

A Study of the Acquisition Order of the Multi-Category Word 叫 Jiào

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How to cite this paper: Ding, A. Q., & Zhang, T. (2024). A Study of the Acquisition Order of the Multi-Category Word 叫 Jiào. *Open Journal of Modern Linguistics*, 14, 981-1002.

<https://doi.org/10.4236/ojml.2024.145051>

Received: September 26, 2024

Accepted: October 20, 2024

Published: October 23, 2024

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Abstract

In modern Chinese, the word 叫 jiào is a multifunctional polysemy which straddles multiple word categories—verb, preposition, and auxiliary. Based on the HSK Dynamic Composition Corpus, we propose the acquisition order of 叫 jiào in terms of word categories and meaning items among Mandarin L2 learners, according to the usage rate, accuracy percentage, emergence criterion and implicational scale. The sequence is basically in consistence with the word's process of grammaticalization. Cognitive difficulty, frequency effect, and in-trilingual interference account for the acquisition order. Suggestions for teaching methods and textbook compilation are also given, offering a reference for the acquisition research of multi-category words.

Keywords

Multi-Category Word, 叫 Jiào, Acquisition Order, Implicational Scale

1. Introduction

A multi-category word is defined as a lexical item that performs the grammatical functions of two or more word classes, with its various senses being interrelated. Multi-category words are a representative example of grammatical multifunctionality. In Chinese linguistics, discussions surrounding multi-category words have often been intertwined with debates on the existence of word classes. Ma Jianzhong, in his seminal work *Ma's Grammar*, was the first to establish a classification system for Chinese words, proposing the concept of 同名假借 tóngmíng jiǎjiè “general naming and borrowing”. However, Ma did not fully account for the multifunctional nature of Chinese words within syntactic structures, conflating homographs, functional conversion, and multi-category words. This led him to conclude that 字无定义, 故无定类 zì wú dìng yì, gù wú dìng lèi “words have no

fixed definition and therefore no fixed category.” Li (1924)’s *New Chinese Grammar* introduced the first modern classification system for Chinese words, but her interpretation of cross-category phenomena led to the assertion that “Chinese Words have no fixed category”.

For several decades thereafter, the issue of multi-category words remained a subject of debate in the field of Chinese grammar. In the mid-20th century, many prominent scholars conducted extensive research on the phenomenon. Wang (1943) was the first to formally define multi-category words, arguing that they must exhibit at least two common uses. Lyu (1979) further developed this idea, asserting that when a word’s meaning remains constant, its classification should also remain stable, thus making word classification meaningful. He articulated the principle that 词有定类, 类有定词 *cí yǒu dìng lèi, lèi yǒu dìng cí* “words have specific categories, and categories encompass specific words.” Zhu (1982) subsequently established a more systematic set of criteria for the classification of Chinese words. Over time, scholars have increasingly reached a consensus on the nature of multi-category words in Chinese: while words have fixed categories, cross-category usage remains a recognized linguistic phenomenon.

The more word classes a word possesses, the more diverse its grammatical functions, naturally increasing the difficulty of acquisition. Multi-category words thus become a challenging aspect of Chinese language acquisition and teaching. While the acquisition of multi-category words presents a significant challenge, there are discernible patterns that can be identified. In the process of second language learners’ approximate lexical systems transitioning to the target language system, this process typically exhibits a sequential order.

The order can be observed in the sequence in which learners acquire different grammatical items in the target language (Ellis, 1999). The majority of the researches on the acquisition order of Chinese as a second language have concentrated on specific linguistic items, such as distinctive sentence structures and certain verbs. This research has employed a variety of methods, including corpus analysis, questionnaires, and case studies, to collect data (Shi, 1998; Huang & Xiao, 2012). Studies on the second language acquisition of multi-category words remain limited to the categorization and labeling of word classes in textbooks and syllabi, or to error analysis for learners with specific native language backgrounds (Zhang, 2018; Guan, 2020).

One illustrative example of examining the acquisition sequence of individual multi-category words by learners is the research on 打 *dǎ*. Some scholars have employed questionnaires and in-class tests to ascertain that the acquisition sequence of the various senses of 打 *dǎ* is influenced by factors such as intralingual interference, native language characteristics, and second language features (). In light of this acquisition sequence, instructional levels have been established for each sense (Zhang et al., 2011; Chen & Wang, 2020; Tu, 2021).

Nevertheless, due to the considerable number of multi-category words in Chinese, further investigation into the acquisition sequence of additional multi-cate-

gory words is imperative. The current research methods rely primarily on questionnaires and tests, with relatively few experimental studies and quantitative approaches. This makes it challenging to obtain an objective and comprehensive understanding of the acquisition sequence patterns. The existing studies tend to focus on describing the influence of native language characteristics on the acquisition of different senses of multi-category words. However, they lack in-depth analysis of factors such as cognitive difficulty and the frequency of use of these senses.

In the history of modern Chinese linguistic research, 问/ 介 has been classified as a multi-category word. The semantic connections among the various meanings of 问/ 介 exhibit varying degrees of strength. Its development from lexical to grammatical meaning is viewed as a case of grammaticalization (Jiang, 1994; Jiang, 2000; Shi & Li, 2001). The vocabulary list in the *Chinese Proficiency Grading Standards for International Chinese Language Education* (hereafter referred to as the *Standards*) includes 859 multi-category words (Wang, 2022), of which 24 function both as verbs and prepositions. These words exhibit multi-category behavior analogous to that observed in 问/ 介, manifesting in multiple levels of the vocabulary list and in grammatical items. For example, certain senses of 问/ 介 give rise to pivotal sentences and passive constructions, both of which are distinctive sentence patterns in Chinese. The large number of multi-category words, combined with their semantic complexity and diverse grammatical functions, represents a significant challenge in Chinese language acquisition and teaching. Consequently, research on the acquisition order of the multi-category word 问/ 介 offers valuable insights for the field.

This paper defines the meanings and grammatical categories of the various senses of the multi-category word 问/ 介. The study is based on the HSK Dynamic Composition Corpus from Beijing Language and Culture University. It employs four quantitative methods to examine the acquisition sequence of the different senses of 问/ 介: usage rate ranking, accuracy percentage ranking, emergence criterion ranking, and implicational scale analysis. Furthermore, the study analyzes the causes behind this acquisition sequence and offers recommendations for teaching methods and textbook organization related to multi-category words.

2. The Senses of the Multi-Category Word 问/ 介

The classification and interpretation of the multi-category word 问/ 介 in modern Chinese reference works is an intricate and nuanced process. *The Contemporary Chinese Dictionary* (5th edition) lists six verb senses for 问/ 介₁ and two prepositional senses for 问/ 介₂, while the sixth edition merges these into a single headword. The *Eight Hundred Words of Modern Chinese* categorizes 问/ 介₁ as a verb with five senses and 问/ 介₁ as both a preposition and a particle, each with one sense. The difference between these two sources lies in whether the verb senses “to ask, to order” and “to result in” are merged, and whether 问/ 介 as a marker of passive grammatical meaning distinguishes between prepositional

and particle uses.

The academic community has long distinguished the preposition 叫 *jiào*, which indicates passivity, from the typical passive marker 被 *bèi*. Wang (1943) proposed that 叫 *jiào* should be classified as an auxiliary verb, suggesting that it evolved from the verb and carries a less weighty meaning than 被 *bèi*. The distinction between sentences using 叫 *jiào*, 让 *ràng*, 给 *gěi*, and 被 *bèi* is that the former are more commonly used in spoken language, where the object cannot be omitted, while the latter are more often used in written language, where the object can be omitted. In instances where the preposition 叫 *jiào* indicates passivity, the agent cannot be omitted (e.g., 碗叫他给打了 *wǎn jiào tā gěi dǎ le*, “the bowl was broken by him”). In contrast, when 叫 *jiào* functions as a particle, the agent can be omitted, with 叫 *jiào* primarily serving a structural role to connect the subject and predicate (e.g., 好大的雨，衣服都叫淋湿了 *hǎo dà de yǔ, yīfu dōu jiào lín shī le* “it rained so heavily that the clothes got soaked”). In this instance, the agent is understood implicitly and therefore does not require explicit mention before the result is expressed. It is therefore necessary to differentiate between the prepositional and particle uses of the multi-category word 叫 *jiào*.

A review of several sets of commonly used Chinese textbooks (40 *lessons for basic Chinese course*, *Conversational Chinese 301*, *Chinese with me: an integrated course book*, & *Spoken Chinese Course*) revealed that the multi-category word 叫 *jiào* is used with the following senses: The seven senses of the multi-category word 叫 *jiào*, as identified in the review of several sets of commonly used Chinese textbooks, are as follows:

- 1) be called/known as
- 2) call; summon
- 3) ask; order
- 4) shout; (of animals) cry
- 5) the prepositional passive meaning

The senses of multi-category words presented in the textbooks are limited, with a general trend of extending from concrete to abstract meanings. Additionally, no examples of the auxiliary usage were found. Based on the definitions from both reference works and textbooks, this paper classifies the senses of the multi-category word 叫 *jiào* into seven senses to explore their acquisition sequence (see **Table 1**).

Table 1. Classification of the Senses of 叫 *jiào*.

Part of Speech	Lexical Meaning	Grammatical Function	Example Sentence	Classification
Verb	cry;	Can be reduplicated	他大叫了一声 <i>tā dà jiào le yī shēng</i> “He gave a loud cry”	<i>jiào</i> ₁
	call; summon	Takes an object (person or thing)	我叫了三个菜 <i>wǒ jiào le sān gè cài</i> “I ordered three dishes”	<i>jiào</i> ₂
	ask; order	Followed by a pivotal structure	他叫我拿一本书 <i>tā jiào wǒ ná yī běn shū</i> “He asked me to take a book”	<i>jiào</i> ₃

Continued

Verb	be called/known as	Followed by a person's name	我叫唐山 wǒ jiào Tángshān “My name is Tangshan”	jiào ₄
	call	Followed by double objects	大家都叫他大老李 dàjiā dōu jiào tā dà lǎo lǐ “Everybody called him Big Old Lee”	jiào ₅
Preposition	(used in a passive sentence to introduce the doer of the action)	Followed by an agent object (cannot be omitted)	自行车叫人骑走了 zìxíngchē jiào rén qí zǒu le “The bike was called off”	jiào ₆
Auxiliary	Indicating passive meaning	The agent object is implicit	我的东西叫偷了 wǒ de dōngxī jiào tōu le “My stuff was stolen”	jiào ₇

The complexity of the multi-category word 叫/ jiào is also evident in the syllabus standards and textbook interpretations utilized in international Chinese education. *The Outline of Chinese Proficiency Vocabulary and Chinese Character Levels* classifies 叫/ jiào as a homophonic homograph, dividing it into two separate entries under Level A. In contrast, the *New HSK Vocabulary Outline* includes it as a single entry under Level 1 vocabulary. The classification of 叫/ jiào in the *Standards* demonstrates a variety of grammatical items and a wide distribution across different levels, including Level 1 vocabulary 叫(动) jiao (verb), Level 2 vocabulary 叫作 jiàozuò “to be called”, Level 3 vocabulary includes the preposition 叫(介) jiào (preposition), while Level 7 to 9 vocabulary items encompass such terms as 叫板 jiàobǎn “challenge” and 叫好 jiàohǎo “applaud”. Additionally, in the Level 3 grammar syllabus, 叫/ jiào appears as a preposition, while sentence types such as passive sentences, causative sentences, and pivotal sentences are covered from Levels 3 to 6, alongside the colloquial structure 叫你 X 你就 X jiào nǐ X nǐ jiù X “just do as you are asked to” in the Level 4 grammar points.

In the grammar syllabus, 叫/ jiào corresponds to the semantically bleached senses 叫₃ jiào₃, 叫₅ jiào₅, and 叫₆ jiào₆, which primarily involve the formation of special sentence patterns such as pivotal sentences and passive constructions. The distribution of the various senses of 叫/ jiào in the vocabulary and grammar sections of the *Standards* is detailed in **Table 2**.

Table 2. Distribution of 叫/ jiào in the Vocabulary and Grammar Sections in the *Standards*.

		Position	Entry	Sense
Vocabulary Lists		Band 1	叫(动) jiao (verb)	jiào _{1,2,3,5}
		Band 2	叫作 jiàozuò	jiào ₄
		Band 3	叫(介) jiao (preposition)	jiào ₆
		Bands 7 - 9	叫板 jiàobǎn, 叫好 jiàohǎo	jiào ₁
Outline for Grammar Points of Each Band	Band 3	Parts of Speech-Prepositions	Prepositions Introducing an Agent or Patient	jiào ₆
	Band 3	Phrases-Structure Categories	Pivotal phrases	jiào ₃

Continued

Outline for Grammar Points of Each Band	Band 3	Classification of Sentences-Special Sentence Patterns	Passive Sentences 1: Subject + 被/叫/让 + Object + Verb + Other Constituents	jiào ₆
	Band 3	Classification of Sentences-Special Sentence Patterns	Pivotal Sentences 1 Indicating Command: Subject + 叫 ask; order/派 send; dispatch; assign/请 request; ask/让 let;	jiào ₃
	Band 4	Classification of Sentences-Special Sentence Patterns	Pivotal Sentences 2 Indicating a form of address or recognition: subject + 叫/称(呼)/说/收/选 + object 1 + 做/为/当/是 + object	jiào ₅
	Band 4	Classification of Sentences-Colloquial Structures	让/叫你 X 你就 X (just do as you are asked to)	jiào ₃
	Band 5	Classification of Sentences-Special Sentence Patterns	Pivotal Sentences 3 Indicating Cause and Effect: Subject + 叫 ask; order/令 order; cause/使 send; make/让 let; allow + Personal Pronoun + Verbal Phrase	jiào ₃
	Band 6	Classification of Sentences-Special Sentence Patterns	Passive Sentences 4: Subject + 被/叫/让 + Object + 给 + Verb + Other Constituents	jiào ₆

3. The Acquisition Sequence of Different Senses of 叫 jiào

The research methods employed to ascertain the acquisition sequence of Chinese can be broadly classified into seven categories: accuracy ranking, usage rate ranking, stage scoring, implicational scale analysis, error rate ranking, and first-appearance rate ranking. The use of a single method is insufficient for providing a comprehensive reflection of the acquisition sequence.

The use of language is frequently shaped by learners' strategies, such as the deployment of avoidance tactics to minimize errors (Luo, 1999). Consequently, the accuracy ranking method is limited in its scope, focusing exclusively on language output rather than encompassing the full spectrum of language acquisition. Furthermore, the lack of clear acquisition standards for reference in studies results in highly subjective outcomes. For example, this approach may encourage learners to settle for basic communicative competence, resulting in a habitual reliance on simplified expressions while avoiding more sophisticated vocabulary and complex syntactic structures. As a result, their language skills may stagnate at a lower level. In addition, it can contribute to the "fossilization" of incorrect language forms, making them more persistent in learners' language use.

The usage rate ranking method is constrained by the specific context and topic of actual communication. For instance, the top ten most frequently used words, as identified through usage rate statistics, differ between two notable studies: the *Statistical Analysis of Chinese Vocabulary* (1986), conducted by Beijing Language and Culture University in collaboration with the Institute of Linguistics at the

Chinese Academy of Social Sciences, and the *Common Words List of Modern Chinese (Draft)* (2008), published by the Ministry of Education. The former study lists the top ten words as: 的 de, 一 yī, 了 le, 我 wǒ, 是 shì, 在 zài, 不 bù, 们 men, 人 rén, 有 yǒu, while the latter provides the following: 的 de, 是 shì, 在 zài, 一 yī, 不 bù, 有 yǒu, 这 zhè, 个 gè, 上 shàng, 也 yě. The discrepancy between these results can be attributed to differences in the scope of the datasets. The former draws from all Chinese textbooks used in primary and secondary education, while the latter is based on texts from “modern and contemporary social life,” including literary works and online communication materials.

The first-appearance rate standard is limited in its ability to reflect the entirety of the acquisition process, particularly in its inability to account for the later stages. This makes it challenging to ascertain whether low occurrences represent genuine acquisition or merely the mechanical use of a “chunk”.

Implicational scale analysis has gained traction in the academic community due to its scientific and intuitive nature, offering a promising alternative to existing measurement methods. Nevertheless, it remains contingent upon accuracy, and issues pertaining to accuracy standards persist during the process of data conversion. Furthermore, the manner in which missing data is handled in the implicational scale, along with the numerous and complex factors involved in the acquisition process, can potentially impact the validity of the results. The error rate ranking method and the accuracy ranking method are based on the same underlying principles, differing only in their contrasting perspectives. The practice of stage scoring is seldom employed in the field of Chinese acquisition sequence research, and its general applicability is limited.

Despite the existence of a multitude of methodologies for the study of acquisition sequences, it remains an intractable challenge to fully capture the nuances of language acquisition. This paper conducts a search using the keyword 叫 jiào in the HSK Dynamic Composition Corpus, excluding words containing the morpheme 叫 jiào, such as 喊叫 hǎnjiào, 叫闹 jiàonào, and 千叫 qiānjiào. This process yields 723 valid entries. Four methods—usage rate ranking, accuracy ranking, first-appearance rate ranking, and implicational scale analysis—were employed to statistically and comparatively analyze the data, resulting in a relatively objective conclusion regarding the acquisition sequence of the multi-functional word 叫 jiào.

3.1. Acquisition Sequence Based on Usage Rate Results

The usage rate ranking method is based on the acquisition hypothesis that the first semantic items to be acquired are often the most familiar and are more likely to be used repeatedly. The calculation formula is:

$$\frac{\text{number of uses}}{\text{total occurrences}} \% .$$

The output rates of the seven senses of the multi-category word 叫 jiào from the 723 valid entries are shown in **Table 3**.

Table 3. Usage frequency and usage rate of the various senses of 叫 jiào.

Sense	Usage Frequency/Instances	Usage Rate/%
jiào ₁	34	4.7
jiào ₂	87	12.0
jiào ₃	175	24.2
jiào ₄	403	55.7
jiào ₅	22	3.0
jiào ₆	2	0.3
jiào ₇	0	0.0

The proportion among the output rates of different senses is disproportionate; the functional meanings, such as prepositions and auxiliaries, manifest infrequently, exhibiting a notable disparity compared to the lexical meanings. The usage frequency of 叫 jiào as a verb exceeds 90%, with 叫₄ jiào₄ meaning “to be named” having a high output rate of 55.7%. This indicates that learners have varying levels of familiarity with the language. This is contingent upon the frequency of both language input and output. Second language learners are more likely to encounter the lexical verb meaning, particularly in self-introductions and naming in spoken communication. The auxiliary sense of 叫₆ jiào₆, which marks passivity, was observed on only two occasions at the intermediate and advanced levels. 叫₇ jiào₇, which resulted from further grammaticalization of 叫₆ jiào₆, demonstrated even greater flexibility in meaning and use. Nevertheless, its usage rate among native Chinese speakers is already lower than that of 叫₆ jiào₆, and 叫₇ jiào did not emerge at all. Based on the output rates of each sense, the acquisition sequence of the multi-category word 叫 jiào is as follows: Verb 叫 jiào—Preposition 叫 jiào—Auxiliary 叫 jiào, with the specific order being jiào₄-jiào₃-jiào₂-jiào₁-jiào₅-jiào₆-jiào₇.

3.2. Acquisition Sequence Based on Accuracy Results

The accuracy ranking method is predicated on the theoretical assumption that language items with higher accuracy are acquired at an earlier stage, while those with lower accuracy are acquired at a later stage. The calculation formula is as follows:

$$\frac{\text{number of correct uses}}{\text{number of uses}} \%$$

At present, there is no unified reference standard for accuracy in language acquisition. Dulay and Burt (1974) employed a 90% acquisition threshold, whereas Shi (1998) and Huang & Xiao (2012) utilized 80% and 70%, respectively. In this paper, given the difficulty for second language learners to fully master the target language to the level of native speakers, a compromise was made by setting 80% as the standard for accurate acquisition. Out of 723 entries, 662 were correct,

yielding an overall accuracy rate of 91.6%. This indicates that the multi-category word 叫/ jiào has been acquired (see Table 4).

Table 4. Accuracy percentage for the various senses of 叫/ jiào.

Sense	Usage Count/Instances	Correct Usage Count/Instances	Correct Usage Rate/%
jiào ₁	34	27	79.4
jiào ₂	87	77	88.5
jiào ₃	175	162	92.6
jiào ₄	403	368	91.3
jiào ₅	22	18	81.8
jiào ₆	2	2	100.0
jiào ₇	0	0	0.0

The accuracy rates between the different senses do not vary significantly, and the accuracy rates of 叫/ ₂ jiào₂, 叫/ ₃ jiào₃, 叫/ ₄ jiào₄, and 叫/ ₅ jiào₅ each reach 80%. This indicates that second language learners of Chinese are at least able to acquire these four senses of the multi-category word 叫/ jiào well, although there are differences in their respective usage frequencies, which results in a varied acquisition sequence. The accuracy rates of the functional meanings 叫/ ₆ jiào₆ and 叫/ ₇ jiào₇ are outliers. Based on the accuracy rates, the acquisition sequence is as follows: Verb 叫/ jiào—Preposition 叫/ jiào—Auxiliary 叫/ jiào; with the specific order being jiào₃/jiào₄-jiào₂-jiào₅-jiào₁-jiào₆-jiào₇.

3.3. Acquisition Sequence Based on First-Appearance Rate Results

The first-appearance rate standard is based on the parameter that a grammatical phenomenon is considered to have begun its acquisition process when it first appears and is used “systematically” and “non-formulaically” in interlanguage (Meisel, Clahsen, & Pienemann, 1981). A phenomenon cannot be considered acquired simply because it appears once; rather, its frequency of occurrence and the variety of its collocations must be considered. The first-appearance frequency statistics for the 723 entries are shown in Figure 1.

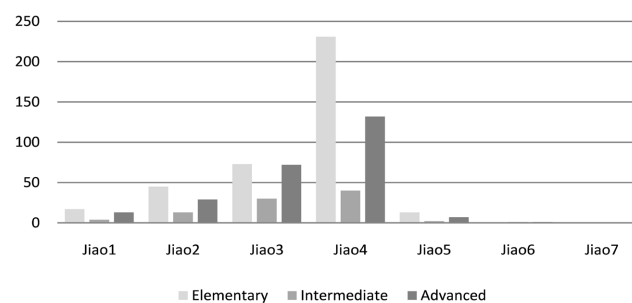


Figure 1. Emergence criterion for the various senses of 叫/ jiào.

Except for $\text{ㄐ} \text{ jiào}_6$ and $\text{ㄐ} \text{ jiào}_7$, the other five senses have already appeared in the examples from elementary-level Chinese learners. However, the initial appearance patterns of each sense exhibit considerable variation. As illustrated in the figure, the number of examples for each sense at the intermediate level is notably fewer than at the elementary and advanced levels. The HSK Dynamic Composition Corpus is a naturally random corpus rather than a balanced one. This implies that the sample sources are not proportionally sampled based on proficiency levels, and that the number of participants at each proficiency level is uneven, with significantly fewer intermediate-level samples compared to the other two levels. Moreover, the frequency of occurrence for each sense diminishes from the elementary to the advanced levels, particularly for $\text{ㄐ} \text{ jiào}_4$, which exhibits a notable decline. This phenomenon is contingent upon the learners' proficiency levels. As learners progress from lower to higher levels, their language ability undergoes qualitative changes, with an increased vocabulary and greater lexical complexity. This is evidenced by a marked increase in Level B and Level C words. Advanced learners are less constrained to using Level A words compared to beginners and are more likely to use Level B and Level C words in place of Level A words. For example, when expressing the causative sense of the multi-category word $\text{ㄐ} \text{ jiào}$, advanced learners may use Level B words like $\text{使} \text{ shǐ}$ or Level C words like $\text{令} \text{ lìng}$ to replace the Level A word $\text{ㄐ} \text{ jiào}$.

The acquisition sequence of the multi-category word $\text{ㄐ} \text{ jiào}$ based on the first-appearance rate is as follows: Verb $\text{ㄐ} \text{ jiào}$ —Preposition $\text{ㄐ} \text{ jiào}$ —Auxiliary $\text{ㄐ} \text{ jiào}$; with the specific order being jiào_4 - jiào_3 - jiào_2 - jiào_1 - jiào_5 - jiào_6 - jiào_7 .

3.4. Acquisition Sequence Based on Implicational Scale Results

The implicational scale (Wu & Wang, 2014) is based on accuracy, but compared to the accuracy ranking method, the implicational scale reduces the impact of individual differences on statistical results and better reflects the characteristics of the overall sample (Feng & Sun, 2010). By analyzing the accuracy rates of the various senses of $\text{ㄐ} \text{ jiào}$ as used by learners across elementary, intermediate, and advanced Chinese proficiency levels, the data were converted into binary values (0 and 1), and an implicational scale matrix was established. In this matrix, proficiency levels are arranged vertically from high to low on the y-axis, and the senses of $\text{ㄐ} \text{ jiào}$ are arranged from right to left based on the number of “1” s, as shown in Table 5. By calculating the various index coefficients, the scalability coefficient exceeds 0.6, indicating that the established implicational scale is valid and can reflect the hierarchical order of acquisition.

Table 5. Implicational scale of the various senses of $\text{ㄐ} \text{ jiào}$.

Level	Sense							Total
	jiào7	jiào6	jiào1	jiào5	jiào2	jiào3	jiào4	
Advanced	0	0	1	1	1	1	1	
Intermediate	0	0	0	1	0	1	1	

Continued

Elementary	0	0	0	0	1	1	1	
Correct	3	3	3	3	2	3	3	20
Error	0	0	0	0	1	0	0	1
Total	3 0	3 0	2 1	1 2	1 2	0 3	0 3	18

The data obtained from the implicational scale reveal the general acquisition pattern of the multi-category word $\text{ㄇㄞ} \text{jiào}$: $\text{ㄇㄞ}_2 \text{jiào}_2$, $\text{ㄇㄞ}_3 \text{jiào}_3$, and $\text{ㄇㄞ}_4 \text{jiào}_4$ are relatively easy to acquire; $\text{ㄇㄞ}_5 \text{jiào}_5$ and $\text{ㄇㄞ}_1 \text{jiào}_1$ are somewhat easier to acquire; $\text{ㄇㄞ}_6 \text{jiào}_6$ and $\text{ㄇㄞ}_7 \text{jiào}_7$ are very difficult to acquire or have not been acquired at all.

The acquisition sequence indicated by the implicational scale method is as follows: Verb $\text{ㄇㄞ} \text{jiào}$ —Preposition $\text{ㄇㄞ} \text{jiào}$ —Auxiliary $\text{ㄇㄞ} \text{jiào}$, with the specific order being $\text{jiào}_3/\text{jiào}_4$ - jiào_2 - jiào_5 - jiào_1 - jiào_6 - jiào_7 .

In summary, the acquisition sequences of the multi-category word $\text{ㄇㄞ} \text{jiào}$ derived from the four methods show both similarities and differences. The commonality lies in the consistent acquisition order of $\text{ㄇㄞ} \text{jiào}$ as a verb, preposition, and auxiliary. The differences, however, are found in the acquisition order of the various verb senses. The results from the usage rate ranking method and the first-appearance rate ranking method are the same, while the accuracy ranking method and the implicational scale method yield the same results. The main distinction is the difference in the acquisition order between $\text{ㄇㄞ}_3 \text{jiào}_3$ and $\text{ㄇㄞ}_4 \text{jiào}_4$, as well as between $\text{ㄇㄞ}_1 \text{jiào}_1$ and $\text{ㄇㄞ}_5 \text{jiào}_5$.

Table 6. Acquisition sequence of the various senses of $\text{ㄇㄞ} \text{jiào}$ based on four research methods.

Research Method	Acquisition Sequence
Usage Rate Method	ㄇㄞ_4 - ㄇㄞ_3 - ㄇㄞ_2 - ㄇㄞ_1 - ㄇㄞ_5 - ㄇㄞ_6 - ㄇㄞ_7
Accuracy Percentage Method	ㄇㄞ_3 / ㄇㄞ_4 - ㄇㄞ_2 - ㄇㄞ_5 - ㄇㄞ_1 - ㄇㄞ_6 - ㄇㄞ_7
First-Appearance Method	ㄇㄞ_4 - ㄇㄞ_3 - ㄇㄞ_2 - ㄇㄞ_1 - ㄇㄞ_5 - ㄇㄞ_6 - ㄇㄞ_7
Implicational Scale Method	ㄇㄞ_3 / ㄇㄞ_4 - ㄇㄞ_2 - ㄇㄞ_5 - ㄇㄞ_1 - ㄇㄞ_6 - ㄇㄞ_7

The acquisition sequences of the various senses of the multi-category word $\text{ㄇㄞ} \text{jiào}$ obtained from the accuracy ranking, implicational scale method, usage rate ranking, and first-appearance rate ranking methods are not entirely consistent (see **Table 6**). To address this, we used SPSS26 software to conduct a Spearman rank correlation test on the acquisition sequences and calculated the correlation coefficient. The acquisition sequence of the multi-category word $\text{ㄇㄞ} \text{jiào}$ shows a highly significant correlation with parameters such as accuracy, implicational scale, usage rate, and first-appearance rate, indicating a strong positive relationship. The correlation coefficient is 0.929, Kendall's coefficient is 0.810, and $P < 0.05$, showing that the two acquisition sequences are largely consistent. This also

indirectly supports the validity of the concept that there is a specific acquisition sequence for a word.

Both the usage rate and first-appearance rate methods indicate that $\text{ㄇ}^4 \text{jiào}_4$ is acquired earlier than $\text{ㄇ}^3 \text{jiào}_3$, while the accuracy ranking shows that $\text{ㄇ}^3 \text{jiào}_3$ is slightly higher than $\text{ㄇ}^4 \text{jiào}_4$. However, the difference in accuracy between the two is negligible, meaning that $\text{ㄇ}^3 \text{jiào}_3$ is acquired after $\text{ㄇ}^4 \text{jiào}_4$. Similarly, the accuracy difference between $\text{ㄇ}^1 \text{jiào}_1$ and $\text{ㄇ}^5 \text{jiào}_5$ is minimal, but $\text{ㄇ}^1 \text{jiào}_1$ appeared 17 times at the elementary level, compared to 13 occurrences for $\text{ㄇ}^5 \text{jiào}_5$. Additionally, the overall usage rate of $\text{ㄇ}^1 \text{jiào}_1$ is higher than that of $\text{ㄇ}^5 \text{jiào}_5$, and learners tend to frequently use grammatical items that are easier to acquire. Therefore, $\text{ㄇ}^1 \text{jiào}_1$ is acquired earlier than $\text{ㄇ}^5 \text{jiào}_5$.

Finally, we conclude that the acquisition sequence of the various senses of the multi-category word $\text{ㄇ}^1 \text{jiào}$ is: Verb $\text{ㄇ}^1 \text{jiào}$ —Preposition $\text{ㄇ}^4 \text{jiào}$ —Auxiliary $\text{ㄇ}^5 \text{jiào}$; with the specific order being jiào_4 - jiào_3 - jiào_2 - jiào_1 - jiào_5 - jiào_6 - jiào_7 .

4. Investigation of the Causes Behind the Acquisition Sequence

Language acquisition is a complex behavior, involving both cognitive and social activities. Therefore, the factors influencing the acquisition sequence of language are also diverse and multifaceted. This paper categorizes the main factors influencing the acquisition sequence of the various senses of the multi-category word $\text{ㄇ}^1 \text{jiào}$ into three aspects from cognitive, social, and linguistic perspectives: cognitive difficulty of the language item, frequency effect, and intralingual interference.

4.1. Cognitive Difficulty

Our research results indicate that the acquisition sequence of $\text{ㄇ}^1 \text{jiào}$ follows a gradient of increasing difficulty, with the senses shifting from concrete meanings to more abstract ones. This can be explained by cognitive difficulty. Cognitive difficulty refers to the distance and levels involved in transitioning from perceiving surface forms to understanding deeper meanings. The further the distance and the more levels of transformation, the greater the cognitive difficulty. Shi (1998), in his investigation of acquisition sequences, found a close correlation between acquisition order and cognitive difficulty; language items that are cognitively easier tend to be acquired earlier, while those with greater cognitive difficulty are generally acquired later. There is also a correlation between the lexical acquisition sequence in a second language and grammaticalization (Gao, 2011; Lin & Wu, 2013), indicating a relationship between the grammaticalization mechanism of words and the cognitive mechanisms of individual learners. Therefore, we further discuss the semantic and syntactic foundations of the grammaticalization of $\text{ㄇ}^1 \text{jiào}$ to explain the cognitive mechanisms underlying its acquisition sequence.

The multi-category word $\text{ㄇ}^1 \text{jiào}$ had a very low usage frequency before Middle Chinese and did not belong to the category of basic vocabulary. It was only after

the Yuan and Ming dynasties that it gradually became widely used, becoming a common word, which is directly related to the semantic bleaching and the increase in its grammatical functions. The extension of a word's meaning typically follows a unidirectional grammaticalization process. Grammaticalization refers to the process or phenomenon in which a word with concrete meaning transforms into a component expressing grammatical functions without concrete meaning (Shen, 1994). The extension of the meanings of the multi-category word 叫 jiào is a typical example of grammaticalization.

In *Shuowen Jiezi*, it is stated: “叫 jiào, to call.” Its original meaning is to shout (叫₁ jiào₁). 叫 jiào first appeared in the Spring and Autumn period, meaning “to shout”. After the Han Dynasty, 叫 jiào gradually began to take objects, and the meaning expanded from “to shout” to “to call, to summon” (叫₂ jiào₂). During the Song Dynasty, with the increase in vernacular works, the language of the time was more reflected. At this point, based on the existing meanings of “to call, to summon”, two developments occurred: first, the meanings of “to name” and “to address” (叫₄ jiào₄, 叫₅ jiào₅) emerged, often used in conjunction with 做 zuò; second, the causative sense (叫₃ jiào₃) appeared, used in pivotal constructions. Initially, this causative sense was mostly used in concrete speech acts, such as “telling someone to do something”. Over time, the meaning became more abstract, emphasizing the result of an agent's action on the recipient.

The prepositional passive sense is derived from the causative sense, where the resulting state often conveys a sense of dissatisfaction (叫₆ jiào₆). In novels from the Ming and Qing dynasties, the technique of verb serialization was commonly used to highlight the continuity of actions and create concise text. This led to the frequent occurrence of sentences where the patient subject is absent and the object in the pivotal structure is omitted from the previous clause, creating conditions for the extension of the causative sense. For example, in *Water Margin* from the late Yuan and early Ming periods, 叫 jiào was used in both the causative and passive senses, reflecting a transitional phase between these two meanings:

(1) 武松谢了，收拾行李铺盖，有那新制的衣服并前者赏赐的物件，叫个土兵挑了，武松引到哥哥家里。Wǔ Sōng xiè le, shōushi xínglǐ pūgài, yǒu nà xīn zhì de yīfu bìng qián zhě shǎngcì de wùjiàn, jiào gè tǔbīng tiāo le, Wǔ Sōng yǐn dào gēge jiāli. “Wu Song thanked them, packed his belongings and bedding, including the newly made clothes and previously rewarded items, and had a soldier carry them. Wu Song then led the way to his brother's house.”

(2) 当时说定了，连夜收拾衣服盘缠，段匹礼物，排担了。次日早起来，叫庄客挑了，两个取路望五台山来。Dāngshí shuō dìng le, liányè shōushi yīfu pánchán, duàn pǐ lǐwù, pái dān le. Cì rì zǎo qǐlái, jiào zhuāngkè tiāo le, liǎng gè qǔ lù wàng Wǔtái Shān lái. “At that time, they agreed, and overnight packed clothes, travel expenses, and gifts of silk. They loaded the items onto carrying poles. Early the next morning, they had a servant carry them, and the two of them set off towards Mount Wutai.”

(3) 那新制的衣服并前者赏赐的物件，叫个士兵挑了。nà xīn zhì de yīfú bìng qián zhě shǎngcì de wùjiàn, jiào gè tǔbīng tiāo le. “(He) asked a local soldier to carry the new clothes and previously gifted items /the new clothes and previously gifted items was carried by a local soldier.”

Example (1) 叫个士兵挑了, should originally be 武松叫个士兵挑了行李和物件, but the agent of 叫 *jiào* (武松 Wǔ Sōng), as the subject and topic of the entire sentence, is omitted. The pivotal construction with 叫 *jiào* is immediately followed by clauses containing “luggage” and “bedding”, and to avoid repetition, no object follows 叫 *jiào*, which can be seen as the object being fronted. If we isolate this type of elliptical pivotal construction with 叫 *jiào*, as in example (3), it is easy to interpret it as a passive sentence (Li & Shi, 2006). From the historical development of passive constructions, the dominant structure during the Han dynasty 为……所…… wéi…suǒ… “be…by…”, the structure 被……所…… bèi…suǒ… “be…by…” appeared during the Tang and Song dynasties, and the extensive use of the structurally similar 被 *bèi* sentence since the late Tang and Five Dynasties periods (Yan, 2018), all allow similar instances where 叫 *jiào* is reanalyzed as having a passive meaning. Overall, the omission of the agent weakens the actionality of 叫 *jiào* and facilitates its semantic bleaching; the fronting of the object leaves enough space for syntactic reanalysis. This reflects the transitional nature of the word’s meaning, and it wasn’t until the late Ming dynasty in *The Golden Lotus* that typical passive usage significantly increased.

It is evident that the semantic evolution of the multi-category word 叫 *jiào* is not limited to the extension of meaning but has continuously undergone a process of grammaticalization, transitioning from concrete to abstract. 叫 *jiào* has gradually grammaticalized from a verb to a preposition, and further to an auxiliary. This process of grammaticalization causes the meaning and function of language items to become more abstract and flexible, increasing cognitive difficulty. The more abstract the meaning becomes, the greater the cognitive difficulty, and the later it is acquired in the acquisition sequence. As a verb, 叫 *jiào* retains its lexical conceptual meaning, as a preposition it only carries grammatical meaning, and as an auxiliary it primarily serves a structural function. The cognitive difficulty increases progressively (Zhou, 2004). Therefore, the verbal usage of the multi-category word 叫 *jiào* is acquired earlier than its prepositional passive use, and even earlier than its auxiliary use.

4.2. Intralingual Interference

Our research results show that the passive senses 叫₆ *jiào*₆ and 叫₇ *jiào*₇ are the most difficult to acquire, which is related to intralingual interference. Intralingual interference refers to the interference in language acquisition caused by the forms and meanings within the target language itself. This interference manifests not only at the lexical level but also permeates the acquisition of grammatical structures. The acquisition sequence of the various senses of multi-category words is a specific example of intralingual interference. Different senses under the same

entry can interfere with each other, and similar linguistic items can also cause interference, thereby affecting learners' acquisition speed and accuracy.

In Chinese, the main markers of passive sentences include 被 *bèi*, 叫(教) *jiào* *jiào*, and 让 *ràng*. Particularly in Beijing dialect and some other Chinese dialects, 叫 *jiào* is often used as a passive marker. However, in actual second language acquisition, we found that learners struggle to master the use of 叫 *jiào* in passive sentences. Through statistical analysis of over 700 samples, only two examples showed 叫 *jiào* being used as a prepositional passive marker, which is significantly less than the output of 被 *bèi* sentences. This phenomenon can be explained from two perspectives. First, the use of 叫 *jiào* in passive sentences carries certain dialectal features and has a strong colloquial flavor. Since second language learners typically aim to learn the standard language, and traditional testing methods like HSK mainly focus on the evaluation of formal written language skills, learners are less exposed to 叫 *jiào* passive sentences in their daily studies and exams, resulting in a lower familiarity with this sentence structure. Second, from the perspective of the teaching syllabus, there are six grammar points related to passive sentences in the *Standards*, distributed across Levels 3 to 9, as shown in **Table 7**.

Table 7. Grammar points related to the passive voice in the *standards*.

	Position	Entry	Passive marker	
Outline for Grammar Points of Each Band	Band 3	Parts of Speech-Prepositions	Prepositions Introducing an Agent or Patient	被 <i>bèi</i> , 叫 <i>jiào</i> , 让 <i>ràng</i>
	Band 3	Classification of Sentences-Special Sentence Patterns	Passive Sentences 1: Subject + 被/叫/让 + Object + Verb + Other Constituents	被 <i>bèi</i> , 叫 <i>jiào</i> , 让 <i>ràng</i>
	Band 4	Classification of Sentences-Special Sentence Patterns	Passive Sentences 2: Subject + 被 + Verb + Other Constituents	被 <i>bèi</i>
	Band 5	Classification of Sentences-Special Sentence Patterns	Passive Sentences 3: Notional Passive Constructions	(None)
	Band 6	Classification of Sentences-Special Sentence Patterns	Passive Sentences 4: Subject + 被/叫/让 + Object + 给 + Verb + Other Constituents	被 <i>bèi</i> , 叫 <i>jiào</i> , 让 <i>ràng</i> , 给 <i>gěi</i>
	Band 7-9	Classification of Sentences-Special Sentence Patterns	Passive Sentences 5 (1) 被.....所..... be ... by ... (2) 为.....所..... be ... by ...	被 <i>bèi</i> /Wei(为) ... suo(所) ...

In terms of occurrences alone, 叫 *jiào* appears much less frequently than 被 *bèi*; in terms of usage frequency, 被 *bèi* holds an absolute advantage. 被 *bèi* is a more prominent and typical passive marker, often becoming a focal point for teachers. In actual language production, 被 *bèi* can fully meet the communicative needs for expressing passive meaning (Wu & Zhou, 2004). Moreover, 被 *bèi* has

a singular function, whereas 叫 jiào is a complex polysemous word. Choosing the more specific 被 bèi also aligns with the principle of economy. Therefore, when learners need to express passive meaning, they tend to prefer using 被 bèi sentences or adopt an avoidance strategy by using active voice instead of passive. This has led to passive sentences with 叫 jiào being largely overlooked, with the passive sense of 叫₆ jiào₆ being acquired much later. Learners tend to master 叫₆ jiào₆ with significant delays, and in some cases, it may not be acquired at all. To enhance second language learners' proficiency, teachers need to pay closer attention to these interference factors and design targeted teaching strategies to help learners overcome these difficulties.

4.3. Frequency Effect

Our research results reveal that 叫₃ jiào₃ and 叫₄ jiào₄ are among the first senses to be acquired, while the verb sense 叫₅ jiào₅ is acquired the latest. This is related to the frequency effect of language input. The frequency effect refers to the idea that the more frequently a language item appears, the easier it is to recognize, and the more often a language skill is practiced, the easier it is to master. In a classroom learning environment, the teacher's instruction and the arrangement of materials determine the quantity, quality, and sequence of language input.

In the *Standards* grammar outline, 叫 jiào appears at the word, phrase, and sentence levels, involving three special sentence structures in Chinese: pivotal sentences, double-object sentences, and passive sentences. The causative sense 叫₃ jiào₃ forms pivotal sentences, while the addressing sense 叫₅ jiào₅ is used in double-object sentences. However, from the acquisition sequence we observed, the causative sense 叫₃ jiào₃ is acquired earlier than the addressing sense 叫₅ jiào₅. This result is related to the arrangement of language points in textbooks and classroom teaching. In *Chinese for Beginners*, *Elementary Chinese Readers*, and *Praktisches Chinesisch*, pivotal sentences are introduced within the first 30 lessons and have been a focus in teaching Chinese as a foreign language, often using 叫 jiào as an example. As a result, pivotal sentences become a key learning focus, and the input volume of the causative sense 叫₃ jiào₃ far exceeds that of the addressing sense 叫₅ jiào₅. The passive construction corresponds to 叫₆ jiào₆, which includes standard marked passive structures and fixed constructions introducing the auxiliary 给 gěi. However, there are fewer examples of 叫 jiào compared to markers like 被 bèi and 让 ràng, which may result in reduced input for the passive sense of 叫 jiào, partially reflecting how intralingual interference affects output frequency.

The *Standards* place emphasis on certain aspects of mastering 叫 jiào, implementing tiered levels for more difficult grammar points. In the elementary-level vocabulary lists, the five verb senses of 叫 jiào are combined into one entry, but 叫作 jiàozuò "to be called" is listed separately, indicating the importance of 叫₄ jiào₄, which naturally leads to its earlier acquisition. Moreover, the data clearly show how communicative needs influence output frequency, which in turn affects acquisition order. The higher the output frequency to meet communicative needs,

the easier it is to acquire, and vice versa. The “HSK Dynamic Composition Corpus” is a composition-based corpus with predefined language tasks and content, which introduces a certain bias as the output must meet the requirements of the task. In the corpus, the focus is primarily on narrative writing, with topics like “My Childhood”, “The Story of Three Monks”, and “The Person Who Influenced Me the Most”, resulting in the sense 叫₄ jiào₄ meaning “to be named” appearing with high frequency at the elementary level, but sharply decreasing at the advanced level. This also reflects the development of second language learners’ communicative abilities and the refinement of language functions. At the elementary level, learners’ communicative skills are limited, and their communicative functions are relatively simple, mostly involving statements and information inquiries, so 叫₄ jiào₄ is acquired first. As their language proficiency improves, so do their communicative abilities, allowing them to acquire more complex functions such as “request, command, causative” senses like 叫₃ jiào₃.

5. Pedagogical Implications

The teaching and arrangement of linguistic items should be aligned with the learners’ acquisition sequence, which progresses from simple to complex and from concrete to abstract. This approach allows for the matching of learners’ cognitive realities and the achievement of optimal acquisition outcomes. Based on our research results, we propose the following suggestions for the teaching of multi-class words, especially 叫₃ jiào₃.

5.1. Integrating Lexicographical Research with Practical Teaching

Academic research and lexicography can provide a theoretical foundation for Chinese language teaching, but attention must also be paid to practical teaching considerations. For example, although there is a semantic connection between the causative sense of the verb 叫₃ jiào₃ and the prepositional sense 叫₆ jiào₆, in the mental lexicon of second language learners, the semantic and syntactic characteristics of 叫₃ jiào₃ and 叫₆ jiào₆ remain quite distant, making it challenging for learners to achieve automatic retrieval. The extension of the meaning of 叫₃ jiào₃ to 叫₆ jiào₆ involves complex processes such as the omission of the patient in the previous clause and the reanalysis of pivotal structures. The transformation of semantic relationships between sentence components is also complex, posing further challenges for Chinese as a second language (L₂) learners. Therefore, in practical Chinese teaching, it would be more in line with learners’ internal knowledge structure and teaching practice to re-teach the multi-category word 叫₃ jiào₃ as homophonic words in different stages.

5.2. Frequency Effect

The study of the acquisition sequence of the multi-category word 叫₃ jiào₃ also highlights the importance of teaching polysemous words. In most current general textbooks, the focus is primarily on the first or second sense of polysemous words,

while other senses are usually explained in context or even omitted altogether. Statistical learning mechanisms play a crucial role in second language acquisition of Chinese (Potter et al., 2017; Wiener et al., 2019), and diverse, accurate input helps learners gather more linguistic data for statistical learning, which in turn facilitates the construction of grammatical rules. To enrich learners' sense diversity, the rate of new words in textbooks should be carefully controlled. For words like the multi-category 叫 jiào, which have rich and variable meanings, textbooks could introduce more new senses to increase recurrence rates and expand coverage of polysemous senses. Instructors should also fully utilize corpus resources and allocate recurrence rates based on the importance and acquisition difficulty of each sense. For instance, more focus should be placed on introducing the new senses and examples for 叫₅ jiào₅ and 叫₆ jiào₆, followed by 叫₁ jiào₁ and 叫₂ jiào₂.

The capacity of learners to construct the target language develops in a progressive manner. As learners progress, the semantic network in their mental lexicon becomes more intricate, and their comprehension of polysemous words evolves from a mere word-level correspondence to a conceptual-level understanding, nearing the proficiency level of native speakers (Qu, 2023). It is postulated by scholars that learners may replicate or reconstruct the diachronic grammaticalization sequence in their cognitive process of polysemous words, with closely related senses being acquired in tandem (Comajoan & Saldanya, 2005). It is therefore recommended that instructors reflect the diachronic development of word meanings in their teaching, emphasizing the core meanings of polysemous words, creating conceptual links between different senses, and helping second language learners build semantic networks to reach higher proficiency levels.

5.3. Promoting Communicative Grammar Teaching

The Chinese language is highly pragmatic in nature, and an understanding of semantic roles is primarily dependent on the ability to reason pragmatically in real time, with a strong reliance on contextual cues (Song, 2023). The “Trinity Grammar” approach to teaching Chinese places emphasis on elucidating the function of a given structure within the context of typical functional scenarios, wherein sentences or phrases serve their intended purposes (Feng & Shi, 2011). This underscores the significance of recognizing the function of a structure in context. The pivotal and passive constructions of 叫 jiào frequently entail the participation of multiple semantic roles. Consequently, an understanding of these roles is similarly contingent upon situating them within contextual scenarios, thereby facilitating the analysis of relationships such as those between the agent and the affected, or the causer and the caused.

It is therefore recommended that the teaching of 叫 jiào should focus more on its use in real-life scenarios, with the aim of enhancing acquisition through interactive and natural contexts. This approach would be more beneficial than confining it to the isolated teaching of certain “structure types” or “special sentence

patterns”. Furthermore, the design of teaching syllabi, Chinese textbooks, and teaching strategies should reflect this by providing authentic, communicative, and interaction-based environments that facilitate the acquisition process.

5.4. Effectively Managing and Utilizing Native Language Transfer

In the teaching of polysemous words, particularly those belonging to multiple categories, it is essential to consider the use of equivalent terms in order to facilitate positive transfer from the native language and prevent negative transfer. The phenomenon of native language transfer refers to the tendency of second language learners to apply the usage of similar items in their native language to the target language, occurring at various levels, including vocabulary, grammar, and discourse. For instance, learners of Chinese from a Korean background frequently apply the use of Chinese characters from their native language to Chinese, due to the psychological proximity between the two languages. Negative transfer at the vocabulary and grammar levels is a common phenomenon in the elementary and intermediate stages of language learning. However, at the advanced stage, grammatical transfer gradually decreases, while lexical and discourse-level transfer persists, sometimes leading to fossilization, particularly in the use of prepositions and auxiliaries (Huang, 2012). Japanese-speaking learners of Chinese are frequently less conscious of the employment of Chinese modal particles, a consequence of the influence of Japanese word order (Xu & Hu, 2007). Advanced second language learners may even engage in “cross-linguistic transfer of grammar” (Hwang et al., 2018). Consequently, when instructing students with one particular language background in multi-category words, it is essential for educators to consider each sense as the fundamental unit, initially grasping the correspondences and contrasts between the native language and Chinese. In the case of word items where there is a clear correspondence between the meaning and usage in the second language and Chinese, students should be guided to utilize this correspondence as a means of learning Chinese. Conversely, for word items where the correspondence is unclear, students should be assisted in analyzing the differences and correcting any inappropriate transfers in a timely manner.

6. Conclusion

This paper categorizes the meanings of the multi-category word 叫 *jiào* into three principal lexical classes and seven senses. By employing four research methods—usage rate, accuracy, first-appearance rate, and implicational scale—the acquisition sequence of *jiào* was determined as follows: The verb 叫 *jiào*, the preposition 叫 *jiào*, and the auxiliary 叫 *jiào* are ordered as follows: $jiào_4$ - $jiào_3$ - $jiào_2$ - $jiào_1$ - $jiào_5$ - $jiào_6$ - $jiào_7$. The factors influencing this sequence were elucidated from three perspectives: cognitive difficulty, intralingual interference, and frequency effect. As a prototypical multi-category word, the study of the acquisition sequence of 叫 *jiào* illuminates the intrinsic intricacy and interdependence of the categories of multi-category words, polysemous words, and homophonic words.

This offers insights that inform Chinese language teaching.

This study on the acquisition sequence of the multi-category word 叫 jiào provides a foundational model for future research on multi-category words in Chinese. Future studies could build on this template by expanding the scope to include a larger number of multi-category words, thereby generating more comprehensive findings and allowing for comparative analysis across different words. In addition, new research methodologies, such as neuroscience approaches, could complement corpus-based methods. By investigating the biological and cognitive foundations of multi-category word acquisition, researchers could gain deeper insights into how the brain processes such words and how this affects learning outcomes. This interdisciplinary approach could verify and extend the findings of this study, offering a more holistic understanding of the acquisition process.

Moreover, the integration of frequency effects, cognitive difficulty, and intralingual interference—factors explored in this study—can serve as key areas for further investigation. Future research could delve into how these factors interact in different learning environments, especially in digital learning contexts or with different learner backgrounds. This study provides an important step in identifying these challenges, laying the groundwork for developing more effective teaching strategies and materials tailored to the acquisition of multi-category words.

Fund

The present research is funded by the 2023 International Chinese Language Education Key Research Topic Project “Construction and Empirical Research on the Morpheme Bank Based on the International Chinese Language Education Chinese Proficiency Level Standard” (Project No. 23YH18B).

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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