

A Study on the Influence of Subject-Verb Agreement in Chinese Grammar Structure on Second Language Learners

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Abstract This study focuses on the subject-verb agreement phenomenon in grammatical structures, exploring its complexity in the process of second language acquisition and its impact on learners' language development abilities. Research has found that although Chinese does not rely on strict morphological changes to express subject-verb agreement, it achieves logical consistency through word order, function words and context, which has a significant impact on learners whose native language is morphologically rich (English). This study provides empirical evidence for optimizing Chinese grammar teaching, emphasizes the importance of paying attention to the influence of the typological characteristics of Chinese on the acquisition process, and puts forward specific suggestions for textbook optimization and teaching.

Index Terms Grammatical structure: subject-verb agreement, Second language acquisition Language development ability

I. Introduction

With China's sustained rapid economic growth and the gradual enhancement of its comprehensive national strength, there has been an increasing demand worldwide for a deeper understanding and mastery of the Chinese language and Chinese culture. Additionally, an growing number of foreign companies are entering the Chinese economic market, and the number of foreigners learning Chinese is also on the rise, leading to a gradual increase in the phenomenon of Chinese being studied as a second language [1]–[4]. However, most second-language learners of Chinese begin their studies without any prior knowledge of the language, no familiarity with Chinese characters, and no exposure to a Chinese-language environment. As one of the most challenging languages to learn, Chinese presents these learners with numerous obstacles, severely dampening their interest and effectiveness in learning the language, particularly in terms of grammatical structure [5]–[8]. The grammatical structure of Chinese is a unique linguistic form characterized by flexibility and diversity. Among these, subject-verb agreement is a key focus and an important factor influencing the learning, mastery, and application of Chinese by second language learners [9]–[11].

Subject-verb agreement refers to the consistent relationship between the subject and predicate in terms of person, number, and tense [12]. The proper use of subject-verb agreement plays a crucial role in the accurate expression and communication of Chinese [13], [14]. First, subject-verb agreement ensures the grammatical correctness and clarity of sentences [15]. Subject-verb agreement involves the consistency between the singular or plural form of the subject and the singular or plural form of the verb [16], [17]. When subject-verb agreement is not maintained, sentences may become awkward or even difficult to understand [18], [19]. Second, subject-verb agreement helps avoid ambiguity and misunderstandings [20]. When subject-verb agreement is not maintained, it may lead to unclear sentence meanings and potential misunderstandings [21]. Additionally, subject-verb agreement aids second language learners in understanding complex sentence structures [22]. In complex sentences, subject-verb agreement helps us correctly understand the relationship between the verb and the subject, thereby grasping the meaning of the entire sentence [23], [24]. Furthermore, subject-verb agreement is one of the basic requirements in writing [25]. In Chinese article writing, proper use of subject-verb agreement enhances the quality and readability of the article; errors in subject-verb agreement make the article appear careless and unprofessional [26]–[28].

This paper summarizes the connotations and influences of second language acquisition in Chinese, compares the overall differences between the structures of English and Chinese, and proposes the factors that influence the differences in subject-verb agreement and subject-verb inversion. Based on the Chinese grammatical framework, this study explores the subject-verb relationship and syntactic semantics in Chinese sentences with a two-part noun phrase (NP) as the object, and analyzes the frequency of non-agentive subject sentences in Chinese. Through pre- and post-tests, the study further analyzes the impact of subject-verb agreement on second language learners. Based on the experimental results, teaching improvement suggestions are proposed from two aspects: textbook arrangement and practical teaching.

II. The differences in subject-predicate relations between English and Chinese

II. A. The essence of second language acquisition of Chinese

Second language learners (whose native language is English) encounter certain obstacles in the process of learning Chinese due to the significant differences in language structure between Chinese and English. In the process of learning Chinese, students are often unconsciously influenced by the structure of the English language. Therefore, during the learning process, one feels at a loss and frequently makes grammatical mistakes in Chinese communication. The subject-predicate relationship is the most important relationship in language structure. Therefore, the differences in the subject-predicate relationship between English and Chinese seriously affect the learning of Chinese.

The primary factors influencing second language acquisition are the differences between the two languages. This is because both languages have their own specific linguistic contexts, so learners must set aside the influence of their native language environment. However, since the native language has a deep-rooted influence on learners, it is difficult to change these expression habits in a short period of time. Therefore, during the process of learning Chinese, students are often influenced by the thinking patterns of their native language and incorporate native language features into their language learning, thereby affecting the acquisition of Chinese.

II. B. Overall differences between the structures of English and Chinese

In Chinese, the emphasis is usually on the completeness of the information being conveyed, while in English, the emphasis is not only on the completeness of the information being conveyed, but also on structural completeness and consistency in person, with a greater emphasis on formal completeness, thus causing differences between the two languages.

In terms of form, English reflects subject-verb agreement through the morphological changes of verbs, especially in the third person singular form. However, Chinese verbs do not deform with changes in person, quantity or tense; they are mainly reflected through vocabulary or context.

At the level of consistency principles, there are also significant differences between English and Chinese. English follows the principle of grammar first, and consistency relations are determined by grammatical form rather than semantics. Chinese follows the semantic-first principle, and consistent relations depend on semantic logic rather than grammatical form.

At the semantic structure level, English has very strict grammatical relations, while Chinese can break away from grammatical consistency.

II. C. Impact of differences

II. C. 1) The Impact of Subject-Verb Agreement Differences

In Chinese, the subject and predicate do not have a clear consistency relationship. In Chinese expressions, as long as the meaning of the sentence can be conveyed, one of them can be omitted. In English expressions, however, consistency and completeness between the subject and predicate are emphasized, and one of them must be omitted strategically according to certain rules. In English learning, students often overlook this point [29].

II. C. 2) Differences in the impact of subject-verb inversion

Subject-verb inversion is also an important factor affecting second language acquisition. In Chinese, there is generally no habit of expressing subject-verb inversion, and the organization of language structure is relatively flexible. Therefore, there is no subject-verb inversion in Chinese grammar. However, in English, subject-verb inversion is a key point of learning, so some students are unable to switch their grammatical thinking and find themselves stuck in a learning dilemma.

III. Subject-verb relationships in Chinese grammar and their impact on second language acquisition

III. A. The subject-predicate relationship in Chinese as seen from the object-binary NP sentence

III. A. 1) Non-parallelism in the transposition of the object in a two-part NP clause

To comprehensively examine the phenomenon of non-parallelism in object-subject double NP sentences, the object at the beginning of the sentence is paired with four common types of NPs: agent, instrument, location, and time, to form object-subject double NP sentences. It was found that the phenomenon of non-parallelism is widespread in this sentence pattern and is systematic.

The essence of the patient subject statement is a topicalized structure. The patient object, as a topic, is placed before the patient subject and must meet the pragmatic conditions of the topic (such as definite reference and known knowledge), while the patient subject has no such restrictions. Some Chinese verbs allow the object to become the subject because of their implicit state changes, which conforms to the Chinese "result-oriented" cognitive model. However, more action-oriented verbs (such as "eat" and "see") rely more on the agent subject.

III. A. 2) Chunk structure and prosodic structure of double-negative sentences

Based on the above discussion, there is an intuitive sense that the relationship between NP and complex VP is relatively loose, while the relationship with bare V is very close. There is evidence in both syntax and prosody to support this linguistic intuition [30].

Early studies to varying degrees acknowledged that inversion merely changes the position of constituents without altering their nature—that is, the syntactic relationships between constituents remain intact after inversion. For example, the inverted sentence “Came, Zhang San” retains the “predicate-subject” structure of the original sentence “Zhang San came.” Under this notion, transposed sentences always have a corresponding “original sentence,” where the original sentence has normal word order, and the transposed sentence has abnormal word order.

What is a “syntactic chunk”? This is the core question addressed in this paper, and the answer can only be derived through a comprehensive discussion of the entire text. Here, we first provide an operational definition: a “syntactic chunk” refers to the largest sentence fragment whose word order remains stable during sentence inversion. Take the sentence “This knife can't chop the ribs” as an example. The inverted sentence is “This knife can't chop the ribs.” The largest fragment whose word order remains stable before and after inversion is “ribs,” “this knife,” and “can't chop.” Other segments with stable word order, such as “cannot chop,” are not the largest. Larger segments, such as “this knife cannot chop,” have changed their word order, so there are exactly three syntactic chunks in the sentence. It should be noted that an operational definition cannot be complete. As we will see later, while this definition applies to most cases, the syntactic chunks identified solely based on this definition may have issues. This is because the definition fails to capture the essence and substance of syntactic chunks.

III. A. 3) Syntactic structure of two-way NP sentences

In the previous section, based on the form and prosodic characteristics of transposed sentences, we preliminarily argued that complex VP-double NP sentences have three syntactic chunks: NP1, NP2, and complex VP, while bare V-double NP sentences have only two chunks: NP1 and “NP2 + bare V.” The difference in the number of syntactic chunks suggests a difference in syntactic structure. In this section, we will systematically demonstrate the different properties of the two sentence types through a series of syntactic evidences, explore the meaning and essence of syntactic chunks, and ultimately determine the structure of the two types of two-part NP sentences.

III. A. 4) Syntactic semantics related to differences in the structure of two-way NP sentences

In the first section of this paper, we discussed the phenomenon of non-parallelism in multi-category object-based two-part NP sentences, but we did not discuss examples where both two-part NPs at the beginning of the sentence are objects. This is partly because sentences where both two-part NPs at the beginning of the sentence are objects are relatively rare, and partly because there is no non-parallelism in sentences with two object-based two-part NPs, as the VP in such sentences is generally only a complex VP form, allowing the positions of the two object-based NPs to be exchanged.

Through the study of two-part NP sentences with two agents, the essence of the subject-predicate structure and the topic-comment structure in Chinese has been preliminarily determined, and the differences between the two structures have been clarified. Additionally, this research has promoted the resolution of the “large subject-small subject transposition” problem and the sentence completeness problem in Chinese, as well as the interpretation of the information structure of Chinese sentences.

III. B. Analysis of non-agentive sentences in Chinese

(1) Statistical Analysis of Non-Actor Subjects in Action Verbs

This paper focuses on two major categories of verbs: action verbs and mental verbs. Twenty verbs were randomly selected from the “Chinese Dictionary” to investigate the presentation of the semantic types of the subjects in the sentences where these 20 verbs are located in the BBC Chinese corpus, and the frequencies of each semantic type were calculated. The frequency is calculated by dividing the number of times one subject semantic type appears by the total number of times all subject types appear.

In modern Chinese, the semantic types of subjects are primarily divided into two major categories: agentive subjects and non-agentive subjects. Some verbs appear in sentences where all subjects are agentive, with agentive subjects accounting for 100% of the cases. Some verbs appear in sentences where subjects can be either agentive or non-agentive, with agentive subjects accounting for less than 100% of the cases. Some verbs appear in sentences where only one type of non-agentive subject is present, while others appear in sentences where multiple types of non-agentive subjects can be present. Figure 1 shows the semantic types of verb subjects and their usage frequencies. As can be seen from the figure, the action subject usage frequencies for the verbs “change,” “fly,” “bathe,” and “cry” are all 100%, and the average usage frequency of action subjects for all verbs surveyed is 85.56%.

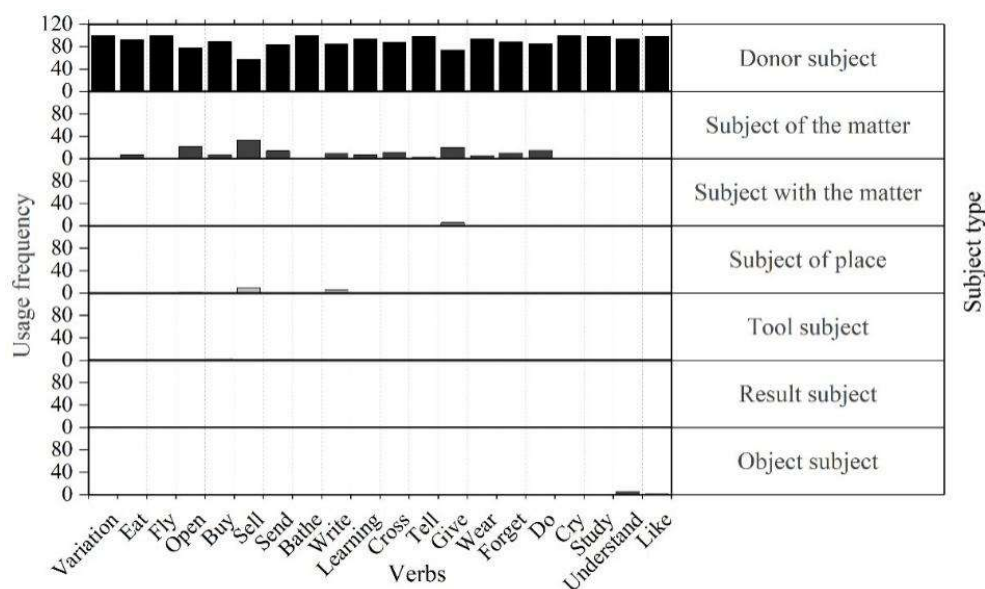


Figure 1: The verb subject semantic type and various types of use frequency

(2) Non-agentive subject types of action verbs

The patient subject is the dominant semantic type among non-agentive subject types, characterized by its broad coverage and high proportion. Among the selected action verbs, only four verbs — “change,” “fly,” “cry,” and “bathe” — are non-agentive subject verbs with zero tendency. The remaining 15 action verbs all have object subjects, and if the action verb can carry a second non-agent subject, the proportion of object subjects is generally higher than that of the second non-agent subject, with one exception: the action verb “hang,” which has a higher proportion of locative subjects than object subjects. Figure 2 shows the usage frequency of non-agentive subject types for action verbs. The figure below displays the non-agentive subject types and their respective proportions for the 14 action verbs excluding “hang.” The object subject has a high usage frequency, appearing in all verbs, with an average frequency of 13.179%.

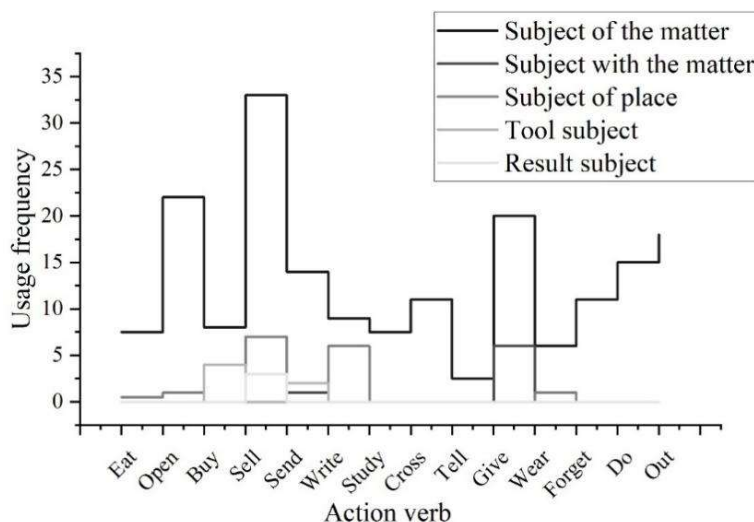


Figure 2: The action verb is not the frequency of the subject type

(3) Statistical Analysis of Non-Actor Subjects in Mental Verbs

There are various opinions on the classification of mental verbs, so the criteria for classification in this paper were first established. Based on the Grade A words in the “Chinese Language Proficiency Chinese Characters and Vocabulary Level Outline,” this paper ranks words according to their frequency in the Chinese Interlanguage Corpus. Why use the frequency ranking of the Interlanguage Corpus? Because this paper focuses on second language acquisition research, it is more meaningful for second language acquisition research to select words that are commonly used by second language learners and

examine the acquisition of non-agentive subjects of these words. We selected 10 psychological verbs based on their frequency of use: understand, like, think, love, fear, thank, care, hope, feel pain, and believe. We examined the semantic type of the subject in sentences containing these verbs. Figure 3 presents the statistical analysis of non-agentive subjects for psychological verbs. Among these 10 psychological verbs, based on the proportion of non-agentive subjects in the sentences containing these verbs, “think,” “thank,” “care,” “hope,” and “hurt” are verbs with zero tendency toward non-agentive subjects. while understand, like, love, fear, and believe are verbs with a low tendency toward non-agentive subjects, with respective proportions of 5.512%, 1.575%, 2.464%, 5.931%, and 2.136% as object subjects.

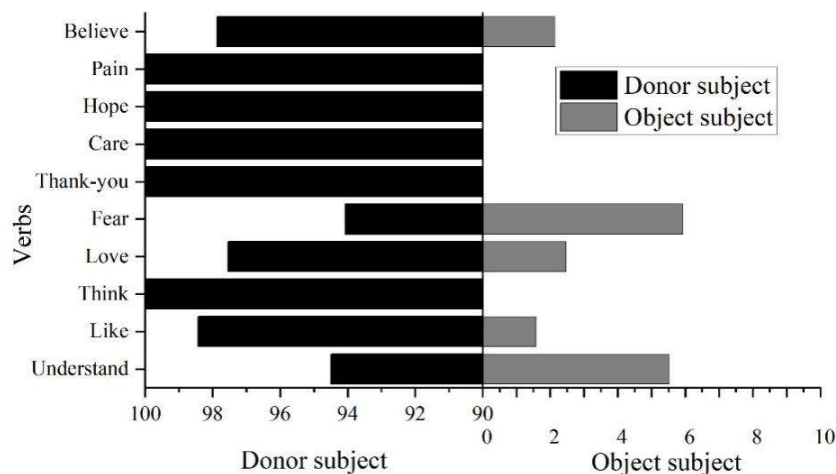


Figure 3: The statistical analysis of the subject of the psychological verb

III. C. The Impact of Subject-Verb Agreement on Second Language Learners

III. C. 1) Analysis of Second Language Learners' Understanding of Various Types of Subject-Predicate Sentences

By analyzing how second language learners answered the multiple-choice questions in the questionnaire, it can be seen that there are differences in their understanding of the five types of subject-predicate sentences. To gain a clearer, more intuitive, and comprehensive understanding of the specific situation, the statistical results are presented in tabular form, as shown in Table 1.

Second language learners do not encounter significant difficulties in recognizing various types of subject-predicate sentences. However, there are differences in their specific recognition of the five categories of subject-predicate sentences. Among these, the average accuracy rate for declarative subject-predicate sentences is the highest at 82.424%, indicating that second language learners have the best understanding of declarative subject-predicate sentences. Declarative subject-predicate sentences are frequently used in modern Chinese spoken language, and in the Chinese grammar curriculum guidelines and Chinese grammar textbooks for non-native speakers, the most extensively introduced and explained subject-predicate sentences are possessive subject-predicate sentences. Therefore, second language learners find declarative subject-predicate sentences the easiest to understand. Additionally, second language learners also demonstrated good understanding of possessive subject-predicate sentences and quantitative subject-predicate sentences, with average accuracy rates of 81.515% and 79.091%, respectively. These two types of subject-predicate sentences have structures similar to declarative subject-predicate sentences and are encountered more frequently in students' daily lives, which is why second language learners have a relatively good understanding of these two types of subject-predicate sentences. Secondly, second language learners demonstrated relatively good understanding of agent-patient subject-predicate sentences, with an average accuracy rate of 77.273%. While agent-patient subject-predicate sentences are mentioned in some curricula and textbooks, the content covered is limited, resulting in lower understanding compared to the previous three categories. Finally, the sentence type that students have the poorest understanding of is the “involving” subject-predicate sentence, with an average accuracy rate of 64.242%. This sentence type is barely mentioned in curricula and textbooks, and second language learners rarely encounter it in daily life. Additionally, the “involving” subject-predicate sentence encompasses multiple subcategories, making it the most challenging for second language learners to understand.

Table 1: In the second language, students' cognition of the main predicate is known

Issue number	Categories	Correct number	Accuracy	Average accuracy
1	Genus	48	87.273%	81.515%
2		40	72.727%	
3		41	74.545%	
4		46	83.636%	
5		49	89.091%	
6		45	81.818%	
7	Quantity class	49	89.091%	79.091%
8		40	72.727%	
9		42	76.364%	
10		45	81.818%	
11		40	72.727%	
12		45	81.818%	
13	Related class	35	63.636%	64.242%
14		36	65.455%	
15		41	74.545%	
16		36	65.455%	
17		34	61.818%	
18		30	54.545%	
19	Acceptor	40	72.727%	77.273%
20		42	76.364%	
21		45	81.818%	
22		43	78.182%	
23		45	81.818%	
24		40	72.727%	
25	Presentation class	45	81.818%	82.424%
26		48	87.273%	
27		40	72.727%	
28		50	90.909%	
29		41	74.545%	
30		48	87.273%	

III. C. 2) Analysis of Second Language Learners' Understanding of Various Types of Subject-Predicate Sentences

By analyzing how second language learners answered the ranking and translation questions in the survey questionnaire, we can summarize the types of errors that second language learners make when learning Chinese subject-predicate sentences. The error rates for the five types of subject-predicate sentences are shown in Table 2.

Based on the error rates in the table, it can be seen that second language learners have the highest error rate when answering questions related to relational subject-predicate sentences, with an average error rate of 21.364%. Next are agent-patient subject-predicate sentences and quantity subject-predicate sentences, with average error rates of 16.818% and 10.455%, respectively. This indicates that students face certain difficulties in understanding relative, agent-patient, and quantifier subject-predicate sentences. However, errors are relatively rare when understanding possessive and declarative subject-predicate sentences, suggesting that second language learners find it easier to understand these two types of subject-predicate sentences.

III. C. 3) The use of various subject-predicate sentences in second language learning

Based on the responses to the questionnaire, it can be observed that second language learners have difficulty using the five types of subject-predicate sentences. The accuracy rates for the use of the five types of subject-predicate sentences are shown in Table 3.

The data in the table indicates that second language learners have significant difficulties when answering situational questions, and their overall performance in using the five types of subject-predicate sentences is poor. Specifically, the best usage rate is for possessive subject-verb sentences, at 85.455%, while the lowest is for relational subject-verb sentences, at 68.182%. Therefore, it is essential to focus on the specific usage of Chinese subject-verb sentences by second language learners.

Table 2: The error rate of the predicate sentence of the five kinds of main predicate sentences

Issue number	Categories	Wrong number	Error rate	Mean error rate
31	Genus	1	1.818%	3.636%
32		5	9.091%	
33		0	0.000%	
34		2	3.636%	
35	Quantity class	6	10.909%	10.455%
36		8	14.545%	
37		5	9.091%	
38		4	7.273%	
39	Related class	8	14.545%	21.364%
40		9	16.364%	
41		15	27.273%	
42		15	27.273%	
43	Acceptor	6	10.909%	16.818%
44		8	14.545%	
45		10	18.182%	
46		13	23.636%	
47	Presentation class	4	7.273%	5.909%
48		6	10.909%	
49		1	1.818%	
50		2	3.636%	

Table 3: Students use all kinds of main predicate sentences

Issue number	Categories	Correct person number	Accurate usage	Average accuracy
51	Genus	48	87.273%	85.455%
52		46	83.636%	
53	Quantity class	40	72.727%	75.455%
54		43	78.182%	
55	Related class	40	72.727%	68.182%
56		35	63.636%	
57	Acceptor	43	78.182%	77.273%
58		42	76.364%	
59	Presentation class	44	80.000%	80.909%
60		45	81.818%	

III. D. Analysis of the Impact of Subject-Verb Agreement on Second Language Learners

All experiments and tests were conducted using Questionnaire Star. In this experiment, 55 second language learners in a certain intermediate listening and speaking class at a certain university were given the test, and they were asked to make judgments based on their first reactions. A total of 55 test papers were collected. After comparing and analyzing the test time and test results, 55 valid test papers were obtained, with a 100% return rate for both the pre-test and post-test papers and a 100% validity rate. Figure 4 shows the pre-test and post-test scores of the test subjects.

Based on the participants' test scores, in the pre-test on Chinese grammatical structures (out of 30 points), the highest score among the 55 participants was 17 points, and the lowest was 15 points. After the students underwent training on subject-verb agreement in Chinese grammatical structures, in the post-test, the highest score among the 55 participants was 20 points, and the lowest was 18 points. The average scores for the pre-test and post-test were 16 points and 19 points, respectively. A paired sample t-test revealed a t-value of -5.648 and a significance level of $P < 0.01$. This indicates that there is a significant difference between the pre-test and post-test scores in this experiment, suggesting that subject-verb agreement in Chinese grammar structures has a certain influence on second language learners.

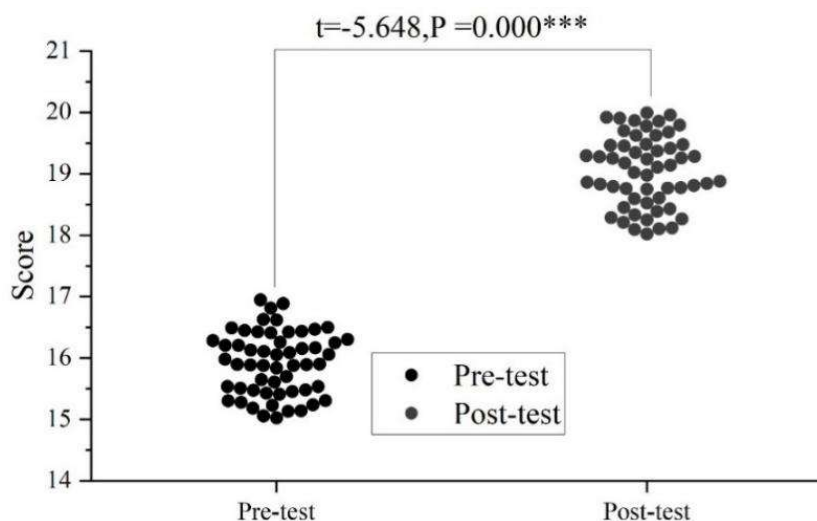


Figure 4: Subjects before and after

IV. Teaching suggestions for second language learners acquiring Chinese subject-predicate sentences

IV. A. Suggestions for textbook organization

There are many subordinate sentence patterns in Chinese subject-predicate sentences, but most international Chinese language teaching materials do not provide a comprehensive introduction to them and offer only simple explanations. They mainly focus on meaning, structure, and grammar, neglecting explanations of the pragmatic aspects of subject-predicate sentences.

IV. A. 1) Reasonably arrange the order of the five types of subject-predicate sentences

When compiling textbooks, one should follow the characteristics and sequence of second language acquisition summarized above, and arrange the order in which various types of subject-predicate sentences appear in the textbook in a reasonable manner, following the principle of progressing from easy to difficult and step by step.

IV. A. 2) The language material in textbooks should be realistic.

The language and scenarios used in textbook design should be based on the actual living environment of second language learners, rather than simply imitating the living scenarios of Chinese people. There are significant differences between China and second language learners in terms of the frequency and specific circumstances of using subject-verb sentences. The corpus in beginner-level textbooks should focus on visual dialogues, while the corpus in intermediate and advanced-level textbooks should be a mix of spoken and written language. Subject-verb sentences are highly frequent in spoken Chinese, so we should appropriately increase the oral features in textbooks and pay attention to the repetition rate of subject-verb sentences in intermediate and advanced materials.

IV. A. 3) Appropriate introduction of the target culture in textbooks

Cultural differences among countries lead to numerous errors among second language learners when acquiring Chinese subject-predicate sentences. Therefore, when compiling international Chinese language textbooks, it is necessary to introduce appropriate Chinese cultural elements and present traditional culture that aligns with the language points being taught. The content introduced in the textbooks should be representative and appropriate for the stage of language instruction. Attention should also be paid to the compilation of country-specific textbooks, with targeted materials designed for different countries and cultures.

IV. B. Recommendations for teaching

IV. B. 1) Teaching should be conducted in a step-by-step manner according to the characteristics of students at each stage.

Subject-predicate sentences have already been introduced in the early stages of teaching. At this stage, students have a relatively low level of Chinese proficiency, a limited vocabulary, and have not yet developed a complete target language system. Teachers can begin by introducing the simplest and most typical subject-predicate sentences to deepen students' understanding of them. They can then supplement these with representative examples not found in textbooks to teach students basic language knowledge, enabling learners to correctly distinguish subject-predicate sentences. As learners' Chinese proficiency improves, the difficulty of vocabulary can be gradually increased.

IV. B. 2) Focus on teaching subject-predicate sentences with high error rates

International Chinese language teachers should pay attention to subject-verb predicate sentences that are frequently used but also prone to errors in their teaching. As mentioned earlier, subject-verb predicate sentences are commonly used in spoken Chinese. Therefore, teachers can select authentic language materials from the real-life experiences of different students and have them practice dialogues using these materials in class. Teachers can also design specific scenarios based on topics frequently discussed in learners' daily lives, guiding learners to use subject-verb predicate sentences for role-playing and dialogue practice. Sentences with high error rates are a challenge for international students during the learning process. Teachers should focus on providing detailed explanations for sentences with high usage frequency and high error rates, while appropriately addressing sentences with low usage frequency but high error rates, ensuring a clear distinction between main and secondary points and maintaining appropriate levels of detail.

V. Conclusion

This study further examines the subject-verb relationship in Chinese from the perspective of object-based two-part noun phrases. By analyzing second language learners' responses to multiple-choice questions in the questionnaire, the mean scores for Chinese grammatical structures before and after the test were 16 and 19, respectively. The paired sample t-test showed a t-value of -5.648 and a significance level of $P < 0.01$, indicating a significant difference between the two groups. This suggests that subject-verb agreement in Chinese grammatical structures has a certain influence on second language learners. In response to the issues encountered by second language learners during the second language acquisition process, this paper proposes relevant suggestions from two aspects: textbook organization and actual teaching. While emphasizing the content of Chinese meaning, structure, and grammar, it is also important to focus on the pragmatic aspects of subject-verb predicate sentences.

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