn’t mean I really want my students have a native tones, no; but that is a critical time I don’t want to waste this time so I let them practice but uh..yeah I let*
them practice but uh...but I don’t I don’t how to say...I don’t pursue every student can reach the native speakers so if they cannot they still have a...even if they don’t have native pronunciation but when they speak Chinese, Chinese people can understand so if you don’t emphasize on pronunciation Chinese people will not understand what they said.

Interviewer:  You think English is more important than Chinese?
Teacher Li:    Sure. Definitely.
Interviewer:  Hmm. Okay. And-

李老师: Yeah so if students interest though let's do it let's learn together. So...I don't think it’s important.

Teacher Li believes that students’ pronunciation does not need to be completely mastered and native-like, but does think that they need to be intelligible.

4.1.2 Students’ Classroom Strategy Use

During all of the observations of synchronous online classes, no explicit discussion of strategies ever took place in class. Both Jane and David reported not learning any of the LLS they used for Chinese in Chinese class, instead that these strategies came from prior experiences learning other languages.

4.2 Strategy Inventory for Language Learning (SILL) Data

Five students completed the questionnaire which collected data about their language learning strategy use. This was in part a background questionnaire, the Emotion Rating Scale designed by Oxford, and the modified form of the SILL. This section presents the data collected from the SILL portion of that form.
4.2.1 SILL Data

Figure 4

Cross Case Comparison of Mean SILL Score

Note: This figure shows the mean scores per each student based on the modified version of
the SILL. According to Oxford (1990, p. 291) the High use range is from 4.5-5.0, Usually used range is from 3.5-4.4, Medium use range is from 2.5-3.4, and Low use is from 1.5-2.4.

Looking at Figure 4, Jane and David’s SILL scores are displayed in a barplot. Jane had a cumulative total of 126 with a mean of 2.9. David had a cumulative total of 145 with a mean of 3.37. Both fell within Medium use range.

The most common reported strategies based on the questionnaire are: creating associations between new material and known material, visualizing the tone contour in the mind, imitating native speakers, reading a short story or dialogue until it is flawless, watching TV, movies, or listening to podcasts, concentrating on what is being said (planning for and paying attention to cognition), finding a quiet and comfortable place to practice tones, goal setting (planning for affect), planning for an upcoming language task (planning for cognition), noticing errors and finding out the reasons for them (evaluating cognition), learning from mistakes, evaluating progress, relaxing when feeling anxious about using Mandarin, making encouraging statements to oneself (activating supportive emotions, beliefs, and attitudes; generating and maintaining motivation), and encouraging oneself to take wise risks even though mistakes may be made (activating supportive emotions, beliefs, and attitudes; generating and maintaining motivation).

The least popular strategies by frequency based on the SILL are using rhyming to remember tone, using spaced repetition (like with Anki), giving oneself a tangible reward for doing well, and keeping a private language diary.
4.3 Cross-Case Analysis

This cross-case analysis investigated the experiences of David and Jane, two students in an elementary Chinese class at an American university to understand what language learning strategies they use to learn tone in Mandarin and how they use them. They provide an opportunity to look into the minds of the students in this class to see how students learn tone during the first year of their Mandarin study. They are both experienced language learners and they have experience learning a language close to Mandarin (Japanese), though they did not start learning that language until high school or later. As will be shown in the next chapter, much of their language learning strategy experience can be described using the S²R model proposed by Oxford. Some other themes emerged organically in the coding process. This is all described in the following cross-case analysis.

4.4 Student Cases: Jane and David

In this study two students’ experiences were investigated in depth through interviews and class notes to better understand the strategies they use to learn tone in Mandarin as first year students. The students are different in that one is male and one is female, one is 20 and one is 35, and one was a traditional student while the other had gone back to school after serving time in the military. However, they both have extensive language learning backgrounds, including both learning Japanese to an advanced level. Mandarin is just the newest of several foreign languages that they have learned. As will be shown in the cross-case analysis, this is an important factor in how they use language learning strategies to learn tone in Mandarin during their first year of study.

Following Lewis (2009) the data must also provide in-depth rich transcriptions that “transport the reader to the environment” (p.12). Each case will be presented in detail describing the individual and their beliefs about themselves as language learners and language learning. Later a
cross-case analysis will be described, which shows how both the a priori codes (taken from the work of Oxford) were identified across cases as well as themes that emerged inductively.
4.4.1.1 Beliefs  When asked during the interview, Jane felt as though language learning is something anyone can do even as an adult, saying “I think if an adult had the capacity to totally immerse themself and just focus completely, then they will be able to learn faster than a child.” At the same time when asked if language learning was a special skill she said she believed “some people have just like a larger capacity to learn faster.” When asked about whether or not she believed that she had a special skill for language learning, she said yes that language learning is “[her] one special skill mentally.”

She could not identify a main motivation for learning Mandarin, although she said it was “mostly that [she] like[s] language learning” and that “it would be fun if [she] could get to a point where she could understand some Chinese media.” She described her feelings towards language learning and more language specific attitudes in this statement:

Jane: *Mmm. Like I said I do enjoy language learning as an activity in itself but Chinese has not been my favorite language to learn. I've enjoyed Japanese more, and I've dabbled a little in Korean which I also think I enjoy more than Chinese [laughs].*

That means that out of the four languages she had studied (French, Japanese, Mandarin, and Korean), she considered Mandarin to be her least favorite. Nevertheless she reported that would continue studying Mandarin if her schedule allowed. Jane does not believe that excellent tones in Mandarin are important, just that effort is made to be understandable. Jane stated that she believes the most important aspect of language learning is acquiring vocabulary and she compared that with vocabulary acquisition in English since that is also limitless.
4.4.1.2 **Use of Language Learning Strategies** Jane is an accomplished language learner; she has been studying Japanese on her own for years, considers herself fluent, and is currently preparing for the JLPT N1. Most of her strategies for language learning in general come from her experience in learning Japanese. For example, when talking about language learning strategies in an online chat group for other language learners, she said, “We’ll like ask each other questions if we don't understand the passage or we'll talk about what we do ourselves to learn the language and make recommendations.” This is how she learned about various Japanese language learning tools such as Anki, a popular spaced repetition flashcard system, for studying vocabulary and renshu.org, which is a Japanese dictionary.

She also watched video game play-throughs in Japanese, usually of something she was familiar with in English. She reported that she was willing to do this in Chinese, but at her level she cannot yet understand a lot of the dialogue. She also said that she a Twitter account that has “bite sized” pieces to study every day which she thinks is fun. An overarching strategy for her is to just “try to get as much content as possible.” Jane did not have many specific strategies for tone learning. She said that the hand gestures were not helpful, but that Teacher Li’s corrections with telling her “higher” or “lower” were helpful. Jane wanted to be corrected and have a chance to try to produce the correct tone.

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17 The JLPT is the Japanese Language Proficiency Test and N1 is the most challenging level.
4.4.2.1 Beliefs David believes that people can have an aptitude for language in general, and that he does not possess any special ability to learn languages; rather his “advantage” is that it is something he enjoys. He considered himself to be passionate about the subject as well as having an aptitude for language. He also has had prior language learning experience which he felt benefited him. He believes having excellent tones in Mandarin is important, and his motivating factor for learning is his hope to gain employment with the FBI using his language skills. David believes that motivation is the most important factor in language learning.

4.4.2.2 Use of Language Learning Strategies Like Jane, David tries to use everything he possibly can when language learning, which is a habit he reports picking up from Japanese. He also reports writing down anything he hears that is new. David also uses Anki, and he described in detail how he uses it to study for dictation quizzes:

David: *Anki is is has been absolutely brilliant, for me, for both languages. She puts on Blackboard the list of cha- we have a dictation. I should have thought about this, this is actually helpful um pretty much every class, we have a dictation quiz, where she will say a word out loud in Chinese, you gotta write it down in Hanzi, you have to put the English meaning and that helped me a lot with getting like strokes and my muscle memory and remembering the tone and everything. That is actually really, really helpful if you study for it, I spent like a million hours studying these dictation quizzes. The way I do it, though, is with Anki. So I'll just copy that list she puts on Blackboard and put it in the search string with a certain syntax for Anki. And I can pull those individual words out of an existing deck and make them their own deck, and I just call it, you know, "Lesson 3 Dictation 1" and go through that one by one and do the Anki thing with spaced repetition and all that until until I acquire it, you know to where you where you hear the word and you can't you can no longer not understand it; that's my my metric for for fluency: if I say the word “panda bear” you have to know what what I'm talking about; you can't choose to not understand panda bear so that's where I stop studying the word.*

David described using Anki which is a virtual flashcard system with a spaced repetition feature to study new vocabulary and in particular to prepare for the dictation quizzes that frequently occur in
class. He also finds the quizzes to be helpful in part because he spends so much time utilizing Anki to study for them. He learned about Anki through studying Japanese.

4.4 Major Findings as They Relate to the Research Questions

Looking back to the goal of this study: to understand the adult NES CFL learner’s perspective about their experience learning tones through the lens of the S²R model, the next step is to examine the data and find out the answers to the research questions. The research questions are:

1. What language learning tactics, strategies, and metastrategies do CFL learners report when learning tones independently?
2. What language learning tactics, strategies, and metastrategies do CFL learners implement during live instruction? What teaching strategies does the instructor use to facilitate tone learning during live instruction?
3. What are students’ emotions, beliefs, and attitudes toward mastering the tonal system?

4.4.1 RQ1 What language learning tactics, strategies, and metastrategies do CFL learners report when learning tones independently?

This research question was answered via analyzing data from the SILL and the interview data. Learners reported using both metastrategies and strategies in each of the three dimensions described in the S²R model. General metastrategies include planning, implementing plans, paying attention, obtaining and using resources, orchestrating strategies, monitoring and evaluating. These can be applied to any of the three dimensions. Dimension-specific metastrategies therefore include the above general metastrategies as applied to each of the following three dimensions: cognitive, affective, and sociocultural-interactional (SI). Metacognitive strategies refer to planning for cognition, implementing plans for cognition, paying attention to cognition, obtaining and using
resources for cognition, orchestrating cognitive strategy use, monitoring cognition, and evaluating
cognition. Meta-affective strategies refer to planning for affect, implementing plans for affect,
paying attention to affect, obtaining and using resources for affect, orchestrating affective strategy
use, monitoring affect and evaluating affect. Meta sociocultural-interactive (SI) strategies refer to
planning for contexts, communication, and culture, implementing plans for contexts,
communication, and culture, paying attention to contexts, communication, and culture, obtaining
and using resources for contexts, communication, and culture, orchestrating strategies for contexts,
communication, and culture, monitoring contexts, communication, and culture, and evaluating
contexts, communication, and culture.

Strategies are defined by Oxford (2011) as specific goal-directed actions that a given learner
employs in a particular sociocultural setting for particular learning related purposes and needs.
Cognitive strategies include using the senses to understand and remember, activating knowledge,
reasoning, conceptualizing with details, conceptualizing broadly, and going beyond the immediate
data. Affective strategies include activating supportive emotions, beliefs and attitudes and
generating and maintaining motivation. SI strategies include interacting to learn and communicate,
overcoming knowledge gaps in communicating, and dealing with sociocultural contexts and
identities. Tactics are the way a metastrategy or strategy is applied in a given context, and these are
not set behaviors; they can be any activity that a learner does to facilitate language learning. The
following sections describe the a priori themes of the cognitive, affective, and sociocultural-
interactive dimensions based on the S^2R model.

4.4.1.1 Cognitive Dimension

According to Oxford (2011) the cognitive dimension is the dimension responsible for
remembering and processing language. This dimension includes both meta-cognitive strategies and
cognitive strategies which help the learner to construct, transform, and apply L2 knowledge. Metacognitive strategies refer to planning for cognition, implementing plans for cognition, paying attention to cognition, obtaining and using resources for cognition, orchestrating cognitive strategy use, monitoring cognition, and evaluating cognition. Cognitive strategies include using the senses to understand and remember, activating knowledge, reasoning, conceptualizing with details, conceptualizing broadly, and going beyond the immediate data. Table 4 below shows data collected in this study via interviews where student learners mention a tactic used while acquiring the tonal system of Mandarin that can be categorized into a specific metacognitive strategy.
<table>
<thead>
<tr>
<th>Metastrategy</th>
<th>Basic Function</th>
<th>Example of Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying Attention to Cognition</td>
<td>Broadly</td>
<td>“Anytime I hear something new I will write it down.”</td>
</tr>
<tr>
<td>Planning for Cognition</td>
<td>Setting cognitive goals</td>
<td>“Uh if anything I kind of want her to correct me cause I’m kind of unsure when I'm speaking if I'm getting it right, so...if she corrects me then I know for the future.”</td>
</tr>
<tr>
<td>Obtaining and Using Resources for Cognition</td>
<td>Obtaining and using technological resources for cognition</td>
<td>“I use Anki and renshu.org”</td>
</tr>
<tr>
<td>Implementing Plans for Cognition</td>
<td>Putting the plan into action</td>
<td>“I will change my schedule to watch [language videos].”</td>
</tr>
<tr>
<td>Evaluating Cognition</td>
<td>Evaluating cognitive progress and states</td>
<td>“The amount that I understand [while watching videos in Mandarin] or don’t understand is one of the ways I gauge how well I’m doing.”</td>
</tr>
</tbody>
</table>
Table 5 below shows data collected in this study via interviews where student learners mention a tactic used while acquiring the tonal system of Mandarin that can be categorized into a specific cognitive strategy.

**Table 5**

*Cognitive Strategies and Their Basic Functions with Examples of Related Tactics*

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Basic Function</th>
<th>Example of Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the senses to understand and remember</td>
<td>Auditory</td>
<td>“[李老师 won't always correct [our tone mistakes] but often she like repeats the word with the correct tone and ask us to say it back”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Haptic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“pretty much every class, we have a dictation quiz, where she will say a word out loud in Chinese you gotta write it down in Hanzi, you have to put the English meaning and that helped me a lot with getting like strokes and my muscle memory and remembering the tone and everything. That is actually really, really helpful if you study for it, I spent like a million hours studying these dictation quizzes. The way I do it, though, is with Anki”</td>
</tr>
<tr>
<td>Conceptualizing with details</td>
<td>Comparing/contrasting across languages</td>
<td>[on strategies for remembering tone in new vocab] “For me it it”</td>
</tr>
</tbody>
</table>
ended up feeling kind of like in German where to know the gender of a noun you have to--it's the article that comes before it essentially “the” is *der, die, or das*. And those correspond to masculine, feminine, neutral. To learn German vocab you have to just find that article, with the word, so if you're learning table you just learn *der Tisch*. So to me you just you have to learn to tone with the word. Um, don't try to learn it later. Don't try a separate Kan--kanji--uh Hanzi and meaning and pronunciation...learn all of it together.”

| Going beyond the immediate data | Inferring | “I’ll watch something [a video game playthrough] I’ve already watched in English because then I can like see how they translated it.” |

One strategy that came up more than once and should be elaborated on was **conceptualizing with details**. This includes analyzing and comparing. As mentioned in Teacher Li’s section, she identified the ability to compare mother tongue and target language as the most important part of language learning. What is interesting is that David agreed; however he reported not learning any strategies related to this in class. Instead, he compared learning tones in Mandarin to learning articles in German:
David: *For me it ended up feeling kind of like in German where to know the gender of a noun you have to--it’s the article that comes before it, essentially “the” is der, die, or das. And those correspond to masculine, feminine, neutral. To learn German vocab you have to just find that article, with the word, so if you’re learning table you just learn der Tisch. So to me you just you have to learn the tone with the word. Um, don’t try to learn it later. Don’t try a separate Kan--Kanji--uh Hanzi and meaning and pronunciation...learn all of it together.*

Here, David compares learning tones in Mandarin not with his mother tongue, but one of his non native languages. In fact, David had reported that although he had learned German as his second language and began learning Japanese much later, his Japanese was now so much better than his German that occasionally when speaking German he would forget a word and replace it with a Japanese word. This shows that languages beyond the L1 and L2 relationship are dynamic in nature in terms of their strength. Language is a living thing, even in the mind of an individual speaker. David frequently mentioned how this ability to reflect on prior language learning experiences gave him a sense of “what to look out for, what to be suspicious of” which he used for acquiring tone as well as grammar and vocabulary.

Another common cognitive strategy that showed up in the data was *using the senses to understand and remember*. This includes a breakdown of three senses (auditory, visual, and haptic) which can be combined. In one instance Jane described a situation in class when Teacher Li would help her to adjust her tone as needed by having her repeat the word with the correct tone. This would be considered auditory and haptic since it involves both listening and physically doing. Here is an example from an interview with Jane where she describes the correction:

**Interviewer:** *For tones okay um does she do anything, in particular, to help you? Like if you say, for example, she calls on you, and you respond and um your tone, or like one of the tones in the word or the sentence is not correct, what does she do to help correct you?*

**Jane:** *She won't always correct it, but often she’ll like repeat the word with the correct tone and ask us to say it back.*
“She won't always correct it” shows that there is some level of awareness that she can recognize certain tones are not correct, which also speaks to the *evaluating for cognition* metastrategy.

Another example of *using the senses to understand (auditory/haptic)* is Teacher Li’s use of hand gestures to help students visualize the tone contour. This has been documented in previous CFL literature as a common teaching technique for students to physically act out the tone contours with their hands. What this looks like for first tone, the high flat tone, one would raise their hand, palm down, and around the height of their face move it from left to right in a flat line, usually while saying the target word that carries that tone. For second tone, this would mean moving the hand from the bottom left to top right in front of the shoulders, neck, and face area. For third tone, a contour tone, first the hand is moved downwards from about eye level to collarbone level, and then pivots up to eye level again. Finally, of fourth tone, it would be the opposite of second tone, moving left to right in a downward fashion. This one is also usually done at a higher rate of speed than the others as it is considered the “falling” tone. See Figure 3 below for an example.
Figure 3

An Example of Using Hand Gestures to Mimic Tone Contour

Note: From Exploring the Effects of Imitating Hand Gestures and Head Nods on L1 and L2 Mandarin Tone Production (pp. 2179-2195) by Zheng, Hirata, and Kelly, September 2018, Journal of Speech, Language, and Hearing Research. Copyright 2018 American Speech-Language-Hearing Association. The model above is showing the tone contour for second tone, which is a rising tone.

Jane discussed her opinion on the usefulness of hand gestures here:

Interviewer:  Okay. Does she ever do any like hand gestures for the tones?

Jane:  Yeah, especially for 4th tone she’ll be like [gestures hand down at an angle] [laughs]

Interviewer:  This one [makes same gesture] right? [laughs] Yeah. Um okay. And do you in the--as a student in the class or other class uh other peers in your class do you guys all do the hand motions, or is it just-
Jane: *I don't think the students really do them.*

Interviewer: *Okay, so and when you're practicing on your own you don't, like, do that [gestures fourth tone again]*?

Jane: *No.*

Interviewer: *Okay, so you don't find that helpful?*

Jane: *Uh I guess not.*

Interviewer: *Okay um but you notice that she does it when she’s giving you a correction?*

Jane: *Yeah.*

This is of particular interest because this strategy along with directing students by saying “higher” or “lower” seem to be the top two strategies used in class based on the interviews with David, Jane, and Teacher Li as well as class observation data, and yet Jane and David do not seem to find gestures or telling the students “higher” or “lower” to be particularly helpful; at least not enough to include them in their own toolbox of strategies. It was never observed in class that Teacher Li explicitly taught hand gestures to the students, and she did not report explicitly teaching them to students, either. This means that the teaching strategy that is used most frequently by the instructor when teaching and correcting tones is never used by the learners. Jane does note that she at least notices the hand gestures, so perhaps passively the students are absorbing some effects of Teacher Li performing them during class, but no students reported using them at all when studying independently. This shows a significant lack of communication between Teacher Li and the students on what LLS to use and how to use them.
David also reported using this *evaluating for cognition* in talking about evaluating his progress. David reports that he will ask himself questions like this:

**David:** *How difficult is the homework? How many times, do I have to stop and get the textbook and flip through or go to grammar wiki to figure something out? If I’m having to do that for everything, that’s that’s a problem for me. That tells me I need to get under the hood and kind of do more work to acquire it, especially when the grammar is pretty simple like I understand some simple that’s that’s not good um. I do watch a few YouTube channels. I’m looking at laptop here, I have two. Speak Mandarin click. I think it’s called is one that has like really slow simple Mandarin I will listen to that. And the amount that I understand I don't understand is one of the ways that I gauge how much how well I’m doing.*

David has a good handle on evaluating for cognition. He is very self-aware as a learner and knows how to assess himself via various means of technology such as checking for understanding when doing the homework or watching a basic video in Mandarin. As will be seen in the next section David also employs many affective strategies.

4.4.1.2 Affective Dimension

In the S^2^R Model, the affective dimension is responsible for learners’ emotions, beliefs, attitudes, and motivation. The main function of affective strategies are to create optimistic emotions, beliefs, and attitudes and to spur and maintain motivation. Affect and cognition are closely linked in L2 learning, and as Oxford (2011) describes “L2 learning is an adventure of the whole person rather than merely a cognitive exercise.” Meta-affective strategies refer to planning for affect, implementing plans for affect, paying attention to affect, obtaining and using resources for affect, orchestrating affective strategy use, monitoring affect and evaluating affect. Affective strategies include activating supportive emotions, beliefs and attitudes and generating and maintaining motivation. Table 6 below shows data collected in this study via interviews where student learners
mention a tactic used while acquiring the tonal system of Mandarin that can be categorized into a specific meta-affective strategy.
Table 6

*Meta-Affective Strategies and Their Basic Functions with Reported Tactics*

<table>
<thead>
<tr>
<th>Metastrategy</th>
<th>Basic Function</th>
<th>Example of Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying attention to affect</td>
<td>Sharply</td>
<td>“Not when she's correcting me. If anything before she corrects me I feel more nervous.” [laughs]</td>
</tr>
<tr>
<td>Planning for Affect</td>
<td>Setting affective goals</td>
<td>If anything before she corrects me I feel more nervous.</td>
</tr>
<tr>
<td>Monitoring Affect</td>
<td>Monitoring affective state during a task</td>
<td>“I get nervous when it's like a-an open-ended question where I don't know what to say immediately.”</td>
</tr>
<tr>
<td>Evaluating Affect</td>
<td>Evaluating affective progress and states</td>
<td>“I think the thing that makes me the most nervous when she asks open-ended questions like “what's the difference between American and Chinese culture” like I don't know how to answer that in English. [laughs]”</td>
</tr>
</tbody>
</table>

Table 7 below shows data collected in this study via interviews where student learners mention a tactic used while acquiring the tonal system of Mandarin that can be categorized into a specific affective strategy.
<table>
<thead>
<tr>
<th>Strategy</th>
<th>Basic Function</th>
<th>Reported Tactic</th>
</tr>
</thead>
</table>
| Activating                                    | Using positive self-talk                            | [on using the wrong tone when speaking with a native speaker] “I’d try to tell myself like ‘it’s fine, I’m a language learner; they know I’m not a native speaker. It’s normal to make mistakes.’”
|                                              |                                                     | “Yeah yeah it's just I know ‘hey I know I screwed this up, but like that's how this thing works so. Like it's going to happen as part of the process. Every language learner has done it and always will do it matter what the language is.’” |
| Expressing feelings or being in touch with feelings | [on using the wrong tone when speaking with a native speaker] “Well, I mean I’d be a little embarrassed of course.” | “...juggling [sounding native-like and getting full points] is definitely more stressful than fun.” |
| Generating and Maintaining Motivation         | Increasing extrinsic motivation by considering instrumental use of the L2 | “I think it would be fun to get to the point where I could understand some Chinese media.”                                                                 | [on the importance of becoming proficient in speaking Mandarin] “Very, very important like extremely important like I'm not gonna not become fluent. For job purposes and also just because I started. So I’m not going to like give up on it...Mandarin is the second most common language in the entire planet, so it has utility...um, there's a million people, I mean many, many people, you can talk to you can use it professionally.” |
“Increasing intrinsic motivation”

“It’s an interesting language. It’s nice to look at, too.”

One of the richest examples of a tactic in the data highlights metastrategy of evaluating affect. The first vignette comes from David recounting his experience using Chinese at an Asian supermarket:

Interviewer:  *So when you when their eyes light up, how does that make you feel like when you--*

David: *That’s a- that’s amazing.*

Interviewer:  *Yeah?*

David: *Sorry I cut you off go ahead.*

Interviewer:  *No, no, just like so bef- so when you walked in there and were you like planning to say 谢谢 and like 我学中文 or whatever you said, like...?*

David: *No I’m I was just in line like putting my card in the card reader, and I was like “I can say thank you” and I said it and her eyes lit up. And that happened in Japan, too, like they don’t expect it, and that is a unique connection between two humans when you’re not supposed to be able to communicate, but you can, and when you take the visitor to the country and speak their home language like, I think it's a really great experience for them um this was even more so in Japan because they don’t expect a bunch of bunch of dumb marines from America to just be speaking Japanese so it's always like a fantastic way to connect the human even if you never see him again so that's that's great, and it was one of the things that I think is the most rewarding about about learning.*
David described the trip to the supermarket where he realized he could thank a native speaker in their native tongue, and even just that small gesture created positive emotions for both David and the cashier.

Jane also described an instance where she used the metastrategy of *evaluating affect* and this coincided with an SI strategy which will be examined in the next section. Here is a vignette of Jane talking about being corrected in class by Teacher Li:

Interviewer: *Then like let's go back to that scenario I mentioned, where you get called on, and you say something and she corrects you; what is your feeling like when she's correcting you?*

Jane: *Uh if anything I kind of want her to correct me cause I'm kind of unsure when I'm speaking if I'm getting it right, so...if she corrects me then I know for the future.*

Interviewer: *So you don't feel nervous at all when she does that?*

Jane: *Not when she's correcting me. If anything before she corrects me I feel more nervous. [laughs] I just don't know.*

Interviewer: *Yeah so it's that period of uncertainty that you feel like “ah I don't--I don't really know, but I'm gonna do my best.”*

Jane: *Yeah then when she says it the right way, I'm like “oh okay okay.”*

Interviewer: *So, then you learn, and then you feel more confident, because you know? [overlapping]*

Jane: *Yeah yeah yeah.*

Interviewer: *OK, and then, how do you feel at that time: like you see 李老师 coming over to you what's your feeling?*
Jane: *Mmm...It depends if I'm confident with the passage, I guess.*
[overlapping]
Interviewer: *Okay yeah-*

Jane: *I get nervous when it's like an open ended question where I don't know what to say immediately.* [laughs]

Here, Jane shows that she wants to be corrected, even if it makes her uncomfortable briefly because it ultimately leads to overcoming a knowledge gap.

One of the most plentiful examples that was triangulated by class observations, and all interviews was the affective strategy of *activating supportive emotions, beliefs, and attitudes.*

Interviewer: *Some of the other strategies so like one of them was “I make encouraging statements to myself, so that I will continue to try hard and do my best in language learning” somewhat true of me. So what are some examples of like encouraging statements that you would say?*

David: *Um...well...I keep in mind a few things. Um speaking of George Trombley, he has a video that thing is just called “Language Depression.” And his whole sort of thesis is that when you get to that point you're like “I've been doing this for six months, I know nothing” his take was that means you're learning. Um I've been through in Japan having a whole night where no one understands you. I drink I drink coffee like by the truckload. And just ordering coffee in Japan was so difficult because the pronunciation and eventually you're gonna have a moment will you think: “You know what? Maybe I'm putting too much time in this because if ordering coffee is that difficult then maybe I can use my time for something else.” Uh, but eventually I figured it out like I learned “oh that's how they actually say coffee,” I was saying it wrong. So understanding that that language learning itself is not a linear straight line that goes from the bottom left corner the top right corner is very, very helpful. You're going to have highs and lows you're gonna make some big mistakes you're going to have moments, where you don't know what's going on. Um just already having had that experience is helpful learning Chinese.*
David describes feeling negative emotions during his experience learning Japanese, but he persevered and was able to learn and grow from the experience. He now sees how that can happen again in his experience learning tones in Mandarin. The fact that there were quite a few examples of this shows that language learning is related to emotions and it isn’t a purely cognitive process. This further confirms statements by Oxford.

The strategy of generating and maintaining motivation was touched on in interviews with both David and Jane, although they both had quite different responses. David described how important tones are in his interview:

Interviewer: *Talking about your goal for learning Mandarin right, you said, has to do with like FBI so how important is it for you to become proficient in Mandarin?*

David: *Very, very important like extremely important like I'm not gonna not become fluent. For job purposes and also just because I started. So I'm not going to like give up on it...Mandarin is the second most common language in the entire planet, so it has utility...um, there's a million people, I mean many, many people, you can talk to you can use it professionally and and it's also you know it's an interesting language. It's nice to look at, too.*

Here, David shows high intrinsic and extrinsic motivation. Like Teacher Li he will use his language learning for a job, but unlike Teacher Li he believes Mandarin is also important because of how many people speak the language.

Finally, Jane actually had a more neutral perspective:

Interviewer: *In terms of staying motivated since like your it's not your top language that you're learning. Um like how have you been able to stay motivated to keep studying because you said you want to continue it through...like you're taking elementary and intermediate so what's the motivation behind it?*
Jane: *Mmm. Honestly I don’t know off the top of my head. [laughs]*

Jane did use the least amount of strategies, so this suggests that further work looking into motivation and strategy use might be potentially enlightening.

One sub-theme of the affective dimension is tone exaggeration. This theme emerged mostly out of interviewing David, who brought this up frequently. Teacher Li also brought this up since it is something she struggles with herself in her teaching practice. This was important because despite David working very hard and earning good grades, he still feels embarrassed when it comes to speaking because of his tones and this particular dilemma. The issue at hand is that David knows that Teacher Li exaggerates the tones by telling students to make 1st tone outside of the normal vocal range, or that 3rd tone is always a contour tone, for example. Teacher Li says that she does this, and this is also confirmed by observation of classes where the tones are clearly exaggerated so as not to be in the normal rate of speech, and sometimes they are even outside the normal pitch. David feels as though he is caught between trying to maintain a good grade and speaking these exaggerated tones or speak tones more natively but risk losing points. David feels extremely frustrated because of this, and he admitted that while he wants to learn Chinese and will continue, a large reason that he is willing and able to do that is because he is going to school for free based on his military service. David describes the problem here:

David: *I don't want to lose points on this because I didn't exaggerate enough, but then I think but in native speech, they probably don't exaggerate that much so, I feel like I'm being graded on my ability to say something that Chinese people don't ever say which makes no sense and doesn't really it doesn't doesn't feel like I'm acquiring the language.*
This can all fall under monitoring for cognition and monitoring for affect within the S²R model. The following are some examples from interviewing David on this topic. In the first example this would fall under monitoring for affect:

David: *I know for a fact that I would be excited if I was more confident in it, but again, that trying to juggle, this is what a native speaker says, this is what the textbook says, I have to get a 100 on this test. So I am going to exaggerate them to make sure she knows I do know the tone. juggling all those is is definitely more stressful than fun.*

David is clearly having a difficult time enjoying learning, which has a negative impact on the affective dimension. He explicitly states that it is directly affecting his ability to feel confident. He elaborates on it in greater detail in the following interaction:

Interviewer: *How important is it to you personally to have good pronunciation in Mandarin?*

David: *In Mandarin specifically, um really important...uh uniquely important actually because I know for a fact that when I speak Chinese, it does not sound like a Chinese person like I already know that, and I've been kind of driving myself crazy past few months trying to figure out--this is a problem that language learning in general--uh textbook versus actual real life. Um it's really important to me to learn how to say it, the way native speakers do. But then I have this problem where if I say it the way a native speaker does will I lose points?*

Interviewer: *Why would you...*

David: *Like on a test.*

Interviewer: *Okay, I see.*

David: *Right, so when I listen to native speakers, third tone does not...go like that [gestures a V shape contour]. For sure like it doesn't it sounds to me like the opposite of first tone. But if I say that on the speaking test that I have to email*
to my Professor if I say it that way, will I sound native? And if I do I get those points because she thinks I don't understand that it's falling and then rising? And that's been super frustrating eventually I just recorded myself like an MP3 email to reset is this okay? And she said yeah it's fine, you know that was kind of exaggerating tones us a little bit. She says stuff like “go all the way down,” did you ever have her, by the way?

Interviewer:  No.

David:  Okay, she she says stuff like for the falling tone you have to go all the way down. For the first tone, and she says, make sure you go as high as you can, which I know it's absolutely not true, no, no one does that, because I can go much, much higher than I do, in class I'm not going to do that any language; it'd be ridiculous. So trying to figure out like okay she's trying to get me to exaggerate so they learn it. I have to do a certain thing to get points in the test to show that I know what something like your tone is and then you have the way native speakers actually talk and to juggle all those three things is making pronunciation kind of like my my white whale right now...yeah so right now pronunciation is definitely my my main main goal.

David struggles with juggling wanting to sound native-like and with Teacher Li’s instructions to produce what, to David, sound like exaggerated tones. As stated earlier, Teacher Li struggles to find a balance and even a good method of teaching students tones.

4.4.1.3 Sociocultural-Interactive (SI) Dimension

SI strategies facilitate L2 learning in the areas of contexts, communication, and culture. Meta-SI strategies refer to planning for contexts, communication, and culture, implementing plans for contexts, communication, and culture, paying attention to contexts, communication, and culture, obtaining and using resources for contexts, communication, and culture, orchestrating strategies for contexts, communication, and culture, monitoring contexts, communication, and culture, and evaluating contexts, communication, and culture. SI strategies include interacting to learn and communicate, overcoming knowledge gaps in communicating, and dealing with sociocultural
contexts and identities. Table 8 below shows data collected in this study via interviews where student learners mention a tactic used while acquiring the tonal system of Mandarin that can be categorized into a specific meta-SI strategy.
Table 8

*Meta-Sociocultural Interactive Strategies and Examples of Related Tactics*

<table>
<thead>
<tr>
<th>Metastrategy</th>
<th>Basic Function</th>
<th>Example of Tactic</th>
<th>Jane</th>
<th>David</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying Attention to SI</td>
<td>Broadly</td>
<td>“It’s easier with a partner I’m comfortable with”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning for SI</td>
<td>Setting SI goals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtaining and Using Resources for SI</td>
<td>Obtaining and using technological resources for SI</td>
<td>“I’ll go on forums to discuss language learning strategies”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluating SI</td>
<td>Evaluating SI progress and states</td>
<td>“I’ve definitely found class more helpful for Chinese”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9 below shows data collected in this study via interviews where student learners mention a tactic used while acquiring the tonal system of Mandarin that can be categorized into a specific SI strategy.
<table>
<thead>
<tr>
<th>Strategy</th>
<th>Basic Function</th>
<th>Reported Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interacting to learn and communicate</td>
<td>Asking for explanation, clarification, verification, or repetition</td>
<td>“We [her and her partner in class] help each other when we don’t know how to read a character”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcoming knowledge gaps in communication</td>
<td></td>
<td>“When [李老师] says it the right way I’m like ‘oh okay okay.’”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dealing with sociocultural contexts and identities</td>
<td></td>
<td>“I found it in in an Asian market out in Albany I go there, like once a week and they're all Chinese and I just said “谢谢” when she gave me my receipt and their eyes light up so great, when my natives to do that. and I said to her in Chinese, “I’m a Chinese student.” That was usable because I'm literally a Chinese student. So, because that fit my circumstances so well, I was able to go out and use it like in the first couple of months of the course.”</td>
</tr>
</tbody>
</table>
One meta-SI strategy that came up during Jane’s interview was monitoring for SI. This is relevant to the observations and some of David’s frustrations since she refers to being disconnected from her peers. She reported that in an online setting she might not have a partner she is comfortable with. This affects her speaking aloud in class:

Interviewer: *How do you feel about speaking [Mandarin] in front of other people like what emotions, does it bring up for you?*

Jane: *Mm...I’m not sure. It’s definitely easier with like, like I said, like the partner that I’m comfortable with.*

Interviewer: *Okay, so if it's a partner that you're comfortable with you feel more confident, maybe less nervous?*

Jane: *Yeah.*

Interviewer: *And if it's with 李老师, does that also depend on your comfort level with the material?*

Jane: *Pretty much. Yeah it’s more about the content, I think.*

Similarly, another meta-strategy that came up is evaluating for SI. Here, Jane talks about language learning both in and outside of a classroom.

Interviewer: *Okay um so do you find classes helpful, or do you- it sounds like you've done a lot of self studying in general with language, too, so do you like being in class?*

Jane: *I’ve definitely-compared to my other language learning experiences- I’ve definitely found class more helpful for Chinese.*

Again it seems like Jane and David have differing opinions on whether or not Chinese class is helpful.
4.4.2 RQ2 What language learning tactics, strategies, and metastrategies do CFL learners implement during synchronous, online instruction? What teaching strategies does the instructor use to facilitate tone learning during synchronous, online instruction?

Class observation data were used to answer research question two. During synchronous, online instruction, the number one learning strategy used is listening to Teacher Li and repeating in an attempt to mimic her, or listening to her suggestion of how to adjust the tones so they are more accurate based on the pitch the learner starts or ends at based on her listening as a native speaker. This teaching strategy falls under the category of *using the senses to understand (auditory and haptic)*, and occasionally the students self-corrected which would be considered *monitoring cognitive performance during a task*, a metacognitive strategy. These strategies were prompted by the teacher when she would tell a student “higher” or “lower” and ask them to mimic her.

Here is teacher Li talking about this in an interview:

Teacher Li: Yeah, not hard. The most hard part like you say is the tones. So I like to use; I will tell my students I just tell them: “okay your first tone: too low. Please high, as high as you can I just tell them high. High High High High High.” So, and second tone I let them know: “lower” Beginning. For for foreigners for second tone beginning of the second tone always high, so I just let them know lower as low as you can. I just remind them “as low as you can” and for the third tone just make a turn. I just speak and let them to imitate. And the last tone the problem is the ending. The ending is very high. I say “I am ending very low” so I tell them “ending is very low; as low as you can.”

Teacher Li will tell students how to adjust the pitch of their voice in order for the tone to sound accurate. She notes that students’ first tones are often too low, so she tells them “higher.” She notices that for the second tone, the pitch starting point is too high, so students should start lower. The third tone, since it is a contour tone, Teacher Li tells students to “make a turn” meaning to change the direction of the pitch. Finally, students typically end the fourth tone too high, so she
tells them to end it lower. She listens to them, gives them the correction and an example, and lets
them mimic her and try again.

Teacher Li elaborated on this in a scenario elicited during the interview, which was
confirmed by classroom observation data.

Interviewer: Okay, so I'm going to give like a scenario so say you're in class and
you're asking students to like answer questions right and the-You call on a student
and they answer a question and their tones...they respond with like the right word,
but the tone is off. So what do you do?

李老师: Correct.

Interviewer: How do you correct them?

李老师: Say-Okay, most of most of because of tones not because of initials and-

Interviewer: Yeah just the tone is off.

李老师: Yes, so lower higher. So if I say lower and they still not as low as I want,
I will speak and ask them to speak after me.

Interviewer: Okay, so first you give them like, “Oh no this needs to be lower” and
then they try. And then, if it's still not correct you will do it, so they can imitate.

李老师: Yes.
4.4.3 RQ3 What are students' emotions, beliefs, and attitudes toward mastering the tonal system?

The final research question was answered by examining the Emotion Rating Scale (Oxford, 2011) and interview data.

Figures 5-9 were adapted from Oxford (2011)’s 4 level continua which can be used to evaluate students’ feelings toward L2 learning. Here, they are broken down into the Fear/Relaxation continuum, the Anger/Happiness continuum, the Shame/Pride continuum, and the Boredom/Interest continuum. In each of the figures below the student’s name is next to a point that corresponds with their answer to the question associated with that continuum.
Figure 5 above shows the Fear/Relaxation Continuum. The center line represents the neutral point. Going left are negative emotions that increase in intensity the further left one goes. They are: mildly apprehensive, anxious, and terrified. Going right from the center are positive emotions that increase in intensity the further right one goes. They are: calm, somewhat relaxed, and very relaxed. Students responded to the following prompt: Please choose an emotion that describes how scared or relaxed you are when learning tones in Mandarin. As seen in Figure 5 Sara, Jane, and David all selected mildly apprehensive while Tom and Oscar chose calm. In this prompt, no students strayed very far from close to neutral, and three of the students indicated experiencing a more negative emotion while two indicated experiencing a more positive emotion while learning tones in Mandarin.
Figure 6

Emotion Rating Scale: Anger/Happiness Continuum

Figure 6 above shows the Anger/Happiness Continuum. The center line represents the neutral point. Going left are negative emotions that increase in intensity the further left one goes. They are: annoyed/dissatisfied, angry/upset, and furious. Going right from the center are positive emotions that increase in intensity the further right one goes. They are: accepting/satisfied, happy/pleased, and delighted. Students responded to the following prompt: Please choose an emotion that describes how angry or happy you are when learning tones in Mandarin. As seen in Figure 6 Sara, Oscar, and Jane all selected accepting/satisfied while David chose happy/pleased. Only Tom chose the highest rating of delighted. In this prompt, all students selected a more positive emotion, indicating they do not experience much anger in relation to learning tones in Mandarin.
Figure 7 above shows the Shame/Pride Continuum. The center line represents the neutral point. Going left are negative emotions that increase in intensity the further left one goes. They are: embarrassed, humiliated/ashamed, and mortified. Going right from the center are positive emotions that increase in intensity the further right one goes. They are: self-accepting, confident, and proud. Students responded to the following prompt: Please choose an emotion that describes how ashamed or prideful you are when learning tones in Mandarin. As seen in Figure 7 Sara and Jane selected self-accepting while Tom and Oscar chose confident. Tom, however, chose embarrassed. In this prompt, all students except David indicated experiencing a more positive emotion while learning tones in Mandarin.
Figure 8 above shows the Boredom/Interest Continuum. The center line represents the neutral point. Going left are negative emotions that increase in intensity the further left one goes. They are: indifferent, bored, and world-weary. Going right from the center are positive emotions that increase in intensity the further right one goes. They are: interested, engaged, and fascinated. Students responded to the following prompt: Please choose an emotion that describes how bored or interested you are when learning tones in Mandarin. As seen in Figure 8 Sara and Jane selected interested while Tomm Oscar, and David all chose fascinated. In this prompt, all students selected a more positive emotion, indicating they do not experience much boredom in relation to learning tones in Mandarin.
4.4.3.1 Emotion Rating Scale Discussion

Looking at all four continuua above, it is clear that in general students in this class have a positive association with learning tones in Mandarin. These continuua show that no students have any overwhelmingly negative emotions associated with learning tones in Mandarin. Overall they are interested, confident, and satisfied with their tone learning. All five students tended to have more neutral feelings when it came to anxiety; no one was extremely relaxed or fearful. Three students did state they were mildly apprehensive when learning tones. Also, David said he was embarrassed, and when asked about this he reported that it is because he feels like his tones should be better than they are. However, even embarrassed is only the lowest level of negative emotions on that continuum. Interestingly, David was both fascinated by learning tones and also embarrassed about learning them. During the interview he elaborated on this:

David: I don't want to lose points on this because I didn't exaggerated enough, but then I think: “but in native speech, they probably don't exaggerate that much” so, I feel like I'm being graded on my ability to say something that Chinese people don't ever say.

Some feelings of apprehension and embarrassment did not seem to deter students from feeling the positive emotions on the other three continuua. This suggests that learner anxiety, although widely studied, is only one portion of the emotional range experienced by L2 learners and that if generally more positive emotions are felt, apprehension and embarrassment can be overcome.
4.5 Validity and Reliability

Validity and reliability are both crucial in research designs to ensure results are meaningful and accurate. (Maxwell, 2013) defined validity as “the correctness or credibility of a description, conclusion, explanation, interpretation, or other sort of account” (p. 122). (Maxwell, 2013) also created a checklist for strengthening any issues caused by validity. This section describes the validity controls that will be used in the present study.

One method of combating validity issues is by using triangulation, which is essentially using a multitude of sources to explain an event, and in doing so the findings become more valid than explaining an event from a single incident or observation (J. W. Creswell & Miller, 2000; Maxwell, 2013). In this study, there were several forms of data collected: a questionnaire, a task, in depth participant interviews with both the instructor and two students, analysis of artifacts submitted by students (class notes), as well as class observations including a recording of an oral exam. Follow up contact with each of the participants who met with the researcher for an interview was also done to perform member checks. Additionally, observations of class and an exam were done. These were recorded, transcribed, and compared with what both the teacher and students reported having gone on in class. Throughout this process, the researcher consulted with senior faculty as well as peers to receive feedback on her work. Finally, providing a clear record of all data collected (an audit trail) is crucial to enhancing validity of any study.

Another means of strengthening is identifying discrepant data. After the themes or categories are determined, researchers must then search for data that would disprove the established themes or do not fit into one of the categories (Lewis, 2009). From the two datasets, the data will, of course, be compared, and one of the aims of this study is not only to see how the quantitative and qualitative data compare but also to look at the data collected in each stage and make sense of it as well. Another
way to strengthen validity is by performing member checks in which the researcher goes back to confirm with participants what was recorded so that it accurately reflects the intended meaning of the participants, which will be done during the qualitative phase.

Creswell and Miller (2000) suggest researchers engage in at least two of the following checks to ensure validity in a qualitative study: prolonged engagement and persistent observation, triangulation of data sources, peer debriefing, negative case analysis, clarifying researcher bias, member checking, rich thick description, and external audits. In this study, the researcher engaged in all of these checks with the exception of conducting external audits.

Reliability of a study refers to a study producing reliable and consistent results. Lewis (2009) mentions two ways to enhance reliability. The first is through variation whereby the researchers vary the time and place the observations occur. This was not as doable via Zoom where the data was collected; however, the researcher did observe on varying days, not only on Mondays for example. Also, doing research in multiple stages means that the participants have various times and places in which they are being studied. In this study the SILL and the interview and the observations all serve as different places. Since the SILL and observations were done prior to the interviews, the students were asked about situations in class and their responses to interviews, allowing to check for reliable and consistent answers. Lewis also suggests the split-half method wherein several responses are solicited from a participant that basically asks the same question in various manners. These responses should all be relatively similar. This was done in the SILL, the interview, and again during the final member checks when all data is reviewed with each participant.
4.6 Positionality Statement

Objectivity in research is not attainable. Bourke (2014) succinctly writes “we can strive to remain objective, but we must be ever mindful of our subjectivity” (p. 3). Therefore, it is important for the researcher to explain their position. Because the researcher of the present study is a native English-speaking learner of Mandarin, there is an emic perspective; however, there is also an etic perspective since the researcher is shifting the view from that of a student to a researcher. Indeed, the study comes from a place of curiosity built in the foundation of the researcher’s own experience as a learner.

Chapter 5: Discussion and Conclusion

5.1 RQ1 Discussion: What language learning tactics, strategies, and metastrategies do CFL learners report when learning tones independently?

Research done in CFL tone acquisition has focused on many specific aspects such as error analysis (Yang, 2016), pinyin tone formats (Blicher et al., 1990; Y. Liu et al., 2011; Lundelius, 1992; Mcginnis, 1997) pitch gesture (Baills et al., 2019), feedback (Bryfonski & Ma, 2020), perception (A. W. Liu, 2014). However, there are no studies exploring learning Mandarin through the lens of the S^2R model, particularly in how the affective strategies play a role.

This study identified a variety of metastrategies, strategies, and tactics use by students across all three dimensions. Table 10 summarizes the most important tactics, strategies, and metastrategies analyzed in Chapter 4.
Table 10

Tactics, Strategies, and Metastrategies with the Highest Reported Frequencies

<table>
<thead>
<tr>
<th>Tactics</th>
<th>Strategies</th>
<th>Metastrategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>creating associations between new material and known material, visualizing tone contour in the mind, imitating native speakers, reading a dialogue, watching TV/movies or listening to podcasts</td>
<td>activating supportive emotions, beliefs, and attitudes; generating and maintaining motivation</td>
<td>Planning for cognition, paying attention to cognition, evaluating cognition, planning for affect</td>
</tr>
</tbody>
</table>

The LLS used in learning the tonal system of Mandarin differed between David, Teacher Li, and Jane. To David, mastering the tonal system seemed in his words “uniquely important” while to Jane she did not feel as though speaking with excellent tones was necessary. Teacher Li thought the same and that the goal is just communication and basic intelligibility. This means that the affective strategy of generating and maintaining motivation when it comes to tone learning in CFL is different across learners and even in the teacher’s mind. David also expressed his frustration about the textbook, the other students, and the uncertainty of how Teacher Li felt about her students’ ability to produce tone in a native-like way. Also David felt that sometimes the content of the course was not pertinent to his life and was therefore preventing him from using Mandarin on a regular basis outside of class.

However, Oxford (2016) states that without meta-affective strategies, learners may be less likely to reflect on their affective needs and therefore may not take control of the affective dimension of language learning that is often necessary in the early stages. This can explain why very few affective or meta-affective strategies were observed in class or reported by Jane or David about class.
5.2 RQ2 Discussion: What language learning tactics, strategies, and metastrategies do CFL learners implement during synchronous, online instruction? What teaching strategies does the instructor use to facilitate tone learning during synchronous, online instruction?

To get a full picture of the LLS used by David, Jane, and the other students, this question was added. This also allowed the researcher to see if any teaching strategies were implicitly picked up on by the students and used outside of class.

Not every student has strategic expertise at the outset. Expertise in employing language learning strategies “is not present in every learner; it needs to be developed” (Gu, 2010, p. 1; as cited in Oxford (2011)). In class during live instruction the fewest strategies were observed. None were explicitly taught by Teacher Li, and she used tactics that both David and Jane reported not using, namely pitch gestures. Likewise, on the SILL not a single student reported using the hand gestures when practicing tones. This is potentially of importance. Chamot (2008) notes that explicit strategy instruction is more effective than implicit strategy instruction embedded in classroom activities without explanations and modeling. This could account for why the students are not using the hand gesture tactic. It is possible that this is effective, but if no learners are trying it or using it regularly then it cannot be effective. This is significant because if the instructor has no teaching strategies for teaching tone, and according to the S²R model the teacher acts as a mediator for learning LLS, then how can students consistently and systematically learn tones?

Teacher Li did use the affective strategy of activating supportive emotions, beliefs, and attitudes as she consistently encouraged her students and pointed out where they did well. However, it is difficult to observe any internal positive self-talk that could activate supportive emotions beliefs and attitudes or work to generate or maintain motivation. It is possible students pick up on Teacher Li’s encouragement and internally use LLS meaning affective strategies may be
implicitly taught. This is an important finding of this study since Deci (1971) found that giving people unexpected positive feedback on a task increases motivation, so it is possible that this could spark a chain reaction whereby it helps the learner generate and/or maintain motivation. This is probably the most important finding in this study related directly to pedagogy. Teacher Li was extremely encouraging. She never disparaged her students, and even when correcting them she gave them instructions on how to improve, not simply telling them they were incorrect. This shows that her goal, as an instructor’s should be, is truly to help her students improve. This positive learning environment may lead students to feel more relaxed, or at least reduce their anxiety which allows them to maintain more positive emotions overall. This will be explored more in the following section.

5.3 RQ3 Discussion: What are students' emotions, beliefs, and attitudes toward mastering the tonal system?

Prior to this study, learner anxiety had been studied in detail. Learner anxiety (sometimes referred to as language anxiety) is a special form of anxiety in which the learner is afraid of performing in the L2. According to Horwitz (2007) and Oxford (2011) this is related to damaged self-concept, reduced personality, lowered self confidence, and a lowered sense of agency. Further, it can negatively impact learners’ listening comprehension, vocabulary retention, oral production, test scores, and class grades (Gardner, Tremblay, Masgoret, 1997) and can discourage learners from communicating in the L2 (MacIntyre, 2003). However, Oxford (2011) believes that even attitudes can change and through the use of LLS the L2 learner can deal with their emotions that may be negatively affecting their learning outcomes or blocking them from achieving language goals.

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18 Students might be using positive self-talk internally. In order for the strategy to be observable it would have to be done aloud.
Within the S²R model, the affective dimension provides an opportunity for learners to use positive LLS to overcome the challenges they face when dealing with learner anxiety. An important finding of this study is that while some learners did report low levels of apprehension or embarrassment, learners’ relationship with learning tones in Mandarin is overwhelmingly positive. In general, all five participants expressed largely positive emotions in relation to learning tones in Mandarin. The positive emotions contributed to students’ active participation in class, in particular their comfortability asking Teacher Li directly for help when needed. This is linked back to the definition of self-regulation given by Shunk and Ertmer (2000) which includes asking for help when needed. What’s more is that if students are comfortable asking for help and they do, in fact ask for help, then this shows motivation to continue learning. Therefore, it can be said that there is a connection between emotion regulation and motivation as well as learner agency.

5.4 Conclusion

This research highlights the complicated dynamics between language learning, the affective dimension of learning, and tone acquisition in Mandarin. Since tones present a major challenge to CFL learners, having a toolbox of LLS, especially affective strategies, could reduce negative emotions, beliefs, and attitudes and increase motivation.

Oxford (1990) defines LLS as “specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to new situations” (p. 8). This study has examined an elementary level Chinese class at an American university to understand students’ LLS use when learning tone. This study both confirmed the work of previous studies and also opened up new topics for discussion and research. This study is significant because
it confirms Oxford’s notion that language learning is an exercise of the whole person, involving emotions, beliefs, attitudes, and motivation not simply cognitive exercises.

Importantly, the finding that metacognitive and affective strategy use were the two most frequently reported strategies shows that there is a connection between the affective and cognitive dimension of language learning. This confirms Oxford (2011) who maintained that these two dimensions are closely linked. Specifically in this study, there is a symbiotic relationship between the positive environment fostered by Teacher Li and the motivation and overall positive emotions reported by the students in relation to tone acquisition.

This is extremely important because going back to the work of Orton (2013) referenced in the introduction of this paper, there is a need for improving tone pedagogy for the following reasons: (1) unintelligibility by the learner as a hearer, (2) issues with vocabulary retention, (3) unintelligibility by the learner as a speaker, and (4) negative effects on learner motivation. Indeed, all of these points came up in the course of this study, but specifically the finding most pertinent to the relationship between the learning environment created by the teacher and the LLS used by the students is the effect on learner motivation. In this study both the instructor and the student participants agreed that tones are difficult. They are difficult to produce, to hear, to mimic, to teach, and to remember. This is an inevitable challenge that learners of Mandarin must face. It is especially difficult for learners coming from non-tonal language backgrounds, like NES students. However, when the students have positive encouragement from their instructor, they do not feel intimidated to speak and continue learning. In fact, the only evidence of lack of motivation is that of Jane, and her lack of motivation seems to be more closely related to her preference for languages other than Mandarin, not that she felt that tones were particularly difficult.
However, this study provides some insight into how to overcome this challenge. Firstly, the affective dimension is important in acquiring tone in Mandarin. While some neutral and negative emotions were reportedly experienced by the participants in connection with tone learning, the overwhelming majority of emotions were positive. The use of affective strategies was also present. While causation cannot be determined here, the presence of both a majority positive experience and many self-regulated affective strategies as well as an encouraging instructor indicate that a relationship between the two is possible. Further investigation into this in another study would provide more insight. Language is not merely a cognitive exercise made of rote memorization; there are emotional risks involved. It requires vulnerability. This means learning tones might be emotionally challenging, but if students have the LLS to activate positive emotions, beliefs, and attitudes and maintain motivation they can overcome the challenges. This is related to learning tone in Mandarin from a NES perspective since that is a challenge both the instructor and learner can anticipate. These affective LLS can be fostered in a positive teaching environment, like the one created and fostered by Teacher Li.

In that vein, having a deep understanding of your language background or your students’ language background, and the target language is helpful both cognitively and affectively. Both David and Teacher Li outright stated this, while Jane implied it by sharing her experience learning Japanese. Cognitive strategies for language learning such as studying with Anki were helpful and could be applied across languages, as was the knowledge that language learning is not a linear process, and accepting that and knowing challenges will come and knowing how to persevere helps maintain motivation. This is related to the belief in oneself as a language learner, or ones self-concept (Bandura, 2007). When a student (or teacher) conceptualizes themselves as a learner (like Jane and David did) and they believe they have an aptitude for language learning they see LLS as
tools that can be applied to multiple languages, not necessarily unique strategies specific to each language.

As in Bryfonski and Ma (2020), both David and Jane reportedly preferred explicit correction. However, in Bryfonski and Ma (2020) students also reported this, and the authors found that not to be true; students actually preferred implicit instruction and were not aware of that. This would be another avenue worth exploring further using the lens of strategy theory in order to assess.

5.5 Implications

5.5.1 Theoretical Implications

The S^2R model is based on the principle that learning requires a mediator; in other words, lack of language learning strategy knowledge is a barrier to being able to successfully learn the actual language. The lack of explicit in-class strategy instruction and the low number of strategies observed during class time support that fully informs the learner is more successful (Oxford, 1990). This indicates that it may be beneficial for Mandarin teachers to help their students develop LLS in order to facilitate tone learning. Oxford's model posits that the teacher is a facilitator and moderator that connects the learner with the strategies. The instructor should guide and inform learners not only of language content but also of strategies for learning the language. Doing this may increase the LLS used by learners during live instruction. If you have no LLS and the teacher does not assist in teaching strategies, then the learner could struggle. However, it is also important to note that while the S^2R model does believe in a teacher as a necessary mediator for facilitating language learning, there is a difference between a teaching strategy and a learning strategy. This study focuses on language learning strategies within a self-regulation model, which means if the strategy is not something reported by the students, it is not going to be reported as such. This distinction was
obvious in discussions with both Jane and David as well as in the SILL data since no students reported using hand gestures as a strategy to practice tones.

5.5.2 Implications for Research in Tone Acquisition

This case study serves as a supplement to the plethora of quantitative works on tone acquisition in CFL pedagogy. Since prior to this study only Liu (2014) and Bryfonski and Ma (2020) conducted any qualitative analysis in their CFL research, this study adds additional perspectives of learners and a teacher. This is the first study that has focused on specific affective strategies, which shows that affect does play a role in language learning.

This has opened up new possibilities in the field of tone acquisition research since the S2R Model can be successfully applied to CFL classroom learning.

5.5.3 Pedagogical Implications

Tones are the most crucial part of the formative stage of learning Mandarin, typically taught at the beginning of the first semester; there is no way to master Mandarin without acquiring tone successfully, and it has been shown that tones are extremely challenging both to teach and to learn. This challenge can include both the cognitive challenge of overcoming the differences in how tone is processed in the NES’ brain as well as the emotional challenges that can come with learning a new language.

In this study, as shown in Table 10, metacognitive strategies, affective strategies, and the specific tactics of creating associations between new material and known material, visualizing tone contour in the mind, imitating native speakers, reading a dialogue, watching TV/movies or listening to podcasts are all reportedly the most important and most frequently used metasstrategies, strategies, and tactics in this study. Therefore, it may be useful to CFL teachers and learners to apply these metasstrategies, strategies, and tactics to tone acquisition. For example, fostering an encouraging
classroom environment can activate supportive emotions, beliefs, and attitudes, and help to maintain motivation which in turn will reduce emotional challenges for the learners, which ultimately helps them to focus on the cognitive challenge of learning tone.

Another consideration for CFL teachers and learners is that individual learners may require different LLS at different times (Oxford, 2011). As mentioned earlier, both White (1995) and Oxford (2011) noted that affective strategies are especially useful to certain types of learners. One of these groups that White (1995) focused on are distance L2 learners. In this study, Jane reported that she felt less comfortable doing partner work in an online setting because it was awkward working with someone via Zoom. With the increase in virtual and hybrid learning modes post-COVID, Chinese language teachers might consider this when doing group speaking or reading tasks in a hybrid or virtual setting.

Additionally, learner goals and motivation are a factor that needs to be considered. This also has to do with how they position this language learning with part of their life goals. This will have inevitable impacts on learner motivation. One suggestion for teachers and curriculum designers of CFL is that they get to know their students’ goals and motivations for learning Mandarin and align at least some of their teaching with that.

5.6 Limitations

As in any study there are naturally limitations that must be acknowledged. This study is quite small and therefore it is not generalizable to the larger population of language learners on the whole. Another limitation is that it was conducted during COVID-19, and there may have been some effects from the online nature of the course on the outcomes of the learner experience.
5.7 Suggestions for Future Research

This study has only examined one small group of students, and therefore there is plenty of opportunity in future research to learn more about the affective dimension of learning how to use tones when studying Chinese as a foreign language.

A potential means of conducting further research that could directly benefit CFL instructors would be to create guiding principles that would be tested as an intervention, and the any principles that produce meaningful improvement in tone acquisition could potentially become classroom practice. Potential research designs for this could be explored within a multiple baseline design as a qualitative component with or without qualitative aspects such as interviews or focus groups.

One avenue to be explored is within diary studies. To continue investigating the affective aspect of Mandarin language learning, students could be tasked with keeping a private language learning diary and submitting their artifacts as data for the researcher who could then analyze the data to gain more insight into students’ emotions, beliefs, and attitudes about language learning. Strategies described in Liu (2014) included hand gesture, repetition, error correction, exposure, native speaker interaction, and explicit instructions, all of which were also observed and/or reported in this study and fall under the cognitive dimension. In agreement with Bryfonski and Ma (2020) in which students reported wanting explicit feedback but actually preferred implicit feedback, both David and Jane reported wanting to be corrected. This study did not test their preference for implicit feedback, but this could be researched in the future. All of this information along with the findings of this study could be used to design diary questions that could guide the learners.

One theme from the data in this study that could be explored further is what David expressed as struggling to find a balance between achieving native-like tones and getting a good grade. Teacher Li by her own admission has said that she grades largely based on effort and makes sincere attempts
to make her students comfortable when speaking, even during exams. A further research question brought up in going over that data is “at what point does focusing on ensuring a positive affective experience sacrifice cognitive improvement, specifically achieving native-like tones?”

Additionally, thinking of the concept of how tones are processed cognitively in NES’ brains versus native Chinese speakers’ brains is important for exploring another area of potential research. As stated previously, it has been shown that NES process tones as separate from the pronunciation of the rest of the phonetic information in a Mandarin syllable while Chinese speakers produce this as one cohesive unit (Lee & Nussbaum (1993); Wang, Jongman, and Sereno (2001)). One possible goal to improve Mandarin tone acquisition is to move towards this “chunking” in NES. There are two possible ways to do that. The first is to research how NES who possess advanced speaking skills in Mandarin achieved their skills. The second is to expand another study similar to this to include a larger pool of teachers, both native Chinese speakers and NES. This would allow for potentially greater number of and increased variety of teaching strategies, which ultimately would benefit Chinese teachers of all language backgrounds.

Finally, taking this model and exploring it outside of an academic context with non-traditional learners who are doing language self-study may produce interesting findings. This could be related closely to the work of Bandura (2007) as well as potential merits for language learning technology apps, independent tutors, and learners who are entirely independent.
References


Bryfonski, L., & Ma, X. (2020). Effects of Implicit Versus Explicit Corrective Feedback on


Chen, Q. (2001). *Analysis of Mandarin Tonal Errors in Connected Speech by English-Speaking American Adult Learners: A Study at and above the Word Level* [Dissertation].


Liu, A. W. (2014). *Students’ and Instructors’ Perceptions of Tone Pedagogy: A Qualitative, Collective Case Study* [Dissertation].


Social Issues, 12(1), 64–74.


Language Learning, 2, 70–76.
Appendix

Data Collection Materials

Script:

Hello, my name is Adele Touhey, and I am a PhD Candidate at the University at Albany in New York. I am working on my dissertation which focuses on how native English speakers learn tones in Mandarin. I am currently looking for participants for my research. If you are interested and willing to help with this project, there are two parts: the first is clicking this link and responding to the survey questions, and the second is a short interview/reading task on a separate date of your choosing. In total this will take less than 1 hour of your time. If you have any questions, please email me at atouhey@albany.edu. Thank you!

This was also made available via a link so students could have a simulated face to face experience in an attempt to recruit more participants. The link of the researcher reading this script can be found here: https://youtu.be/m68Htj3OFLU

Background Questionnaire

1. Name
2. Age
3. Gender
4. First Language
5. Country of origin
6. Current country of residence
7. Language(s) you speak at home and percentage of the day you use each language:
8. Have you ever traveled to a Mandarin speaking country?
   a. If yes, please describe the reason for your trip(s), the length, and when that trip took place.
9. How long have you been studying Mandarin?
10. Which textbooks have you used to learn Mandarin?
11. Which online language programs (if any) have you used to learn Mandarin?
12. In which format do you study Mandarin?
   a. University course in person
   b. University course blended format (in person & online)
   c. University fully online course
   d. Private Tutor
   e. Self taught
13. What is the most difficult part of learning Chinese for you personally?
a. Character writing  
b. Character reading  
c. Tones  
d. Pronunciation of sounds/Pinyin (not tones)  
e. Listening  
f. Other:  

Thank you for completing the Background Questionnaire. Please continue to the next part of the study.
Emotion Rating Survey

Please respond to the following questions about your general emotions when you are learning tones and speaking in Mandarin.

1. Please choose an emotion that describes how scared or relaxed you are:
   a. Terrified
   b. Anxious
   c. Mildly apprehensive
   d. Calm
   e. Somewhat relaxed
   f. Very relaxed

2. Please choose an emotion that describes how bored or interested you are:
   a. World-weary
   b. Bored
   c. Indifferent
   d. Interested
   e. Engaged
   f. Fascinated

3. Please choose an emotion that describes how angry or happy you are:
   a. Furious
   b. Upset/Angry
   c. Annoyed/Dissatisfied
   d. Accepting/Satisfied
   e. Happy/Please
   f. Delighted

4. Please choose an emotion that describes how ashamed or prideful you are:
   a. Mortified
   b. Humiliated/Ashamed
   c. Embarrassed
   d. Self-accepting
   e. Confident
   f. Proud

Thank you for your responses. Please continue to the final part of the survey.
The Strategy Inventory for Language Learning (SILL) is designed to gather information about how you, as a student of Mandarin, go about learning that language. Below, you will find statements related to learning Mandarin. Please read each statement. Then, mark the response (1, 2, 3, 4, or 5) that tells how true the statement is in terms of what you actually do when you are learning Mandarin. If you wish to stop the study at any time you are free to do so. Your responses will not be used, and you will face no consequences whatsoever.

Possible responses:

1. Never or almost never true of me
2. Generally not true of me
3. Somewhat true of me
4. Generally true of me
5. Always or almost always true of me

Never or almost never true of me means that the statement is very rarely true of you; that is, you do the behavior which is described in the statement only in very rare instances.

Generally not true of me means that the statement is usually not true of you; that is, you do the behavior which is described in the statement less than half the time, but more than in very rare instances.

Somewhat true of me means that the statement is true of you about half the time; that is, sometimes you do the behavior which is described in the statement, and sometimes you don’t, and these instances tend to occur with about equal frequency.

Generally true of me means that the statement is usually true of you; that is, you do the behavior which is described in the statement more than half the time.

Always or almost always true of me means that the statement is true of you in almost all circumstances; that is, you almost always do the behavior which is described in the statement.

Answer in terms of how well the statement describes you, not in terms of what you think you should do, or what other people do. Answer in reference to Mandarin, not to any other language(s) you may have studied. There are no right or wrong responses to these statements. Work carefully but quickly. You will be shown one (1) example, and then the study will begin.

Example:
A. I actively seek out opportunities to talk with native speakers of Mandarin.

1. Never or almost never true of me
2. Generally not true of me
3. Somewhat true of me
4. Generally true of me
5. Always or almost always true of me

The study will begin on the next page.

-----

Part A

1. When learning a new word I create associations between new material and what I already know.
2. When learning a new word I put the new word in a sentence so I can remember it.
3. When learning a new word I place the new word in a group with other words that are similar in some way.
4. When learning a new word I associate the sound of the new word with the sound of a familiar word.
5. When learning a new word I use rhyming to remember it.
6. When learning a new word I remember the word by making a clear mental image of it or drawing a picture.
7. When learning a new word I visualize the tone contour of the new word in my mind.
8. When learning a new word I use a combination of sounds and images to remember the new word.
9. When learning a new word I use flashcards with the new word on one side and the definition or other information on the other.
10. When learning a new word I physically act out the tone contour with my hand.
11. When learning new material I review often.
12. When learning new material I schedule my reviewing so that the review sessions are initially close together in time and gradually become more widely spread apart.
13. When learning new material I go back to refresh my memory of things I learned much earlier.

Part B

1. When learning new material I say or write new expressions repeatedly to practice them
2. When learning new material I imitate the way native speakers talk.
3. When learning new material I read a story or dialogue several times until I can understand it.
4. When learning new material I practice the sounds and tones of Mandarin.
5. When learning new material I use familiar words in different combinations to make new sentences.
6. When learning new material I initiate conversations in Mandarin.
7. When learning new material I watch TV shows or movies or listen to the radio or podcasts in Mandarin.
8. When learning new material I try to think in Mandarin.
9. When learning new material I attend and participate in out-of-class events where the new language is spoken.
10. When learning new material I seek specific details in what I hear.
11. When learning new material I apply general rules to new situations when using Mandarin.

Part C
1. I preview the language lesson to get a general idea of what it is about, how it is organized, and how it relates to what I already know.
2. When someone is speaking Mandarin, I try to concentrate on what the person is saying and put unrelated topics out of my mind.
3. I decide in advance to pay special attention to specific language aspects; for example, I focus the way native speakers pronounce certain sounds.
4. I try to find out all I can about how to be a better language learner by reading books or articles, or by talking with others about how to learn.
5. I arrange my schedule to study and practice Mandarin consistently, not just when there is the pressure of a test.
6. I arrange my physical environment to promote learning; for instance, I find a quiet, comfortable place to review.
7. I organize my language notebook to record important language information.
8. I plan my goals for language learning, for instance, how proficient I want to become or how I might want to use the language in the long run.
9. I plan what I am going to accomplish in language learning each day or each week.
10. I prepare for an upcoming language task (such as giving a presentation in Mandarin) by considering the nature of the task, what I have to know, and my current language skills.
11. I clearly identify the purpose of the language activity; for instance, in a listening task I might need to listen for the general idea or for specific facts.
12. I take responsibility for finding opportunities to practice Mandarin.
13. I actively look for people with whom I can speak Mandarin.
14. I try to notice my language errors and find out the reasons for them.
15. I learn from my mistakes in using Mandarin.
16. I evaluate my general progress I have made in learning Mandarin.
17. I try to relax whenever I feel anxious about using Mandarin.
18. I make encouraging statements to myself so that I will continue to try hard and do my best in language learning.
19. I actively encourage myself to take wise risks in language learning, such as guessing meanings or trying to speak, even though I may make some mistakes.
20. I give myself a tangible reward when I have done something well in my language learning.
21. I pay attention to physical signs of stress that may affect my language learning.
22. I keep a private diary or journal where I write my feelings about language learning.
23. I talk to someone I trust about my attitudes and feelings concerning the language learning process.

Thank you for completing this survey. Please continue to the task now.
Interview

Thank you for agreeing to participate in this portion of this study.

You will be asked some questions about learning Mandarin. The interviewer may ask you to repeat an answer or to clarify. There are no right or wrong answers; you are encouraged to give your honest opinion, experience, and beliefs. If you wish to change your answer to a previous question at any time, please let the interviewer know, and we can revisit that question. This interview is being recorded, but your name and/or identity will not be shared with anyone, nor will it be used in any written version of this research in accordance with your right to remain anonymous as per the consent form you signed at the beginning of the study. If you wish to stop the study at any time you are free to do so. Your responses will not be used, and you will face no consequences whatsoever. We will begin the interview now.

General Questions:

1. How important is it for you to become proficient in Mandarin?
2. Why do you want to learn Mandarin? (Possible prompts: I’m interested in Mandarin language. I’m interested in Chinese culture. I have friends who speak Mandarin. Mandarin is a required course for me to graduate. Mandarin is my choice out of several possible language courses required for graduation. I need to know Mandarin for my career. I need to know Mandarin for travel.
3. What is your level of enjoyment in learning Mandarin?

Questions about Tones in Mandarin:
1. What strategies do you use when you learn Mandarin to improve your tones?
2. When you learned about tones and Mandarin pronunciation, how much time did your teacher spend on it?
3. How do you feel about your tones when you speak to native Mandarin speakers?
4. In a classroom setting, how do you feel about speaking in front of others?
5. How do you feel others perceive your tones in Mandarin?

Questions from the BALLI

1. Do you believe it is easier for children to learn foreign languages than for adults?
2. Do you believe some people have a special ability to learn foreign languages?
3. Do you believe that you have a special ability to learn foreign languages?
4. Do you believe that some languages are easier or harder to learn than others?
5. Do you think people from your country are good at language learning?
6. Do you believe that it is important to speak Mandarin with excellent tones and pronunciation?
7. Do you agree with this statement: people who are good at science or math are not good at learning foreign languages.
8. Do you agree with this statement: if beginner learners are allowed to make mistakes, it will be difficult for them to become fluent later on.
9. What do you think is the most important part of learning a language? (grammar, vocabulary, pronunciation, reading, writing)
10. Do you agree with this statement: people who speak more than one language are very intelligent.
11. Do you agree with this statement: everyone can learn to speak a foreign language.

Final thoughts: Is there any question you would like to revisit? Do you have any other questions or comments?

Thank you for your time and for participating in this study. If you have any questions or would like to contact the researcher, feel free to reach out at atouhey@albany.edu.
**BALL1 Response Chart**

<table>
<thead>
<tr>
<th>Name: 李老师</th>
<th>David</th>
<th>Jane</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you believe it is easier for children to learn foreign languages than for adults?</td>
<td>Mhm. You know my background is linguistics. I don't think so.</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Do you believe some people have a special ability to learn foreign languages?</td>
<td>Yes, yes! [laughs]</td>
<td>Yes, but no. I think people have been can add an aptitude for language, not necessarily foreign language it's just language.</td>
</tr>
<tr>
<td>3. Do you believe that you have a special ability to learn foreign languages?</td>
<td>No</td>
<td>I think my advantage is that I like it.</td>
</tr>
<tr>
<td>4. Do you believe that some languages are easier or harder to learn</td>
<td>Sure sure yeah depends on mother language and target language.</td>
<td>It balances out in the end.</td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5. Do you think people from your country are good at language learning?</td>
<td>I don't think so. I don't think they have which country are good, no, no. It it-yeah it's dependent on individuals, not a country so no.</td>
<td>No. I don't think they will be much of an inherent difference, but I think that, compared to other countries we maybe don't focus as much in school on it</td>
</tr>
<tr>
<td>6. Do you believe that it is important to speak Mandarin with excellent tones and pronunciation?</td>
<td>Excellent...no I don't think so. I don't think so.</td>
<td>Yes. Mm... I don't think excellent would be necessary, but I think it's important to make an effort to have the right tone for pronunciation just for understandability.</td>
</tr>
<tr>
<td>7. Do you agree with this statement: people who are good at science or math are not good at learning foreign languages.</td>
<td>No</td>
<td>No.</td>
</tr>
<tr>
<td>8. Do you agree with this statement: if beginner learners are allowed to make mistakes, it will be difficult for them to become fluent later on.</td>
<td>It will no, no, no, no. Yeah no.</td>
<td>If they're allowed to make the same mistake over and over again, then yes.</td>
</tr>
<tr>
<td>9. What do you What's the Motivation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Response 1</td>
<td>Response 2</td>
</tr>
<tr>
<td>----------</td>
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</tr>
<tr>
<td>10. Do you agree with this statement: people who speak more than one language are very intelligent.</td>
<td>No</td>
<td>I think people will speak well and then, which are very interesting. Intelligent probably goes along with it, but interesting is definitely the the top of the list.</td>
</tr>
<tr>
<td>11. Do you agree with this statement: everyone can learn to speak a foreign language.</td>
<td>Everyone can. But you know some people have special ability [laughs].</td>
<td>Yes to varying degrees.</td>
</tr>
</tbody>
</table>
Table 1

*Overview of Mandarin Tones with Examples*

<table>
<thead>
<tr>
<th>Tone Name</th>
<th>Pinyin</th>
<th>Character</th>
<th>IPA</th>
<th>English Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(6) first tone</td>
<td>mā</td>
<td>妈</td>
<td>[ma˥]</td>
<td>mother</td>
</tr>
<tr>
<td>(7) second tone</td>
<td>má</td>
<td>麻</td>
<td>[ma˨˩˧˥]</td>
<td>hemp</td>
</tr>
<tr>
<td>(8) third tone</td>
<td>mǎ</td>
<td>马</td>
<td>[ma˨˩˩˦]</td>
<td>horse</td>
</tr>
<tr>
<td>(9) fourth tone</td>
<td>mà</td>
<td>骂</td>
<td>[ma˨˩˩˧˨]</td>
<td>to scold</td>
</tr>
<tr>
<td>(10) neutral tone</td>
<td>ma</td>
<td>吗</td>
<td>[ma]</td>
<td>interr. particle</td>
</tr>
<tr>
<td>Metastrategy</td>
<td>Basic Function</td>
<td>Example of Tactic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paying Attention to Affect</td>
<td>Broadly</td>
<td>“I consider my attitude toward the language course and the teacher.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sharply</td>
<td>“I watch for physical signs of stress regarding language studies.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning for Affect</td>
<td>Setting affective goals</td>
<td>“I want to learn to relax when doing listening exercises.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtaining and Using Resources for Affect</td>
<td>Obtaining and using technological resources for affect</td>
<td>“I find blogs and websites in order to help reduce my anxiety about language learning.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizing for Affect</td>
<td>Organizing the environment for affect</td>
<td>“I make sure to have music on in the background because it relaxes and motivates me.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementing Plans for Affect</td>
<td>Putting the plan into action</td>
<td>“I meditate before my exam.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orchestrating Affective Strategy Use</td>
<td>Orchestrating strategies for current use and future instrumental needs</td>
<td>“In order to develop my speaking skills, I personalize them for now, and I think about my future job.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring Affect</td>
<td>Monitoring use of affective tactics and strategies</td>
<td>“If I start getting bored, it means I need to come up with a new strategy or take a break.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluating Affect</td>
<td>Evaluating affective progress and states</td>
<td>“I was a nervous wreck before the listening test, but the strategies I used helped me calm down a lot.”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3

Affective Strategies and Their Basic Functions with Examples of Related Tactics

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Basic Function</th>
<th>Example of Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activating Supportive Emotions, Beliefs, and Attitudes</td>
<td>Using positive self-talk</td>
<td>“I tell myself it is fine for me to not understand everything in Amharic yet.”</td>
</tr>
<tr>
<td></td>
<td>Expressing feelings or being in touch with feelings</td>
<td>“I write in my journal almost daily to describe my language learning experiences and express my feelings about them.”</td>
</tr>
<tr>
<td>Generating and Maintaining Motivation</td>
<td>Increasing extrinsic motivation by considering instrumental use of the L2</td>
<td>“I think of all the ways I can use Chinese after I graduate.”</td>
</tr>
<tr>
<td></td>
<td>Increasing intrinsic motivation</td>
<td>“I always look for something of cultural interest in the Spanish homework.”</td>
</tr>
</tbody>
</table>


This is meant to show explicitly how she categorized each strategy or metastrategy, its function, and an example of a tactic from data she collected. It is important to point out that any metastrategy or strategy can have multiple functions. Actual data from the present study will be presented in a similar table in a later chapter.
Table 4

Meta-Cognitive Strategies and Examples of Related Tactics

<table>
<thead>
<tr>
<th>Metastrategy</th>
<th>Basic Function</th>
<th>Example of Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying Attention to Cognition</td>
<td>Broadly</td>
<td>“Anytime I hear something new I will write it down.”</td>
</tr>
<tr>
<td>Planning for Cognition</td>
<td>Setting cognitive goals</td>
<td>“Uh if anything I kind of want her to correct me cause I’m kind of unsure when I'm speaking if I'm getting it right, so...if she corrects me then I know for the future.”</td>
</tr>
<tr>
<td>Obtaining and Using Resources for Cognition</td>
<td>Obtaining and using technological resources for cognition</td>
<td>“I use Anki and renshu.org” “Anki has been absolutely brilliant for me.”</td>
</tr>
<tr>
<td>Organizing for Cognition</td>
<td>Organizing the environment for cognition</td>
<td></td>
</tr>
<tr>
<td>Implementing Plans for Cognition</td>
<td>Putting the plan into action</td>
<td>“I will change my schedule to watch [language videos].”</td>
</tr>
<tr>
<td>Orchestrating Cognitive Strategy Use</td>
<td>Orchestrating strategies for current use and future instrumental needs</td>
<td></td>
</tr>
<tr>
<td>Monitoring Cognition</td>
<td>Monitoring use of cognitive tactics and strategies</td>
<td></td>
</tr>
<tr>
<td>Evaluating Cognition</td>
<td>Evaluating cognitive progress and states</td>
<td>“The amount that I understand [while watching videos in Mandarin] or don’t understand is one of the ways I gauge how well I’m doing.”</td>
</tr>
<tr>
<td>Strategy</td>
<td>Basic Function</td>
<td>Example of Tactic</td>
</tr>
<tr>
<td>----------</td>
<td>----------------</td>
<td>------------------</td>
</tr>
</tbody>
</table>
| Using the senses to understand and remember | Auditory | “[李老师 won't always correct [our tone mistakes] but often she like repeats the word with the correct tone and ask us to say it back”
| Haptic | “pretty much every class, we have a dictation quiz, where she will say a word out loud in Chinese you gotta write it down in Hanzi, you have to put the English meaning and that helped me a lot with getting like strokes and my muscle memory and remembering the tone and everything. That is actually really, really helpful if you study for it, I spent like a million hours studying these dictation quizzes. The way I do it, though, is with Anki”
| Conceptualizing with details | Comparing/contrasting across languages | [on strategies for remembering tone in new vocab] “For me it it ended up feeling kind of like in German where to know the gender of a
noun you have to--it's the article that comes before it essentially “the” is *der*, *die*, or *das*. And those correspond to masculine, feminine, neutral. To learn German vocab you have to just find that article, with the word, so if you're learning table you just learn *der Tisch*. So to me you just you have to learn to tone with the word. Um, don't try to learn it later. Don't try a separate Kan--kanji--uh Hanzi and meaning and pronunciation...learn all of it together.”

<p>| Going beyond the immediate data | Inferring | I’ll watch something [a video game playthrough] I’ve already watched in English because then I can like see how they translated it.” |</p>
<table>
<thead>
<tr>
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</tr>
<tr>
<td></td>
<td>Sharply</td>
<td>“Not when she's correcting me. If anything before she corrects me I feel more nervous.” [laughs]</td>
</tr>
<tr>
<td>Planning for Affect</td>
<td>Setting affective goals</td>
<td>If anything before she corrects me I feel more nervous.</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Implementing Plans for Affect</td>
<td>Putting the plan into action</td>
<td></td>
</tr>
<tr>
<td>Orchestrating Affective Strategy Use</td>
<td>Orchestrating strategies for current use and future instrumental needs</td>
<td></td>
</tr>
<tr>
<td>Monitoring Affect</td>
<td>Monitoring affective state during a task</td>
<td>“I get nervous when it's like a-an open-ended question where I would be excited if I was more confident</td>
</tr>
</tbody>
</table>
I don't know what to say immediately.” in it.” [on using tones]

| Evaluating Affect | Evaluating affective progress and states | “I think the thing that makes me the most nervous when she asks open-ended questions like “what's the difference between American and Chinese culture” like I don't know how to answer that in English. [laughs]” |

**Table 7**

*Affective Strategies and Their Basic Functions with Reported Tactics*

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Basic Function</th>
<th>Reported Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activating Supportive Emotions, Beliefs, and Attitudes</td>
<td>Using positive self-talk [on using the wrong tone when speaking with a native speaker] “I’d try to tell myself like ‘it’s fine, I’m a language learner; they know I’m not a native speaker. It’s normal to make mistakes.””</td>
<td></td>
</tr>
<tr>
<td>Expressing feelings or being in touch with feelings</td>
<td>[on using the wrong tone when speaking with a native speaker] “Well, I mean I’d be a little embarrassed of course.”</td>
<td>“...juggling [sounding native-like and getting full points] is is definitely more stressful than fun.”</td>
</tr>
<tr>
<td>Generating and Maintaining Motivation</td>
<td>Increasing extrinsic motivation by considering</td>
<td>“I think it would be fun to get to the point where I could [on the importance of becoming proficient in speaking Mandarin]”</td>
</tr>
</tbody>
</table>
instrumental use of the L2 understand some Chinese media.” “Very, very important like extremely important like I'm not gonna not become fluent. For job purposes and also just because I started. So I'm not going to like give up on it...Mandarin is the second most common language in the entire planet, so it has utility...um, there's a million people, I mean many, many people, you can talk to you can use it professionally.”

Increasing intrinsic motivation “It’s an interesting language. It’s nice to look at, too.”

Table 8

Meta-Sociocultural Interactive Strategies and Examples of Related Tactics

<table>
<thead>
<tr>
<th>Metastrategy</th>
<th>Basic Function</th>
<th>Example of Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying Attention to SI</td>
<td>Broadly</td>
<td>“It’s easier with a partner I’m comfortable with”</td>
</tr>
<tr>
<td>Planning for SI</td>
<td>Setting SI goals</td>
<td>“I’ll go on forums to discuss language learning strategies”</td>
</tr>
<tr>
<td>Obtaining and Using Resources for SI</td>
<td>Obtaining and using technological resources for SI</td>
<td>“I’ve definitely found”</td>
</tr>
</tbody>
</table>
Table 9

**Sociocultural Interactive Strategies and Their Basic Functions with Reported Tactic**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Basic Function</th>
<th>Reported Tactic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interacting to learn and communicate</td>
<td>Asking for explanation, clarification, verification, or repetition</td>
<td>“We [her and her partner in class] help each other when we don’t know how to read a character”</td>
</tr>
<tr>
<td>Overcoming knowledge gaps in communication</td>
<td></td>
<td>“When [李老师] says it the right way I’m like ‘oh okay okay.’ ”</td>
</tr>
</tbody>
</table>
| Dealing with sociocultural contexts and identities |                                                                                | “I found it in an Asian market out in Albany I go there, like once a week and they’re all Chinese and I just said “谢谢” when she gave me my receipt and their eyes light up so great, when my natives to do that. and I said to her in Chinese, “I’m a Chinese student.” That was usable because I’m literally a Chinese student. So, because that fit my circumstances so well, I was able to go out and use it like in the first
a couple of months of the course.”
Table 10

*Tactics, Strategies, and Metastrategies with the Highest Reported Frequencies*

<table>
<thead>
<tr>
<th>Tactics</th>
<th>Strategies</th>
<th>Metastrategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>creating associations between new material and known material, visualizing tone contour in the mind, imitating native speakers, reading a dialogue, watching TV/movies or listening to podcasts</td>
<td>activating supportive emotions, beliefs, and attitudes; generating and maintaining motivation</td>
<td>Planning for cognition, paying attention to cognition, evaluating cognition, planning for affect</td>
</tr>
</tbody>
</table>
### LIST OF FIGURES

#### Figure 1

**Types of Metaknowledge and How They Interact with the Three Dimensions of the S²R Model**

<table>
<thead>
<tr>
<th>Dimensions of L2 learning in which metaknowledge operates</th>
<th>Type 1: Person knowledge (can refer to knowledge of self or of another person) (Narrower)</th>
<th>Type 2: Group or culture knowledge (Broader)</th>
<th>Type 3: Task knowledge (immediate L2 learning task) (Narrower)</th>
<th>Type 4: Whole-process knowledge (longer-term, future-time orientation) (Broader)</th>
<th>Type 5: Strategy knowledge - Knowledge of strategies and metasatategies (cognitive, affective, and SI strategies and metacognitive, meta-affective, and meta-SI strategies)</th>
<th>Type 6: Conditional knowledge of when, where, and why to use a given strategy, drawing on the other types of metaknowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive dimension</td>
<td>Knowledge of one's own or another's cognitive level, cognitive learning style, goals, and related strengths and weaknesses</td>
<td>Knowledge of group/cultural norms and expectations in relation to cognitive elements of L2 learning</td>
<td>Knowledge of the cognitive demands of the immediate L2 learning task</td>
<td>Knowledge of longer-term cognitive demands of learning the L2</td>
<td>Knowledge of cognitive strategies</td>
<td>Knowledge of metacognitive strategies</td>
</tr>
<tr>
<td>Affective dimension</td>
<td>Knowledge of one's own or another's emotions, motivations, and related strengths and weaknesses</td>
<td>Knowledge of group/cultural norms and expectations in relation to affective elements of L2 learning</td>
<td>Knowledge of affective (emotional or motivational) demands of the immediate L2 learning task</td>
<td>Knowledge of longer-term affective demands of learning the L2</td>
<td>Knowledge of effective Strategies</td>
<td>Knowledge of meta-affective strategies</td>
</tr>
<tr>
<td>Sociocultural-interactive dimension</td>
<td>Knowledge of one's own or another's social interaction patterns, social learning style, related strengths and weaknesses, and the sociocultural setting</td>
<td>Knowledge of group/cultural norms and expectations in relation to interaction and sociocultural elements of L2 learning</td>
<td>Knowledge of sociocultural-interactive demands of the immediate L2 learning task</td>
<td>Knowledge of longer-term sociocultural-interactive demands of learning the L2</td>
<td>Knowledge of sociocultural-interactive strategies</td>
<td>Knowledge of meta-SI strategies</td>
</tr>
</tbody>
</table>

Figure 2

General Metastrategies and the Strategies within each Dimension of the S2R Model

Figure 3

An Example of Using Hand Gestures to Mimic Tone Contour

Note: From Exploring the Effects of Imitating Hand Gestures and Head Nods on L1 and L2 Mandarin Tone Production (pp. 2179-2195) by Zheng, Hirata, and Kelly, September 2018, Journal of Speech, Language, and Hearing Research. Copyright 2018 American Speech-Language-Hearing Association. The model above is showing the tone contour for second tone, which is a rising tone.
Figure 4

Cross-Case Comparison of Mean SILL Score
Figure 5

*Emotion Rating Scale: Fear/Relaxation Continuum*

![Fear/Relaxation Continuum Diagram](image-url)
Figure 6

Emotion Rating Scale: Anger/Happiness Continuum
Figure 7

*Emotion Rating Scale: Shame/Pride Continuum*

![Shame/Pride Continuum Diagram](image)

Figure 8

*Emotion Rating Scale: Boredom/Interest Continuum*

![Boredom/Interest Continuum Diagram](image)