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Article

International Students' Attitudes toward Chinese Character Learning: Interplay with Motivation and External Educational Factors

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Abstract
This study investigates international students' attitudes towards Chinese character learning, examining their relationship with motivation and external educational factors. Utilizing the Attitudes to Mandarin Chinese Character Learning questionnaire, attitudes were analyzed into cognitive, affective, and conative components. Motivation was assessed through integrative and instrumental motivation scales, with external factors like teachers and course settings evaluated. Results showed no significant attitude differences based on gender or age but revealed disparities relating to academic level, discipline, and Chinese learning duration. Significant correlations among attitude components, motivation, and external factors were identified. Hierarchical multiple regression analysis indicated that variables like gender, Chinese learning duration, integrative motivation, and teacher influence significantly predicted the cognitive component, while integrative motivation and teacher influence were key predictors for affective and conative components. This study aims to offer insights for developing effective Chinese character learning strategies, highlighting the significance of student motivation and external educational factors.

Keywords
Attitudes, Chinese characters learning, integrative motivation, external education factors

1. Introduction

In an increasingly globalized world, the demand for Chinese language education has seen a significant rise (Orton, 2016). This surge of interest is particularly evident among international students, who are the people seeking overseas education (Ahmad & Shah, 2018). For the purposes of this study, we focus on Chinese L2 learners, of whom international students—those of foreign nationality studying in China—comprise a significant segment. A portion of these students has undergone Chinese instruction in their

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native countries prior to their arrival in China, while others begin their Chinese language education only after settling in China. The typical instructional approach for Chinese L2 in the classroom encompasses direct instruction in vocabulary and grammar, collaborative group discussions and activities, and immediate practice with feedback (Wen, 2022). To many international students, mastering Mandarin—particularly the intricacies of Chinese characters—serves not only as an academic pursuit but also as a vehicle to expand their cultural horizons and bolster their global competencies. Chinese characters, given their inherent complexity and profound cultural connotations, play an integral role in Mandarin language acquisition (Ye, 2013).

However, the learning of Chinese characters poses a particular challenge for non-native speakers (Zhan, & Cheng, 2014). The process involves not only mastering the shape and structure of individual characters, but also understanding their contextual usage and semantic nuances (Ye, 2013). This complexity can significantly influence international students' attitudes toward Chinese character learning, a factor that plays a crucial role in determining their learning outcomes and overall proficiency (Nkrumah & Darko, 2020). Therefore, exploring these attitudes and their interplay with elements such as student motivation and external educational factors has become an increasingly significant area of focus in international pedagogy. This study aims to provide insights into these aspects, with the hope of informing better pedagogical strategies for Chinese character learning among international students.

Despite the central role that Chinese characters play in Mandarin language acquisition, most studies have predominantly focused on students' general Chinese language learning experiences (Gao, 2007) or teaching methodologies (Guo et al., 2016). Remarkably, minimal attention has been given to students' attitudes toward learning Chinese characters specifically (Yu, 2010). These attitudes, which could be categorized into cognitive, affective, and conative components, can have a substantial impact on the students' learning processes and outcomes (Gallois et al., 2007). Furthermore, there is insufficient understanding of how these attitudes interact with students' motivations (Au, 1988; Noels et al., 1996; Clément et al., 1994; Wen, 2022; Yu, 2010) and external educational factors such as teacher influence (Alrabai, 2022), course settings (Weng et al., 2018), and learning environments (B. Y. Hu et al., 2018). These limitations inhibit the formulation of effective teaching strategies specifically tailored to improve Chinese character learning among international students. Therefore, there is a pressing need for a comprehensive exploration of international students' attitudes toward Chinese character learning and their interrelations with motivational aspects and external educational factors.

1.1 Attitudes toward Chinese character learning

The learning of Chinese as a second language has gained significance in recent years due to China's increasing global influence (Zhao & Huang, 2010). However, the complexity of Chinese characters presents a unique set of challenges for learners (Shen, 2013). Unlike alphabetic writing systems, Chinese characters are logographic, representing meanings rather than sounds. This characteristic poses additional difficulties in terms of memorization, recognition, and writing (Yang, 2018). In the field of second language learning, attitude plays a pivotal role in facilitating or hindering the process of acquiring a new language. Language learning attitude refers to an individual's emotional and cognitive disposition toward learning a language. A large number of studies have also investigated the relationship between attitudes and language proficiency (Alrabai, 2022; Lee & Lo, 2017; Zeinivand et al., 2015). In the field of sociolinguistics, attitudes toward language are commonly understood to have three distinct components: *cognitive, affective, and conative* (Gallois et al., 2007). The *cognitive component* of language attitudes pertains to an individual's beliefs concerning the truth or falsehood of certain statements, and these beliefs tend to be relatively resistant to change. On the other hand, the *affective component* refers to the emotional evaluations of individuals have toward particular events, thoughts, or actions related to language. Lastly, the *conative component* relates to an individual's life experiences and may precede or follow the cognitive and affective components in shaping their language attitudes. Learners' perceptions

and evaluations of the target language, the target language speakers, the culture, and the learning environment can directly affect how successful they are in learning the language (Wesely, 2012). Therefore, educators should pay attention to learners' attitudes and beliefs in order to better help them learn the language.

Learners' attitudes toward Chinese character learning can significantly impact their achievements. Understanding the factors that shape learners' attitudes is crucial for developing effective teaching strategies and intervention programs. A range of factors, including personal attributes, educational environment, duration of Chinese language study, and motivational factors may influence learners' attitudes toward Chinese character learning.

Personal attributes encompass various individual characteristics that may influence learners' attitudes toward Chinese character learning. Age, gender, educational background, and major are essential aspects to consider. Previous studies have suggested that younger learners might exhibit higher levels of openness and adaptability, whereas older learners may demonstrate more patience and perseverance (Schumann, 1975). Gender differences might also play a role, as certain character learning strategies may appeal differently to males and females (Okuniewski, 2014). Similarly, educational background and major may influence learners' previous exposure to languages and cognitive abilities, influencing their attitudes toward Chinese character learning (Zulkefly & Razali, 2019).The educational environment also plays a significant role in shaping learners' attitudes toward Chinese character learning. Factors such as classroom atmosphere, teaching methodologies, and resources available can influence learners' motivation, engagement, and overall satisfaction with the learning process (Alqasa & Afaneh, 2022; Hanaysha et al., 2023; Pianta et al., 2012). Supportive and interactive classrooms (B. Y. Hu et al., 2018), access to quality instructional materials (Weng et al., 2018), and well-trained teachers (Alrabai, 2022) are some key components in fostering positive attitudes among learners. Moreover, as learners progress through different stages of language proficiency, their experiences and achievements contribute to their overall perception of the learning process (Han & Hiver, 2018).

1.2 The relationship between attitudes toward language learning, motivation and external educational factors

1.2.1 Attitudes toward language learning and motivation

Motivation, a multifaceted theoretical construct, has garnered significant attention and research across diverse disciplines, including second language (L2) studies (Eom & Braithwaite, 2023). Numerous theories have been postulated to elucidate the intricate interplay between attitudes and motivation in the context of foreign language learning (Au, 1988; Clement, Dörnyei, & Noels, 1994; Oxford, 1996; Wen, 2022; Yu, 2010). However, it lacks a singular, universally accepted definition (Pham, 2021). In language learning, motivation chiefly refers to the internal mechanisms that drive, direct, and sustain language acquisition efforts. This encompasses an array of learners' attributes, encompassing interests, requirements, anticipations, beliefs, and an array of other psychological factors inherent to engagement with the target language (Brown, 1994; Harmer, 1991).

The realm of L2 learning motivation has been significantly influenced by the seminal work of Canadian psychologists Gardner and Lambert, whose framework has held sway in the field for approximately three decades (Chang, 1994). Gardner and Lambert (1972) introduced the dichotomy between integrative and instrumental motivation. Integrative motivation reflects an individual's desire for cultural or linguistic integration with a positive, non-ethnocentric approach toward the target community (Gardner, 1985). Instrumental motivation refers to learning the language for practical purposes, such as career advancement, financial gain, or examination success (Gardner, 1985).

Motivation exercises a profound influence on the effort, duration, and method of learners' language acquisition, consequently exerting an impact on their language learning attitudes. Both integrative and

instrumental motivations are crucial factors for achieving success in L2 learning. However, integrative motivation has been identified as the key determinant for long-term success (Crookes & Schmidt, 1991; Oroujlou & Vahedi, 2011). In early research by Gardner and Lambert, integrative motivation was deemed more important than instrumental motivation in a formal learning environment (Ellis, 1997, cited in Clément et al., 1994). Later studies have continued to emphasize integrative motivation while also highlighting the importance of instrumental motivation. It is important to note that instrumental motivation has only been acknowledged as a significant factor in some research, whereas integrative motivation is continually linked to successful second language acquisition (Clément et al., 1994).

1.2.2 Attitudes toward language learning and external educational factors

Besides individual factors like motivation, external educational factors also influence attitudes toward L2 learning. External educational factors encompass various elements, including school environments, teachers, peers, teaching materials, teaching methods, social culture, etc. (Higgins et al., 2005). Moos's (1979) model of the factors affecting 'classroom climate' is an attempt at a general model to clarify the influences of external educational factors on students' learning attitudes. In this model, educational factors included school classroom context, physical and architectural features, teacher characteristics, and classroom climate, which gave us a lot of inspiration. As many environmental psychologists have suggested, these factors can affect learners' cognition and emotion toward language learning by providing information, feedback, reward, punishment, etc., and thus affect their attitude (e.g., Gifford, 2002).

Of these factors, the influence of language teachers on students' language attitude is the most widely discussed. Specifically, when a teacher can present the target language in an engaging and effective manner, and provide positive encouragement and support, learners are more likely to develop a positive attitude toward the target language (Lightbown & Spada, 2013). Conversely, Dörnyei (2003) observed that students' dissatisfaction with teaching methods and outcomes can foster negative learning attitudes, thereby underlining the substantial influence of teacher guidance on language learning. Similarly, when peers communicate with learners in a friendly and cooperative manner, sharing their views and experiences about the target language community and culture, learners are likely to develop a curious and respectful attitude toward the target language community and culture (Getie, 2020). Furthermore, the course setting and teaching materials should also be considered, because if materials reflect the diversity and richness of the target language, showing its connections and differences with other languages and cultures, then learners are likely to develop an attitude of interest and appreciation for the target language (Esra & Sevilen, 2021). In addition, an optimal learning environment — characterized by factors such as classroom size, temperature, lighting, sound, and color — can also enhance students' willingness to learn (Gilliland, 1969).

The aforementioned studies mainly refer to the influence of either individual related or external educational factors on language learning attitude. However, to the best of our knowledge, existing research has yet to integrate these factors and comparatively analyze their respective impacts on language learning attitudes. Focusing on the attitude of Chinese language learning, this paper discusses the influence of internal factors (mainly motivation) and external educational factors (mainly teacher, course setting, and learning environment) on the attitude of language learning.

1.3 Current study

In order to investigate the international students' attitudes toward Chinese character learning and their association with motivational underpinnings and external educational factors, the following research questions will guide this study:

1. What are the attitudes of international students toward learning Chinese characters, and how can these attitudes be classified into cognitive, affective, and conative components?

2. Are there significant differences in attitude components based on demographic and academic variables such as gender, age, academic level, discipline, and duration of Chinese learning?
3. How does the motivational underpinning of international students, particularly the integrative and instrumental motivations, influence their attitudes toward Chinese character learning?
4. What impact do external educational factors, such as teacher influence, course settings, and the overall learning environment, have on international students' attitudes toward Chinese character learning?
5. To what extent do variables such as gender, duration of Chinese learning, integrative motivation, and teacher influence predict the cognitive component of students' attitudes toward Chinese character learning?

These research questions will be addressed through the utilization of the Attitudes to Mandarin Chinese Character Learning (AMCCL) questionnaire, along with assessments of motivation and external educational factors.

2. Methods

2.1 Participants

The present study included 177 international students studying at Shanghai Jiao Tong University. Of these students, 42.9% (n=76) were male and 57.1% (n=101) were female, aged between 18 to 43 years (with a mean age of 24.36±4.73 years). These participants were enrolled in Chinese language courses at elementary, intermediate, or advanced levels. Demographic information of the participants is presented in Table 1.

Table 1

Demographic and Descriptive Data for the 177 Students in the Study

	Group	N	%
Gender	Male	76	42.9
	Female	101	57.1
	Total	177	100
Grade	Undergraduate	76	42.9
	Graduate	71	40.1
	Doctor and other	30	16.9
	Total	177	100
Major	Humanities	64	36.2
	Social sciences	55	31.1
	Sciences and other	58	32.8
	Total	177	100
Age	18-24 years old	106	59.9
	More than 25 years old	71	40.1
	Total	177	100
Average time spent studying Chinese in daily life	Less than 1 hour	47	26.6
	1-2 hours	29	16.4
	2-4 hours	30	17.0
	4-6 hours	39	22.0
	More than 6 hours	32	18.1
	Total	177	100

The students ranged across different educational levels, including undergraduate (42.9%, n=76), graduate (40.1%, n=71), and doctoral/other (16.9%, n=30). They were from various disciplines, with 36.2% (n=64) majoring in the humanities, 31.1% (n=55) in the social sciences, and 32.8% (n=58) in sciences and other fields. The age distribution of the participants was also diverse, with a majority in the 18-24 years old bracket (59.9%, n=106), while 40.1% (n=71) were over 25 years old. In terms of study habits, students varied significantly in the average time spent studying Chinese after class per week. A fraction of the students studied less than 1 hour (26.6%, n=47), 16.4% (n=29) studied for 1-2 hours, 17.0% (n=30) for 2-4 hours, 22.0% (n=39) for 4-6 hours, and the rest, 18.1% (n=32), studied more than 6 hours weekly. This broad array of demographic and academic variables provided a comprehensive sample to carry out the study.

2.2 Assessments

The primary goal of this research was to understand the attitudes toward learning Chinese characters among Chinese language learners whose first language is English. This includes aspects such as cognition, emotion, and willingness toward Chinese characters. The study also took into account the participant's personal information and their basic situation in learning Chinese characters, which served as vital factors in the investigation and analysis of their attitudes toward Chinese characters. Moreover, the overall assessment of learning Chinese characters and the motivations for learning were also examined. Such exploration can shed light on the variations in Chinese language attitudes and learning needs. Consequently, the survey is divided into the following sections, with specific questions and corresponding conditions detailed in Tables 3–7.

2.2.1 Demographic information

The demographic information of the participants, including their age, gender, major, and average daily time spent learning Chinese, was examined.

2.2.2 Attitudes to Mandarin Chinese Character Learning (AMCCL) questionnaire

To investigate international students' attitudes toward Chinese character learning, we developed the Attitudes to Mandarin Chinese Character Learning (AMCCL) questionnaire. Table 2 presents a list of questions related to the attitudes toward Chinese character learning. Participants are asked to indicate their level of agreement or willingness on a scale for each question on a 5-point Likert scale ranging from 1 ('strongly disagree') to 5 ('strongly agree'). The distribution of the scale of attitudes toward learning Chinese characters into three unique subscales—the cognitive component, the emotional component, and the conative component—was validated by factor analysis. The three separate subscales' internal consistency according to Cronbach's alpha varied from.843 to.858. It was 0.918 for the comparative fit index (CFI). The scores that are presented for each component are averages of all answers to each item.

The cognitive component of attitudes toward Chinese character learning was measured with 8 items (Table 2). The items within the cognitive component of attitudes reflect how students view and believe about language learning.

The affective component of attitudes toward Chinese character learning was measured with 9 items (Table 2b). The items within the affective component of attitudes represent students' feelings and emotions associated with language learning.

The conative component of attitudes toward Chinese character learning was measured with 9 items (Table 2c). Statements of behavioral intention, suggest students' intentions to act in a certain way toward language learning.

Table 2

Attitudes to Mandarin Chinese Character Learning (AMCCL) Questionnaire

Item	Questions
	Cognition component
26	What is your level of understanding of the phonetic-semantic compound characters in Chinese?
30	I believe that even if I don't learn Chinese characters, it wouldn't have a significant impact on my personal development.
33	Learning Chinese characters can help better understand Chinese culture.
36	Learning Chinese characters can enhance my personal cultural literacy.
37	Learning Chinese characters is very important for my current major.
41	What is your level of understanding of the tones in Chinese characters?
45	What is your understanding of the idea that the stroke is the smallest unit of Chinese character formation?
49	I believe that learning Chinese characters can be helpful for personal career choices and development.
	Affective component
27	Chinese characters have a beautiful form.
28	I really enjoy and feel happy during the process of learning Chinese characters.
32	Chinese characters are inclusive.
35	Learning Chinese characters is interesting.
39	Chinese character culture has innovativeness.
40	Chinese characters are vibrant.
43	Chinese characters have diversity.
46	If no one around me likes to learn Chinese characters, I don't like it either.
48	Chinese characters are attractive.
	Conative component
29	What is your level of willingness to set up a learning plan for Chinese characters and follow it?
31	What is your level of willingness to participate in classroom activities related to Chinese characters?
34	If given the opportunity to be exposed to Chinese characters at an earlier age, what would be your level of willingness?
38	If your university offers courses related to Chinese characters, what is your level of willingness to take such a course?
42	If given the opportunity to read books in Chinese characters, what is your level of willingness?
45	If given the opportunity to enable the next generation to learn Chinese characters, what is your level of willingness?
47	When encountering problems in learning Chinese characters, what is your level of willingness to seek help from others?
50	If given the opportunity, what is your level of willingness to learn calligraphy?
51	If given the opportunity, what is your level of willingness to proactively delve into the culture embedded behind Chinese characters?

2.2.3 Motivation to learn

In this study, we utilized integrative and instrumental motivation as metrics to assess the concept of 'motivation', which consisted of six items (Masgoret, 2006). A strong emotional connection to the Chinese community and a desire to learn Chinese to feel more at home are indicated by high integrative motivation scores. A practical goal, such as passing a language competency test, is indicated by instrumental motivation.

2.2.4 External educational factors

Students' attitudes toward language acquisition might be impacted by several external educational factors. We assessed the variable 'teacher' using two items, such as '*I am satisfied with the way teachers teach Chinese*'. The variable '*course setting*' was assessed by three items, such as '*I am satisfied with the textbooks used for learning Chinese characters*'. The variable '*learning environment*' was assessed by the four items, such as '*The learning environment of the school is conducive to learning Chinese characters*'.

2.3 Data analysis

The data were analyzed using SPSS 26. The study had two main objectives. Firstly, it aimed to investigate the attitudes toward learning Chinese characters among Chinese language learners whose first language is English. To achieve this, factors such as participants' gender, age, grade, major, and average time spent studying Chinese in daily life were analyzed by one-way analysis of variance (ANOVA). The variable 'component' consisted of three levels: cognitive, affective, and cognitive components. Secondly, the study aimed to examine the relationships between the different factors using correlation analyses. Additionally, regression analyses were conducted to identify predictors of attitudes toward Chinese characters.

3. Results

3.1 Attitudes toward Chinese character learning in terms of gender, age, grade, major and average time spent studying Chinese in daily life

First, the results of the t-test comparing attitudes toward Chinese characters in terms of gender are given in Table 3a. When both male and female students' attitudes toward Chinese characters were compared, no significant difference was observed in the cognitive component ($t(175) = -0.17$, $p=0.865$), the affective component ($t(171.14) = 0.12$, $p=0.908$), or the conative component ($t(175) = 0.32$, $p=0.748$). Similarly, there was no significant difference in any component in terms of age, as shown in Table 3b.

Table 3a

Results of t-test Comparing Attitudes Toward Chinese Characters in Terms of Gender

Variables	Gender	N	$\bar{x}$	Sd	df	t	p	Cohen's d
Cognitive component	1.Male	76	3.07	0.69	175	-0.17	0.865	-0.03
	2.Female	101	3.09	0.76				
Affective component	1.Male	76	2.95	1.07	171.14	0.12	0.908	0.02
	2.Female	101	2.93	1.22				
Conative component	1.Male	76	2.92	1.04	175	0.32	0.748	0.05
	2.Female	101	2.86	1.18				

Table 3b

Results of t-test Comparing Attitudes Toward Chinese Characters in Terms of Age

Variables	Age	N	$\bar{x}$	Sd	df	*t*	*p*	Cohen's d
Cognitive component	1.18-24 years old	106	3.10	0.74	175	0.29	0.769	0.05
	2.More than 25 years old	71	3.07	0.70				
Affective component	1.18-24 years old	106	3.01	1.23	165.49	1.02	0.309	0.15
	2.More than 25 years old	71	2.83	1.04				
Conative component	1.18-24 years old	106	2.96	1.14	175	1.14	0.257	0.18
	2.More than 25 years old	71	2.77	1.09				

Note: * p < .05, ** p < .01, *** p < .001.

Next, comparisons were made to reveal differences among attitudes toward Chinese characters among students from different grades, majors, and average time spent studying Chinese in daily life, using one-way ANOVA tests. Results are given in Tables 3c, 3d, and 3e.

Table 3c

One-way ANOVA Results on Attitudes Toward Chinese Characters by Grade

Variables	Grade	N	$\bar{x}$	S	df	F	p	Post-Hoc
Cognitive component	1.Undergraduate	76	3.20	0.66	2	2.46	0.088	
	2.Graduate	71	2.94	0.81	174			
	3.Doctor and other	30	3.13	0.64	176			
	Total	177	3.08	0.73				
Affective component	1.Undergraduate	76	3.20	1.07	2	3.62	0.029*	1-2
	2.Graduate	71	2.71	1.27	174			
	3.Doctor and other	30	2.73	0.98	176			
	Total	177	2.94	1.16				
Conative component	1.Undergraduate	76	3.17	1.03	2	4.75	0.010*	1-2
	2.Graduate	71	2.62	1.18	174			
	3.Doctor and other	30	2.80	1.06	176			
	Total	177	2.88	1.12				

Note: * p < .05, ** p < .01, *** p < .001.

Table 3d

One-way ANOVA Results on Attitudes Toward Chinese Characters by Major

Variables	Major	N	$\bar{x}$	S	df	F	p	Post-Hoc
Cognitive component	1.Humanities	64	3.21	0.75	2	1.69	0.188	
	2.Social sciences	55	3.05	0.73	174			
	3.Sciences	58	2.98	0.68	176			
	Total	177	3.08	0.73				
Affective component	1.Humanities	64	3.19	1.10	2	3.26	0.041*	1-3
	2.Social sciences	55	2.94	1.18	174			
	3.Sciences	58	2.66	1.14	176			
	Total	177	3.08	0.73				
Conative component	1.Humanities	64	3.05	1.13	2	2.40	0.094	
	2.Social sciences	55	2.96	1.16	174			
	3.Sciences	58	2.63	1.05	176			
	Total	177	3.08	0.73				

Note: * p < .05, ** p < .01, *** p < .001.

Table 3e

One-way ANOVA Results on Attitudes Toward Chinese Characters by Average Time Spent Studying Chinese in Daily Life

Variables	Average time spent studying Chinese after class a week	N	$\bar{x}$	S	df	F	*p*	Post-Hoc
Cognitive component	1.Less than 1 hour	47	2.72	0.47	4	6.23	<0.001***	3>1
	2.1-2 hours	29	2.93	0.70	172			4>1
	3.2-4 hours	30	3.32	0.65	176			5>1
	4.4-6 hours	39	3.34	0.70				
	5.More than 6 hours	32	3.23	0.92				
	Total	177	3.08	0.73				
Affective component	1.Less than 1 hour	47	2.23	0.92	4	9.21	<0.001***	3>1
	2.1-2 hours	29	2.93	1.06	172			4>1
	3.2-4 hours	30	3.50	0.91	176			
	4.4-6 hours	39	3.40	1.07				
	5.More than 6 hours	3(2; 174)2	2.86	1.35				
	Total	177	2.94	1.16				
Conative component	1.Less than 1 hour	47	2.29	0.92	4	6.70	<0.001***	3>1
	2.1-2 hours	29	2.79	1.14	172			4>1
	3.2-4 hours	30	3.24	0.88	176			
	4.4-6 hours	39	3.37	1.02				
	5.More than 6 hours	32	2.91	1.32				
	Total	177	2.88	1.12				

Note: * p < .05, ** p < .01, *** p < .001.

As shown in Table 3c, there was no significant difference in the *cognitive component* ($F_{(2; 174)}$=2.46, *p*=0.088) of students' attitudes toward Chinese characters, but there were significant differences in the affective component ($F_{(2;174)}$=3.62, *p*=0.029) and conative component ($F_{(2; 174)}$=4.75, *p*=0.010). According

to the post-hoc Scheffe test results, it was found that the average attitude score of undergraduates ($\bar{x}_{(affective)}$=3.20, $\bar{x}_{(conative)}$=3.17) was significantly higher than that of graduates ($\bar{x}_{(affective)}$=2.71, $\bar{x}_{(conative)}$=2.62) in both *affective component* and *conative component*.

Table 3d shows that there was no significant difference in the *cognitive component* ($F_{(2;\ 174)}$=1.69, p=0.188) and the conative component ($F_{(2;\ 174)}$=2.40, p=0.094) of students' attitudes toward Chinese characters, but there were significant differences in the *affective component* ($F_{(2;174)}$=3.26, p=0.041). According to the post-hoc Scheffe test results, the average attitude score of students majoring in humanities ($\bar{x}$=3.19) was significantly higher than that of students majoring in sciences ($\bar{x}$=2.66) in the *affective component*.

However, according to Table 3e which reveals the ANOVA test results on average time spent studying Chinese in daily life, we can find that there were strongly significant differences in the *cognitive component* ($F_{(4;172)}$=6.23, p=0.000), *affective component* ($F_{(4;172)}$=9.21, p=0.000) and *conative component* ($F_{(4;172)}$=6.70, p=0.000). According to the post-hoc Scheffe test results, in *cognitive component*, the average attitude score of students studying Chinese less than 1 hour in daily life ($\bar{x}$=2.72) was significantly lower than that of students studying Chinese 2-4 hours ($\bar{x}$=3.32), 4-6 hours ($\bar{x}$=3.34) and more than 6 hours ($\bar{x}$=3.23). The *affective component* and *conative component* showed a similar trend. In *affective component* and *conative component*, the average attitude score of students studying Chinese less than 1 hour in daily life ($\bar{x}_{(affective)}$=2.23, $\bar{x}_{(conative)}$=2.29) was significantly lower than that of students studying Chinese 2-4 hours ($\bar{x}_{(affective)}$=3.50, $\bar{x}_{(conative)}$=3.24), 4-6 hours ($\bar{x}_{(affective)}$=3.40, $\bar{x}_{(conative)}$=3.37).

3.2 Relationships between attitudinal, motivational variables, and external educational factors

Correlation analysis (see *Table 4*) showed that attitudes toward Chinese characters had closed relationships with motivation and external educational factors.

Firstly, attitudes toward Chinese characters were closely related to motivation. The integrative motivation was related to the *cognitive component* (r=0.80, p<0.01), *affective component* (r=0.88, p<0.01), *conative component* (r=0.86, p<0.01). The instrumental motivation was also related to the *cognitive component* (r=0.34, p<0.01), *affective component* (r=0.27, p<0.01), *conative component* (r=0.32, p<0.01).

Among other related factors, the three components of attitudes toward Chinese characters were also related to external educational factors such as teacher, course setting, and learning environment. To be specific, the cognitive component was related to the teacher (r=0.75, p<0.01), course setting (r=0.68, p<0.01) and learning environment (r=0.66, p<0.01). The affective component was also related to the teacher (r=0.81, p<0.01), course setting (r=0.71, p<0.01) and learning environment (r=0.66, p<0.01). The conative component was also related to the teacher (r=0.78, p<0.01), course setting (r=0.70, p<0.01) and learning environment (r=0.67, p<0.01). These findings suggested that attitudes toward Chinese characters were influenced by different motivational and external educational factors.

Table 4

Correlations among Attitudes toward Chinese Character Learning, Motivation, and Other External Educational Factors

Variables	Affective component	Cognitive component	Conative component
Integrative motivation	.88**	.80**	.86**
Instrumental motivation	.27**	.34**	.32**
Teacher	.81**	.75**	.78**
Course setting	.71**	.68**	.70**
Learning environment	.66**	.66**	.67**

Note: * p < .05, ** p < .01, *** p < .001.

After establishing the correlation among the variables, hierarchical multiple regression was employed to determine which independent factors best predicted attitudes toward Chinese characters. Table 5 shows the independent variables that met the statistical criteria to be included in the model. Gender, average time spent studying Chinese in daily life, integrative motivation, and teacher could significantly explain the cognitive component, which is a response to the fifth research question. Integrative motivation and teacher could also significantly explain the affective component and conative component of the attitudes toward Chinese characters.

The findings revealed that a range of factors significantly predicted attitudes toward Chinese characters, encompassing cognitive, affective, and conative components. Moreover, distinct variables such as integrative motivation and teacher influence played pivotal roles in shaping these attitudes. When designing language learning programs and activities, it is important to take into account these factors in order to improve learners' attitudes and optimize their learning experiences.

Table 5

Hierarchical Regression Models to Predict Attitudes toward Chinese Characters

Variables		Cognitive component			Affective component			Conative component		
		β	Adj R2	ΔR2	β	Adj R2	ΔR2	β	Adj R2	ΔR2
Step 1	Grade	0.10*	0.01	0.02	0.02	0.05	0.06	0.02	0.04	0.05
	Major	0.03			-0.01			0.21		
Step 2	Average time spent studying Chinese in daily life	0.09*	0.09	0.08	0.02	0.10	0.05	0.03	0.09	0.06
Step 3	Integrative motivation	0.48***	0.65	0.56	0.63***	0.77	0.67	0.60***	0.74	0.64
	Instrumental motivation	0.04			-0.06			-0.01		
	Teacher	0.24**	0.69	0.05	0.27***	0.81	0.04	0.23***	0.77	0.03
Step 4	Learning environment	0.09			0.04			0.07		
	Course setting	0.10			0.05			0.05		

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

4. Discussion

This study investigates the attitudes of international students toward learning Chinese characters, uncovering some key findings in terms of cognitive, affective, and conative components of these attitudes. No significant differences were observed in any components of the attitudes based on gender or age. However, variations were observed with respect to students' academic level, discipline, and average daily time spent on Chinese language studies. The cognitive component of attitudes toward learning Chinese characters was significantly affected by factors such as academic level, discipline, and time dedicated to daily Chinese study. Additionally, a strong correlation was found among attitudinal components, motivation, and external educational factors. Importantly, the study identified integrative motivation and teacher influence as significant predictors of all components of attitudes toward Chinese character learning. These findings underscore the complex interplay of various internal and external factors influencing students' attitudes toward Chinese characters learning, and highlight the critical need for personalized and effective pedagogical strategies.

4.1 Attitudes toward Chinese character learning

In response to the second research question, the results show there were no significant differences in attitudes toward Chinese characters learning in terms of the cognitive, affective, and conative components across gender and age in this study. This is consistent with the findings of Alhaisoni and Alhaysony (2017) and Al-Shehri (2009), which suggests a universality in the attitude structures among international students, irrespective of their gender or age. This finding suggests that various demographic groups perceive the challenge of Chinese character learning similarly. This further implies that strategies aimed at improving Chinese character learning should not be overly focused on age or gender variations, but rather, on other significant factors that might influence students' learning experiences and outcomes (Alhaisoni & Alhaysony, 2017).

The present study identified significant variations in students' attitudes based on academic levels, disciplines, and daily time allocated to Chinese language studies. Undergraduates demonstrated significantly more positive attitude in both affective and conative components compared to their graduate counterparts. This could be attributed to the exploratory nature of undergraduate studies, which often fosters a more positive view of learning new concepts, whereas graduate students, focused more on specific academic or research areas, may find Chinese character learning to be more demanding or less pertinent. The study is consistent with Cai et al. (2010) 's findings on Chinese language learners among college students. As noted by Sung (2010), lower-grade learners, whose attitudes may be shaped by their peers' opinions on language classes and professors, as well as a desire to study in a Chinese-speaking country, exhibited more positive attitudes towards Chinese language learning. Similarly, Doley (2022) reported that less experienced younger Indian ESL learners, including secondary, undergraduate, and postgraduate students, demonstrated higher L2 motivational scores across all dimensions. Additionally, humanities majors exhibited more positive affective attitudes towards Chinese character learning compared to their science major counterparts. This might be due to the close alignment of language learning with the humanities, where a deeper appreciation for cultural nuances, such as those embodied in Chinese characters, is cultivated. Moreover, students dedicating more daily study time to Chinese exhibited more positive attitudes across all three components. This may suggest a positive feedback loop, wherein increased study time leads to enhanced understanding and performance, subsequently fostering more positive attitudes. It also highlights the importance of sufficient study time allocation in Chinese language curriculum planning. These findings provide actionable insights for educators, suggesting that attention should be given to students' academic level, discipline, and time dedicated to Chinese learning when devising strategies to improve attitudes toward Chinese character learning.

4.2 Influence of motivational and external educational factors on attitudes toward Chinese character learning

In response to the third research question, our findings indicate a robust relationship between students' attitudes toward Chinese character learning, their motivational underpinnings, and external educational factors. Specifically, integrative motivation—which reflects a desire to learn Chinese for social integration or personal interest—showed a high correlation with the cognitive, affective, and conative components of students' attitudes. This suggests that students who are intrinsically motivated to learn Chinese due to personal interests or social reasons may develop more positive attitudes toward Chinese character learning, which aligns with the conclusion of previous research (Crookes & Schmidt, 1991; Oroujlou & Vahedi, 2011). Therefore, teachers should consider fostering students' integrative motivation, as this may enhance students' attitudes and subsequently improve their learning outcomes. We also found that instrumental motivation, driven by practical benefits such as career advancement or academic requirements, was positively correlated with these attitude components, albeit to a lesser degree. This

relationship implies that practical reasons can also encourage students to engage positively with Chinese character learning. Hence, highlighting the potential practical benefits of learning Chinese, like job opportunities or academic advancements, could be another approach to boost students' attitudes.

Furthermore, in response to the forth research question, external educational factors, including teacher influence, course setting, and learning environment, emerged as significant predictors of students' attitudes toward Chinese character learning. For instance, the teacher's role significantly predicted all three components of attitudes. This underscores the importance of the teacher's approach and instructional style in shaping students' attitudes toward Chinese character learning, as emphasized in previous studies (Alrabai, 2022; Kurniawan et al., 2021). Similarly, an effective course setting and a conducive learning environment were also identified as essential factors in promoting positive attitudes.

Taken together, these results emphasize that an integrative approach should be adopted when designing Chinese language learning programs and activities. This approach should aim to enhance students' integrative and instrumental motivation, provide effective teacher support, and create a conducive learning environment and course structure. Implementing such an approach is anticipated to improve students' attitudes toward Chinese character learning, thereby optimizing their learning experiences and outcomes.

4.3 Implications of the research

The findings of this research bear substantial implications for the pedagogy and policies surrounding Chinese character teaching, especially for programs catering to international students. Recognizing the significant role of both integrative and instrumental motivation in shaping students' attitudes toward Chinese character learning, educators and curriculum designers should focus on nurturing these aspects. For example, language courses could be designed to highlight the cultural richness and global importance of Chinese, thus fostering integrative motivation. Meanwhile, underlining the practical advantages—such as the potential career and academic benefits—could boost instrumental motivation.

Moreover, our results underscore the substantial influence of external educational factors on students' attitudes. As such, teachers need to be aware of their pivotal role in shaping student attitudes. Liao (2017) suggests that cultural differences between American and Chinese schools significantly contribute to the instructional strategy challenges faced by Chinese language teachers. In general, Chinese students tend to exhibit discipline and hold a high regard for the authority of their teachers. In contrast, American students are often more informal and responsive to teachers who engage them through personal rapport and approachability, rather than relying on authority alone to gain student interest and participation in the class (Liao 2017). This may imply that teachers should reconsider their cultural preconceptions, adopt more engaging and interactive teaching methods, provide personalized feedback, and consider employing technology-assisted tools to enrich the learning experience. Furthermore, course settings and learning environments must be designed thoughtfully. Referring to previous studies, some showed that Chinese NS teachers tended to be a knowledge authority and over-rely on textbooks to impart knowledge (R. Hu & Smith, 2011; Wang, 2011). In response to this phenomenon, Yang (2019) suggests that the future direction of Chinese education reform may involve designing engaging activities and selecting appropriate teaching materials based on students' needs and interests. Besides, classrooms should cultivate an inclusive and supportive atmosphere that encourages student participation and learning.

4.4 Limitations and future direction

Despite the valuable insights drawn from this study, there are certain limitations that must be acknowledged. The major limitation lies in the sample, as it primarily involved international students from a particular region. This might restrict the generalizability of the findings to a broader, more diverse population of international students learning Chinese characters. Furthermore, while our research

considered several important factors such as integrative and instrumental motivation, teacher influence, and learning environment, there might be other relevant factors unaccounted for, such as familial or peer influence, or individual learner's personality traits.

Looking ahead, the scope for future research in this field is vast and promising. To overcome the limitations of the current study, subsequent investigations should strive to encompass more diverse samples. This would entail including participants from different regions, cultural backgrounds, and varying degrees of exposure to Chinese characters, to provide a more representative and comprehensive understanding of the learners' attitudes. Moreover, there's potential for exploring additional factors that might influence learners' attitudes toward Chinese character learning. This could offer a more holistic perspective of the learners' experiences and contextual factors that shape their attitudes. In addition to this, longitudinal studies that track the evolution of attitudes over time could shed light on the dynamics of attitude formation and development. Understanding these temporal changes could significantly contribute to devising more effective strategies for teaching and learning Chinese characters.

Furthermore, future research should consider the practical implications of the findings and focus on integrating the influential factors identified—integrative and instrumental motivations, teacher influence, and learning environment—into an optimized model for Chinese character learning. By doing so, we can aim to enhance not only the students' attitudes toward Chinese character learning but also improve their overall learning efficiency and effectiveness. This approach may make learning Chinese characters more enjoyable and rewarding, thereby promoting long-term engagement and success in this complex and enriching field.

5. Conclusion

The present research provides significant contributions to the understanding of attitudes toward Chinese character learning among international students. The findings reveal that grade level, major, and daily study time substantially impact these attitudes, although no significant differences were observed based on gender or age. Additionally, motivation and external educational influences, including teacher impact and learning environment, appear to play pivotal roles. The implications of this research extend beyond theoretical understanding, providing valuable insights for practical implementation in teaching methodologies. Nevertheless, future investigations should strive to incorporate a broader spectrum of influencing factors and representatively diverse sample populations. Such endeavors can further enhance our understanding and potentially transform the process of learning Chinese characters into an increasingly effective and rewarding experience, thereby promoting more successful outcomes in the realm of language acquisition.

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留学生的汉字学习态度研究：与动机和外部教育因素的关系探讨

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摘要
本研究旨在探索留学生的汉字学习态度及其与动机、外部教育因素的关系。通过使用汉字学习态度问卷，本研究将汉字学习态度分为认知、情感和意志三个维度，并评估了学生的学习动机和教师影响等外部教育因素。结果显示，不同性别或年龄群体间的汉字学习态度无显著差异，但在不同汉语水平、专业背景及汉语日常学习时长等方面却呈现显著差异。此外，汉字学习态度和学习动机以及外部教育因素之间有显著的相关性。层次多元回归分析结果指出，性别、汉语日常学习时长、融入型动机和教师影响等变量能显著预测汉字学习态度的认知维度；而融入型动机和教师影响是预测其情感和意志维度的关键变量。本研究为优化汉字教学策略提供建议，强调了学生动机和外部教育因素在提升留学生的汉字学习态度中的重要性。

关键词
态度，汉字学习，融入型动机，外部教育因素

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