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華裔中文學習者對多義詞「吃」之理解研究

Exploring the Comprehension of the Polysemous Verb *Chi* in Chinese Heritage Learners

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"Let's not forget how to be dreamers."— Khalil Fong

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摘要

本研究旨在探討華裔中文學習者如何理解中文多義詞「吃」的不同義項。主要探討三個因素：各義項的語義相關性、語境線索，以及語言能力效應對學習者的影響。研究對象包括 40 位華裔中文學習者，根據其華語文能力測驗（TOCFL）成績分為中級組與高級組，另有 20 位中文母語者作為對照組。研究設計包含兩項義項詮釋任務：無語境詮釋任務（IT-WC）與有語境詮釋任務（IT-C）。每項任務包含 18 題選擇題，測試不同「吃」短語的義項，有語境詮釋任務則提供了語境提示和相關圖片輔助說明。

研究結果顯示以下幾個主要發現：首先，華裔學習者在「吃」的義項習得上呈現出一定的習得順序，分為三個難易層次。第一層次：吃$_1$「咀嚼並吞下」、吃$_2$「在某地吃」、吃$_3$「依靠」，第二層次：吃$_6$「消耗」，以及第三層次：吃$_4$「獲得」、吃$_5$「遭受」。高級學習者對所有義項的解釋達到母語水準，而中級學習者僅能正確掌握第一層次的義項，對第二層次及第三層次延伸義的理解表現不佳。研究發現，義項與核心意義的語義偏離程度越大，華裔學習者理解的難度越高。其次，語境線索顯著促進了義項理解，特別是在中級學習者對於較難義項（吃$_4$、吃$_5$、吃$_6$）的理解上。此外，高級學習者在不同任務及義項上的詮釋均優於中級學習者，顯示語言程度對表現具有顯著影響。

綜上，研究結果揭示了「吃」義項的習得順序，並為教學實踐提供了啟示，建議根據義項習得難度採用漸進的教學順序。此外，教學中引入語境線索對於提升學習者對多義詞義項的理解具有重要作用。

關鍵詞：華裔中文學習者、多義詞、吃、語境線索、語言程度效應

ABSTRACT

This study investigates how heritage learners of Chinese interpret the polysemous verb *chi* 'to eat,' focusing on three factors: semantic relatedness of *chi* senses, the role of contextual clues, and proficiency effects. Forty heritage learners, categorized as intermediate and advanced based on their scores on a standardized test (TOCFL), participated in the study, along with 20 native Chinese speakers who served as a control group. Participants completed two interpretation tasks: the Interpretation Task without Context (IT-WC) and the Interpretation Task with Context (IT-C). Each task consisted of 18 multiple-choice questions targeting different *chi* expressions, with the IT-C task supplemented by contextual clues and illustrative pictures.

The findings revealed several key insights. First, heritage learners suggested three levels of difficulty order: Level 1 (chi_1 'to chew and swallow,' chi_2 'to eat at a certain location,' chi_3 'to rely on'), Level 2 (chi_6 'to consume'), and Level 3 (chi_4 'to obtain,' chi_5 'to suffer'). The advanced learners demonstrated native-like interpretation across all *chi* senses, while intermediate learners struggled with the meanings at Levels 2 and 3. This indicates increasing difficulty with greater semantic deviation from the core meaning. Second, contextual clues substantially facilitated comprehension, particularly for intermediate learners in understanding the more challenging meanings (chi_4, chi_5, chi_6). Third, proficiency levels significantly influenced performance, with advanced learners consistently outperforming intermediate learners across tasks and *chi* types. In conclusion, the findings highlight the importance of teaching *chi* meanings in sequence and incorporating contextual clues to enhance comprehension.

Keywords: Chinese heritage learners, polysemy, *chi*, contextual clues, proficiency effect

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Chapter One

Introduction

1.1 Motivation

Vocabulary is widely recognized as a fundamental element in language acquisition (Nation, 2001). As Ma (2009) aptly observes, if syntax or grammar provides the structural framework for language learning, then vocabulary serves as the essential building blocks of that structure. However, vocabulary acquisition presents a significant challenge for second language (L2) learners (Meara, 1982). One major hurdle is polysemy—a linguistic phenomenon in which a single word has a core meaning and multiple related senses (Falkum & Vicente, 2015; Gries, 2015; Liang, 2015; Lyons, 1995; Taylor, 1995; Verspoor & Lowie, 2003). Despite its pervasive nature across languages (Falkum & Vicente, 2015; Gries, 2015), it poses particular difficulties for L2 learners (Evans & Tyler, 2004; Parent, 2009; Yu, 2022).

Chinese, in particular, is highly polysemous and exhibits greater context sensitivity than many other languages (Golden, 1996; Hunt & Agnoli, 1991). For instance, the Chinese verb *da* 'to hit' encompasses multiple senses, as shown in (1):

(1) a. 我們 來 打 牌。
Women lai da pai.
we come play card
'Let's play cards.' (Chen & Wang, 2020: 6)

b. 打 電話
da dianhua
hit phone
'to call' (Chen & Wang, 2020: 8)

In (1a), *da pai* ‘to play cards’ retains a traceable hand-action component, while in (1b), *da dianhua* ‘to call’ extends metaphorically to denote making a phone call. If L2 learners of Chinese only grasp the basic or literal meaning of a polysemous word, they risk misinterpretation. Moreover, the extensions of polysemous words typically arise from mechanisms like metonymy and metaphor (Falkum & Vicente, 2015; Gries, 2015; Ho, 2008; Traugott & Dasher, 2003), which can create interpretive challenges for L2 learners. Therefore, to know how L2 learners interpret polysemous senses is an intriguing issue in language acquisition.

This study focuses on the verb *chi* ‘to eat,’ a highly polysemous word in Chinese (Jia & Wu, 2017; Leung & Hong, 2023; Liu, 2013; Liu & Wan, 2020; Nie, 2008; Wang, 2001). As illustrated in (2), *chi* possesses a core meaning of physically “putting food into the mouth, chewing, and swallowing.” However, when used metaphorically, as in (3), *chi* extends beyond its core meaning to signify other concepts, such as ‘to rely on’ (Jia & Wu, 2017; Leung & Hong, 2023; Liu, 2013; Liu & Wan, 2020; Nie, 2008; Tao, 2000; Wang, 2001).

(2) 吃　蘋果
chi　pingguo
eat　apple
‘to eat an apple’

(3) 吃　軟飯
chi　ruanfan
eat　soft.rice
‘a man relying on a woman to support his livelihood’ (Liu, 2013: 9)

Theoretical studies have identified at least five distinct senses of the polysemous verb *chi* (Leung & Hong, 2023; Liu & Wan, 2020; Wang, 2001; Wang & Huang, 2011). Beyond its core meaning, *chi* encompasses extended senses that vary in their degree of relatedness to the core sense—some are closely related, while others are more distantly

connected. This variation in semantic relatedness can make it challenging for non-native speakers to fully acquire and understand its meanings. Consequently, the acquisition of the polysemous verb *chi* is a topic worthy of investigation.

In particular, this study examines the acquisition of *chi* by heritage learners of Chinese. A heritage learner is an early bilingual who grew up hearing and speaking both the heritage language and the dominant language, either simultaneously or sequentially, during early childhood (Benmamoun et al., 2013). This means that heritage learners receive input not only from family members who are fluent in the heritage language but also need to communicate in the dominant language. However, at some point, typically after starting school, the dominant language becomes their primary language (Montrul, 2018; Traugott & Dasher, 2003). In the context of Chinese as a heritage language, Chinese often becomes weaker compared to the other language spoken by the individual. Consequently, it is assumed that heritage learners of Chinese are similar to L2 learners of Chinese, as both groups have a dominant language alongside a second language.

While prior research on heritage learners has explored how early exposure to Chinese can facilitate the morphological awareness in lexical inferencing (Zhang & Koda, 2018; Zhang et al., 2022), tone sandhi (Chen, 2020), vocabulary (Wang, 2020), and some core aspects of syntax (Chen, 2020; Wang, 2020), few studies have investigated their acquisition of polysemy in specific aspects, particularly in relation to culturally embedded words like *chi*. Cultural factors significantly influence the development of *chi*'s extended meanings (Liu, 2013; Sheng, 2019; Wang, 2014). Many *chi* expressions, such as *chi ruanfan* in (3), reflect figurative thinking and moral commentary in Chinese culture. Heritage learners with sufficient exposure may develop competence in such culturally nuanced meanings. This study, therefore, seeks to explore how heritage learners interpret the senses of *chi*.

Furthermore, it has been suggested that ambiguity arises when there are multiple senses of a polysemous word, leading to various interpretations in the absence of sufficient contextual clues (Hsiao et al., 2016). As a result, from a pedagogical perspective, it is often emphasized that teaching polysemy through context-based methods can enhance the acquisition of extended meanings (Sheng, 2019). However, while some studies argue that contextual information is crucial for understanding polysemy (Gries, 2015; Klein & Murphy, 2001), other research suggests that the context of a single word may be insufficient for distinguishing between different senses of a polysemous word (e.g., Perfetti & Goodman, 1970). To address this issue, the current study aims to examine whether contextual clues aid in the interpretation of the various senses of the *chi* by heritage learners.

Despite their early exposure, heritage learners of Chinese may not fully acquire the heritage language due to the influence of their dominant language (Montrul, 2018; Traugott & Dasher, 2003). This phenomenon can result in varying degrees of language attrition among heritage learners (Benmamoun, Montrul, & Polinsky, 2013). Consequently, heritage learners often exhibit significant individual differences in their proficiency levels in Chinese. These variations in proficiency levels are also reflected in their performance in a L2, with higher-proficiency learners typically outperforming lower-proficiency learners. Moreover, research further indicates a correlation between language proficiency and the ability to use contextual clues. Haastrup (1991) and Haynes (1993) demonstrated that learners with limited proficiency often lack the necessary vocabulary knowledge to effectively utilize linguistic cues for deriving word meanings. Therefore, this study considers whether differences in Chinese proficiency influence heritage learners' interpretation of the various senses of *chi* and their ability to employ contextual clues in the process.

In summary, this study investigates how heritage learners with varying levels of

proficiency interpret the semantically related senses of *chi* in Chinese. Additionally, it examines whether and how contextual clues enhance their understanding of these senses. Finally, the study compares the overall performance of heritage learners with different proficiency levels in their interpretation of *chi*.

1.2 Research Questions

This study aimed to examine how heritage learners of Chinese interpret the various senses of *chi*, the role of contextual clues in their comprehension, and the potential influence of Chinese proficiency on their acquisition of these meanings. Specifically, the study addresses the following research questions:

1) How does semantic relatedness influence the comprehension of *chi* among advanced and intermediate heritage learners of Chinese?
2) How do contextual clues influence the comprehension of *chi* by advanced and intermediate heritage learners of Chinese?
3) Does Chinese proficiency influence the interpretation of the various senses of *chi*?

1.3 Significance of the Study

Research on polysemy in the context of language acquisition is extensive. Some studies focus on polysemy from the perspective of first language (L1) acquisition (Chen & Wang, 2020). Others examine it from the angle of second language (L2) acquisition (Hsieh &Wang, 2020; Kato, 2006; Liang, 2015; Liang & Sullivan, 2019; Verspoor & Lowie, 2003). Additionally, some research approaches polysemy from a pedagogical standpoint (Liu, 2013; Sheng, 2019; Weng, 2020). However, there is a notable gap in research focusing on heritage learners.

Although there is substantial literature on the development of the Chinese

polysemous verb *chi*, much of it is theoretical in nature (Chen, 2012; Jia &Wu, 2017; Leung & Hong, 2023; Liu & Wan, 2020; Nie, 2008; Tao, 2000; Wang, 2001; Wang & Huang, 2011; Yang et al., 2021). Few studies have approached this topic empirically (Hsiao et al., 2016; Liu et al., 2013; Sheng, 2019; Weng, 2020). Notably, Hsiao et al. (2016) and Liu et al. (2013) focus on native Chinese speakers, while Sheng (2019) and Weng (2020) provide insights into the L2 acquisition of *chi* from a pedagogical perspective. To date, no research has investigated the polysemous verb *chi* from an acquisition-oriented perspective, particularly concerning heritage learners. This study aims to address this gap by investigating how heritage learners interpret and comprehend the various meanings of *chi*, with a particular focus on the influence of proficiency and the role of contextual clues in the acquisition process.

1.4 Organization of the Thesis

This thesis is organized as follows: Chapter Two provides a review of the theoretical background of the polysemous verb *chi*, focusing on three approaches that propose distinct developmental patterns for its meanings. Additionally, it examines three empirical studies related to *chi*. Chapter Three presents the research design and methodology, followed by a detailed report of the study's results. Chapter Four discusses the key findings, addressing the research questions and exploring their implications. Finally, Chapter Five concludes the thesis, offering pedagogical implications and the study's limitations.

Chapter Two

Literature Review

In this chapter, theoretical and empirical studies of the Chinese verb *chi* are reviewed. Section 2.1 first introduces previous theoretical studies which discuss the development of *chi* meanings. Section 2.2 summarizes the *chi* meanings categorized in the present study. Section 2.3 presents three empirical studies of *chi*. Finally, Section 2.4 provides a summary of this chapter.

2.1 Theoretical Studies of Senses of *Chi* in Mandarin

Previous research on Chinese verb *chi* posited that *chi* is a polysemy that has multiple meanings (e.g., Chen, 2012; Jia & Wu, 2017; Leung & Hong, 2023; Liu & Wan, 2020; Nie, 2008; Sheng, 2019; Tao, 2000; Wang, 2001; Wang, 2014; Yang et al., 2021). *Chi* is defined as a polysemous verb that has multiple senses, in which the core meaning is identified as the action of placing food into the mouth, chewing, and swallowing (Chen, 2012; Jia & Wu, 2017; Leung & Hong, 2023; Liu & Wan, 2020; Nie, 2008; Tao, 2000; Wang, 2001; Wang, 2014; Yang et al., 2021). Moreover, the other senses are extended from the core meaning (Leung & Hong, 2023; Liu & Wan, 2020; Nie, 2008; Tao, 2000; Wang, 2001).

Building on the argument that the Chinese verb *chi* encompasses a variety of meanings, the following sub-sections will introduce some previous theoretical studies where the development of several senses of *chi* is explained with different approaches. Section 2.1.1 discusses *chi*'s meaning development from the account of semantic chain theory in Wang (2001). Section 2.1.2 discusses the *chi* meanings from the perspective of emergent argument structure proposed by Tao (2000) and further examined by Chen

(2012). Finally, Section 2.1.3 introduces a two-dimensional model of the meaning development proposed from a construction grammar approach in Liu and Wan (2020).

2.1.1 Semantic Chain of *Chi*

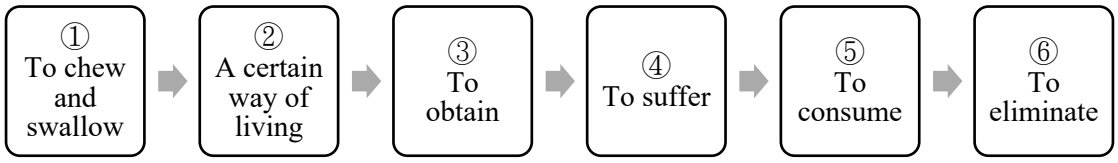
According to Taylor (1995), the various senses of a polysemous word are not unified by a single semantic denominator. Instead, these meanings are interconnected through meaning chains. In Taylor's proposed schema, meaning develops in a linear sequence. As illustrated in (1), Meaning A is linked to Meaning B, with Meaning B inheriting some common attributes from Meaning A. This close connection between A and B forms the basis for further extensions, where Meaning B becomes the source for Meaning C, which in turn links to Meaning D, Meaning E, and so forth. Furthermore, within a polysemy category, adjacent members in the chain share more similarities, making them more closely related, whereas non-adjacent members may have minimal commonalities.

(1) Meaning $A \rightarrow B \rightarrow C \rightarrow D$ etc. (Taylor, 1995: 108)

Using this approach, Wang (2001) proposed a semantic chain of *chi* meanings to illustrate the sequential development of its senses. He argued that the extension of *chi* meanings occurs through the mechanism of metaphor, with the expansion following a specific order, as depicted in Figure 2.1.

Figure 2.1

The Semantic Chain of Chi in Wang (2001)



In the proposed semantic chain, Wang identified the core meaning of *chi* as the act of putting food into the mouth, chewing, and swallowing the food into the stomach (Meaning 1). The fundamental sense of *chi* clearly describes the physical eating action. Example (2) shows a basic combination of a "*chi* + NP" expression where *chi* can be categorized as Meaning 1. (2) shows the fundamental meaning of *chi* and it does not possess metaphorical significance. On the other hand, the verbal predicates of this *chi* are something edible.

(2) 吃　蘋果
chi　pingguo
eat　apple
'to eat an apple'

Over time, through metaphorical extension, the meaning of *chi* has gradually broadened. While traditionally associated with food-related objects, the range of components linked to *chi* has expanded to encompass non-food and even non-material categories. As a result, when the object is not conventionally edible, *chi* can take on alternative meanings. In other words, the nature of the object can influence the semantic development of *chi* (Jia & Wu, 2017). For instance, the first extended meaning in Wang's (2001) model is that *chi* represents a certain way of living. This extension is

closely tied to the idea that eating is fundamental to survival, or that living is, in essence, a process of consumption (Yang et al., 2021). Example (3) demonstrates how *chi* is used in this context within the semantic chain.

(3) 吃　食堂
chi　shitang
eat　canteen
'to dine at a canteen' (Wang 2001: 212)

(4) 吃　父母
chi　fumu
eat　parents
'to rely on one's parents' (Wang 2001: 212)

In expressions like (3), one does not actually eat a canteen; rather, one consumes the food provided by the canteen. This usage is also a common application of *chi*, as *chi* frequently collocates with dining locations (Wang & Huang, 2011). Furthermore, Meaning 2 directly extends from the core sense, as the action of eating can still be clearly inferred (Wang, 2001) when one dines at a specific location. On the other hand, Wang also classifies *chi* in expressions like (4) under Meaning 2. In (4), where *fumu* 'parents' is metonymically associated with the financial resources they provide, the phrase metaphorically signifies dependence on one's parents. Specifically, it figuratively refers to living off others' savings or relying on others' resources to sustain oneself. Thus, building on the core sense, Meaning 2 extends to indicate that eating serves the purpose of survival (Wang, 2001) and involves reliance on others (Yang et al., 2021).

Building on Meaning 2, Wang specifically emphasized the intake of food—that is, eating involves putting something into one's mouth, which can metaphorically extend to meanings such as 'entering,' 'getting,' and 'obtaining.' For example, (5) illustrates *chi* in Meaning 3. In (5), *tian* literally means 'sweet,' which can further symbolize the

concept that “sweetness is happiness” (Yang et al., 2021). When eating serves more than just the purpose of survival, it can also bring pleasure. From (5), it can be inferred that if one experiences pleasure after eating, it suggests a positive outcome for the subject of the eating action. Accordingly, it can also be noted that the verbal predicate—the object noun phrase (NP) of *chi*—may influence its meaning when the predicate attributes certain qualities to the eating action (Leung & Hong, 2023).

(5) 吃　甜頭
chi　tiantou
eat　advantage
‘to enjoy advantages’ (Wang 2014: 23)

In addition to the positive outcomes of the eating action, there may also be negative outcomes. In other words, when the predicate brings about a negative influence on the subject of the eating action, the meaning of *chi* extends to the concept of “eating as suffering” (Meaning 4). As shown in (6), the opposite of (5), *ku* means ‘bitter.’ The taste of bitterness often causes dissatisfaction and discomfort. Therefore, when one eats something bitter, one experiences the negative outcome associated with the eating action.

(6) 吃　苦頭
chi　kutou
eat　hardship
‘to endure hardship’ (Nie 2008: 114)

Following Meaning 4, *chi* further extends to the concept of ‘consuming’ (Meaning 5). In (7), *chi* means ‘to consume.’ In this compound word, *chi* denotes the action of consuming or using up, while *li* refers to ‘strength’ or ‘effort.’ Together, *chili* conveys

the idea of expending strength or effort, implying that something requires significant physical or mental exertion or is strenuous to accomplish.

(7) 吃　力
chi　li
eat　strength
'to require effort/ to be strenuous'　(Wang 2001: 212)

Finally, "to eat up" something implies its complete consumption, resulting in the meaning of 'elimination' (Meaning 6). For instance, (8) is a commonly occurring example in which *chi* functions to convey elimination. This usage is also frequently found in military contexts.

(8) 吃　掉　敵方　一　個　師
chi　diao defang　yi　ge　shi
eat　PAR enemy　one　CL　division
'to eliminate an enemy division'　(Wang 2001: 213)

Overall, Wang (2001) argued that there are six meanings of *chi*, which develop in a linear sequence. That is, Meanings 1 through 6 unfold in a sequential order, as illustrated in Figure 2.1. Wang suggested that the concept of *chi* plays a significant role in Chinese culture, with the development of *chi*'s meanings not only reflecting human cognitive processes but also revealing the underlying conceptual metaphors within Chinese culture. However, while Wang proposed this linear expansion of *chi*'s meanings, he did not address the relationship between Meanings 4 and 5. Specifically, he did not explain how Meaning 5 developed from Meaning 4, leaving the connection between these two meanings somewhat unclear.

2.1.2 Emergent Argument Structure of *Chi*

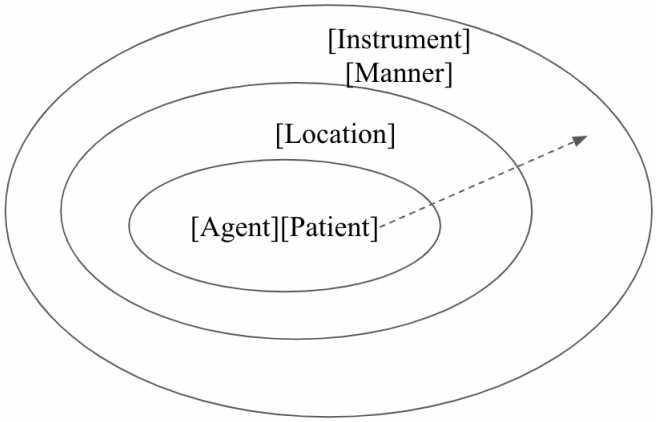
Different from Wang's (2001) semantic chain of *chi*, Tao (2000) examined this Chinese polysemous verb from the perspective of emergent argument structure. While Wang's (2001) proposed semantic chain primarily addresses the cognitive processes and conceptual metaphors related to the eating action, Tao (2000) focused on the argument structure that the verb *chi* takes. Tao emphasized that a purely stative analysis often overlooks the dynamic nature of verb meanings, which can vary across different contexts. To adopt a more emergent perspective on *chi*, he proposed gathering data from discourse to identify evidence of *chi*'s argument structure.

First of all, Tao (2000) identified the typical argument structure of *chi*, as illustrated in (9). The meaning development of *chi* is closely linked to its collocations, particularly the object NPs that typically follow *chi*. These verbal predicates can be broadly categorized into two types: concrete and abstract. Concrete predicates of *chi* often refer to edible items, as shown in (9), and this usage represents the most frequent application of *chi*, accounting for 92% of the collected data in Tao's study. However, the usage of *chi* with a "pseudo-patient," as coined by Tao (2000, p. 23), is also common in Chinese. Therefore, Tao (2000) also identified additional possible argument structures of *chi*, as depicted in Figure 2.2.

(9) Agent + (Location/ Place) + ***Chi*** + Theme (Solid and edible food)

Figure 2.2

Developmental Path of Chi Arguments Reproduced and Adapted from Tao (2000)



In Figure 2.2, in addition to the typical arguments that *chi* takes—namely, the Agent and the Patient of the eating action—there is also an argument that *chi* can take as its predicate: Location. The usage of *chi* in collocation with this sub-typical argument parallels what has been categorized as Meaning 2 in Wang's (2001) semantic chain. Similar to Wang's example in (3), Tao pointed out that the Location refers to the place where food is provided for the Agent to eat. However, expressions like (4) were classified as taking the thematic role of Manner in Tao's (2000) study, indicating that a way of living is to depend on others. Furthermore, a newly emerged usage is that *chi* can take Instrument as its predicate. For example, the Instrument of the eating action, *kuaizi* 'chopsticks,' appears immediately adjacent to the verb *chi*. Rather than requiring a preposition, (10) shows that *chi* can directly collocate with eating utensils in Chinese.

(10) 在 中國 人們 喜歡 吃 筷子。
Zai Zhongguo renmen xihuan chi kuaizi.
in China people like eat chopstick
'In China, people like to eat with chopsticks.' (Tao 2000: 23)

Based on observations from the corpus, Tao (2000) identified that *chi* can take at least four arguments as its predicate: Patient, Location, Instrument, and Manner. Furthermore, Tao noted that the transition from typical arguments to more atypical ones reflects the gradual expansion of *chi*'s meaning, extending from its prototypical meaning to metaphorical interpretations.

Building on Tao's (2000) work, Chen (2012) further explores the semantic nuances of *chi* through the lens of emergent argument structure. In particular, Chen argues for a new argument structure to explain *chi*'s meanings, as presented in (11).

(11) Experimenter/ Theme + ***Chi*** + Stimulus

According to Chen (2012), *chi* undergoes semantic extensions, transitioning from a purely "physical verb" to one that denotes "suffering." Notably, this shift conveys a more passive sense of *chi*. In fact, the meaning of "eating is suffering" is also discussed in Wang's (2001) semantic chain. However, Chen extends this analysis by suggesting that when *chi* denotes suffering, the subject takes on the role of an Experimenter, and the predicate becomes the Stimulus. Similarly, Chen includes Example (6) in his analysis, as illustrated in the sentential context in (12). In (12), the subject *ta* 'he' suffers from the hardship caused by the object *zhejianshi* 'this matter.' According to Chen's proposed formula, *ta* is the Experiencer, while *zhejianshi* is the Stimulus.

(12) 這件事 他 吃 足 了 苦頭。
Zhejianshi ta chi zu le kutou.
this-CL-thing he eat enough LE hardship
'He has had his fair share of suffering in this matter.' (Chen 2012: 53)

To further elaborate on the different argument structures of *chi*, Chen (2012) discusses several semantic features of the arguments involved in *chi*'s structures. Chen

argued that the influence of the Agent diminishes as the argument structures evolve. In other words, in argument structures like (9), the Agent has volition and controls the eating action. However, when the meaning shifts to 'suffering,' the Agent is involved in a more passive situation, transforming its role into that of an Experimenter. As a result, the Experimenter loses control over the eating action and is less volitional in engaging in the eating action. On the other hand, in structures like (9), the Patient is typically affected by the Agent of *chi*. However, in (11), when the Patient becomes the Stimulus, it shifts its role to that of the Affecter.

In summary, the analysis of *chi* from the perspective of emergent argument structure reveals that *chi* assumes different semantic roles depending on its meaning. In Tao (2000), the typical meaning of *chi* involves the core arguments of Agent and Patient, while its non-typical meanings involve the arguments of Location, Instrument, and Manner. Furthermore, these arguments form a pathway that connects *chi*'s core meaning to its peripheral meanings: Theme → Location → Instrument/Manner. Chen (2012) further highlights the roles of Experiencer and Stimulus when *chi* denotes 'suffering.' However, Chen did not specify how the meaning of 'suffering' fits into Tao's proposed semantic path of *chi* (Figure 2.2). In other words, it remains unclear how the meaning of 'suffering' is developed within the semantic map. Additionally, Tao did not address to what extent this path is exhaustive in reaching its endpoint.

2.1.3 Frame-based Constructional Approach of *Chi*

Liu and Wan (2020), employing a frame-based constructional approach, proposed a core frame to represent the fundamental meaning of *chi* and its semantic correlations with its extended meanings. The study proposed a model of "one frame, three profiles, and seven constructional variations" to capture the meanings of *chi*. The prototypical meaning is characterized as the act of ingestion, involving an in-taker (X) and an in-

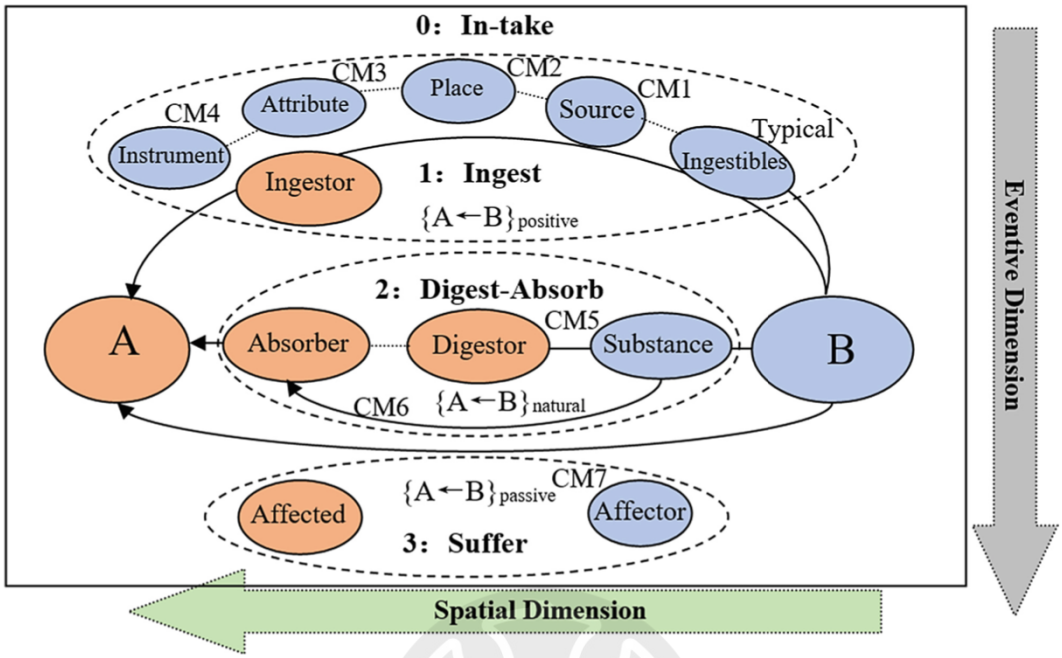
taken (Y). This foundational relationship serves as the basis for deriving extended meanings. Moreover, Liu and Wan (2020) also suggested that the degrees of agentivity and volitionality of both the in-taker and the in-taken vary, leading to the extension of *chi*'s meaning. Three distinct profiles emerged:

1. Highly Agentive and Volitional Ingestion: focused on the physical act of eating, typically involving an animated ingestor.
2. Dependency and Digestion Effects: emphasizing the transfer of resources from the in-taked to the in-taker, reflecting a dependency relation.
3. Change-of-State and Negative Outcomes: highlighting the reduction in the volume or mass of the in-taked, often metaphorically associated with suffering or misfortune.

These profiles underpin seven constructional meanings, offering a nuanced understanding of *chi*'s semantic diversity. As illustrated in Figure 2.3, the three profiles and seven constructional meanings were further analyzed to explore their interrelations from two perspectives: spatial and eventive dimensions. The spatial dimension examines the physical relationships between participants in the ingestion process. The model categorizes *chi*'s actor into roles such as Ingestor (Profile 1), Absorber, Digestor (Profile 2), and Affected (Profile 3).

Figure 2.3

Two-dimensional Semantic Model of Chi in Liu and Wan (2020: 196)



When the actor assumes the role of Ingestor, the undergoer of *chi* may take on various roles, including Ingestibles, Source, Place, Attribute, and Instrument. As classified and explained by Liu and Wan (2020), the meaning of Ingestibles corresponds to the core sense of *chi*. Furthermore, when the undergoer is Source, it signifies that the Ingestor relies on the Source, which aligns with the meaning in expression (4). Liu and Wan (2020) also pointed out that the undergoer of *chi* can take the role of Place, indicating that the Ingestor dines at a particular location, as seen in expression (3). Although collocations with Instrument were found to occur with low frequency (0.1%), the model identified this usage, as illustrated in Tao's analysis in Example (10). Additionally, the model emphasizes that the undergoer may attribute its characteristics to the actor of *chi*, leading to the meaning where the Ingestor favors the Attribute, as in expression (13).

(13) 吃　甜
chi　tian
eat　sweet
‘to keen on sweet food’　(Liu & Wan, 2020: 196)

When the actor assumes the roles of Absorber and Digestor, the undergoer of *chi* may take on the role of Substance. This profile highlights the effect of digestion as a consequence of consumption in a dependency relationship, where the in-taker demands and consumes the in-taken, leading to the interpretation of a consumable support or demand. For instance, in (14), the Substance of *chi* can be liquid, signifying the action of absorption and the displacement of the substance into the Absorber. Furthermore, when the actor assumes the role of Digestor, the meaning corresponds to ‘to consume,’ as illustrated in (7).

(14) 米　很　吃　水。
Mi　hen　chi　shui.
rice　very eat　water
‘Rice absorbs water well.’　(Liu & Wan, 2020: 196)

Furthermore, the third profile specifically emphasizes negative or undesirable experiences, such as suffering, misfortune, or unwillingness brought about by eating. More importantly, the actor of *chi* shifts to the role of Affected, influenced by the Affector. This concept of Affected and Affector parallels Chen’s (2012) framework of Experiencer and Stimulus, both of which underscore the meaning of ‘to suffer,’ as seen in (6).

Moreover, the eventive dimension offers a temporal perspective, outlining the sequential stages of ingestion: ingestion, digestion, absorption, and resultant outcomes. From this perspective, the meanings of *chi* can be further divided into three stages. First, the event of ingestion encompasses the core meaning, as well as the meanings of ‘to

rely on,' 'to dine at a certain location,' 'to favor something,' and 'to dine with certain instruments,' forming the first layer. In the second stage, following ingestion, the food is absorbed and digested, transforming the Ingestor into an Absorber or Digestor. The meanings of 'to absorb' and 'to consume' are placed in this layer. The third stage includes the meaning of 'to suffer.' Overall, this integrated model provides a comprehensive perspective on *chi*, capturing both its semantic relationships and temporal progression across various contexts of use.

2.1.4 Summary of the Theoretical Studies

Based on the above analysis, it can be observed that the semantic classifications and extensions of chi analyzed by Wang (2001), Tao (2000), Chen (2012) and Liu and Wan (2020) are not completely consistent. Wang (2001) considers the meaning of chi as a single linear extension, while Tao (2000) and Chen (2012) view it as an emergent expansion. Liu and Wan (2020), on the other hand, categorize *chi* from two dimensions. Table 2.1 compares the three models.

All three models recognized the core meaning of *chi* as the action of putting food into the mouth, chewing, and swallowing, which served as the foundation for deriving other meanings. However, they differ in their explanations of the emergent patterns for the extended meanings of *chi*. Wang (2001) focuses on five main extended senses and argued for a linear development in which six meanings are equally significant and likely developed in sequence. Although they share some common *chi* senses, Tao (2000) and Chen (2012), in contrast to Wang's (2001) proposal, argued that the extensions are based on an argument extension path. They suggest that the meanings become increasingly metaphorical as they diverge from the core argument structure.

Table 2.1

A Comparison of Wang (2001), Tao (2000), Chen (2012), and Liu and Wan (2020)

Aspect / Study	Emergent pattern	Core meaning	
		Number	**Sense**
Wang (2001)	Linear extension	1	To put food into mouth, chew, and swallow (e.g. *chi pingguo*)
Tao (2000), Chen (2012)	Emergent expansion		
Liu and Wan (2020)	Two-dimensional development		
Notes	Different	Same	

Aspect / Study	Extended meanings	
	Number	**Senses**
Wang (2001)	5	A certain way of living (including to eat at a certain location, e.g., *chi canteen*, to rely on, e.g., *chi laoben*), to obtain (e.g., *chi tiantou*), to suffer (e.g., *chi guansi*), to consume (e.g., *chi you*), to eliminate (e.g., *chi diao diren yige lu*)
Tao (2000), Chen (2012)	4	To eat at a certain location (e.g., *chi canteen*), to use certain instruments to eat (e.g., *chi kuaizi*), to rely on (e.g., *chi laoben*), to suffer (e.g., *chi guansi*)
Liu and Wan (2020)	7	To rely on (e.g., *chi laoben*), to eat at a certain location (e.g., *chi canteen*), to favor something (e.g., *chi tian*), to use certain instruments to eat (e.g., *chi kuaizi*), to absorb (e.g., *chi shui*), to consume (e.g., *chi you*), to suffer (e.g., *chi guansi*)
Notes	Differences in number: Liu and Wan (2020) > Wang (2001) > Tao (2000), Chen (2012)	Differences in senses: To use certain instruments to eat, to obtain, to consume, to eliminate (Wang (2001) & Tao (2000), Chen (2012)) To favor something, to use certain instruments to eat, to absorb (Wang (2001) & Liu and Wan (2020))

Building on these perspectives, Liu and Wan (2020) propose a two-dimensional model that categorizes *chi* meanings into three stages of the eating process, corresponding to three distinct layers of meanings. According to their model, meanings in the first layer develop first, followed by those in the second and third layers. Unlike Wang's linear model, Liu and Wan (2020) do not propose a sequential developmental path but instead emphasize a stage-based progression.

2.2 *Chi* Meanings Adopted in this Study

The three approaches to *chi* discussed in Section 2.1 provide valuable insights into its diverse meanings. However, this study selectively adopted specific meanings to investigate how heritage learners interpret the polysemy of *chi*. Given the focus on assessing whether heritage learners of Chinese could comprehend various meanings of *chi*, this study prioritized expressions that represent non-lexicalized usages over lexicalized expressions. Additionally, the productivity of *chi*—its ability to collocate with different NPs—is taken into account. Furthermore, the frequency of use is also considered; meanings that are infrequent or rarely encountered may not be comprehensible to heritage learners and are deemed unnecessary for them to understand. Based on these criteria, six meanings of *chi* have been selected for analysis, as outlined below.

Chi$_1$: To chew and swallow (e.g., *chi dangao* 'to eat a cake')

According to the three approaches, all of them claim that the core meaning of *chi* is defined as 'to chew and swallow food in the mouth.' This is the fundamental sense of *chi*, which is interpreted literally. Therefore, the direct objects which *chi*$_1$ can collocate with are extremely numerous, as long as the direct objects are edible.

Additionally, due to this fundamental sense, *chi*$_1$ is highly productive. Furthermore, it is predicted that *chi*$_1$ is the easiest meaning for a non-native speaker to acquire first.

Chi$_2$: To eat at a certain location (e.g., *chi maidanglao* 'to eat at McDonalds")

In addition to *chi*$_1$, the three approaches also recognize the meaning of *chi*$_2$. This metonymic usage of *chi* is argued to be closely related to *chi*$_1$ (Hsiao et al., 2016). The significance of *chi*$_2$ lies in its diverse collocational patterns observed in corpus data. Although the meaning of *chi*$_2$ is sometimes regarded as identical to *chi*$_1$, it is important for non-native speakers of Chinese to understand the subtle differences between the two. Furthermore, data from the Academia Sinica Balanced Corpus of Mandarin Chinese 4.0 indicate that the collocation of *chi* with locations and events is highly frequent, ranking immediately after the usage of *chi*$_1$. Given its frequency and distinct characteristics, the meaning of *chi*$_2$ is also incorporated into the present study.

Chi$_3$: To rely on (e.g., *chi laoben* 'to rely on one's old savings')

One of the extended meanings shared by all three approaches is 'to rely on.' Moreover, this meaning of *chi* is considered important, as it appears as the second (Liu & Wan, 2020; Wang, 2001) and third entry (Tao, 2000). From this, it is evident that the meaning of *chi*$_3$ cannot be ignored.

Chi$_4$: To obtain (e.g., *chi tiantou* 'to enjoy advantages')

Although Wang's (2001) model is the only one to identify the meaning of 'to obtain,' this meaning is deemed relevant for inclusion in the present study. First, the frequency and collocational patterns of *chi*$_4$ are well-documented in corpus data. Second, Jia and Wu (2017) argued that the act of eating can lead to the internalization of the consumed objects within one's body. In other words, the meaning of *chi* can be

shaped by the outcomes associated with the objects being consumed. Accordingly, Wang (2001) suggested that the outcomes of eating can be positive, implying that experiencing a positive outcome through eating equates to "obtaining."

Chi_5: To suffer (e.g., *chi guansi* 'to be sued')

Based on the development of chi_4, chi_5 is undoubtedly an extension. All three approaches agree that one can "suffer" from the negative outcomes of *chi*. Specifically, if the outcomes brought about by the objects of *chi* are negative, one may suffer from those negative results. Furthermore, this extended meaning of *chi* is also frequently used, according to the corpus. Consequently, chi_5 is considered crucial for non-native speakers when it understanding the meanings of *chi*.

Chi_6: To consume (e.g., *chi you* 'to consume fuel')

Finally, another important meaning of *chi* is 'to consume.' In the process of eating, one is consuming something. Metaphorically, this means that parts of the objects are being consumed. For example, effort, time, money, and even resources like gasoline and electricity are objects that can be consumed. Moreover, the corpus also indicates that chi_6 is frequently used.

Aside from the six selected meanings, additional senses of *chi* proposed in theoretical studies are not included in this section for several reasons. First, Tao (2000) and Liu and Wan (2020) suggest that *chi* can involve the use of instruments, this usage is rare in the context of Taiwan and absent in corpus data. For instance, expressions such as *chi kuaizi* 'to eat with chopsticks' or *chi dawan* 'to eat a large bowl of food' illustrate this sense (Liu & Wan, 2020; Tao, 2000; Wang & Huang, 2011). However, such usages are not common among speakers in Taiwan.

Additionally, Liu and Wan (2020) propose a meaning of *chi* as 'to favor something,'

where *chi* takes flavors as direct objects, such as c*hi tian* ‘to eat sweet food’ or *chi la* (‘to eat spicy food’). In this context, *chi* does not indicate an act of eating but instead reflects the agent’s flavor preference. However, this usage is limited and infrequent. Another less common and infrequent meaning of *chi* is ‘to absorb,’ as in expressions like *zhi chi mo* ‘paper absorbing ink’ or *mi chi shui* ‘rice absorbing water.’ These examples are seldom found in corpus data or daily language use. Consequently, this study suggests that these meanings are too marginal for non-native speakers to grasp and are thus excluded from the analysis.

Furthermore, one meaning that occurs in Wang (2001) but not in this study is ‘to eliminate.’ This meaning metaphorically symbolizes that the food is eaten, forming expressions like (15). However, this study does not adopt this meaning because this *chi* is typically collocated with particles. In (15), it can be seen that *diao* immediately follows *chi*, suggesting that this *chi* does not usually form a *chi* + direct object expression. Additionally, there are two objects in (15): an inherent object *diren* and a direct object *lu*. Due to this construction, this study considers this *chi* unsuitable for forming a *chi* + NP expression.

(15) 吃 掉 敵人 一 個 旅
chi diao diren yi ge lu
eat PAR enemy one CL regiment
‘to eliminate an enemy regiment’

Overall, this study adopts six senses of *chi*, including the core meaning, ‘to eat at a certain location,’ ‘to rely on,’ ‘to obtain,’ ‘to suffer,’ and ‘to consume.’ Moreover, based on the models, it is predicted that there is an acquisition order of *chi* for heritage speakers. The sequence is as follows: $chi_1 > chi_2 > chi_3 >= chi_6 > chi_4 = chi_5$. The core meaning should be acquired first since it is the literal meaning and it is used

robustly in daily conversations. Next, *chi*$_2$ is closely-related to the core meaning, so it is predicted that *chi*$_2$ would be acquired immediately. From *chi*$_3$ to *chi*$_6$, they are meanings that gradually deviate from the core sense or are developed through metaphors, indicating that they are more challenging to acquire. It is predicted that *chi*$_3$ is the easiest one to grasp among these four senses, and followed by *chi*$_6$. If the prediction is proved in the study, then the development of *chi* may not adhere strictly to Wang's (2001) linear model. Finally, *chi*$_4$ and *chi*$_5$ are predicted to be more difficult for heritage speakers. As the three approaches claimed, the result of the eating action is the later stage of eating. Accordingly, due to the later development and the metaphorically inherent sense, non-native speakers may find *chi*$_4$ and *chi*$_5$ more challenging to acquire.

2.3 Empirical Studies of *Chi* in Mandarin

In this section, three empirical studies on the verb *chi* are reviewed. Section 2.3.1 discusses a study that categorizes different meanings of *chi* by thematic roles and analyzes its usage through an Event-Related Potential (ERP) experiment to understand how speakers process its various meanings. Section 2.3.2 presents a study that classifies the meanings of *chi* into three broad categories based on degrees of prototypicality and examines speakers' reactions to these different meanings through a semantic judgment task. Section 2.3.3 introduces a thesis that specifically focuses on the verb *chi* from the perspective of second language acquisition. Finally, Section 2.3.4 provides a brief summary of these empirical studies.

2.3.1 Liu et al. (2013)

Liu et al. (2013) explored the cognitive processing involved interpreting different

thematic roles associated with the Chinese verb *chi* through an Event-Related Potential (ERP) experiment. They focused on the semantic roles of Patient, Means, Source, Locative, and Instrument, and investigated how these roles were processed in relation to the verb *chi*.

Similar to Tao's (2000) proposal of "pseudo-patient" discussed in the previous section, Liu et al. (2013) considered the "non-patient object" locatives in Chinese. One typical example is repeated below.

(16) 吃　食堂
chi　shitang
eat　canteen
'to dine at a canteen'

They found that *chi* collocates with a variety of non-patient objects, each with their thematic roles, which aligns with the proposals discussed in the theoretical studies in the previous section. For instance, the object in (17) was defined as having the thematic role of Source. Additionally, *chi* can license the object with the thematic role of Means. In (18), the phrase literally means 'to eat food bought with one's salary,' figuratively denoting 'to live on one's salary.'

(17) 吃　父母
chi　fumu
eat　parents
'to rely on one's parents'
(18) 吃　工資
chi　gongzi
eat　wage
'to live on one's salary'　(Liu et al., 2013: 37)

While the verb *chi* has various collocations with non-patient objects, Liu et al.

(2013) found no thematic hierarchy established by empirically testing Chinese native speakers' intuitive processing and reaction about the sematic acceptability of particular verbs with different types of objects. Consequently, they examined *chi*'s collocations, which have different thematic roles, using EPR to see if there was any N400 anomaly, as the N400 effect was commonly obtained in response to a target word violating semantic constraints.

The research design involved thirty sets of sentences, each containing five sentences with objects representing different thematic roles, including Patient, Means, Source, Locative, and Instrument. A sample set of test items is presented in Table 2.2:

Table 2.2

Sample Set of Test Items in Liu et al. (2013)

Thematic role	Example	Literal translation	Free Translation
Patient	吃　米飯 *chi mifan*	to eat white rice	to eat white rice
Source	吃　老鄉 *chi laoxiang*	to eat one's folks	to eat food provided by one's folks
Means	吃　利息 *chi lixi*	to eat bank interest	to eat food bought with bank interest
Locative	吃　食堂 *chi shitang*	to eat the canteen	to eat at the canteen
Instrument	吃　筷子 *chi kuazi*	to eat chopstick	to eat with chopsticks

As noted above, the collocation of *chi* with the thematic role of Patient corresponds

to its core meaning, where the object typically represents edible food. Similarly, Tao (2000) and Liu and Wan (2020) suggested that *chi* could take the argument of Source, conveying the meaning of 'relying on someone or something to live.' Additionally, Liu et al. (2013) identified a pattern where *chi* is followed by a predicate categorized as Means in thematic roles. As summarized in Table 2.2, the authors described Means as a way for the actor of *chi* to utilize the Means to gain or obtain something. Furthermore, *chi* can also take on other thematic roles, such as Locative and Instrument, as discussed in Tao (2000). These roles expand the semantic scope of *chi*, illustrating its versatility in expressing different relationships between the actor and the object or context.

In the ERP experiment, thirty Chinese native speakers were recruited. A training session was implemented to ensure participants' accuracy in judgments before the formal ERP test was conducted. In the formal ERP test, the procedures involved presenting sentences segment by segment, followed by a semantic probe to assess participants' comprehension. The results indicated that the N400 wave amplitudes—a negative ERP deflection associated with semantic processing in context (Van Berkum, 2008)—decreased along a thematic hierarchy: Instrument > Locative > Source > Means > Patient. This pattern reflects varying levels of cognitive effort required to interpret different thematic roles associated with *chi*. In other words, the amplitudes suggest that when *chi* is assigned the role of Instrument, participants found it less appropriate compared to its use as Locative or Source roles. Specifically, the predicate of *chi* is most commonly assigned the role of Patient, which was the least anomalous role in the hierarchy according to the findings. This aligns with the notion of a "default assignment" to Patient, underscoring *chi*'s core meaning.

Conversely, as shown in Table 2.2, non-Patient roles often maintained an implicit relationship with food. For example, *chi lixi* translates to 'to eat food bought with bank interest,' and *chi laoxiang* means 'to eat food provided by one's folks.' Similarly, *chi*

shitang refers to a place where food is provided, while *chi kuaizi* emphasizes the utensil involved in the eating process. The authors argued that the interpretation of predicates with non-Patient roles conflicted with participants' default semantic assignment to Patient. In such cases, a metonymic link was established between the literal meaning of the predicate and the concept of "food." This metonymic interpretation not only produced stronger N400 effects but also increased cognitive effort, reflecting the additional processing demands of resolving semantic conflict.

In summary, Liu et al. (2013) concluded that processing thematic roles with *chi* involved a default assignment to the role of Patient, while non-Patient roles required additional cognitive resources for interpretation. This finding reinforces that the core meaning—or the typical collocation—of *chi* is the easiest to process. Moreover, the metonymic link between non-Patient roles and the concept of food highlights the flexibility and complexity of semantic processing in comprehending polysemous expressions in Chinese.

Limitations of Liu et al. (2013)

However, the categorization of thematic roles in this study did not fully encompass all possible roles *chi* can take. For instance, the meaning of "eating is suffering" was excluded because no corresponding thematic role was identified to illustrate this meaning. Nonetheless, Liu and Wan (2020) have argued that the actor of eating does not always need to be volitional; instead, the actor can be conceptualized as the "Affected."

Additionally, the interpretations of *chi* with Source and Means lacked clarity. As discussed by Tao (2000) and Liu and Wan (2020), the role of Source extends beyond simply indicating food provided by the Source. It can also signify resources or money. Thus, "*chi* Source" should be understood as going beyond a metonymic relationship

with food. Furthermore, the meanings of test items categorized under Means were ambiguous. For example, while *chi lixi* was translated as "to eat food bought with bank interest," a deeper analysis might interpret this phrase as "relying on bank interest to live." Since "eating is to survive," bank interest functions similarly to a Source on which one depends. Consequently, the meaning of *chi* with Means may overlap with that of Source.

Moreover, test items for Means included phrases like *chi fuli* (to gain benefits), *chi huikou* (to obtain kickbacks), and *chi jiangshang* (to obtain rewards), which align more closely with the notion of "eating as obtaining." These examples suggest that certain items in the Means category might be more appropriately classified under Source.

In conclusion, a more nuanced categorization of *chi* meanings is necessary, particularly under a thematic role framework, to provide a more comprehensive analysis of its polysemous nature.

2.3.2 Hsiao et al. (2016)

Hsiao et al. (2016) examined the intricate nature of polysemy in Chinese verbs, specifically focusing on the verbs *chi* (to eat), *da* (to hit), and *xi* (to wash). They employed a semantic judgment task to mainly focus on how various senses of the polysemous verbs were stored and processed in mental lexicon. In their experimental approach, they recruited Chinese native speakers to engage in a semantic judgment task, where they evaluated different senses of the target verbs based on the relatedness among the various senses. In their task design, the test items, comprising polysemous verbs followed by a predicate, were classified into three conditions, resulting in three types of meanings of the polysemous verbs: basic senses, closely-related senses, and distantly-related senses, as shown below:

Table 2.3

Senses of Chi Categorized in Hsiao et al. (2016)

Type	Sense
Basic	To chew and swallow
Closely-related	1. To eat at a certain location (e.g. *chi weiya* 'to attend a year-end party) 2. To chew the following object to suck its nutrition (e.g. *chi naizui* 'to suck on a pacifier') 3. To keep an object in the mouth and chew it as a subconscious habit (e.g. *chi binlang* 'to chew areca nut')
Distantly-related	1. To suffer (e.g. *chi guansi* 'to be sued') 2. To live off (somebody/ something) (e.g. *chi laoben* 'to rest on one's laurels')

Following their classification, the basic sense corresponded to the primary definition found in the Revised Mandarin Chinese Dictionary and was listed as the first entry in Chinese WordNet (Huang & Hsieh, 2010). For *chi*, the basic sense was 'to swallow food through the mouth.' Regarding closely-related senses, two criteria were applied for *chi* to fall into this category: (1) when the usage of the verb had been considered an extended sense through previous semantic analyses, or (2) if the usage was categorized by the Chinese WordNet as a different sense from the basic one. In Tao's (2000) research, discussed in Section 2.1.2, the verb *chi* can be followed by atypical predicates indicating a location like (19) or manners similar to the action denoted by the basic sense as in (20).

(19) 吃　尾牙
chi　weiya
eat　year-end-party
'to attend a year-end-party'　(Hsiao et al., 2016: 10)

(20) 吃　奶嘴
chi　naizui
eat　pacifier
'to suck on a pacifier'　(Hsiao et al., 2016: 10)

According to the authors, these closely-related senses only exhibited subtle differences in meanings compared to the basic sense. Unlike the basic sense, the senses in this category represented "concrete" extended senses that imply physical actions. For example, (19) involves the action of eating at a certain event, while (20) involves the action of placing an item in the mouth and sucking. In other words, the subtle difference was that there was no swallowing process involved in the closely-related senses of *chi*.

A *chi* expression was classified as a distantly-related sense when the usage of *chi* had been recognized as an extended sense in the previous studies on verb semantics. These senses, unlike the closely-related senses, extended further from the basic sense as they were more abstract and involve no physical action. For instance, the meanings of 'to live off (somebody/ something)' and 'to suffer,' corresponding to (4) and (6), were considered to be distantly-related senses. In this category, the meanings of *chi* had extended from the realm of action and behavior to the realm of psychology (Chen, 2012). Thus, they had undergone abstraction and were usually collocated with non-concrete nouns, resulting in *chi* phrases that were less transparent compared to those in the previous two types. The senses in this category originated from metaphorical semantic extensions that enabled *chi* to be associated with nouns from atypical domains (Hsiao et al., 2016).

The results of the tasks revealed intriguing patterns in response times and positive response rates, indicating that as *chi* senses deviated further from the basic sense, both response rates and reaction times were affected. This result evidenced a gradient of relatedness among the senses of *chi*, which could influence how fast and accurately

participants processed the various senses. In particular, the authors claimed that the findings challenged traditional views of polysemy representation, such as the separate-entry view (Klein & Murphy, 2001). The separate-entry view posited that each sense of a polysemous word was stored independently, with no overlap or connection between senses. However, the results in Hsiao et al. (2016) indicated a gradient relatedness among the senses of *chi*, suggesting a more interconnected and integrated network of meanings.

To conclude, Hsiao et al. observed linearly decreasing priming effects as the senses of *chi* moved from core senses to closely-related senses and then to distantly-related senses. This pattern of decreasing priming effects contradicted the predictions of the separate-entry hypothesis. The fact that processing times and response rates varied based on the degree of relatedness among the senses indicated that there was a shared core representation that influenced how *chi* senses were stored and accessed in the mental lexicon. On the other hand, this shared core representation allowed for faster and more accurate processing of closely-related senses compared to distantly-related senses, indicating a hierarchical organization of meanings within *chi*.

Limitations of Hsiao et al. (2016)

Nevertheless, Hsiao et al. (2016) categorized the various senses of *chi* into three broad categories rather than addressing each sense individually. This approach overlooks potential differences in the semantic realization of senses within the same category, such as variations in interpretative difficulty and the order in which these senses emerge. For example, in the category of distantly related senses, the meanings ‘to live off (something/someone)’ and ‘to suffer’ were grouped together. However, theoretical studies like Liu and Wan (2020) categorized *chi* senses into three layers based on interpretative difficulty, with ‘to live off’ positioned in the first layer and ‘to

suffer' in the third. This discrepancy suggests that further empirical evidence is needed, as Hsiao et al.'s (2016) categorization may not adequately reflect the emergent sequence of *chi* senses. Additionally, Hsiao et al. (2016) discussed relatively fewer senses of *chi*, leaving meanings such as 'to obtain' unexamined, which warrants further investigation.

2.3.3 Sheng (2019)

Unlike the previously reviewed studies, which focused on reaction times and brain activities in response to *chi*, Sheng (2019) examined *chi* and its collocations from the perspective of teaching Chinese as a second language and argued that the mechanism of forming *chi* phrases was tightly associated with conceptual metaphor. Consequently, she posited that teaching the conceptual metaphors of *chi* phrases could better facilitate the acquisition of *chi* for second language learners. In other words, due to the metaphorical mechanisms behind the development of various meanings of *chi*, it was beneficial to teach these metaphors alongside the verb itself.

Sheng (2019) conducted experiments to investigate whether teaching *chi* through some related conceptual metaphors could help L2 learners comprehend and memorize its various meanings. Additionally, the experiments aimed to determine if teaching conceptual metaphors could enhance learners' ability to infer correct meanings of words, thereby improving learning efficiency. She emphasized the importance of these conceptual metaphors since introducing a new word typically involved presenting its meaning and usage contexts. However, merely memorizing several new meanings of a polysemous word can be challenging and constrained by memory capacity. Therefore, if learners could relate to conceptual metaphors that align with their native languages or daily routines, they were likely to benefit from these metaphors and memorize more meanings compared to traditional teaching methods (Boers, 2000).

In Sheng (2019)'s study, the participants were second language learners of Chinese

whose native language was Korean. The experimenter initially collected questionnaire responses from 50 university students in two Korean universities. The questionnaire assessed whether L1-Korean L2-Chinese learners could distinguish the meanings of *chi*. The findings indicated that most learners (89.09%) could discriminate between the core meaning and the extended meanings of *chi*. Additionally, the correctness of what the author categorized as "basic vocabulary" was also high (83.64%). Predictably, the correctness for "non-basic vocabulary" was lower (70.9%). This comparison suggested that meanings more closely related to the core meaning were better acquired and comprehended than those less related. Sheng attributed the lower correctness to the learners' unfamiliarity with the metaphorical meanings of *chi*.

Following the preliminary findings on L2 learner's acquisition of *chi*, Sheng conducted further experiments to investigate the role of conceptual metaphors in teaching *chi* meanings. Eighteen participants were selected from the 50 questionnaire respondents. Their L2 proficiency was above HSK5[1]. These participants were chosen because they struggled to discriminate and use various meanings of *chi*. To examine the effectiveness of using conceptual metaphors to teach *chi*, participants were divided into two groups: one taught with conceptual metaphors (Group A) and the other with traditional methods (Group B). The experiment procedures were as follows: (1) Participants first took a pre-test on *chi*. (2) After the pre-test, participants were divided into Group A and Group B and taught using different methods. (3) Finally, an immediate post-test assessed participants' comprehension of *chi*. The study categorized *chi* phrases into "basic vocabulary" and "non-basic vocabulary," with each category including 10 *chi* phrases. Moreover, both categories contain metaphorical meanings. In other words,

[1] HSK (*Hanyu Shuiping Kaoshi*) is the Chinese Proficiency Test implemented by the People's Republic of China. There are three proficiency levels: Beginner (Bands 1-3), Intermediate (Bands 4-6), and Advanced (Bands 7-9).

the distinction between the categories was based on the frequency in the corpora and the difficulty according to different levels of the teaching materials.

The results revealed that Group A participants (80%) had a better understanding of the metaphorical meanings than Group B participants (67.78%). The findings then suggested that the L2 learners could indeed benefit from the teaching of conceptual metaphors of *chi*. Accordingly, it was clear that conceptual metaphors played a crucial role in forming the extended meanings of *chi*.

Overall, although Sheng's (2019) research was conducted from a pedagogical perspective, it still provided insight for this current study, which aims at the acquisition of heritage learners. However, Sheng's research is not without limitations. Firstly, the test items in this study were simply categorized as "basic vocabulary" and "non-basic vocabulary." The meanings of *chi* were not discussed specifically and separately. Consequently, if there exists an acquisition order of *chi*, it is somewhat unfortunate that the participants were not tested on all meanings associated with *chi*.

2.3.4 Summary of the Empirical Studies

Table 2.4 summarizes the key findings and limitations of the empirical studies reviewed. The difficulty hierarchy of *chi* proposed by Liu et al. (2013) and Hsiao et al. (2016) suggests that the core meaning is acquired first. However, these studies diverge in their assessments of the difficulty associated with metaphorical meanings. For example, Liu et al. (2013) argued that the meaning 'to rely on' is easier to comprehend than 'to eat at a certain location,' whereas Hsiao et al. (2016) held the opposite view. Moreover, Liu et al.'s (2013) ERP experiment also showed that contextual cues significantly aid comprehension. From a pedagogical standpoint, Sheng (2019) highlighted the value of combining conceptual metaphors with contextual examples in vocabulary instruction.

Table 2.4

Major Findings and Limitations of the Previous Empirical Studies

Study	Major Findings	Limitations
Liu et al. (2013)	1. Difficulty order: To chew and swallow > To obtain > To rely on > To eat at a certain location > To eat with a certain instrument 2. Contextual effect: Yes 3. Others: The collocations with atypical objects required more cognitive effort.	1. Subjects: only Chinese adults, no heritage learners of Chinese 2. Method: only an ERP task 3. *Chi* meanings: some meanings (e.g. to suffer, to consume) not included
Hsiao et al. (2016)	1. Difficulty order: To chew and swallow > To eat at a certain location > To suffer, To rely on 2. Others: The relatedness of meanings and familiarity influenced the processing time of polysemous verbs in Chinese.	1. Subjects: only Chinese adults, no heritage learners of Chinese 2. Method: only a semantic judgment priming task 3. *Chi* meanings: some metaphorical meanings (e.g. to obtain, to consume) not included
Sheng (2019)	1. Contextual effect: Yes 2. Others: The conceptual metaphor group outperformed the traditional method group.	1. Subjects: L1-Korean L2-Chinese learners, no heritage learners of Chinese 2. Method: two comprehension tests without context clues provided 3. *Chi* meanings: only categorized in two broad categories, not identified as distinct senses

Furthermore, Liu et al. (2013) examined *chi* in terms of its collocations with various objects and found that while *chi* typically collocates with edible objects, collocations with atypical objects required more cognitive effort. In other words, apart from the core meaning, metaphorical meanings of *chi* involving atypical objects were more difficult and required more processing time. On the other hand, Hsiao et al. (2016) considered that the metaphorical meanings of *chi* were associated with the core meaning but varied in their degrees of relatedness. They claimed that the relatedness of meanings and familiarity influenced the response times of *chi*. In line with this finding, Sheng (2019) emphasized that conceptual metaphors were interrelated. She thus concluded that vocabulary teaching using conceptual metaphors was more effective than traditional methods.

However, these studies are not without limitations. First of all, the subjects in Liu et al. (2013) and Hsiao et al. (2016) were Chinese native speakers, while Sheng (2019) focused on L2 learners of Chinese. None of these studies had specifically targeted heritage learners of Chinese. Secondly, the meanings of *chi* were not comprehensively addressed (Liu et al., 2013), or each meaning was not thoroughly investigated (Hsiao et al., 2016; Sheng, 2019). For example, the meaning of 'to suffer' was not discussed in Liu et al. (2013), 'to obtain' was not examined in Hsiao et al. (2016), and 'to consume' was not investigated in either Liu et al. (2013) and Hsiao et al. (2016).

2.4 Summary of Chapter Two

This chapter has introduced several theoretical and empirical studies on the polysemous verb *chi*. The current study identifies six distinct meanings of *chi* in Chinese: chi_1 'to chew and swallow,' chi_2 'to eat at a certain location,' chi_3 'to rely on,' chi_4 'to obtain,' chi_5 'to suffer,' and chi_6 'to consume.' Additionally, theoretical studies (Chen, 2012; Liu & Wan, 2020; Tao, 2000; Wang, 2001) have been discussed to

understand the sequence in which these meanings emerged. Based on their viewpoints, this study proposes a difficulty order for acquiring these meanings: $chi_1 > chi_2 > chi_3 >= chi_6 > chi_4 = chi_5$. Regarding the empirical studies, the findings suggest that the core meaning (chi_1) is acquired first. For the other meanings, Liu et al. (2013) claimed that meanings like chi_2 were more difficult to acquire than meanings like chi_4 and chi_5. However, Hsiao et al. (2016) suggested that more distantly related meanings, such as chi_4 and chi_5, were acquired after closely related meanings like chi_2. Based on these theoretical and empirical insights, the research design will be presented in the following chapter.

Chapter Three

Research Design and Results

This chapter elaborates on the research design of the present study. Participants and their background information are presented in Section 3.1. Section 3.2 describes the materials and tasks, while the procedure for the tasks and the scoring policy are reported in Section 3.3. In Section 3.4, the results of the Interpretation Task without Context (IT-WC) and the Interpretation Task with Context (IT-C) are presented. Finally, a brief summary is provided in Section 3.5.

3.1 Participants

The present study aimed to investigate how heritage learners of Chinese with different levels of Chinese proficiency interpreted the related senses of *chi*, with a particular focus on the role of contextual clues in this interpretation. A total of 60 adult participants were recruited for the study and divided into three groups. Table 3.1 provides a summary of the participants who were recruited for this study.

Table 3.1

A Summary of the Participants

Group		**Mean age**	**Number**
G1	Intermediate heritage learners	22;2	20
G2	Advanced heritage learners	22;1	20
G3	Chinese speakers	25;6	20
Total			60

Group 1 consisted of 20 intermediate heritage learners of Chinese (Mean age = 22;2; range = 18;2–27;0), while Group 2 included 20 advanced heritage learners of Chinese (Mean age = 22;2; range = 18;6–31;7). All participants had a heritage background in Chinese, and their native languages included Burmese, Indonesian (Bahasa), and Vietnamese. These participants were recruited from the Academy of Preparatory Programs for Overseas Chinese Students (NUPS) at National Taiwan Normal University. NUPS is an educational institution in Taiwan that provides preparatory courses for overseas Chinese students planning to enter university. Given the unique composition of students at NUPS, this study deemed it valuable to investigate how these students, with their heritage language background, interpret Chinese polysemous words.

One of the research aims was to examine the effect of proficiency on polysemy interpretation. Therefore, participants in Group 1 and Group 2 were distinguished based on their Chinese proficiency levels. The criterion for classification was derived from their performance on the Test of Chinese as a Foreign Language (TOCFL), which assesses listening and reading proficiency in Chinese. Learners who passed the Band C level[2] in either listening or reading, or in both skills, were categorized as advanced learners (Group 2). Conversely, students who failed both listening and reading at the Band C level but had passed the Band B level were categorized as intermediate learners (Group 1).

Additionally, Group 3 served as a control group and consisted of 20 Chinese native speakers (Mean age = 25;6; range = 21;4–28;9). All participants in this group were born in Taiwan and were either undergraduate students or had completed a bachelor's degree.

[2] In the TOCFL, there are three levels: Band A, Band B, and Band C. Band A includes the Beginner (A1) and Basic (A2) levels; Band B consists of the Intermediate (B1) and Upper Intermediate (B2) levels; and Band C encompasses the Advanced (C1) and Proficient (C2) levels.

3.2 Materials and Design

To address the research questions in this study, specifically exploring the comprehension from Chinese heritage learners and the effect of contextual support on interpreting the various senses of *chi*, a quantitative approach was adopted. This approach was chosen for its strength in establishing cause-effect relationships, often through experimental methods (Savela, 2018). The study aimed to determine whether prior exposure to Chinese gave heritage speakers an advantage in interpreting polysemous words, and whether contextual cues enhanced comprehension of these words. However, it is acknowledged that quantitative research has its limitations, such as the potential inconsistency of linguistic phenomena in real-world contexts (Blaikie, 2007). Despite these limitations, there were compelling reasons for adopting a quantitative approach in this study. Quantitative methods, particularly experiments, allow for the investigation of specific linguistic properties (Blom & Unsworth, 2010) and are effective in capturing participants' intuitive responses. Therefore, this study utilized a quantitative research approach to provide a comprehensive and generalizable view of non-native speakers' acquisition of polysemous words.

Among the various methods available within the quantitative paradigm, such as experimental production tasks and comprehension tasks, this study employed the comprehension task. While production tasks allowed for more detailed responses by capturing participants' thoughts in their own words (Creswell & Creswell, 2017), they often resulted in irrelevant or null responses, making the data less useful. In contrast, comprehension tasks, particularly multiple-choice questions, provided clearer results and are less demanding for participants. These tasks offered a standardized way of testing, reducing subjectivity and bias in responses (Dean Brown, 2010). Moreover, multiple-choice questions were efficient for data collection and analysis, allowing for

responses from a large number of participants in a short period (Haladyna, Downing, & Rodriguez, 2002). They could also be designed to be highly reliable, with consistent scoring and clear correct answers. However, this method had limitations, such as not capturing deep understanding or the reasoning behind responses (Gorin, 2007), and the fixed nature of options may restrict participants from expressing understanding (Scouller, 1998).

Given the objective of capturing participants' intuitive data efficiently and reliably, multiple-choice questions were particularly suitable for this study. They provided a clear, standardized method for assessing understanding of polysemous words, ensuring that responses can be easily compared and analyzed. While they might not capture deep reasoning, their efficiency and reliability made them an ideal choice for the large-scale data collection required in this research. Moreover, by carefully designing incorrect options, it was possible to gain insights into common misconceptions and errors, which could be valuable for understanding the acquisition process.

In this study, the primary goal was to investigate the comprehension of different meanings of *chi*. To achieve this, two interpretation tasks were conducted: the Interpretation Task without Context (IT-WC) and the Interpretation Task with Context (IT-C). Both tasks consisted of 18 multiple-choice questions about the meanings of *chi*, with test items classified into six types, each representing one meaning. Type 1 (T1) represents chi_1, Type 2 (T2) represents chi_2, and so on. Each type contained two test items, resulting in 12 target items, along with six filler items. Table 3.2 presents the classification and distribution of the test items used in this study.

Table 3.2

A Summary of the Test Items Used in the Tasks

Type	Meaning	Example	IT-WC	IT-C
T1 (*chi*$_1$)	To chew and swallow	*chidangao* 'to eat a cake'	Q7, Q11	Q7, Q11
T2 (*chi*$_2$)	To dine at a certain location	*chimaidanglao* 'to eat at McDonalds''	Q4, Q16	Q4, Q16
T3 (*chi*$_3$)	To rely on	*chilaoben* 'to rely on one's savings'	Q2, Q18	Q2, Q18
T4 (*chi*$_4$)	To obtain	*chitiantou* 'to enjoy advantages'	Q6, Q14	Q6, Q14
T5 (*chi*$_5$)	To suffer	*chiguansi* 'to be sued'	Q1, Q13	Q1, Q13
T6 (*chi*$_6$)	To consume	*chiyou* 'to consume fuel'	Q3, Q10	Q3, Q10
Fillers		*tingyinyue* 'to listen to music'	Q5, Q8, Q9, Q12, Q15, Q17	Q5, Q8, Q9, Q12, Q15, Q17
Total			18	18

In the IT-WC task, the *chi* phrase in each question was presented without contextual support. Participants were asked, "What does the phrase '*chi* ___' mean?" Each question offered three choices, with only one being the correct interpretation. Participants were expected to select the correct interpretation of the target item.

Table 3.3 provides an example question from the IT-WC task.

Table 3.3

An Example of the Interpretation Task without Context

The participants heard and read: 請問「**吃官司**」是什麼意思？ Qingwen *chiguansi* shi sheme yi? 'What does *chiguansi* mean?'
The participants chose from: (1) 在法院工作 Zai fayuan gongzuo 'To work at the court' (2) 寫一份法律文件 Xie yifen falu wenjien 'To write a legal document' (3) 面對法律訴訟 Miandui falu susong 'To face a lawsuit'
The expected answer: (3)面對法律訴訟 Miandui falu susong 'To face a lawsuit'

For more information, please see Appendix A.

To examine the role of contextual cues in interpreting different meanings of *chi*, the Interpretation Task with Context (IT-C) used the same test items as in the IT-WC task but with the addition of context. Therefore, each test item in the IT-C was accompanied by a brief context description and pictures related to the context. As in the IT-WC, participants chose from three choices that best correspond to the interpretation of the target item. Table 3.4 provides an example of the questions used in the IT-C task.

Table 3.4

An Example of the Interpretation Task with Context

<table>
<tr><td colspan="2">The participants saw the pictures and heard:</td></tr>
<tr><td colspan="2">Scene 1</td></tr>
<tr><td>  </td><td>小張在公司裡被指控挪用公款，現在他需要出庭辯護。
Xiaozhang zai gongsili bei zhikong nuoyong gongkuan, xianzai ta xuyao chuting bianhu.
‘Xiaozhang has been accused of embezzling company funds and now needs to appear in court to defend himself.’</td></tr>
<tr><td colspan="2">Scene 2</td></tr>
<tr><td>  </td><td>他的同事們都在議論紛紛，說他這次真是吃了官司。
Tade tongshimen dou zai yilunfenfen, shuo ta zheci zhen shi chi le guansi.
‘His colleagues are all talking about it, saying that he is really chiguansi this time.’</td></tr>
<tr><td colspan="2">Scene 3</td></tr>
<tr><td>qǐng wèn chī guān sī shì shé me yì si
請 問 「 吃 官 司 」 是 什 麼 意 思 ？

zài fǎ yuàn gōng zuò
(1) 在 法 院 工 作

xiě yí fèn fǎ lǜ wén jiàn
(2) 寫 一 份 法 律 文 件

miàn duì fǎ lǜ sù sòng
(3) 面 對 法 律 訴 訟</td><td>請問「吃官司」是什麼意思？
Qingwen chiguansi shi sheme yi?
‘What does chiguansi mean?’

(1) 在法院工作 Zai fayuan gongzuo
‘To work at the court’
(2) 寫一份法律文件 Xie yifen falu wenjien ‘To wirte a legal document’
(3) 面對法律訴訟 Miandui falu susong
‘To face a lawsuit’</td></tr>
<tr><td colspan="2">The expected answer:
(3)面對法律訴訟 Miandui falu susong ‘To face a lawsuit’</td></tr>
</table>

For more details, please refer to Appendix B.

3.3 Procedures

In this section, the procedures of the study will be addressed. Section 3.3.1 describes the pilot study conducted prior to the formal study. Section 3.3.2 provides detailed information about the formal study. Finally, the scoring policy is covered in Section 3.3.3.

3.3.1 Pilot Study

A pilot study was conducted in July 2024 to ensure the quality and validity of the test items intended for use in the formal study. This pilot study involved three groups of adult participants aged between 22 and 38. The first group consisted of five heritage learners of Chinese and the second group comprised L2 learners of Chinese. A control group of five native Chinese speakers was also recruited. In total, 15 individuals participated in the pilot study.

To assess the interpretation of the six meanings of *chi*, each participant completed two tasks: the Interpretation Task without Context (IT-WC) and the Interpretation Task with Context (IT-C). Both tasks consisted of 24 questions, including 18 target items and six fillers (see Appendix C). Participants first completed the IT-WC task, followed by the IT-C task. The tasks were administered individually through online meetings in two sessions, each lasting approximately 10 to 15 minutes, with no break between tasks.

The pilot study yielded several key findings. All three groups performed slightly better on the IT-C task than on the IT-WC task, suggesting that contextual cues may aid in interpreting the meanings of *chi*. Although the differences between the two tasks were not statistically significant, the Chinese native speakers performed the best on both tasks (Mean = 1), followed by the heritage learners (IT-WC Mean = 0.96; IT-C Mean = 0.99) and the L2 learners (IT-WC Mean = 0.88; IT-C Mean = 0.99). Despite

the small differences, the results suggest that heritage learners might have a slight advantage in interpreting the various meanings of *chi* in the IT-WC task compared to L2 learners. The presence of contextual cues also appeared to improve performance across all groups, as indicated by the better results on the IT-C task.

Regarding the interpretation of different types of *chi*, Chinese native speakers scored perfectly across all six types (T1-T6). Heritage learners scored slightly lower on T4 (Mean = 0.90) and T6 (Mean = 0.93), while L2 learners scored lower on T3 (Mean = 0.93), T4 (Mean = 0.83), T5 (Mean = 0.9), and T6 (Mean = 0.93). These findings suggest that T1 and T2 were easier for participants to interpret, whereas the more metaphorical meanings, particularly T4 and T6, posed greater challenges, especially for L2 learners. Overall, heritage learners performed slightly better than L2 learners in interpreting the various meanings of *chi*.

However, the pilot study revealed several limitations that influenced the design of the formal study. First, the average scores for both heritage and L2 learners were high and closely aligned with those of the native speaker group. This finding suggests that the performance of L2 learners of Chinese may not differ significantly from that of heritage learners, making it less feasible to examine the differences between these two groups. Consequently, the research focus was adjusted to investigate heritage learners of Chinese exclusively, with an emphasis on comparing learners with different proficiency levels.

Second, feedback from native speakers identified at least one misleading and inappropriate question among the test items for each type (e.g., Q9: *chi you* 'to consume fuel' in Appendix C). To address this issue, the number of test items per type was reduced to two in the formal study. Additionally, issues were identified with certain filler questions. Four out of five L2 learners incorrectly interpreted Q22 (*zuo zuoye* 'to do the homework'). The correct answer should have been *wancheng laoshi buzhide*

gongke ‘to finish the homework assigned by the teacher,’ but instead, four L2 learners chose *wancheng mama fenpeide jiashi* ‘to finish the housework assigned by one’s mother.’ This misinterpretation suggests that L2 learners may have associated “doing the homework” with “mother” due to the common experience of being scolded by one’s mother for not completing homework. This issue occurred in both the IT-WC and IT-C tasks, indicating that the options for Q22 require revision, despite it being a filler item.

3.3.2 Formal Study

The procedures for the formal study closely mirrored those of the pilot study. Before beginning the tasks, a consent form (see Appendix D) was collected from each participant, ensuring their voluntary participation and informing them that the data collected were used solely for academic research purposes. Once the consent forms were gathered, the tasks started.

Participants first received clear instructions outlining the procedures. They were informed that they were required to complete two tasks, each consisting of 18 multiple-choice questions, with one correct answer to be chosen for each question. Participants recorded their answers on an answer sheet provided to them. The study began with the Interpretation Task without Context (IT-WC). The questions for the IT-WC task were presented via PowerPoint slides on a laptop, with the experimenter reading each question aloud. Participants then selected the correct option on their answer sheets. Following the IT-WC task, participants proceeded to the Interpretation Task with Context (IT-C). Similar to the IT-WC task, the IT-C questions were presented through PowerPoint slides. This time, the experimenter read both the context descriptions and the questions, and participants once again chose the correct answer on their answer sheets. The entire process took approximately 20 to 25 minutes.

Figure 3.1 illustrates the step-by-step process of the formal study.

Figure 3.1

Procedure Flowchart of the Formal Study

3.3.3 Scoring Policy

This section reports the scoring policy for the two tasks in the formal study. Each task comprised 12 multiple-choice questions, with only one correct answer per question. Participants received one point for each correct answer, while no points were awarded for incorrect or omitted responses. After data collection, the mean scores for each group were computed. A two-way ANOVA was performed to analyze and compare the results across different groups, examining the effects of test type and contextual support. All statistical analyses were conducted using R software.

3.4 Results of the Two Tasks

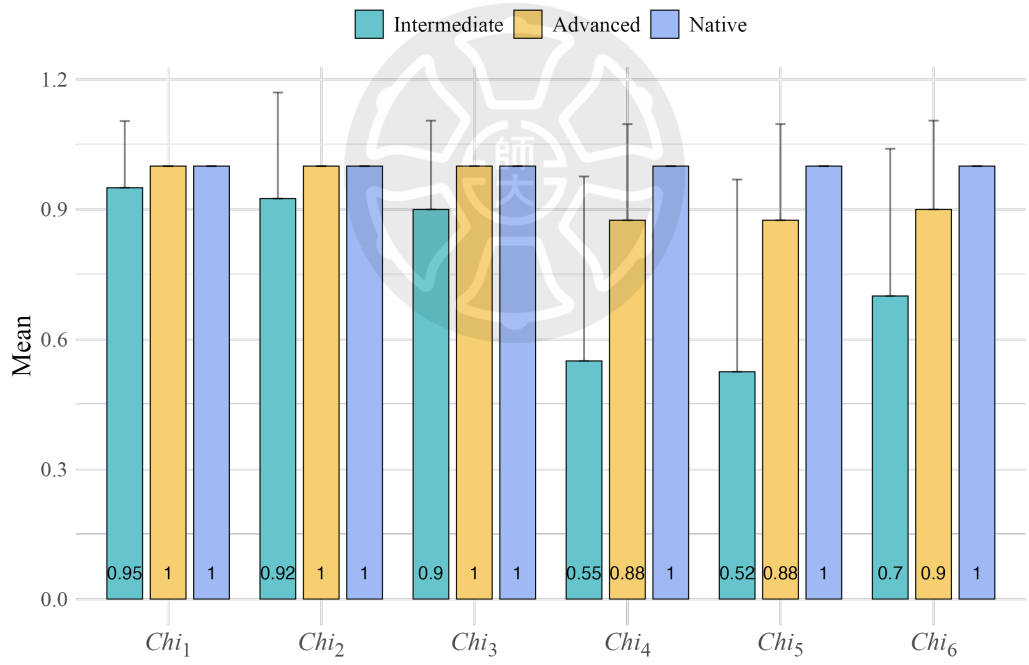
The results of the IT-WC and IT-C analyze the performance of the three participant groups. The following subsections present the mean scores and variability for each group across different *chi* meaning types within the two comprehension tasks, offering a comprehensive view of task performance. Additionally, the results incorporate findings from a two-way ANOVA, which assesses the effects of Chinese proficiency, *chi* meaning types, and task types on performance, as well as their interaction effects. *Post hoc* comparisons are also included to clarify significant differences observed in the ANOVA, providing further insight into how specific variables influenced the interpretation of chi meanings between the IT-WC and IT-C.

3.4.1 Results of the Interpretation Task without Context

As shown in Figure 3.2, the advanced heritage learners achieved a mean score of 1 (*SD* = 0) for *chi*$_1$, *chi*$_2$, and *chi*$_3$, 0.9 (*SD* = 0.2) for *chi*$_6$, and 0.88 (*SD* = 0.22) for *chi*$_4$, and *chi*$_5$. This performance suggests that the advanced learners were able to interpret various *chi* meanings correctly in most cases, exhibiting a near-native accuracy on every *chi* type.

Figure 3.2

Between-Group Performance Comparison in the IT-WC



In contrast, the intermediate heritage learners demonstrated an overall lower performance compared to the advanced group. As indicated in Figure 3.2, the intermediate learners scored 0.95 (*SD* = 0.15) for *chi*$_1$, 0.92 (*SD* = 0.24) for *chi*$_2$, 0.9 (*SD* = 0.2) for *chi*$_3$, 0.55 (*SD* = 0.43) for *chi*$_4$, 0.52 (*SD* = 0.44) for *chi*$_5$, and 0.7 (*SD* = 0.34) for *chi*$_6$. With the exception of *chi*$_1$, *chi*$_2$, and *chi*$_3$, the intermediate learners

appeared to struggle with *chi* meanings, particularly in chi_4 and chi_5, where their mean score fell below 0.6. The greater variability in their scores reflects the challenges they faced with different *chi* meanings.

The native control group, serving as the baseline, consistently achieved a perfect mean score of 1 (*SD* = 0) across all *chi* types. This consistent and stable performance highlights the native speakers' proficiency in interpreting various *chi* meanings in their first language.

Table 3.5

Two-Way ANOVA Results for IT-WC Performance

	Df	**Sum Sq**	**Mean Sq**	***F* value**	***P* value**
Group	2	15.27	7.633	45.166	< 2e-16***
***Chi* Type**	5	8.77	1.753	10.374	2.80e-09***
Group * *Chi* Type	10	7.77	0.777	4.596	3.86e-06***
Residuals	342	57.8	0.169		

Table 3.5 presents the statistical results, revealing a significant main effect of proficiency on overall accuracy in interpreting *chi* in this task ($F(2, 342) = 45.166$, $p <$ 2e-16 ***). This finding indicates that Chinese proficiency substantially influenced participants' comprehension of *chi* meanings without contextual clues. The general trend observed was that native speakers performed at a perfect level, followed by advanced heritage learners, with intermediate heritage learners scoring lowest.

Additionally, a significant main effect of *chi* type was found on the performance ($F(2, 342) = 45.166$, $p =$ 2.80e-09***), indicating that different *chi* meanings presented varying levels of difficulty for participants. In other words, some meanings of *chi* were

easier to interpret, while others posed more challenges. The interaction between proficiency and *chi* type further suggests that these two factors jointly influenced participants' comprehension of *chi* meanings.

Table 3.6

Post Hoc Group Comparisons for IT-WC Performance

Group	Type Effect
Intermediate – Advanced	< .000***
Native – Advanced	.073
Native – Intermediate	< .000***

Table 3.6 presents the results of *post hoc* comparisons, revealing significant performance differences among the groups. As shown in the table, the advanced learners had achieved native-like interpretation across all *chi* meaning types ($p = .073$). Accordingly, both native speakers and advanced learners performed significantly differently from the intermediate learners ($p < .000$***). These findings indicate substantial performance differences between the two learner groups.

Table 3.7 presents the *post hoc* comparisons across different meaning types in the IT-WC task. Of the six meanings, chi_1, chi_2, and chi_3 were the easiest for participants to comprehend. These were followed by chi_6, which posed slightly more difficulty, but the score of chi_6 did not differ from chi_3. In contrast, chi_4 and chi_5 proved to be the most challenging, with participants achieving the lowest scores on these *chi* type. Overall, the results indicate that the various *chi* meanings indeed created distinct levels of difficulty, suggesting that in the IT-WC task, the specific *chi* meanings had a significant impact on participants' interpretations.

Table 3.7

Post Hoc Chi Type Comparisons for IT-WC Performance

***Chi* Type**	***Chi*$_2$**	***Chi*$_3$**	***Chi*$_4$**	***Chi*$_5$**	***Chi*$_6$**
***Chi*$_1$**	.999	.998	<.000***	<.000***	.025*
***Chi*$_2$**		.999	<.000***	<.000***	.047*
***Chi*$_3$**			<.000***	<.000***	.085
***Chi*$_4$**				.999	.629
***Chi*$_5$**					.482

Table 3.8

Post Hoc Interaction Effects of Group and Chi Type in the IT-WC

Chi / **Group**	***Chi*$_1$**	***Chi*$_2$**	***Chi*$_3$**	***Chi*$_4$**	***Chi*$_5$**	***Chi*$_6$**
I – A	.999	.999	.987	<.000***	<.000***	.171
N – A	1	1	1	.901	.901	.987
N – I	.999	.999	.987	<.000***	<.000***	<.000***

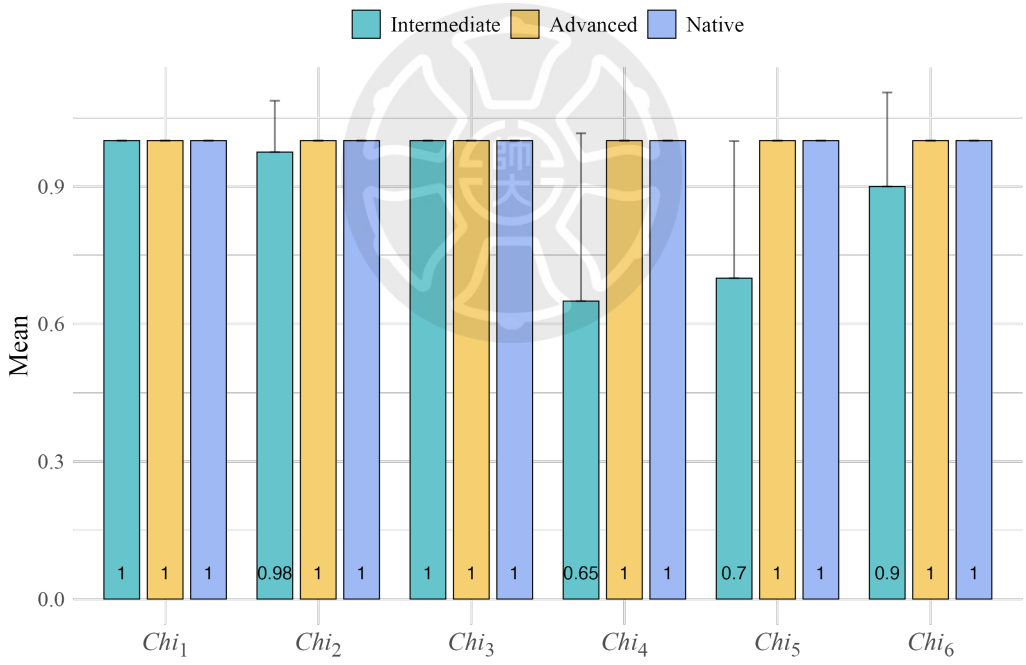
Table 3.8 further presents the interaction effect between Groups and *Chi* Types in the IT-WC task. Likewise, the *post hoc* comparisons revealed that the advanced learners demonstrated performance comparable to that of native speakers. In contrast, the intermediate learners showed significantly lower performance than both native speakers and advanced learners in *chi*$_4$ and *chi*$_5$, and significantly lower than the native speakers in *chi*$_6$, suggesting that these meaning types presented greater interpretive difficulties for the intermediate learners.

3.4.2 Results of the Interpretation Task with Context

The results of the IT-C, as shown in Figure 3.3, indicate improved performance across all meaning types when participants were asked to interpret *chi* phrases with contextual support. The mean scores for the advanced learners increased to 1 (*SD* = 0) for all types of meanings, suggesting that the advanced learners had attained native-like competence in terms of interpreting *chi* meanings.

Figure 3.3

Between-Group Performance Comparison in the IT-C



Similarly, the intermediate learners showed considerable improvement in the IT-C task, with mean scores of 1 (*SD* = 0) for *chi*$_1$, 0.98 (*SD* = 0.11) for *chi*$_2$, 1 (*SD* = 0) for *chi*$_3$, 0.65 (*SD* = 0.37) for *chi*$_4$, 0.7 (*SD* = 0.3) for *chi*$_5$, and 0.9 (*SD* = 0.2) for *chi*$_6$. Although their mean scores remained lower and performance variability higher than that of the advanced learners, the overall improvement in their scores suggests a better

understanding of *chi* meanings in this task. As for the native control group, the native Chinese speakers achieved perfect mean scores (Mean = 1, *SD* = 0) across all meaning types.

Table 3.9

Two-Way ANOVA Results for IT-C Performance

	Df	**Sum Sq**	**Mean Sq**	***F* value**	***P* value**
Group	2	5.339	2.669	43.16	< 2e-16***
***Chi* Type**	5	3.281	0.656	10.61	1.73e-09***
Group * *Chi* Type	10	6.561	0.656	10.61	1.10e-15***
Residuals	342	21.15	0.062		

Table 3.9 presents a detailed analysis using two-way ANOVA to interpret the participants' results in the IT-C task. As shown in the table, there is a significant main effect of Group on the overall accuracy of interpreting *chi* in the IT-C ($F(2, 342) = 43.16$, $p = < 2e\text{-}16$ ***). This finding suggests that Chinese proficiency continues to influence participants' interpretations of *chi* phrases. In addition to the Group effect, a significant main effect of *Chi* Type was found on *chi* comprehension ($F(2, 342) = 43.16$, $p = 1.73e\text{-}09$***). While there was an overall improvement in understanding *chi* meanings, different types of *chi* still posed varying levels of difficulty for some participants.

Table 3.10 presents the results of *post hoc* comparisons, further revealing significant performance differences between the groups. In the IT-C task, the advanced learners performed as well as the native speakers ($p = 1$), suggesting that the advanced learners were able to achieve native-like proficiency when provided with contextual

support. In contrast, the intermediate learners still scored significantly lower than both the native speakers (p <.000***) and the advanced learners (p < .000***). These finding highlights that the intermediate learners showed significant differences not only from the native speakers but also from the advanced learners. Moreover, these results underscore the continued importance of Chinese proficiency in the accurate interpretation of *chi* meanings, even with contextual support.

Table 3.10

Post Hoc Group Comparisons for IT-C Performance

Group	Type Effect
Intermediate – Advanced	< .000***
Native – Advanced	1
Native – Intermediate	< .000***

Table 3.11 presents the *post hoc* comparisons between different meaning types in the IT-C. Compared to the results in the IT-WC, participants demonstrated an overall improvement in comprehending various *chi* meanings. However, certain *chi* phrases remained challenging for the intermediate learners. Notably, chi_4 and chi_5 continued to score the lowest among the six types, with significant differences compared to chi_1, chi_2, chi_3, and chi_6. In contrast to the relatively higher scores on chi_1, chi_2, chi_3, and chi_6, chi_4 and chi_5 were considered more difficult for participants to interpret in the IT-C. Overall, the findings suggest that different *chi* meanings influenced participants' comprehension, indicating different levels of difficulty across types, despite the overall improvement observed.

Table 3.11

Post Hoc Chi Type Comparisons for IT-C Performance

***Chi* Type**	***Chi*$_2$**	***Chi*$_3$**	***Chi*$_4$**	***Chi*$_5$**	***Chi*$_6$**
***Chi*$_1$**	.999	1	<.000***	<.000***	.685
***Chi*$_2$**		.999	<.000***	<.000***	.881
***Chi*$_3$**			<.000***	<.000***	.685
***Chi*$_4$**				.978	.004**
***Chi*$_5$**					.041*

Table 3.12

Post Hoc Interaction Effects of Group and Chi Type in the IT-C

Group \ ***Chi***	***Chi*$_1$**	***Chi*$_2$**	***Chi*$_3$**	***Chi*$_4$**	***Chi*$_5$**	***Chi*$_6$**
I – A	1	.999	1	<.000***	<.000***	.499
N – A	1	1	1	1	1	1
N – I	1	.999	1	<.000***	<.000***	.499

Table 3.12 presents the *post hoc* results for the interaction effect between Groups and *Chi* Types in the IT-C task. Similar to the findings from the IT-WC task (Table 3.8), despite overall improvement in this task, the intermediate learners continued to find meanings *chi*$_4$ and *chi*$_5$ more challenging compared to other *chi* meanings. Additionally, their scores for these two meanings remained significantly lower than those of the advanced learners and native speakers. These results highlight the persistent difficulty posed by the more abstract or less transparent meanings of *chi* for learners with intermediate proficiency.

3.5 Summary of Chapter Three

This chapter introduces the information of the participants, the materials and design, the procedures, and as well as the results of this study. A total of 60 participants were recruited to participate the Interpretation Task without Context (IT-C) and Interpretation Task with Context (IT-C). The test results were analyzed by two-way ANOVA analyses in R software. The results indicate that participants with different Chinese proficiency would have different performances in the tasks. Moreover, the participants overall performed better in the IT-C task than in the IT-WC task.

Chapter Four

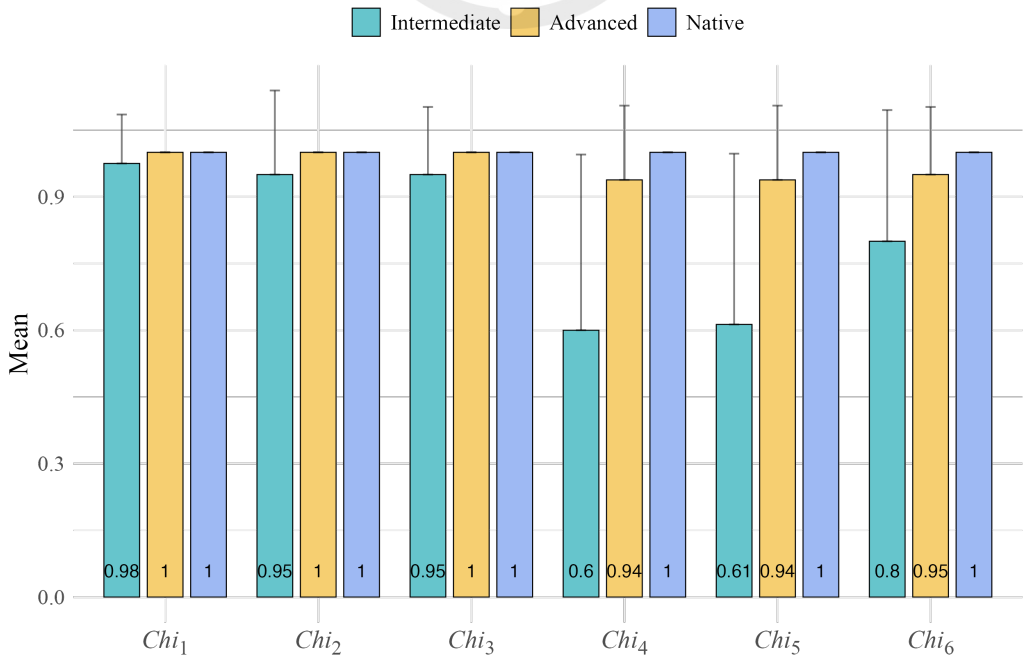
Discussion

Based on the results reported in Chapter Three, Section 4.1 discusses participants performances across various types of *chi*, providing a new perspective of the semantic relatedness of *chi* meanings based on the results of participants' performances. Section 4.2 compares the findings from the two interpretation tasks and examines how contextual cues influence participants' understanding of *chi* meanings. In addition, proficiency effects are addressed in Section 4.3. Finally, a summary of this chapter's key findings is provided in Section 4.4.

4.1 Semantic Relatedness

Figure 4.1

Three Groups' Overall Performance on Six Types of Chi



The first research question of this study explores the semantic relatedness of the six types of *chi* based on the performance of Chinese heritage learners. Specifically, this study seeks to determine whether a discernible difficulty order exists among these six types. Participants' mean scores for each *chi* meaning are illustrated in Figure 4.1.

As indicated in the figure, the intermediate learners had the highest mean score for chi_1 (Mean = 0.98, *SD* = 0.11). chi_2 and chi_3 followed closely with slightly lower accuracy scores (Mean = 0.95, *SD* = 19 and Mean = 0.95, *SD* = 0.15, respectively). The results showed that the intermediate learners had difficulty interpreting these three *chi* meanings since they scored above 0.9 across these types. Next, a mean score of 0.8 was observed in chi_6 (*SD* = 0.3). The lower accuracy score in chi_3 indicated that Chi_3 might pose more comprehensive difficulties to the intermediate learners. A further decline in accuracy was found in chi_5 and chi_4, with mean scores of 0.61 (*SD* = 0.38) and 0.6 (*SD* = 0.4). respectively. This significant drop in accuracy scores indicates that the intermediate learners had considerable difficulty with chi_5 and chi_4 in particular.

On the contrary, the advanced learner group was found showing a sharp contrast with the intermediate learners in particular types of *chi*. Compared to the intermediate learners, they had an overall higher accuracy across different types of *chi*. They had the high mean scores in the interpretation of chi_1, chi_2, and chi_3 (Mean = 1, *SD* = 0), which indicates that the advanced learners had already grasp these three meanings. Chi_6, chi_4, and chi_5 followed closely with very slightly lower accuracy scores (Mean = 0.95, *SD* = 0.15, Mean = 0.94, *SD* = 0.17, and Mean = 0.94, *SD* = 0.17, respectively). Despite the minor difference, the advanced learners were still able to comprehend chi_6, chi_4, and chi_5 effectively. Moreover, compared to the Chinese native speakers who performed perfectly across all types of *chi* (Mean = 1, *SD* = 0), the advanced learners' high accuracy scores suggest that they attained a native-like performance in interpreting various *chi* meanings.

Table 4.1

Two-way ANOVA on Groups and Meaning Types

	Df	**Sum Sq**	**Mean Sq**	***F* value**	***P* value**
Group	2	19.09	9.543	79.35	< 2e-16***
***Chi* Type**	5	11.11	2.221	18.47	< 2e-16***
Group * Type	10	13.65	1.365	11.35	< 2e-16***
Residuals	702	84.42	0.12		

Furthermore, a two-way ANOVA analysis, as shown in Table 4.1, revealed a significant main effect of Group ($F(2, 702) = 79.35$, $p <$ 2e-16 ***), indicating that Chinese proficiency substantially influenced participants' ability to correctly interpret *chi* meanings. The results also indicated a significant main effect on *Chi* Type ($F(2, 702) = 79.35$, $p <$ 2e-16 ***), suggesting that different types of *chi* meanings posed distinct levels of difficulty for participants. Additionally, a significant Group * *Chi* Type interaction effect ($p <$ 2e-16***) was observed, indicating that the combination of Chinese proficiency level and type difficulty notably influenced performance in the tasks.

In fact, as can be seen in Figure 4.1, the mean scores of the three groups revealed that the advanced learners had achieved a native-like performance in comprehending all types of *chi*, whereas the intermediate learners had difficulty in interpreting some *chi* meanings. *Post hoc* comparisons revealed that the native control group and the advanced learner group demonstrated no significant difference with each other ($p = .157$). On the other hand, the advanced learner group and the native control group then demonstrated statistically significant differences with the intermediate learner group ($p <$ .000 *** for both groups). The *post hoc* comparisons highlighted the critical

role that Chinese proficiency played in comprehending the meanings of *chi*.

Post hoc analyses of *Chi* Type revealed three distinct groupings of *chi* meanings based on difficulty: (1) easy meanings (chi_1, chi_2, and chi_3), (2) a moderately difficult meaning (chi_6), and (3) difficult meanings (chi_4 and chi_5). Within each grouping, no significant differences were observed. Overall, participants demonstrated high accuracy scores for the easy meanings. In contrast, chi_6 yielded lower accuracy scores, with significant differences observed when compared to chi_1 (p = .011 *), chi_2 (p = .035 *), and chi_3 (p = .035 *). chi_4 and chi_5 were found to be significantly more challenging than chi_6. Specifically, the accuracy score for chi_4 was markedly lower in comparison to chi_1 (p < .000 ***), chi_2 (p < .000 ***), chi_3 (p < .000 ***), and chi_6 (p = .02 *). Similarly, the accuracy score for chi_5 was significantly lower than chi_1 (p < .000 ***), chi_2 (p < .000 ***), chi_3 (p < .000 ***), and chi_6 (p = .035 *). These findings indicate three levels of difficulty across the *chi* types, resulting in the following hierarchy of difficulty: chi_1, chi_2, chi_3> chi_6 > chi_4, chi_5.

4.1.1 Semantic Relatedness of *Chi* Meanings

As illustrated in Figure 4.1 and detailed in Table 4.1, the analysis revealed a significant type effect among participants. Accordingly, the first research question was addressed, demonstrating a clear difficulty hierarchy for different meanings of *chi* among heritage learners of Chinese. Specifically, the six *chi* meanings examined in this study exhibited the following difficulty order: chi_1, chi_2, chi_3> chi_6 > chi_4, chi_5. This pattern suggests that some *chi* meanings are semantically more closely related, which likely accounts for their placement at similar levels of difficulty.

Within this hierarchy, chi_1, chi_2, and chi_3 were grouped at the same difficulty level. This grouping may result from their semantic association, as these meanings share overlapping semantic features. Newman (2009) posited that the act of eating involves

interaction between two distinct entities: the actor and the undergoer. Typically, eating is initiated by a volitional agent motivated by hunger, with the goal of satisfying this need (Newman, 1997). Thus, the volitional nature of the agent plays a critical role in forming multiple *chi* meanings, which are often highly "agent-oriented" (Næss, 2009; Newman, 2009). For example, the core meaning (chi_1) involves a volitional agent performing the action of eating, with the undergoer typically being an edible object.

Beyond the core meaning, *chi* can also extend to non-literal collocations, forming meanings beyond the primary sense. Even in these extended meanings, *chi* retains its connection to a volitional agent. For instance, chi_2 arises through the mechanism of metonymy (Hsiao et al., 2016; Sheng, 2019; Wang & Huang, 2011; Ye, 2010), preserving the detectability of the core sense. Consider the test item *chi maidanglao* (to eat at McDonalds'). Here, the location *maidanglao* (McDonald's) is metonymically understood as the provider of food. Thus, *chi maidanglao* is easily interpreted as an agent consuming food from McDonald's. The high accuracy rates observed in both learner groups further indicate that chi_2 is strongly correlated with the core sense, as the physical act of eating remains prominent. Consequently, chi_2 phrases also align with the volitional and agent-oriented nature of *chi*.

Similarly, chi_3 is characterized as agent-oriented. As Newman (1997, 2009) noted, eating fulfills fundamental human needs, as it provides essential sustenance. This connection gives rise to the metaphor "eating is for survival" (Yang et al., 2021). In survival contexts, one often relies on external resources such as food, money, or support. This is exemplified by phrases like *chi laoben* (to rely on one's old savings), where the agent volitionally depends on the object *laoben* (old savings) to sustain themselves.

In summary, chi_1, chi_2, and chi_3 share the semantic feature of being agent-oriented *chi* meanings. This study posits that agent-oriented *chi* meanings represent the unmarked usage of *chi* (Zhang & Wang, 2005). This is because the primary objective

of an act of eating typically focuses on its impact on the agent (Næss, 2009, 2011). When a volitional agent initiates an eating act, the effect on the patient becomes secondary (Næss, 2009, 2011; Ye, 2010). Moreover, while these *chi* meanings are agent-oriented, they also exhibit an "affected" quality concerning the patient, as the patient of the eating act is inevitably destroyed or consumed.

Chi$_6$, a more challenging *chi* meaning, is considered an agent-oriented extension of *chi* (Newman, 1997). Ye (2010) observed that *Chi*$_6$ represents a meaning extension that accounts for both the role of the agent and the effect on the patient. Specifically, it reflects a transition in which something consumable moves from being visible and external to becoming invisible and internal within the body (Newman, 1997). This meaning is argued to have emerged from the concept of food digestion in the human body (Liu & Wan, 2020), symbolizing the result of consumption in a dependency relationship, where the consumer relies on and utilizes the consumed object. Typically, the subjects associated with *chi*$_6$ are inanimate entities (Ye, 2010), while the objects are resources that can be consumed or utilized, such as gasoline or electricity (Leung & Hong, 2023).

(1) 最近 我 的 車 吃 油 吃 得 很 兇， 而且
Zuijin wo de che chi you chi de hen xiong erqie
recently 1S DE car eat fuel eat DE very fiercely moreover
尾速 也 提 不 上去 了。
weisu ye ti bu shangqu le.
top-speed also improve NEG go-up LE
'Recently, my car has been consuming fuel at an alarming rate, and its top speed can't improve either.' (Leung & Hong, 2023: 154)

In example (1), the grammatical subject is inanimate but is personified as if it can consume food like a human being. Just as the act of eating involves digestion, wherein food is absorbed to provide energy and nutrients, the concept of "consumption"

parallels this process: the consumed object supplies the energy required by the subject. For instance, in (1), driving a car requires gasoline, echoing the digestive process of food. Thus, *chi*$_6$ is metaphorically conceptualized as the digestion of food, embodying an agent-oriented extension of *chi*.

In contrast, *chi*$_4$ and *chi*$_5$, which show significantly lower accuracy rates, appear to be less semantically related to *chi*$_1$, *chi*$_2$, *chi*$_3$, and *chi*$_6$. While the latter group is generally regarded as agent-oriented, the interpretations of *chi*$_4$ and *chi*$_5$ have been described not as involving a prototypical agent, but rather a "recipient" (Chen, 2021; Yu, 2022), an "affected agent" (Næss, 2009; Ye, 2010), or an "experiencer" (Chen, 2012). In such cases, the action initiated by the agent leads to an internal effect—either physical or psychological—experienced by the agent (Chen, 2021; Næss, 2011; Yu, 2022). Thus, the agents in *chi*$_4$ and *chi*$_5$ are seen as playing a more "passive" role, undergoing emotional or bodily responses such as pleasure or displeasure (Newman, 2009) as a result of the eating event. For example, in the phrase *chi tiantou* 'to enjoy advantages,' the agent benefits from an external object—advantages that do not originally belong to the agent. As Leung and Hong (2023) notes, the agent does not necessarily gain control or possession of the object but temporarily enjoys its benefits. In addition to the notion of receiving something positive, Ye (2010) points out that many *chi*-phrases also depict the agent as negatively affected. In such cases, the agent "suffers" the consequences of the object being consumed. For instance, in *chi guansi* 'to be sued,' the agent endures the negative implications brought about by *guansi* 'lawsuit.'

In conclusion, *chi*$_1$, *chi*$_2$, and *chi*$_3$ primarily represent agent-oriented *chi* meanings, while *chi*$_6$ is an agent-oriented extension, and *chi*$_4$ and *chi*$_5$ incorporate the aspect of recipient and affected agent. The results revealed three levels of difficulty among the *chi* meanings, as demonstrated by the *post hoc* comparisons. This differentiation highlights the contrast between unmarked and marked *chi* meanings. Agent-oriented

meanings (*chi*$_1$, *chi*$_2$, and *chi*$_3$) constitute the unmarked category, aligning with the typical purpose of eating acts—to fulfill the agent's needs. *Chi*$_6$, as an agent-oriented extension that incorporates a personified agent while also considering the role of the patient, presents slightly greater difficulty compared to the unmarked *chi* meanings. In contrast, non-agent-oriented meanings (*chi*$_4$ and *chi*$_5$) are marked, as they emphasize the outcomes or effects the object of *chi* exerts on the agent.

4.1.2 Implications for Liu and Wan's (2020) Semantic Model

The findings of this study reveal a distinct grouping of *chi* meanings based on their levels of difficulty: (1) *chi*$_1$, *chi*$_2$, and *chi*$_3$; (2) *chi*$_6$; and (3) *chi*$_4$, and *chi*$_5$. These results indicate three tiers of acquisition difficulty: Level 1, comprising the easier meanings (*chi*$_1$, *chi*$_2$, and *chi*$_3$); Level 2, representing the moderately difficult meaning (*chi*$_6$); and Level 3, encompassing the more challenging meanings (*chi*$_4$, and *chi*$_5$). These findings challenge Wang's (2001) linear framework of *chi* meaning extensions. Specifically, the observation that *chi*$_6$ was easier for heritage learners than *chi*$_4$ and *chi*$_5$ suggests that a linear semantic extension model may not adequately capture the acquisition or difficulty hierarchy of *chi* meanings.

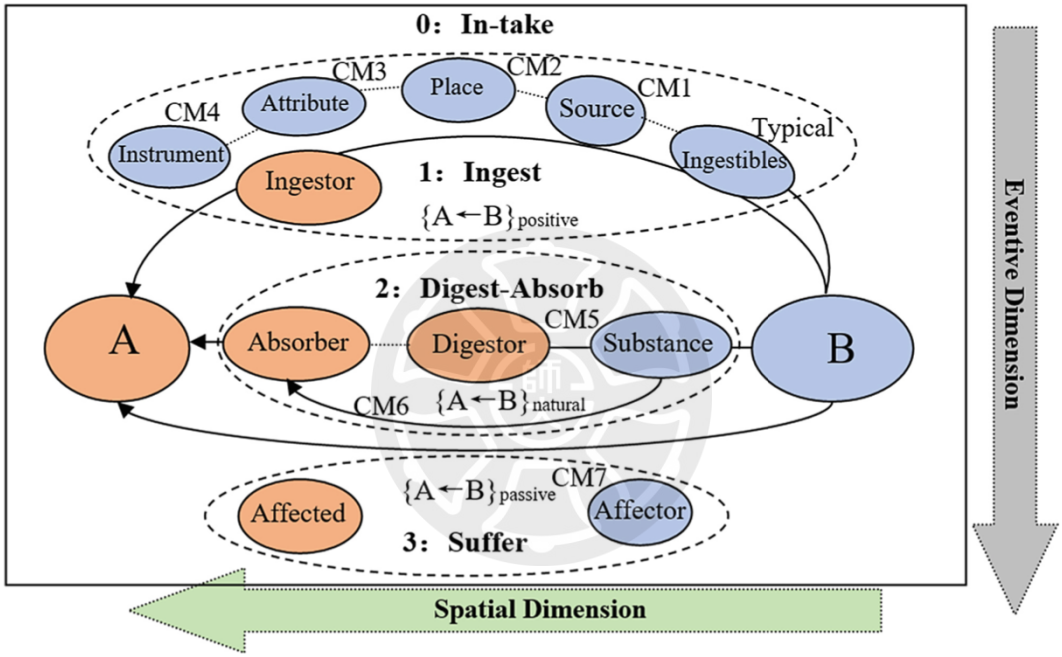
Moreover, the results question the assumption that the "consumption" sense represents the final stage of the eating process. While some studies (Sheng, 2019; Wang, 2001; Wang, 2014) argue that the consumption of food denotes its destruction and ultimate disappearance, this study posits that the concept of "consumption" aligns more closely with the process of digestion (Leung & Hong, 2023; Liu & Wan, 2020; Ye, 2010). Consequently, *chi*$_6$, which metaphorically represents the digestion process, should be placed earlier in the semantic hierarchy than meanings associated with the outcomes of eating actions, such as *chi*$_4$ and *chi*$_5$.

Rather, the results align more closely with Liu and Wan's (2020) two-dimensional

model, though modifications to their framework are warranted. Liu and Wan's model, as repeated here in Figure 4.2, situates *chi*$_1$, *chi*$_2$, and *chi*$_3$ in the first layer, and *chi*$_6$ in the second layer, consistent with this study's results. However, *chi*$_4$, which shares semantic features with *chi*$_5$, is notably absent from their model.

Figure 4.2

The Semantic Model of Chi in Liu and Wan (2020)



Liu and Wan (2020) proposed that the verbal predicate *chi* can function as an Affector, producing specific outcomes for the Affected, a concept closely aligned with Næss's (2009) notion of the "affected agent." However, Liu and Wan (2020) primarily focus on the adverse outcomes typically associated with *chi*, noting that there are only a few instances with positive implications. In contrast, several studies (e.g., Jia & Wu, 2017; Leung & Hong, 2023; Liu et al., 2013; Wang, 2001; Wang, 2014; Yang et al., 2021) highlight the inclusion of *chi*$_4$ 'to obtain' within the semantic extensions of *chi*.

As a counterpart to *chi*$_5$'s negative connotations, *chi*$_4$ conveys a positive outcome

for the agent following the act of eating. For instance, the metaphorical usage of *chi*$_4$ in *chi tiantou* 'eat, sweetness' exemplifies this semantic extension. In *chi tiantou*, *tiantou* 'sweetness' metaphorically refers to taking advantage of something, rather than denoting *tiantou* as simply flavor. This usage suggests the subject's action is akin to enjoying benefits or pleasures. Additionally, Leung and Hong (2023) argue that *chi*$_4$ often involves obtaining something that does not originally belong to the subject, typically resulting in a beneficial outcome. Building on these perspectives, the current study posits that the subject of *chi*$_4$ functions more as an "affected agent" and leans toward the role of a benefactive, emphasizing the positive implications inherent in this semantic extension.

Consequently, this study advocates for the inclusion of *chi*$_4$ alongside *chi*$_5$ within the third profile of Liu and Wan's model, capturing both the positive and negative outcomes associated with *chi*. Notably, since the third layer encompasses both *chi*$_4$ and *chi*$_5$, it should no longer be limited to the notion of "suffering from eating." Instead, this study proposes redefining the third layer as representing the "absorption" stage of the eating process.

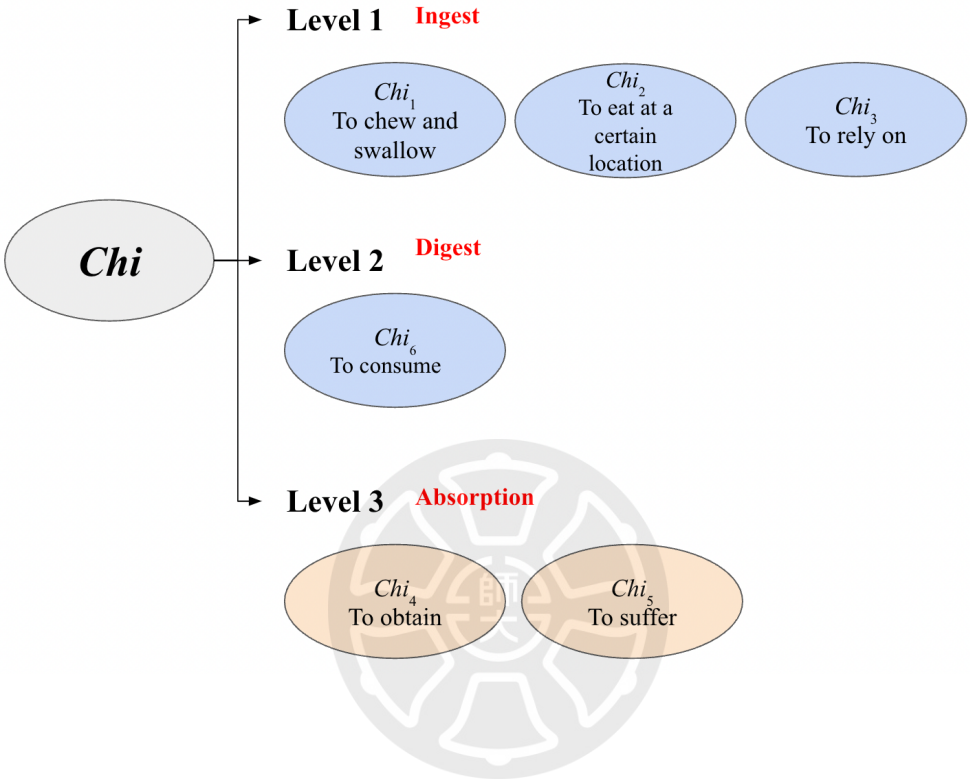
In a typical eating sequence, food is taken into the mouth, masticated, ingested, and subsequently digested within the body. Following digestion, the nutrients—or, in some cases, adverse effects—are absorbed by the body. This absorption phase signifies the point at which one derives benefits or suffers consequences from the act of eating (Leung & Hong, 2023). Accordingly, the third layer of Liu and Wan's model, which captures the outcomes of *chi*, should adopt "absorption" as its overarching concept.

Overall, the findings from the heritage learners in this study suggest that *chi*$_4$ could be incorporated into the third layer of Liu and Wan's (2020) model. Furthermore, the integration of the six *chi* meanings (Figure 4.3) highlights their semantic relationships while accounting for the varying levels of acquisition difficulty associated with each

meaning.

Figure 4.3

Exploratory Adaptation of Liu and Wan's (2020) Model for Heritage Learners



Regarding the between-group performance of the two heritage learner groups, the effect of *Chi* Type was more pronounced among the intermediate learners. While the advanced learners demonstrated near-native performance across all types of *chi*, the intermediate learners were more influenced by the semantic features of different *chi* types. Specifically, the intermediate learners performed well on meanings categorized in Level 1, achieving higher accuracy scores for these three meanings. However, their accuracy declined when interpreting *chi*$_6$, a less semantically related meaning that incorporates the role of the patient.

For meanings in Level 3, the intermediate learners exhibited significantly lower accuracy compared to the advanced learners, reflecting the greater semantic deviation of *chi*$_4$ and *chi*$_5$ from the senses in Level 1. These findings align with Hsiao et al. (2016),

who noted that semantic relatedness influences the processing time of polysemous verbs in Chinese. In summary, semantic relatedness notably affected intermediate learners, leading to a clear acquisition order based on the varying difficulty levels of *chi* senses. However, for advanced learners, the influence of semantic relatedness diminished, as their Chinese proficiency had reached a near-native level.

4.2 The Role of Contextual Clues in Interpretation

The second research question examined whether contextual clues influence participants' comprehension of different *chi* meanings. This section explores the results through the lens of the task effect in this study. Figure 4.4 presents the mean scores achieved by the three participant groups in the IT-WC and IT-C tasks. Both learner groups scored higher in the IT-C task compared to the IT-WC task. While the advanced learners already demonstrated near-native performance in the IT-WC task (M = 0.94, *SD* = 0.16), their slightly higher mean score in the IT-C task (M = 1, *SD* = 0) suggests that contextual clues further enhanced their comprehension of *chi* meanings. In contrast, the intermediate learners exhibited a more pronounced improvement. Their mean score in the IT-WC task was 0.76 (*SD* = 0.36), but with the inclusion of contextual clues in the IT-C task, their performance improved significantly, achieving a mean score of 0.87 (*SD* = 0.26).

A two-way ANOVA further highlights the substantial influence of contextual clues on participants' interpretation of various *chi* meanings. As shown in Table 4.2, there was a significant main effect of Group ($F(2, 714) = 64.69$, $p < 2e\text{-}16$***), as well as a significant main effect of Task ($F(1, 714) = 64.69$, $p = 7.65e\text{-}05$***). Additionally, a significant interaction effect between Group and Task was observed ($p = .006$**), indicating that the impact of contextual clues varied across participant groups.

Figure 4.4

Overall Performance of Each Group on the IT-WC Task and the IT-C Task

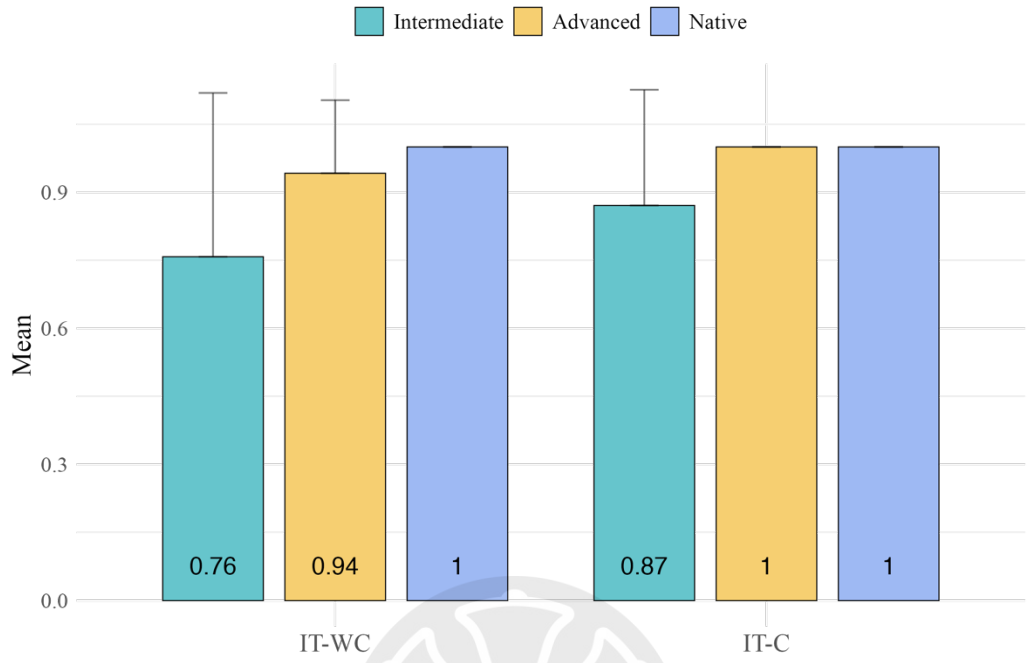


Table 4.2

Two-way ANOVA on Groups and Tasks

	Df	**Sum Sq**	**Mean Sq**	***F* value**	***P* value**
Group	2	19.09	9.543	64.69	< 2e-16***
Task	1	2.33	2.335	15.83	7.65e-05***
Group * Task	2	1.52	0.76	5.15	.006**
Residuals	714	105.33	0.148		

Post hoc tests revealed a significant difference in participants' performance between the two tasks (p < .000 ***). However, as illustrated in Figure 4.4, the advanced learners showed minimal variation in mean scores across the two tasks and did not significantly differ from the native speakers (p = .22). The significant difference

was primarily attributable to the intermediate learners' performance. *Post hoc* comparisons indicated that the intermediate learners significantly differed from both the advanced learners ($p < .000$ ***) and the native control group ($p < .000$ ***), suggesting that contextual support had a greater influence on the intermediate group. Furthermore, only the intermediate learners achieved significantly higher scores in the IT-C task compared to the IT-WC task ($p < .000$ ***), providing additional evidence that contextual clues substantially improved their interpretation of *chi* meanings.

In summary, the *post hoc* comparisons underscore the crucial role of contextual clues in facilitating accurate interpretation of *chi* meanings, particularly for learners with lower Chinese proficiency. Overall, the findings highlight the significant contextual effect on Chinese heritage learners' comprehension of *chi* meanings.

4.2.1 Effectiveness of Contextual Clues

The purpose of the IT-C task was to investigate whether contextual clues could facilitate Chinese heritage learners' interpretation of various *chi* meanings. The *post hoc* results revealed that participants performed significantly better in the IT-C task than in the IT-WC task ($p < .000$ ***). This significant task effect aligns with previous claims that contextual clues can support second language learners in comprehending unfamiliar vocabulary in their L2 (Bambini et al., 2016; Watanabe, 2014; Yuan & Tang, 2024). This study highlights the importance of contextual clues in aiding heritage learners of Chinese to interpret unfamiliar or less familiar *chi* meanings.

In the IT-C task, each test item (*chi* expression) was accompanied by a context designed to highlight the intended meaning of the *chi* phrase. These contexts incorporated strong linguistic hints or frequent collocations associated with the *chi* expressions to facilitate correct interpretation. In other words, the *chi* expressions were presented in biased contexts that favored specific interpretations. The significant

improvement in the heritage learners' performance in the IT-C task supports the idea that biased contexts can activate and facilitate the intended sense of a polysemous word (Foraker & Murphy, 2012).

Global-contextual clues, which provide broader information about the scenario or world knowledge, play a crucial role in interpreting unfamiliar senses of polysemous words (Cai & Lee, 2010).

Table 4.3

An Example in the IT-C Task (Question 1)

Q	**Participants saw:**		**Participants heard:**
Q1	**Scene 1**		*Xiaozhang zai gongsi li bei zhikong nuoyong gongkuan, xianzai ta xuyao chuting bienhu*. 'Xiaozhang has been accused of embezzling company funds and now needs to appear in court to defend himself.'
	Scene 2		*Tade tongshimen dou zai yilunfenfen, shuo ta zheci zhen shi chi le guansi*. 'His colleagues are all talking about it, saying that he really gets into legal troubles this time.'
	Scene 3	qǐng wèn 「 chī guān sī 」 shì shé me yì si 請 問 「 吃 官 司 」 是 什 麼 意 思 (1) zài fǎ yuàn gōng zuò 在 法 院 工 作 (2) xiě yí fèn fǎ lǜ wén jiàn 寫 一 份 法 律 文 件 (3) miàn duì fǎ lǜ sù sòng 面 對 法 律 訴 訟	Qingwen *chiguansi* shi sheme yisi? 'What does *chiguansi* mean?'

For example, in Q1 of the IT-C task, as shown in Table 4.3 here, which tested the sense "to suffer" using the phrase *chi guansi* 'to be sued.' The context required heritage learners to draw on encyclopedic knowledge to comprehend the lexical meanings (Parent, 2009). In this case, learners could use contextual cues such as *zhikong* (accuse), *chuting* (appear in court), and *bienhu* (defend), along with world knowledge—specifically that being sued typically involves a legal defense—to link *guansi* (lawsuit) with legal affairs.

Table 4.4

An Example in the IT-C Task (Question 10)

Q10	**Scene 1**		*Mama shoudao zhe ge yue de zhangdan, faxian dianfei tebie gao.* 'Mom received this month's bill and found that the electricity cost was unusually high.'
	Scene 2		*Baba gaosu ta jiali de lengqi yizhi kaizhe, tebie hui chi dian.* 'Dad told her that the air conditioner is always on and it consumes a lot of electricity.'
	Scene 3	qǐng wèn 「 chī diàn 」 shì shé me yì si 請 問 「 吃 電 」 是 什 麼 意 思 (1) bǐ yù shǐ yòng diàn lì 比 喻 使 用 電 力 (2) zài diàn qì shāng diàn gòu mǎi diàn qì 在 電 器 商 店 購 買 電 器 (3) shǐ yòng diàn qì pēng rèn shí wù 使 用 電 器 烹 飪 食 物	*Qingwen chidian shi sheme yisi?* 'What does *chidian* mean?'

Another example is Q10 in the task (see Table 4.4). Here, the clue *dianfei tebie gao* 'electricity cost was unusually high' helps learners interpret the inanimate subject

lengqi ‘air conditioner’ as metaphorically *chi* ‘consume’ electricity. These examples highlight the critical role of global-contextual clues in enhancing learners’ ability to interpret different senses of *chi* in the IT-C task.

The findings of this study demonstrate that contextual information significantly facilitated heritage learners’ correct interpretation of various *chi* senses. This may contrast with studies such as Folse (2004) and Kondo-Brown (2006), which suggest that contextual cues do not necessarily aid vocabulary learning. For example, Kondo-Brown (2006) found that English-speaking learners of Japanese struggled to infer unknown kanji meanings even with contextual support, attributing this difficulty to insufficient L2 vocabulary knowledge. According to Kondo-Brown, learners’ L2 proficiency strongly influences their ability to utilize contextual cues for lexical inference (Elgort & Warren, 2014; Hamada, 2014).

In this study, however, contextual cues appeared less crucial for advanced learners, who had already achieved high mean scores in the IT-WC task ($p = .816$). This suggests that the advanced heritage learners had sufficient vocabulary knowledge and a solid understanding of the surrounding linguistic and contextual cues (Yu & Altunel, 2018). Conversely, the intermediate learners benefited significantly from contextual support, scoring substantially higher in the IT-C task ($p < .000$ ***). This finding challenges the claims by Elgort and Warren (2014), Hamada (2014), and Kondo-Brown (2006) that lower L2 proficiency hinders the effective use of contextual information for vocabulary learning. Instead, the significant improvement in the intermediate learners’ IT-C task performance suggests that even learners with intermediate L2 proficiency can leverage contextual cues to interpret different senses of a polysemous word.

The effectiveness of contextual information in this study may be attributed to the quality and richness of the provided contexts. Webb (2008) emphasized that rich contextual information enhances the acquisition of word meanings. Similarly, Iravani

and Ghasemi (2012) found that learners performed better when interpreting English polysemous verbs in elaborated contexts, where detailed sentences set the stage for understanding the target sense. This aligns with the current study's design, which provided rich contextual cues for *chi* meanings.

Additionally, Huang (2014) found that intermediate learners of Chinese relied heavily on contextual clues and world knowledge to interpret lexical meanings. In this study, the IT-C task also incorporated visual aids alongside textual contexts, which may have mitigated the intermediate learners' limited vocabulary knowledge and enhanced their comprehension (Ed-dali, 2024; Huang, 2019). While lower proficiency learners may struggle to use contextual information due to incomplete understanding of the surrounding words, visual aids can compensate for this disadvantage and improve performance.

In summary, this study confirms that contextual information plays a pivotal role in interpreting the various meanings of a polysemous word. The findings support previous research highlighting the importance of both local and global contextual cues, as well as the role of visual aids, in facilitating lexical comprehension for L2 learners (Gries, 2015; Klein & Murphy, 2001; Zhang & Koda, 2018).

4.3 Proficiency Effect

The results of the two interpretation tasks demonstrated a clear distinction between the advanced learner group and the intermediate learner group in their interpretation of various *chi* meanings, influenced by their differing levels of Chinese proficiency. This section focuses on discussing the proficiency effect evident in the results of the two tasks. Table 4.5 provides a summary of the key findings for both learner groups.

Table 4.5

A Comparison of Achieved Native-like Performance in Each Group in the Tasks

Intermediate group	Advanced group
● Interpretation across *chi* types: c*hi*$_1$, c*hi*$_2$, c*hi*$_3$ native-like; c*hi*$_4$, c*hi*$_5$, c*hi*$_6$ not native-like	● Interpretation across *chi* types: native-like
● *Chi* meanings with/ without context: c*hi*$_1$, c*hi*$_2$, c*hi*$_3$ native-like; c*hi*$_4$, c*hi*$_5$, c*hi*$_6$ not native-like	● *Chi* meanings with/ without context: native-like

Table 4.5 shows that the advanced learners demonstrated a native-like interpretation of the six *chi* meanings. The advanced learner group performed comparably to the native control group in interpreting *chi* meanings. In contrast, the intermediate learners were noticeably affected by their lower Chinese proficiency. According to Table 4.5, while the intermediate learners easily understood the *chi* meanings in Level 1, they struggled with those in Levels 2 and 3. Specifically, *chi*$_4$, *chi*$_5$, and *chi*$_6$, which represent more metaphorical meanings, posed significant challenges for the intermediate learners. However, the advanced learners had already mastered these metaphorical meanings. This proficiency effect suggests that lower-proficiency learners tend to first acquire the core meanings of a polysemous word, while higher proficiency enables the comprehension of more peripheral meanings (Wei & Lou, 2015; Zhang, 2010).

Table 4.6 further highlights that the advanced learners were unaffected by contextual cues, as evidenced by their perfect scores in the IT-WC task. In contrast, the intermediate learners were significantly influenced by contextual information, achieving much higher accuracy in the IT-C task ($p < .000$ ***). Furthermore, *post hoc* results comparing the intermediate learners' performance between the two tasks revealed that the contextual information supported the intermediate learners'

comprehension in specific *chi* types.

Table 4.6

Post Hoc Comparisons of Chi Types between Groups

Chi / Groups	Chi_1	Chi_2	Chi_3	Chi_4	Chi_5	Chi_6
I – A	.999	.998	.998	<.000***	<.000***	.014*
N – A	1	1	1	.98	.98	.998
N – I	.999	.998	.998	<.000***	<.000***	.014*

In particular, the results echoed the results in regarding the difficulty order suggested previously. The intermediate learners specifically improved when interpreting chi_4 (p = .017*), chi_5 (p = .017*), and chi_6 (p = .013*) in the IT-C task. This finding suggests that the intermediate learners could utilize the contextual information, while their lower Chinese proficiency still resulted in a noticeable proficiency effect compared to the advanced learners' performance. This contrast indicates that the heritage language exposure helps the advanced learners to develop language proficiency, vocabulary knowledge, and associated metalinguistic awareness (Zhang et al., 2022).

Overall, across different *chi* meanings and task types, the intermediate learners exhibited a generally weaker ability to interpret the Chinese polysemous verb, underscoring the prominent role of proficiency in interpreting Chinese polysemy.

4.4 Summary of Chapter Four

In this chapter, the results are discussed in several perspectives. First of all, this study found that the semantic relatedness of different *chi* senses influenced Chinese

heritage learners' interpretation. The results further identified a discernable difficulty order of the six senses of *chi*: chi_1, chi_2, chi_3 > chi_6 > chi_4, chi_5. Secondly, this study found that contextual clues facilitated the comprehension of *chi* senses. Thirdly, the performance of the intermediate and advanced learners differed significantly regarding the semantic relatedness of *chi* senses, and the contextual clues in enhancing *chi* comprehension. That is to say, the advanced heritage learners in this study outperformed the intermediate heritage learners, yielding a significant proficiency effect in terms of interpreting Chinese polysemous verb.

Chapter Five

Conclusion

This chapter presents the conclusion of the study. Section 5.1 provides a summary of the major findings. Section 5.2 discusses the pedagogical implications derived from these findings. Lastly, Section 5.3 outlines the limitations of the study and offers suggestions for future research.

5.1 Major Findings of the Present Study

The present study explored the acquisition of various meanings of the Chinese polysemous verb *chi* among heritage learners of Chinese, focusing on the effect of different *chi* types, the influence of contextual clues, and the role of proficiency.

The findings revealed significant differences in the levels of semantic relatedness among the six senses of *chi*, suggesting three levels of difficulty order: chi_1, chi_2, chi_3 (Level 1) were the easiest to acquire, as they are closely associated with the physical act of eating. chi_6 (Level 2) was moderately challenging due to its metaphorical nature, while chi_4 and chi_5 (Level 3) posed the greatest difficulty for learners, particularly those with intermediate proficiency, as these meanings represent further semantic extensions from the core concept of eating. This acquisition order reflects a hierarchy of semantic complexity: chi_1, chi_2, $chi_3 > chi_6 > chi_4$, chi_5.

The study also identified that contextual clues significantly aided learners in interpreting *chi* meanings. A comparison of performances on the IT-WC (without context) and IT-C (with context) tasks indicated that learners were able to use contextual information to improve their interpretation of *chi* senses. This effect was particularly pronounced for intermediate learners, who benefited significantly from

context when interpreting the more challenging meanings (*chi*$_4$, *chi*$_5$, *chi*$_6$).

Language proficiency emerged as a crucial factor in learners' ability to interpret *chi* meanings. Advanced learners demonstrated native-like comprehension across all six senses, while intermediate learners faced notable difficulties with extended meanings (*chi*$_4$, *chi*$_5$, *chi*$_6$), scoring significantly lower than the advanced group. Moreover, task performance revealed differences in reliance on contextual information: advanced learners' near-perfect scores on the IT-C task indicated minimal need for contextual support, whereas intermediate learners showed significant improvement in the IT-C task, underscoring the importance of context in their interpretation of complex *chi* meanings. Overall, these findings highlight the intricate relationship between semantic relatedness, contextual support, and proficiency in the acquisition of *chi* meanings by heritage learners.

5.2 Pedagogical Implications

Based on the major findings, this study offers pedagogical recommendations for teaching and facilitating the acquisition of *chi* senses.

First, the findings suggest an acquisition sequence for *chi* meanings: *chi*$_1$, *chi*$_2$, *chi*$_3$ > *chi*$_6$ > *chi*$_4$, *chi*$_5$. In second language acquisition, the Natural Order Hypothesis (Krashen, 1982) posits that learners acquire linguistic structures in a predictable sequence, with some elements being acquired earlier and others later. This hypothesis emphasizes that instructional content should align with learners' developmental stages, as previously acquired knowledge serves as a foundation for scaffolding more complex concepts. Similarly, in the context of polysemy acquisition, Verspoor and Lowie (2003) highlight the importance of establishing a core meaning as a prerequisite for effectively inferring related senses. Consistent with these perspectives, the findings of this study suggest that the core meaning of *chi* should be the first focus in teaching. The results

also show that learners generally experience no difficulty interpreting *chi*$_2$ and *chi*$_3$. Therefore, it is recommended that these two meanings be introduced alongside the core meaning, as they are equally accessible. The slightly more challenging sense of *chi* as "consumption" (*chi*$_6$), positioned at the second level, should be taught with careful attention to its usage, including typical collocations with inanimate subjects and inedible objects.

Extended meanings, *chi*$_4$ and *chi*$_5$, present significant challenges, especially for learners with lower proficiency. Consequently, these meanings should be introduced after *chi*$_6$. To address the difficulty associated with these meanings, teachers are advised to focus on explaining how these senses extend metaphorically from the core meaning, highlighting their differing outcomes—positive and negative. Clear examples that illustrate these metaphorical extensions are essential for effective instruction.

In addition to sequencing, incorporating contextual clues is recommended to enhance the teaching of *chi* meanings as contextual clues are found to be able to develop vocabulary acquisition and retention (Lai et al., 2022; Wongwiwattana & Watanapokakul, 2021). The study's findings indicate that contextual support, including visual aids, significantly facilitates learners' comprehension of polysemous words, particularly for those with lower proficiency levels. For instance, intermediate learners benefited from contextual cues when interpreting the more abstract senses, such as *chi*$_4$ and *chi*$_5$. Therefore, teaching practices should integrate contextual information to help learners better grasp the various meanings of polysemy.

Finally, the study identifies a clear proficiency gap between advanced and intermediate learners in interpreting *chi* senses, particularly for Level 2 and Level 3 meanings. This discrepancy suggests that metaphorical meanings are more challenging for intermediate learners than for advanced learners. In response, teachers teaching Chinese as a second language should provide additional support to lower-proficiency

learners. Tailored instruction focusing on the challenging meanings (*chi*$_4$, *chi*$_5$, and *chi*$_6$) is crucial for reinforcing their comprehension of these metaphorical extensions.

5.3 Limitations of the Present Study and Suggestions for Future Research

This study is not without limitations, which provide opportunities for further research on the acquisition of polysemy in L2 Chinese.

First, this study recruited heritage learners of Chinese with intermediate and advanced proficiency levels. Future studies could include learners with lower proficiency levels to explore their acquisition patterns for polysemous senses and to determine whether the proposed acquisition order for *chi* meanings is applicable to beginners. Additionally, future research could compare heritage learners with non-heritage learners of Chinese. While both groups are second language learners, heritage learners are distinguished by their heritage status (Zhang et al., 2022). Due to early exposure to the heritage language (Montrul, 2018), heritage learners often possess a foundational level of language proficiency. Moreover, Chinese culture plays a crucial role in shaping the development of *chi* meanings (Liu, 2013; Sheng, 2019; Wang, 2014), as many *chi* phrases originate from culturally figurative thinking (Liu, 2013). Consequently, heritage learners may interpret Chinese polysemy differently from non-heritage learners. Future research should, therefore, consider both the learners' proficiency levels and their cultural or linguistic backgrounds.

Second, the study employed two comprehension tasks consisting solely of multiple-choice questions. Future studies could incorporate production tasks to elicit learners' interpretations without pre-specified options, providing insights into their natural understanding of *chi* senses.

Third, the test items in the study excluded certain lexicalized phrases such as *chili* 'to be strenuous,' *chixiang* 'to have an advantage,' and *chicu* 'to be jealous.' These

lexicalized items were omitted to focus on non-lexicalized uses of *chi*. Future research could include such lexicalized phrases and compare them with non-lexicalized uses to investigate whether learners demonstrate greater proficiency with one type over the other.

Finally, while the study proposed a model to account for the semantic extensions of *chi*, future research could further refine or validate this model by examining other motor verbs, such as *he* 'to drink.' Investigating additional verbs could reveal whether the proposed model applies to them and whether these verbs share similar patterns in their meaning extensions. By addressing these limitations, future research can deepen our understanding of how language learners acquire and process polysemous words in Chinese.

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Appendix A

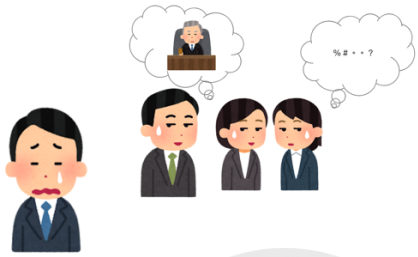
Test Items Used in the Interpretation Task without Context

No	Question	No	Question
1	qǐng wèn 「 chī guān sī 」 shì shé me yì si ？ 請 問 「 吃 官 司 」 是 什 麼 意 思 ？ (1) zài fǎ yuàn gōng zuò 在 法 院 工 作 (2) xiě yí fèn fǎ lǜ wén jiàn 寫 一 份 法 律 文 件 (3) miàn duì fǎ lǜ sù sòng 面 對 法 律 訴 訟	2	qǐng wèn 「 chī lǎo běn 」 shì shé me yì si ？ 請 問 「 吃 老 本 」 是 什 麼 意 思 ？ (1) kào zhī qián jī lěi de zī yuán guò shēng huó 靠 之 前 積 累 的 資 源 過 生 活 (2) gēn lǎo péng yǒu yì qǐ chī fàn 跟 老 朋 友 一 起 吃 飯 (3) yuè dú hěn jiǔ yǐ qián mǎi de shū 閱 讀 很 久 以 前 買 的 書
3	qǐng wèn 「 chī yóu 」 shì shé me yì si ？ 請 問 「 吃 油 」 是 什 麼 意 思 ？ (1) bǐ yù shǐ yòng rán liào 比 喻 使 用 燃 料 (2) shí yòng yóu zhī lèi de shí wù 食 用 油 脂 類 的 食 物 (3) jiāng yóu fàng zài shí wù shàng yǐ zēng jiā wèi dào 將 油 放 在 食 物 上 以 增 加 味 道	4	qǐng wèn 「 chī cān dāng láo 」 shì shé me yì si ？ 請 問 「 吃 參 當 勞 」 是 什 麼 意 思 ？ (1) cān jiā ér tóng pài duì 參 加 兒 童 派 對 (2) zài cān dāng láo lǐ gōng zuò 在 參 當 勞 裡 工 作 (3) qù cān dāng láo cān tīng yòng cān 去 參 當 勞 餐 廳 用 餐
5	qǐng wèn 「 tīng yīn yuè 」 shì shé me yì si ？ 請 問 「 聽 音 樂 」 是 什 麼 意 思 ？ (1) zài yuè qì diàn mǎi yuè qì 在 樂 器 店 買 樂 器 (2) yòng ěr duo gǎn shòu yuè qǔ 用 耳 朵 感 受 樂 曲 (3) gēn péng yǒu tǎo lùn yīn yuè zuò pǐn 跟 朋 友 討 論 音 樂 作 品	6	qǐng wèn 「 chī tián tou 」 shì shé me yì si ？ 請 問 「 吃 甜 頭 」 是 什 麼 意 思 ？ (1) pǐn cháng fēi cháng tián de shí wù 品 嚐 非 常 甜 的 食 物 (2) xiǎng shòu dào mǒu shì dài lái de hǎo chù 享 受 到 某 事 帶 來 的 好 處 (3) gǎn shòu dào shì qíng de xīn suān 感 受 到 事 情 的 辛 酸
7	qǐng wèn 「 chī dàn gāo 」 shì shé me yì si ？ 請 問 「 吃 蛋 糕 」 是 什 麼 意 思 ？ (1) cān jiā zuò dàn gāo de bǐ sài 參 加 做 蛋 糕 的 比 賽 (2) pǐn cháng tián diǎn 品 嚐 甜 點 (3) zài miàn bāo diàn gōng zuò 在 麵 包 店 工 作	8	qǐng wèn 「 dǎ diàn huà 」 shì shé me yì si ？ 請 問 「 打 電 話 」 是 什 麼 意 思 ？ (1) pāi shè diàn huà de zhào piàn 拍 攝 電 話 的 照 片 (2) zài shǒu jī shàng fā sòng jiǎn xùn 在 手 機 上 發 送 簡 訊 (3) shǐ yòng diàn huà yǔ tā rén lián luò 使 用 電 話 與 他 人 聯 絡
9	qǐng wèn 「 kàn qiú sài 」 shì shé me yì si ？ 請 問 「 看 球 賽 」 是 什 麼 意 思 ？ (1) guān kàn yì chǎng tǐ yù bǐ sài 觀 看 一 場 體 育 比 賽 (2) cān jiā tǐ yù xùn liàn 參 加 體 育 訓 練 (3) gòu mǎi tǐ yù yòng pǐn 購 買 體 育 用 品	10	qǐng wèn 「 chī diàn 」 shì shé me yì si ？ 請 問 「 吃 電 」 是 什 麼 意 思 ？ (1) bǐ yù shǐ yòng diàn lì 比 喻 使 用 電 力 (2) zài diàn qì shāng diàn gòu mǎi diàn qì 在 電 器 商 店 購 買 電 器 (3) shǐ yòng diàn qì pēng rèn shí wù 使 用 電 器 烹 飪 食 物

No	Question	No	Question
11	qǐng wèn 「 chī táng guǒ 」 shì shé me yì si ？ 請 問 「 吃 糖 果 」 是 什 麼 意 思 ？ (1) zài táng guǒ diàn mǎi táng guǒ 在 糖 果 店 買 糖 果 (2) bǎ táng guǒ sòng gěi péng yǒu 把 糖 果 送 給 朋 友 (3) bǎ táng guǒ chī jìn dù zi lǐ 把 糖 果 吃 進 肚 子 裡	12	qǐng wèn 「 xǐ yī fú 」 shì shé me yì si ？ 請 問 「 洗 衣 服 」 是 什 麼 意 思 ？ (1) qīng xǐ yī wù yǐ bǎo chí gān jìng 清 洗 衣 物 以 保 持 乾 淨 (2) gòu mǎi xīn yī fú 購 買 新 衣 服 (3) jiāng yī fú zhé dié qǐ lái 將 衣 服 折 疊 起 來
13	qǐng wèn 「 chī bì mén gēng 」 shì shé me yì si ？ 請 問 「 吃 閉 門 羹 」 是 什 麼 意 思 ？ (1) zài pēng rèn bǐ sài zhōng yíng dé guàn jūn 在 烹 飪 比 賽 中 贏 得 冠 軍 (2) bèi bié rén jù jué 被 別 人 拒 絕 (3) yù dào shāng diàn guān mén 遇 到 商 店 關 門	14	qǐng wèn 「 chī dòu fǔ 」 shì shé me yì si ？ 請 問 「 吃 豆 腐 」 是 什 麼 意 思 ？ (1) shí yòng dòu lèi de shí wù 食 用 豆 類 的 食 物 (2) xíng róng rén zuò shì hěn yǒu xiào lǜ 形 容 人 做 事 很 有 效 率 (3) bǐ yù zhàn bié rén pián yí 比 喻 佔 別 人 便 宜
15	qǐng wèn 「 tán gāng qín 」 shì shé me yì si ？ 請 問 「 彈 鋼 琴 」 是 什 麼 意 思 ？ (1) zài yuè qì háng gòu mǎi yuè qì 在 樂 器 行 購 買 樂 器 (2) cān jiā gāng qín bǐ sài 參 加 鋼 琴 比 賽 (3) yòng gāng qín tán zòu yīn yuè 用 鋼 琴 彈 奏 音 樂	16	qǐng wèn 「 chī xǐ jiǔ 」 shì shé me yì si ？ 請 問 「 吃 喜 酒 」 是 什 麼 意 思 ？ (1) gòu mǎi jié hūn lǐ wù 購 買 結 婚 禮 物 (2) cān jiā shēng rì pài duì 參 加 生 日 派 對 (3) cān jiā hūn lǐ bìng xiǎng yòng yàn xí 參 加 婚 禮 並 享 用 宴 席
17	qǐng wèn 「 zuò zuò yè 」 shì shé me yì si ？ 請 問 「 做 作 業 」 是 什 麼 意 思 ？ (1) wàng jì zuò jiā shì 忘 記 做 家 事 (2) wán chéng lǎo shī bù zhì de gōng kè 完 成 老 師 布 置 的 功 課 (3) cān jiā xué xiào de kè wài huó dòng 參 加 學 校 的 課 外 活 動	18	qǐng wèn 「 chī yùn qì 」 shì shé me yì si ？ 請 問 「 吃 運 氣 」 是 什 麼 意 思 ？ (1) chī tè bié de shí wù lái zhuī qiú hǎo yùn 吃 特 別 的 食 物 來 追 求 好 運 (2) jué de hěn xìng fú 覺 得 很 幸 福 (3) xū yào yī kào xìng yùn 需 要 依 靠 幸 運

Appendix B

Test Items Used in the Interpretation Task with Context

Question		Participants saw:	Participants heard:
Q1	Scene 1		小張在公司裡被指控挪用公款，現在他需要出庭辯護。
	Scene 2		他的同事們議論紛紛，說他這次真是吃了官司。
	Scene 3	qǐng wèn 「 chī guān sī 」 shì shén me yì si ？ (1) zài fǎ yuàn gōng zuò (2) xiě yí fèn fǎ lǜ wén jiàn (3) miàn duì fǎ lǜ sù sòng	請問「吃官司」是什麼意思？
Q2	Scene 1		最近經濟不景氣，小王公司的業務量大幅減少，他只能依靠以前存下的錢來維持生活。
	Scene 2		他的朋友們都說他這段時間一直在吃老本。

	Scene 3	qǐng wèn 「 chī lǎo běn 」 shì shé me yì si ？ (1) kào zhī qián jī lěi de zī yuán guò shēng huó (2) gēn lǎo péng yǒu yì qǐ chī fàn (3) yuè dú hěn jiǔ yǐ qián mǎi de shū	請問「吃老本」是什麼意思？
Q3	Scene 1		爸爸最近覺得他的車子太吃油了。
	Scene 2		開沒多久就得要加油，所以他想要換一輛新的。
	Scene 3	qǐng wèn 「 chī yóu 」 shì shé me yì si ？ (1) bǐ yù shǐ yòng rán liào (2) shí yòng yóu zhī lèi de shí wù (3) jiāng yóu fàng zài shí wù shàng yǐ zēng jiā wèi dào	請問「吃油」是什麼意思？
Q4	Scene 1		放學後，小明和同學們一起去吃麥當勞。
	Scene 2		他們點了漢堡、薯條和可樂，開心地邊聊邊吃。
	Scene 3	qǐng wèn 「 chī mài dāng láo 」 shì shé me yì si ？ (1) cān jiā ér tóng pài duì (2) zài mài dāng láo lǐ gōng zuò (3) qù mài dāng láo cān tīng yòng cān	請問「吃麥當勞」是什麼意思？

	Scene 1		小美喜歡在看書的時候戴上耳機，邊聽音樂，邊閱讀。
Q5	Scene 2		她覺得這樣能讓她更專心。
	Scene 3	qǐng wèn 「 tīng yīn yuè 」 shì shé me yì si ？ (1) zài yuè qì diàn mǎi yuè qì (2) yòng ěr duo gǎn shòu yuè qǔ (3) gēn péng yǒu tǎo lùn yīn yuè zuò pǐn	請問「聽音樂」是什麼意思？
	Scene 1		小凡發現一種快速學習的方法。一開始可能讓他吃到甜頭，成績有明顯的提升。
Q6	Scene 2		但隨著課程難度增加，他漸漸覺得這種方法無法應付複雜的內容，長期來看不是好方法。
	Scene 3	qǐng wèn 「 chī tián tou 」 shì shé me yì si ？ (1) pǐn cháng fēi cháng tián de shí wù (2) xiǎng shòu dào mǒu shì dài lái de hǎo chù (3) gǎn shòu dào shì qíng de xīn suān	請問「吃甜頭」是什麼意思？

Q7	Scene 1		今天是小齊的生日，他的朋友們為他準備了一個驚喜派對。
	Scene 2		大家吃蛋糕、玩遊戲，一起開心地慶祝。
	Scene 3	qǐng wèn 「 chī dàn gāo 」 shì shén me yì si ？ (1) cān jiā zuò dàn gāo de bǐ sài (2) pǐn cháng tián diǎn (3) zài miàn bāo diàn gōng zuò	請問「吃蛋糕」是什麼意思？
Q8	Scene 1		小華今天早上著急出門，忘記帶中午要吃的便當。
	Scene 2		所以她只好打電話給媽媽，請她幫忙把便當送來學校。
	Scene 3	qǐng wèn 「 dǎ diàn huà 」 shì shén me yì si ？ (1) pāi shè diàn huà de zhào piàn (2) zài shǒu jī shàng fā sòng jiǎn xùn (3) shǐ yòng diàn huà yǔ tā rén lián luò	請問「打電話」是什麼意思？

Q9

Scene 1

每到週末，小健和朋友們總會聚在一起。

Scene 2

大家一起喝啤酒，一起看球賽，氣氛熱烈。

Scene 3

qǐng wèn 「 kàn qiú sài 」 shì shé me yì si ？

請 問 「 看 球 賽 」 是 什 麼 意 思 ？

(1) guān kàn yì chǎng tǐ yù bǐ sài

觀 看 一 場 體 育 比 賽

(2) cān jiā tǐ yù xùn liàn

參 加 體 育 訓 練

(3) gòu mǎi tǐ yù yòng pǐn

購 買 體 育 用 品

請問「看球賽」是什麼意思？

Q10

Scene 1

媽媽收到這個月的帳單，發現電費特別高。

Scene 2

爸爸告訴她，家裡的冷氣一直開著，特別會吃電。

Scene 3

qǐng wèn 「 chī diàn 」 shì shé me yì si ？

請 問 「 吃 電 」 是 什 麼 意 思 ？

(1) bǐ yù shǐ yòng diàn lì

比 喻 使 用 電 力

(2) zài diàn qì shāng diàn gòu mǎi diàn qì

在 電 器 商 店 購 買 電 器

(3) shǐ yòng diàn qì pēng rèn shí wù

使 用 電 器 烹 飪 食 物

請問「吃電」是什麼意思？

	Scene 1		小利的媽媽不准他每天吃糖果。
Q11	Scene 2		因為這樣容易蛀牙。
	Scene 3	qǐng wèn 「 chī táng guǒ 」 shì shén me yì si ？ (1) zài táng guǒ diàn mǎi táng guǒ (2) bǎ táng guǒ sòng gěi péng yǒu (3) bǎ táng guǒ chī jìn dù zi lǐ	請問「吃糖果」是什麼意思？
	Scene 1		安安最近搬進新家。
Q12	Scene 2		但是她發現洗衣機故障了。所以她只好先自己洗衣服。
	Scene 3	qǐng wèn 「 xǐ yī fú 」 shì shén me yì si ？ (1) qīng xǐ yī wù yǐ bǎo chí gān jìng (2) gòu mǎi xīn yī fú (3) jiāng yī fú zhé dié qǐ lái	請問「洗衣服」是什麼意思？

	Scene 1		剛畢業的美美要找工作。
Q13	Scene 2		但是她對面是不太熟悉。總是因為準備不足而常常吃閉門羹。
	Scene 3	請問「吃閉門羹」是什麼意思？ (1) 在烹飪比賽中贏得冠軍 (2) 被別人拒絕 (3) 遇到商店關門	請問「吃閉門羹」是什麼意思？
	Scene 1		莉莉在公司聚餐的時候，被喝醉的上司摸了一下。
Q14	Scene 2		她很生氣，她不喜歡這樣被吃豆腐的感覺。
	Scene 3	請問「吃豆腐」是什麼意思？ (1) 食用豆類的食物 (2) 形容人做事很有效率 (3) 比喻佔別人便宜	請問「吃豆腐」是什麼意思？
Q15	Scene 1		大同從小學彈鋼琴。

	Scene 2		每當有朋友來家裡，他總會彈鋼琴，分享他喜歡的樂曲。
	Scene 3	qǐng wèn 「 tán gāng qín 」 shì shén me yì si ？ 請 問 「 彈 鋼 琴 」 是 什 麼 意 思 ？ (1) zài yuè qì háng gòu mǎi yuè qì 在 樂 器 行 購 買 樂 器 (2) cān jiā gāng qín bǐ sài 參 加 鋼 琴 比 賽 (3) yòng gāng qín tán zòu yīn yuè 用 鋼 琴 彈 奏 音 樂	請問「彈鋼琴」是什麼意思？
	Scene 1		小華要結婚了，他邀請他的朋友來參加他的婚禮。
Q16	Scene 2		小華的朋友們一起去吃喜酒，慶祝這個特別的日子。
	Scene 3	qǐng wèn 「 chī xǐ jiǔ 」 shì shén me yì si ？ 請 問 「 吃 喜 酒 」 是 什 麼 意 思 ？ (1) gòu mǎi jié hūn lǐ wù 購 買 結 婚 禮 物 (2) cān jiā shēng rì pài duì 參 加 生 日 派 對 (3) cān jiā hūn lǐ bìng xiǎng yòng yàn xí 參 加 婚 禮 並 享 用 宴 席	請問「吃喜酒」是什麼意思？
	Scene 1		每到放學時間，小威總是先坐在書桌前專心做作業。
Q17	Scene 2		這樣完成後才可以去公園玩。

	Scene 3	qǐng wèn 「 zuò zuò yè 」 shì shé me yì si ？ (1) wàng jì zuò jiā shì (2) wán chéng lǎo shī bù zhì de gōng kè (3) cān jiā xué xiào de kè wài huó dòng	請問「做作業」是什麼意思？
Q18	Scene 1		小傑在這場網球比賽中發揮得一般。
	Scene 2		但因為對手在最後一刻失誤，所以他吃運氣贏了。
	Scene 3	qǐng wèn 「 chī yùn qi 」 shì shé me yì si ？ (1) chī tè bié de shí wù lái zhuī qiú hǎo yùn (2) jué de hěn xìng fú (3) xū yào yī kào xìng yùn	請問「吃運氣」是什麼意思？

Appendix C

Test Items Used in the Pilot Study

Part A: The Interpretation Task without Context

1. 請問「吃官司」是什麼意思？
   (1) 在法院工作
   (2) 寫一份法律文件
   (3) 面對法律訴訟

2. 請問「吃老本」是什麼意思？
   (1) 靠之前積累的資源過生活
   (2) 跟老朋友一起吃飯
   (3) 閱讀很久以前買的書

3. 請問「吃蘋果」是什麼意思？
   (1) 摘蘋果給家人吃
   (2) 品嚐水果
   (3) 在店裡買水果

4. 請問「吃力」是什麼意思？
   (1) 需要花費力氣
   (2) 吃得很滿足
   (3) 用力地品嚐食物

5. 請問「吃麥當勞」是什麼意思？
   (1) 參加兒童派對
   (2) 在麥當勞裡工作
   (3) 去麥當勞餐廳用餐

6. 請問「聽音樂」是什麼意思？
   (1) 在樂器店買樂器
   (2) 用耳朵感受樂曲
   (3) 跟朋友討論音樂作品

7. 請問「吃甜頭」是什麼意思？
   (1) 品嚐非常甜的食物

(2) 享受到某事帶來的好處
(3) 感受到事情的辛酸

8. 請問「吃路邊攤」是什麼意思？
(1) 品嚐街上或市場的小吃
(2) 在街上賣食物
(3) 在家自己烹飪食物

9. 請問「吃油」是什麼意思？
(1) 比喻耗費大量能源
(2) 食用油脂類的食物
(3) 將油放在食物上以增加味道

10. 請問「吃豆腐」是什麼意思？
(1) 食用豆類的食物
(2) 形容人做事很有效率
(3) 比喻佔別人便宜

11. 請問「打電話」是什麼意思？
(1) 拍攝電話的照片
(2) 在手機上發送簡訊
(3) 使用電話與他人聯絡

12. 請問「吃蛋糕」是什麼意思？
(1) 參加做蛋糕的比賽
(2) 品嚐甜點
(3) 在麵包店工作

13. 請問「看球賽」是什麼意思？
(1) 觀看一場體育比賽
(2) 參加體育訓練
(3) 購買體育用品

14. 請問「吃父母」是什麼意思？
(1) 比喻品嚐父母做的食物
(2) 比喻依靠父母生活
(3) 比喻與父母一起用餐

15. 請問「洗衣服」是什麼意思？
(1) 清洗衣物以保持乾淨
(2) 購買新衣服
(3) 將衣服摺疊起來

16. 請問「吃電」是什麼意思？
(1) 比喻使用大量電力
(2) 在電器商店購買電器
(3) 使用電器進行烹飪

17. 請問「吃糖果」是什麼意思？
(1) 在糖果店買糖果
(2) 把糖果送給朋友
(3) 把糖果吃進肚子裡

18. 請問「吃閉門羹」是什麼意思？
(1) 在烹飪比賽中贏得冠軍
(2) 被別人拒絕
(3) 遇到商店關門

19. 請問「吃軟飯」是什麼意思？
(1) 比喻依靠別人過日子
(2) 形容品嚐到很軟的米飯
(3) 比喻容易被他人影響或說服

20. 請問「彈鋼琴」是什麼意思？
(1) 在樂器行購買鋼琴
(2) 參加鋼琴比賽
(3) 用鋼琴彈奏音樂

21. 請問「吃喜酒」是什麼意思？
(1) 購買結婚禮物
(2) 參加生日派對
(3) 參加婚禮並享用宴席

22. 請問「做作業」是什麼意思？
(1) 完成媽媽分配的家事
(2) 完成老師佈置的功課

(3) 參加學校的課外活動

23. 請問「吃冰淇淋」是什麼意思？
(1) 形容天氣很涼爽
(2) 比喻看到養眼、有趣的事物
(3) 比喻遭受到不公平的對待

24. 請問「吃苦頭」是什麼意思？
(1) 遇到困難的挑戰
(2) 考試考第一名
(3) 品嚐到苦的食物

Part B: The Interpretation Task with Context

1. 小張在公司裡被指控偷竊辦公用品，現在他需要出庭辯護。他的同事們都在議論紛紛，說他這次真是吃了官司。請問「吃官司」是什麼意思？
(1) 在法院工作
(2) 寫一份法律文件
(3) 面對法律訴訟

2. 最近經濟不景氣，小王的公司業務量大幅減少，他只能依靠以前存下的錢來維持生活。他的朋友們都說他這段時間一直在吃老本。請問「吃老本」是什麼意思？
(1) 靠之前積累的資源過生活
(2) 跟老朋友一起吃飯
(3) 閱讀很久以前買的書

3. 小麗每天都會帶一個蘋果到學校，課間休息的時候，她總是坐在教室角落安靜地吃蘋果。請問「吃蘋果」是什麼意思？
(1) 摘蘋果給家人吃
(2) 品嚐水果
(3) 在店裡買水果

4. 小張的學校最近安排了一個體能測試，他在跑步的時候感覺非常累，跑完之後，他告訴老師這次的測驗真是吃力。請問「吃力」是什麼意思？
(1) 需要花費力氣
(2) 吃得很滿足
(3) 用力地品嚐食物

5. 放學後，小明和同學一起去吃麥當勞，他們點了漢堡、薯條和可樂，開心地邊聊邊吃。請問「吃麥當勞」是什麼意思？
   (1) 參加兒童派對
   (2) 在麥當勞裡工作
   (3) 去麥當勞餐廳用餐

6. 小美喜歡在看書的時候戴上耳機，邊聽音樂，邊閱讀。她覺得這樣能讓她更專心。請問「聽音樂」是什麼意思？
   (1) 在樂器店買樂器
   (2) 用耳朵感受樂曲
   (3) 跟朋友討論音樂作品

7. 維恩發現一種快速學習的方法，一開始可能讓他吃到甜頭，成績有明顯提升，但隨著課程難度增加，他逐漸感到這種方法無法應付複雜的內容，長期看來不是好方法。請問「吃甜頭」是什麼意思？
   (1) 品嚐到非常甜的食物
   (2) 享受到某事帶來的好處
   (3) 感受到事情的辛酸

8. 媽媽總是不讓小恩吃路邊攤，因為她覺得那裡的東西不乾淨。請問「吃路邊攤」是什麼意思？
   (1) 品嚐街上或市場的小吃
   (2) 在街上賣食物
   (3) 在家自己烹飪食物

9. 爸爸最近覺得他的車子太吃油了，開沒多久就得要加油，所以他想要換一輛新的。請問「吃油」是什麼意思？
   (1) 比喻耗費大量能源
   (2) 食用油脂類的食物
   (3) 將油放在食物上以增加味道

10. 莉莉今天坐捷運上學的時候，被不認識的人摸了一下，她很生氣，她不喜歡被吃豆腐的感覺。請問「吃豆腐」是什麼意思？
   (1) 食用豆類的食物
   (2) 形容人做事很有效率
   (3) 比喻佔別人便宜

11. 小華今天早上急著出門，忘記帶中午要吃的便當。所以他只好打電話給媽媽，請她幫忙把便當送來學校。請問「打電話」是什麼意思？
(1) 拍攝電話的照片
(2) 在手機上發送簡訊
(3) 使用電話與他人聯絡

12. 今天是花花的生日，她的朋友們為她準備了一個驚喜派對，大家吃蛋糕、玩遊戲，一起開心地慶祝。請問「吃蛋糕」是什麼意思？
(1) 參加做蛋糕的比賽
(2) 品嚐甜點
(3) 在麵包店工作

13. 每到週末，阿健和他的朋友們總會聚在一起，拿著啤酒，一起看球賽，氣氛熱烈。請問「看球賽」是什麼意思？
(1) 觀看一場體育比賽
(2) 參加體育訓練
(3) 購買體育用品

14. 小傑到了三十歲都還沒有工作，每天在家吃父母，生活費都靠父母支出。請問「吃父母」是什麼意思？
(1) 比喻品嚐父母做的食物
(2) 比喻依靠父母生活
(3) 比喻與父母一起用餐

15. 維尼最近搬進新家，發現洗衣機出現了故障，只好自己洗衣服，感到特別麻煩。請問「洗衣服」是什麼意思？
(1) 清洗衣物以保持乾淨
(2) 購買新衣服
(3) 將衣服摺疊起來

16. 媽媽發現這個月的電費帳單特別高，她發現家裡的冷氣一直開著，爸爸告訴她冷氣特別會吃電。請問「吃電」是什麼意思？
(1) 比喻使用大量的電力
(2) 在電器商店購買電器
(3) 使用電器進行烹飪

17. 小利的媽媽不准他每天吃糖果，因為這樣容易蛀牙。請問「吃糖果」是什麼意思？

(1) 在糖果店買糖果
(2) 把糖果送給朋友
(3) 把糖果吃進肚子裡

18. 剛畢業的美美要找工作，但是她對面試不太熟悉，總是因為準備不足而三番五次吃閉門羹。請問「吃閉門羹」是什麼意思？
(1) 在烹飪比賽中贏得冠軍
(2) 被別人拒絕
(3) 遇到商店關門

19. 傑森一直依賴女朋友的工作和收入，朋友們開玩笑說他真是在吃軟飯，完全不自立。請問「吃軟飯」是什麼意思？
(1) 比喻依靠別人過日子
(2) 形容品嚐到很軟的米飯
(3) 比喻容易被他人影響或說服

20. 大同從小學習鋼琴，每當有朋友來家裡，他總會坐在鋼琴前，為大家彈鋼琴，分享他的音樂。請問「彈鋼琴」是什麼意思？
(1) 在樂器行購買鋼琴
(2) 參加鋼琴比賽
(3) 用鋼琴彈奏音樂

21. 小華的朋友最近結婚，他們邀請大家參加婚禮，小華和其他朋友一起去吃喜酒，慶祝這個特別的日子。請問「吃喜酒」是什麼意思？
(1) 購買結婚禮物
(2) 參加生日派對
(3) 參加婚禮並享用宴席

22. 每到放學，湯姆總是先坐在書桌前，專心做作業，這樣完成後才可以去公園玩。請問「做作業」是什麼意思？
(1) 完成媽媽分配的家事
(2) 完成老師佈置的功課
(3) 參加學校的課外活動

23. 夏天了，大家都想去海邊玩水。海邊的人穿著清涼的泳衣，讓路過的人眼睛大吃冰淇淋。請問「吃冰淇淋」是什麼意思？
(1) 形容天氣很涼爽
(2) 比喻看到養眼、有趣的事物

(3) 比喻遭受到不公平的對待

24. 小芬最近開始了一份新工作，因為缺乏經驗，她經常要面對困難和挑戰，讓她感到自己吃了不少苦頭。請問「吃苦頭」是什麼意思？
(1) 遇到困難的挑戰
(2) 考試考第一名
(3) 品嚐到苦的食物

Appendix D

Consent Form

Part A: Chinese Version

參與研究同意書

【說明】

這是一份關於碩士論文研究的同意書，本研究旨在探討中文學習者對多義詞「吃」之理解研究，在參與受試前，請先詳閱以下內容。

1. 受試者需要在看完題目後，根據題意，選出最適當的答案。
2. 本實驗主要分成兩個部分：
   第一部分為「無語境選擇題」，受試者需要根據題目選出最適當的答案，共 18 題，皆為單選題。
   第二部分為「有語境選擇題」，受試者需要在聆聽完題目敘述後，根據題意選出最適當的答案，共 18 題，皆為單選題。
3. 本實驗共預計進行約 20 至 25 分鐘，待受試者作答完畢後，會贈送受試者一份精美小禮物，感謝受試者參與。
4. 本研究結果只供學術研究使用，任何個人資料絕不對外公開，所有答題資訊將嚴格保密。

☐ 我已詳讀並了解上述內容，且同意參與此實驗，並願意將實驗結果提供此研究使用。

母語/第一語言 ☐ 緬甸語 ☐ 印尼語 ☐ 泰語 ☐ 越南語 ☐ 其他：_____

中文程度：_____（TOCFL）

受試者姓名：_____（簽名） 生日：____年____月____日

日期：____年____月____日

非常感謝您的參與！

敬祝 身體健康

國立臺灣師範大學英語系語言學組

研究生：吳靖柔 敬上

指導教授：陳純音 教授

日期：民國 113 年 11 月

Part B: English Version

Consent Form

This is a consent form for a master's thesis aimed at investigating the understanding of the polysemous verb *chi* among learners of Chinese. Before participating in the study, please read the following information carefully.

1. Participants will need to choose the most appropriate answer after reading each question.
2. This experiment consists of two parts:
   Part One: Context-Free Multiple-Choice Questions
   Participants will select the most appropriate answer based on the question with a total of 18 questions, all of which are multiple-choice.
   Part Two: Contextual Multiple-Choice Questions
   Participants will listen to the narrative of each question and select the most appropriate answer, also consisting of 18 multiple-choice questions.
3. The experiment is expected to take approximately 20 to 25 minutes. Upon completion, participants will receive a small gift as a token of appreciation for their involvement.
4. The results of this study will be used solely for academic research purposes. Any personal information will be kept confidential and will not be disclosed to any outside parties.

☐ I have read and understood the above information, and I consent to participate in this experiment. I also agree to provide the research with the results of the experiment.

Your mother tongue/ first language:
☐ Burmese ☐ Indonesian (Bahasa) ☐ Thai ☐ Vietnamese ☐ Other: _____
Your Chinese proficiency: _____ (TOCFL)

Name: _____ (Signature) Date of Birth: _____/_____/_____

Date: _____/_____/_____ Thank you very much for your participation!

Department of English, NTNU
Student: Jing-rou Cindy Wu
Advisor: Professor Chun-yin Doris Chen
November 2024