

Cognitive Mechanisms and Teaching Strategies in Chinese as a Second Language Acquisition

Saning Guan

The College of Literature and Journalism of Sichuan University, Sichuan University, Chengdu 610000, China

Abstract: The internationalization of Chinese language education is flourishing, making it a crucial task to uncover the cognitive patterns of second language acquisition (SLA) and optimize teaching strategies. Based on cognitive linguistics theory, this paper analyzes the core cognitive mechanisms of Chinese SLA, including perception-conceptualization, mental space construction, and constructivist knowledge integration. By examining the typological features of Chinese tone systems, paratactic grammar, and culturally loaded vocabulary, it highlights the unique challenges these pose to learners' conceptual reconstruction and semantic network formation. Consequently, teaching strategies are proposed from dimensions such as multimodal input, interactive task design, and individual difference adaptation, aiming to provide theoretical and practical support for Chinese SLA instruction and enhance learners' language acquisition efficiency and pragmatic competence.

Keywords: Second Language Acquisition of Chinese, Cognitive Mechanisms, Teaching Strategies, Perception-Conceptualization, Constructivism.

1. Introduction

Chinese, as one of the most widely used languages in the world, has received widespread attention in second language acquisition research in recent years. Compared with Indo European languages, Chinese has significant typological features in phonetics (such as tone discrimination), vocabulary (such as Chinese character meaning), and grammar (such as compound structures), which pose unique cognitive challenges for learners in language processing.

Traditional Chinese language teaching often focuses on explaining language forms, with insufficient attention paid to learners' internal cognitive mechanisms, making it difficult to solve the problem of the disconnect between "learning" and "acquisition". The theory of cognitive linguistics provides a new perspective for solving this problem, emphasizing that language acquisition is a conceptual process based on physical experience, involving cognitive operations such as perceptual input, psychological representation construction, and semantic network integration. For example, the acquisition of Chinese tones not only relies on auditory perception, but also requires the establishment of conceptual representations of "sound meaning" associations; Learning Chinese characters requires completing the mapping process from pictographic symbols to abstract semantics [1].

At present, although there have been preliminary results in the cognitive research of Chinese second language acquisition in academia, there is still a lack of systematic exploration of the relationship between cognitive mechanisms and teaching strategies. This article intends to start from the core theory of cognitive linguistics, combined with the characteristics of Chinese language, to reveal the mechanism of cognitive processes such as perception, memory, and thinking in second language acquisition. Based on this, targeted teaching intervention strategies will be proposed to provide scientific guidance for Chinese international education classroom practice.

From a cognitive perspective, the "perception and experience" of learners when they come into contact with Chinese is the first key to unlocking cognitive mechanisms.

2. Perception and Experience: The Cognitive Code of Chinese Second Language Acquisition

When learning Chinese, it is easy to notice its uniqueness - it relies on tone to distinguish meaning, and sentences are often connected by semantic logic without complex morphological changes. In fact, whether it is practicing pronunciation, recognizing Chinese characters, or understanding grammar, one must start from "perception" and gradually turn these language phenomena into symbols that can be flexibly called up in the mind.

Take tone as an example, learning "m ā" and "m á" is not just about recognizing a flat voice or a raised voice, but also about binding the warm meaning of "flat voice" and "mother", the meaning of "raised voice" and "troublesome" and "sesame" in your heart, so that you won't confuse them the next time you hear them. Recognizing Chinese characters also contains ingenuity. The character "mountain" looks like two small mountain peaks stacked together. When you stare at the shape and ponder, you naturally associate it with the continuous mountains in reality - this ability to "see the shape and think of the meaning" is the unique advantage that Chinese characters bring out from pictographic and referential character making methods. In terms of grammar, it is even more necessary to 'understand'. Chinese does not have so many tense and person changes, such as 'eating' and 'eaten'. Who is the subject and object of 'eating' depends entirely on word order and context. Learners need to ponder this relationship more in their daily conversations in order to gradually understand the syntactic logic of "throw the topic first, then move on".

In fact, language is never created out of thin air. The way we perceive the world through our bodies, we will understand and express language - this is what experiential philosophy wants to tell us. Many abstract ideas in Chinese hide the shadow of the body: feeling that time has "flowed away" is treating it as flowing water; Saying 'sad' really feels like something is holding me in my heart. But for foreigners

learning Chinese, this "body metaphor" sometimes takes a detour. For example, in English, it is rare to say 'laughing until the mouth is closed', and they may not understand why 'laughing' is associated with 'not being able to close the mouth'. At this point, if they were to imitate the grin in front of the mirror and experience the feeling of being so happy that their mouths can't even close, they would gradually understand the beauty of this statement and adjust their original understanding.

Understanding the perceptual logic of speech and Chinese characters, and then looking at the omission expression of Chinese sentences, requires the ability to "mentally construct scenes" - this is the key to constructing psychological space [2].

3. Psychological Space Theory and Cognitive Processing of Chinese Semantic Understanding

3.1. Psychological Scene: Tips for Understanding Chinese Sentences

In fact, understanding a sentence is essentially building a "small scene" in our mind that corresponds to this sentence - this is what the theory of psychological space wants to tell us. Chinese speaking is particularly "convenient", often without saying the subject or explaining all logical words, such as "It's raining, bring an umbrella", without saying "Who's going to rain" or "Who needs to bring an umbrella", but those who listen can understand. For those who learn Chinese, they need to find clues from the context and fill in the gaps in order to construct a complete scene.

Just like hearing 'I met a classmate in the library yesterday', you can't just recognize the meaning of each word. You need to connect the time of 'yesterday', the place of 'library', and the incident of 'meeting a classmate' in your mind, figure out 'when, where, and what happened', in order to truly understand. To achieve this, on the one hand, one needs to rely on the ability of the brain to temporarily "remember" and gather this information together; On the other hand, we also need to rely on the language frameworks we usually remember to help us piece together scattered information.

3.2. Looking at it From a Different Perspective: Small Challenges in Chinese Pragmatics

There is often a hidden layer of "perspective switching" when speaking Chinese, which does not directly convey the meaning. For example, when asked "Do you eat in the cafeteria or at home?", no one will really think they are asking "eat in the cafeteria". It is necessary to figure out whether it is actually "eat in the cafeteria or at home". At this point, it is necessary to flexibly adjust one's perspective of understanding based on the context.

For people whose native language is English and who "clarify grammar", it is easy to get stuck - they are used to having clear markers in sentences, such as "at the canteen" and "at home", and suddenly find it difficult to find the omitted meaning and change perspectives on their own. From a cognitive perspective, this actually requires flexible switching of the "problem-solving framework" in one's mind [3]. So we need to show them and listen to real contexts more often, helping to establish a direct connection between the way they speak and the actual meaning they want to express.

Don't always focus on grammar rules, so that they can gradually keep up with the "speaking rhythm" of Chinese.

To understand how semantics can be 'pieced together', it is even more important to turn fragmented understanding into practical knowledge, which cannot be separated from the constructivist theory of interaction and cultural context.

4. From a Constructivist Perspective: How To "Assemble" Second Language Chinese Knowledge

4.1. Talking About Learning Is Effective: The More Cognitive Frameworks Are Used, The More Lively They Become

In fact, what Constructivism wants to say is very practical - learning knowledge is not about memorizing, but about interacting with people, breaking and completing one's original knowledge framework. Just like in Chinese class, whether it's asking and answering questions with the teacher or simulating scenes with classmates, we are all "discussing and learning", slowly sorting out the meaning of Chinese.

For example, when practicing shopping conversations, at the beginning, one may only hold back "I want that one", and the teacher may ask "Which one? What color, what thing?", or the classmates may remind "You need to clarify what you want", which will gradually change to "I want that red cup". With this change, not only did I remember the order of the modifier 'red cup', but more importantly, the scattered words and sentences that used to be strung together gradually became practical skills - next time I go shopping, I will know how to say it clearly. This kind of interaction is not just casual chatting, it helps to make the Chinese framework in the mind more coherent and lively as it is used.

4.2. Understanding Culture Leads to Understanding Language: There Are "Hidden Rules" In the Context

Chinese pays special attention to the meaning in context. To learn it well, it is not enough to just memorize words and sentences, but also to understand the cultural background behind them [4]. For example, when using honorific language, you should use "you" when speaking to elders, and "please" when asking someone to hand over something. If you say "you" to a teacher, it would appear impolite; For example, when learning "adding feet to a snake", it's not enough to just know that it's "unnecessary". You need to first know the story of adding feet to a snake and losing wine, otherwise you'll always feel like it's almost useless when using it.

These cultural events may seem superficial, but they actually have a significant impact on the effectiveness of learning Chinese - if you don't know the custom of "red envelopes for Chinese New Year", hearing someone say "I'll give you a red envelope" may be mistaken for real money. So in class, we need to incorporate culture into language learning, such as teaching the phrases "appreciating the moon" and "eating mooncakes" during the Mid Autumn Festival, and teaching how to politely say "no need to trouble" when simulating guests. This way, what we learn is not dry words, but words that can be used in real situations, and we won't have to memorize them by rote or forget them again.

Following these cognitive laws, teaching strategies naturally have a direction - how to make knowledge input more efficient and application more natural?

5. Design of Chinese Second Language Teaching Strategies Based on Cognitive Mechanisms

In fact, teaching Chinese as a second language requires following its characteristics of "sound, form, and meaning" intertwined together. It is not enough to rely solely on one input method. Students need to mobilize their ears, eyes, and hands to string this information together in their minds. For example, when teaching the character "mountain", don't just ask students to write it in front of the textbook. First, play a short animation and see how the "mountain" in oracle bone script looks like two small peaks. Then, read the flat tone of "sh ā n" and let students feel the tone without ups and downs. Finally, let them use their hands to trace the shape of the character - they can see the evolution with their eyes, hear the pronunciation with their ears, and move their hands. Only then can the shape, sound, and meaning be ingrained in their minds and not easily forgotten. Even for difficult tones, students don't have to always memorize "one tone flat, two tones rising". They can draw a visible curve of the changes in tone height, such as "m ā" being a flat line and "m á" being an upward line. By reading the curve, students can know how to adjust the tone, which is much more effective than just talking about theory.

Simply putting knowledge in is not enough. Students need to use it in real scenarios in order to construct a Chinese "situational framework" in their minds. For example, we should design some practical tasks, such as asking people to simulate calling the restaurant to make an appointment. We should specify the day to go, the number of people, the position near the window or the corner, and the dishes we want to eat. For example, "at 6:00 on Saturday evening, two people should have a seat near the window, and we want to order Stir-fried tomato and scrambled eggs and shredded pork with fish flavor". At the beginning, don't make it too difficult. Practice the simple "book a seat for three people without any notes" first. When you're done, add more difficulty, such as "if you want to change to a quieter seat, you have to tell the waiter that a friend doesn't eat cilantro".

Don't just pass by like this after completing the task. The teacher needs to help pick and choose mistakes. For example, if a student says "I want to book two people on Saturday," they will be reminded that "I need to say 'book two people's seats on Saturday' to make it clear; Classmates can also listen to each other and see if they have missed any time or number of people. In this way, students not only speak more accurately and smoothly, but also have more detailed Chinese scenarios in their minds. Next time they encounter a similar situation, they will know how to express themselves naturally.

In addition to general strategies, everyone's learning habits vary greatly, and targeted cognitive interventions are needed to help everyone find a path that suits them [5].

6. Individual Differences Adaptation and Cognitive Strategy Intervention

6.1. Metacognitive Strategy Training: Helping Students Find Their Own Learning Methods

When teaching Chinese as a second language, the most obvious difference is that students have very different ways of learning things - some people memorize Chinese characters

by repeating them repeatedly, while others insist on understanding the rules before using their brains. These different habits directly affect whether they learn well or not. So instead of using a one size fits all approach, it's better to teach them to "think about their own learning", which is a metacognitive strategy, gradually shifting from "teachers feeding them to learn" to "finding their own way to learn".

For example, some students are naturally good at rote memorization, memorizing words quickly but always mixing up meanings. So, they can add "ingenuity" along with their advantages: "Look at the three dots of water in 'river', 'lake', and 'sea', all of which are related to water. Next time you see 'swimming' and 'berthing', guess if they are also related to water." In this way, he goes from simply memorizing character shapes to binding radicals and meanings together, not only remembering them firmly, but also guessing new characters on his own. If you encounter a student who loves to nitpick logic, don't just give example sentences when learning the "ba" sentence. Draw a simple box: "First say 'who', then point out what you want to move with 'ba', and finally say 'what did you do', such as 'I put the book on the table'. Does it fit perfectly into 'person+ba+east and west+action'?" He figured out the pattern and learned smoothly.

More importantly, help them "manage their own learning", such as making a small plan together: "Learn 10 Chinese characters for half an hour on Monday night, practice listening for 20 minutes on Wednesday", without being too complicated. After learning for a while, ask again: "Do you think you always forget Chinese characters? Let's break down memorizing characters into 10 minutes a day, which is more effective than memorizing for half an hour at a time. If you can't keep up with the listening, try listening to Chinese nursery rhymes for 5 minutes, which is easier than listening to the text." Gradually, students will know "how should I learn".

6.2. Cognitive Regulation: Helping Students Let Go of the Fear of Learning Chinese

When learning Chinese, many students have "fears" - they are afraid of reading the wrong tone, afraid of not being able to write Chinese characters well, and the more afraid they are, the less they can learn. This anxiety greatly affects their learning. So when teaching, we not only need to teach knowledge, but also help them breathe a sigh of relief.

Firstly, the classroom should be warmer and students should not be afraid of making mistakes. If someone reads "m ā" as "m á", don't criticize, smile and say, "Try speaking calmly again, like speaking calmly, 'Mom' - yes, this time it's right!" Then give feedback based on each person's situation, making them feel that "the teacher is watching my progress", and gradually they will have confidence [6].

If you're afraid of tone, let's play and learn. For example, "tone guessing": "When I pronounce 't ā', can you guess if it's 'he' (first tone) or 'tower' (third tone)?" Or "voice connection": "I'll say 't i ā n' first, and the next person should end with a word that ends in 'ā n', such as 'sh ā n'." Playing with it, I can master the tone and become less nervous.

If you're afraid of writing Chinese characters, start by teaching them separately. Practice simple ones like "one, two, and three" first, and then learn how to spell "ming" and "xiu" together. You can also tell some Chinese character stories, such as the character "home": "In oracle bone script, 'home' means a pig under the roof. In the past, having a pig

represented a stable life, so 'home' is a place where you can live in peace." When students listen to the story, they not only remember the character shape, but also find Chinese characters interesting, so they are not afraid to write them.

In this way, students will no longer have anxiety, so they can focus on learning and use their brains more flexibly to memorize knowledge. Learning will naturally improve.

After sorting out these cognitive mechanisms and strategies, and then looking back at the core logic, we can have a clearer understanding of future research directions.

7. Conclusion

In fact, the core cognitive logic of second language Chinese acquisition ultimately involves learners building flexible connections between three things - how to recognize the appearance of language (such as tones and Chinese characters), how to transform these forms into understandable concepts in their minds, and how to fully understand the cultural nuances behind them.

Let's break down the cognitive keys we discussed earlier, such as hearing tones, seeing Chinese characters, and forming specific concepts in our minds; For example, when reading a sentence, imagine the corresponding scene in your mind; For example, by interacting with people and piecing together scattered knowledge into practical skills, it is actually helping everyone see clearly how their brain works and where they get stuck when learning Chinese phonetics, vocabulary, and grammar.

And the methods we come up with based on these rules, such as using our eyes to see the shape of characters, ears to listen to pronunciation, and handwriting to learn Chinese characters (multimodal input), practicing expression in real-life scenarios such as booking restaurants and shopping (task-based learning), and helping students find their own learning pace (metacognitive intervention), are essentially not about "twisting cognitive rules", but about allowing everyone to

naturally incorporate Chinese knowledge and flexibly apply it. In future research, if we can combine neuroscience techniques, such as using fMRI to see where different people's brains "light up" when learning Chinese, we may be able to more accurately know "who is suitable for how to learn". In addition, with the popularity of intelligent education nowadays, how to make AI actively recommend suitable learning methods to everyone and help adjust them at any time is also a particularly worthwhile direction to consider.

Ultimately, mastering and integrating cognitive laws and teaching methods is the key to making Chinese international education more solid - this not only enables language theory to be implemented, but also truly helps those who want to learn Chinese, making their learning smoother and more practical.

References

- [1] Perfetti C A, Tan L H. The time course of graphic, phonological, and semantic activation in Chinese character identification [J]. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 1998, 24(1): 101.
- [2] Fauconnier G. Mental spaces: Aspects of meaning construction in natural language [M]. Cambridge University Press, 1994.
- [3] Coulson S. Semantic leaps: Frame-shifting and conceptual blending in meaning construction [M]. Cambridge University Press, 2001.
- [4] Scollon R, Scollon S W, Jones R H. Intercultural communication: A discourse approach [M]. John Wiley & Sons, 2011.
- [5] Dörnyei Z. The psychology of the language learner: Individual differences in second language acquisition [M]. Routledge, 2014.
- [6] Lyster R, Saito K, Sato M. Oral corrective feedback in second language classrooms [J]. *Language teaching*, 2013, 46(1): 1-40.