

American Journal of Education and Practice (AJEP)



**Effect of Gender on Morphological Awareness and Reading
Comprehension Competence in Chinese Language: Evidence
from the University of Cape Coast**

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Abstract

Purpose: There are evidences that students studying Chinese language in Ghana find it difficult to read and form simple Chinese words using the *Hànyǔ Pīnyīn* system. Nevertheless, little is known of how gender influences morphological awareness and reading comprehension in Chinese language, as well as the relationship between morphological awareness and reading comprehension. This study, thus, using a correlational research design, examined whether there is any difference between male and female students with respect to morphological awareness and reading comprehension, and the relationship between morphological awareness and reading comprehension.

Methodology: Employing the census sampling technique, a sample of 100 BA Chinese students at the University of Cape Coast was involved in the study. Morphological awareness and reading comprehension tests were used to collect data from the participants. Data were analyzed using means, standard deviations, two independent samples t-test and the Pearson correlation coefficient.

Findings: The results showed that there were no significant differences between male and female BA Chinese students in terms of morphological awareness and reading comprehension. It was further revealed that morphological awareness is positively associated with reading comprehension in Chinese language. It was, thus, concluded that improved awareness of morphology would enhance reading comprehension competence of BA Chinese students at the University of Cape Coast.

Recommendation: It was suggested that the Ministry of Education Ghana introduce Chinese language studies into the basic and high school education systems in Ghana to ensure pre-exposure of students to the language before they enter institutions of higher education.

Keywords: *Gender, morphological awareness, reading comprehension, Chinese language*

INTRODUCTION

Chinese language is becoming increasingly accepted across the globe. It is thus not surprising that it is one of the six official and working languages of the United Nations (United Nations, 2022). According to a survey by Statista, there are 1.1 billion Mandarin Chinese speakers worldwide, making it the second highest spoken language after English (Statista Research Department, 2022). Additionally, China's vice minister of education stated that more than 70 countries have officially incorporated Chinese language teaching into their national education systems (China Global (CGTN), 2020). The minister further revealed that over 4000 colleges across the globe have already set up Chinese language courses in their curriculum, and that an estimated 25 million people are learning Chinese now and over 200 million have learned Chinese globally (CGTN, 2020).

Specifically, there are evidences that the United Kingdom, the United States of America and Russia have adopted Chinese studies in their education systems (Wang, 2010; Xiao, 2016; McGinnis, 2017; Chen, 2022; Smith & Li, 2022; Xu, 2022). South Africa and Kenya have also included Chinese as one of the subjects of taught in their education system (Ma, 2022; Xu, 2022). Similarly, Uganda has allowed Chinese to be taught informally in their Schools. Moreover, as of 2008, China had already helped about 60,000 teachers to promote the Chinese language internationally, and an estimated 40 million people were learning Chinese as a second language around the world (York, 2009).

In Ghana, the University of Ghana started running Chinese programmes in 2014 (News Ghana, 2016). Similarly, the University of Cape Coast (UCC) has begun running a BA Chinese language programme. Many private universities in Ghana have also included Chinese language in their courses. Additionally, a couple of high schools in Ghana have accepted Chinese language and training, including *Tàijí* (or *Tai Chi*), in their extracurricular activities. Basic schools, especially private ones, have also embraced the teaching of Chinese lessons to their students. All these, coupled with the fact that the language improves international relations and business with China and the rest of the world, confirm how relevant the Chinese language is.

Nevertheless, the researchers, being Chinese tutors, have realised that students find it difficult to form simple Chinese words and read fluently and understand. There appears to be inadequate knowledge of morphemes or morphological units of the Chinese words, and comprehension. This problem was supported by Zhong and Adegah (2022) who revealed that some Ghanaians find it difficult to form simple Chinese words using the *Hànyǔ Pīnyīn* (i.e., the official romanisation system for Standard Mandarin Chinese, which is often used to teach Mandarin to learners who are already familiar with the Latin alphabet), and this appears to influence their reading ability. Similarly, the researcher observed that many Chinese students could neither correctly read nor identify simple words written in simplified Chinese (*Pīnyīn* version) – such as *Lái*, *Zuò* and *Zhuó*, among others. From these, it could be inferred that there is a link between morphology and reading comprehension in Chinese language, since the ability to form and identify words serves as a precursor to reading and understanding what has been read (Stoffelson et al., 2020; Van de Werff, 2020).

Clearly, if this problem persists unaddressed, Ghana can be denied of the benefits associated with mastering the Chinese language. For instance, court cases involving Chinese citizens are adjourned simply because of lack of interpreters (Ampofo, 2017). Taking this into account, it is appropriate

to identify the potential factors that influence morphological awareness and reading comprehension in Chinese. Lakoff's theory posits that gender influences the level of language mastery of an individual. Similarly, Nguyen and Winsler (2022) and Trebits et al. (2022), among others, intimated that age could influence the ability to learn new or foreign languages. Considering these, a line of association can be drawn between age, gender, morphological awareness and reading comprehension in Chinese.

Nonetheless, there is modicum of knowledge of the effect of gender on morphological awareness and reading comprehension, as well as the relationship between morphological awareness and reading comprehension, as far as Chinese language is concerned. Majority of extant studies had different foci. For example, as some considered morphology and reading comprehension in English and other languages (Stoffelson et al., 2020; Van de Werff, 2020), others studied how gender influences performance in aspects of English language and its related variants, and other languages (Denton et al., 2014; Logan & Johnston, 2010). Even those that touched on Chinese language looked at elements such as attitudes towards learning Chinese, Chinese language ideologies, among others (Nguyen, 2022; Nkrumah & Opuku-Darko, 2020). Moreover, as far as the researcher was aware, no study has yet been done on the effect of gender on morphological awareness, gender on reading comprehension, as well as the relationship between morphological awareness and reading comprehension in Chinese language in Ghana or elsewhere, making this area a green one.

It was against this background that this study sought to determine the effects of gender on morphological awareness and reading comprehension, as well as the relationship between morphological awareness and reading comprehension in Chinese language in Ghana. Additionally, the following hypotheses were tested: *There is no significant difference between morphological awareness of Chinese students at UCC, with respect to gender; there is no significant difference between reading comprehension competence of Chinese students at UCC, with respect to gender; and there is no significant relationship between morphological awareness and reading comprehension competence of Chinese students at UCC.* This study will be significant to practice, policy and scholarship. Individual schools in Ghana, based on the findings of this study, may consider officially incorporating Chinese language into their curricula so as to benefit from the language use, and as well will get to know ways and techniques to employ to teach students of different gender for quick and timely mastery. The Ghana Education Service can use the findings to drive its educational policies concerning potential inclusion of Chinese language in the national curriculum. Furthermore, this study will serve as a pacesetter for future studies to be conducted on related topics, as it will contribute a worth of knowledge to the existing body of knowledge on Chinese scholarships.

MATERIALS AND METHODS

The study employed the positivist research philosophy. Positivism implies that independence is maintained and all human interests are disregarded in order to ensure objectivity (Wilson, 2017). This viewpoint was employed because, among other things, the study sought to determine relationship between variables, gender, morphological awareness and reading comprehension in Chinese language, using quantitative data which is consistent with the positivist research paradigm (Creswell et al., 2003). Also, prior related studies made use of this philosophical viewpoint (Van de Werff, 2020; Nkrumah & Opuku Darko, 2020; Nguyen, 2022). Consistent with this research

paradigm, the quantitative research approach which uses quantitative data to describe phenomena and focuses on measurements and numerical analysis of data to provide description (Levitt et al., 2018) was employed. With respect to design, the correlational research design was employed. According to Levitt et al. (2018), this design examines relationships between or among variables without implying causation, and since this study sought to determine, among others, the relationship between morphological awareness and reading comprehension in Chinese language, this design was deemed appropriate.

The target population was all the BA Chinese Language students of the University of Cape Coast. This comprised 100 students (48 males and 52 females) – twenty (20) in Level 100, fifty-five (55) in Level 200 and twenty-five (25) in Level 300. The entire population made up the sample frame. The participants making up the sample size were then selected using the census sampling method, as it was quite easy to have access to all the students. In respect of data collection instrument, a self-administered Morphological Awareness and Reading Comprehension in Chinese language Achievement Tests were used. This instrument was divided into three parts, viz., demographic information, Morphological Awareness Test and Reading Comprehension Test. Both tests were developed by the authors who are both Chinese language lecturers, with face and content validations provided by other two Chinese-native lecturers at the Confucius Institute at the University of Cape Coast.

The Morphological Awareness Test comprised 20 multiple choice questions. Each question carried four options labelled A to D. Nonetheless, there was only one correct option in each case. Each correct answer attracted one mark, making a total of 20 marks in all for 20 correct responses. An example of the morphological awareness test items and response options is as follows:

Question: *Wǒ.....University of Cape Coast xuéxí Hànyǔ.*

Options: A. *zài* B. *yě* C. *tài* D. *hěn*

The Reading Comprehension test was in two parts. The first part was to test students' reading skill, and they were made to read aloud a 300 word passage. Attention was given to correct pronunciation of words, taking cognisance of tones. The second part required the students to answer five questions based on the passage read in order to assess their overall comprehension of the content of the passage read. The total obtainable score for the reading comprehension test was also 20 marks.

Next, data collection activities were carried out. The entire process was carried out on 26th August, 2022. The tests were distributed among the students who agreed to partake in the study. Out of the sample size of 100 students, all the 100 students fully took part in the tests, and all the instruments were retrieved and found suitable for analysis. This number was deemed appropriate as it aligned with the minimum sample size of 100 recommended by Hair et al. (2010) to be suitable for conducting inferential analysis. It should also be mentioned that a pre-test of 50 instruments was done in another university prior to the main data collection so as to evaluate the appropriateness of the test instruments (Cooper & Schindler, 2006). This afforded the opportunity to obtain feedback from respondents regarding clarity of the questions as well as to determine the validity and reliability of the instrument.

After processing the data into a form appropriate for analysis, a descriptive analysis was carried out to provide descriptive statistics of the demographic information of the respondents, employing

frequencies and percentages. This was followed by description of scores obtained by the participants using statistical tools of means and standard deviations. Additionally, the first and second hypotheses were tested using the two independent samples t-test, and the third hypothesis tested using the Pearson product-moment correlation coefficient.

RESULTS

This section presents the analysis of demographic characteristics of the students, and the analyses in respect of the study objectives, as well as the tests of the corresponding hypotheses. From Table 1, 52 (52.0%) of the student participants were females whilst 42 (42.0%) were males. This implies that more female students than male students were reading the BA Chinese Language programme. The results also showed that majority of the students were 20 years and above (98, 98.0%), followed by those between the ages of 17 and 19 years (2, 2.0%). Considering their levels, 20 (20.0%), 55 (55.0%) and 25 (25.0%) were in Level 100, Level 200 and Level 300, respectively.

Table 1: Demographic information (N = 100)

Variables		Frequency	%
Gender	Female	52	52.0
	Male	48	48.0
Age	17years – 19years	2	2.0
	≥ 20years	98	98.0
Level	100	20	20.0
	200	55	55.0
	300	25	25.0

Source: Field survey (2022)

Classification of Students' Performance

The performances of students in both morphological awareness and reading comprehension in Chinese were converted to percentage points and classified into “above standard = scores above 70%”, “standard = from 50% to 70%”, “below standard = between 30% and 50%” and “academic warning = below 30%”. Besides, means and standard deviations were used to show the overall average performance in morphological awareness and reading comprehension in Chinese. From the results presented in Table 2, it could be seen that only two (2) students, representing (2.0%), obtained scores above 70% in morphological awareness. The results also showed that only 15 students met the academic standard, by obtaining scores of 50% to 70%, as far as the morphological awareness test is concerned. Forty-nine (49) students had scores of 30% and above but less than 50% which showed a below standard performance. Thirty-four students scored less than 30%.

With respect to Reading Comprehension Test, 25 (25.0%), 52 (52.0%), 12 (12%) and 11 (11.0%) students obtained scores of above 70%, from 50% to 70%, from 30% to below 50%, and below 30%, respectively. These fell under the classifications of “above standard”, “standard”, “below standard” and “academic warning”, respectively. Further, it could be seen from Table 2 that the average scores obtained by the students in Morphological Awareness Test and Reading Comprehension Achievement Test were ($M = 34.70\% \pm 14.67\%SD$) and ($M = 61.26\%$)

±23.59%SD), respectively; implying that majority of the students scored higher marks in Reading Comprehension Test than in the Morphological Awareness Test.

Table 2: Performance classification (N = 100)

Tests	Scores	F (%)	Mean±SD
Morphological awareness in Chinese language	> 70%	2 (2.0)	34.70±14.67
	≥ 50 % and ≤ 70%	15 (15.0)	
	≥ 30% and < 50%	49 (49.0)	
	< 30%	34 (34.0)	
Reading comprehension in Chinese language	> 70%	25 (25.0)	61.26±23.59
	≥ 50% and ≤ 70%	52 (52.0)	
	≥ 30% and < 50%	12 (12.0)	
	< 30%	11 (11.0)	

Source: Field survey (2022)

Gender and Morphological Awareness in Chinese Language

The two independent samples t-test was used to determine whether there was any difference between male and female Chinese students at the University of Cape Coast in terms of their level of morphological awareness, and as well test the significance of the difference. Whereas table 3 showed the average scores obtained in morphological awareness in Chinese language by both male and female students, table 4 showed whether there was any significant between these scores.

Table 3: Morphological awareness scores by gender (N = 100)

Test	Gender	Mean	SD	Std. Error Mean
Morphological awareness	Female	36.75	14.48	1.12
	Male	34.21	13.71	1.19

Source: Field survey (2022)

From table 3, it could be seen that the average score for female Chinese students was ($M = 36.75\% \pm 14.48\%SD$) and that for male students was ($M = 34.21\% \pm 13.71\%SD$). From these results, it could be inferred that there was a slight difference between male and female BA Chinese language students, with respect to their level of morphological awareness. The significance of this difference could be confirmed by the analysis of hypothesis presented in table 4.

Table 4: Gender and morphological awareness (N = 100)

	Levene's Test for Equality of Variances			t-test for Equality of Means					
	F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. E. Diff.	95% CI of the Diff.	
								Lower	Upper
Morphological awareness									
Equal variances assumed	1.34	.25	-1.67	98	.097	-2.54	1.70	-6.17	.51
Equal variances not assumed			-1.70	92.2	.09	-2.54	1.66	-6.10	.44

Source: Field survey (2022)

Table 4 showed the Levene’s Test for Equality of Variances and the t-test for Equality of Means. The Levene’s Test for Equality of Variances tests the homogeneity of variance between male and female Chinese students, with respect to morphological awareness. This is an assumption test required for the independent samples t-test. The result indicated that there was equal variance between male and female Chinese students at the University of Cape Coast, in terms of their average scores in morphological awareness, as the significance level was greater than 0.05 ($P = 0.25$). This suggested that the independent samples t-test could be carried out. The t-test then revealed that there was no statistically significant difference between male and female Chinese students, with respect to their level of morphological awareness; hence, failure to reject the null hypothesis that “*There is no significant difference between morphological awareness of Chinese learners at UCC, with respect to gender*”. This was depicted by the fact that the mean difference of -2.54 fell within a 95% CI of -6.17 to 0.51 which includes zero, with $t(98) = -1.67$ and $P = 0.097$.

Gender and Reading Comprehension in Chinese Language

The independent t-test was used to analyze whether there was any significant difference between male and female Chinese students at the University of Cape Coast with respect to reading comprehension in Chinese. The results are presented in table 5, which displayed the group statistics, and Table 6, which showed whether there was any significant between these female and male Chinese students with respect to reading comprehension.

Table 5: Reading comprehension by gender (N = 100)

Test	Gender	Mean	SD	Std. Error Mean
Reading comprehension	Female	65.19	28.18	1.98
	Male	67.83	26.71	2.27

Source: Field survey (2022)

The results displayed in table 5 showed an average score of ($M = 65.19\% \pm 28.18\%SD$) in reading comprehension in Chinese for female Chinese students, and an average score of ($M = 67.83\% \pm 26.71\%SD$) in reading comprehension for male Chinese students in the University of Cape Coast. These scores showed a slight difference in favour of the male BA Chinese students. The test of significance of the difference is displayed in table 6.

Table 6: Reading comprehension and gender (N =100)

	Levene’s Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. E. Diff.	95% CI of the Diff.	
								Lower	Upper
Reading comprehension									
Equal variances assumed	.21	.65	.87	98	.39	2.64	3.05	-3.35	8.63
Equal variances not assumed			.88	89.1	.38	2.64	3.01	-3.29	8.57

Source: Field survey (2022)

The Levene’s Test in table 6 has shown that there is homogeneity of variance between male and female Chinese students, with respect to reading comprehension, at the 5% significance level ($P = 0.65$). Next, the independent t-test revealed that there was no statistically significant difference between male and female BA Chinese students, with respect to reading comprehension; hence, failure to reject the null hypothesis that “*There is no significant difference between reading comprehension of Chinese language students at UCC, with respect to gender*”. This was shown in the mean difference of 2.64 which fell within a 95% CI of -3.35 to 8.63 which includes a zero, with $t(98) = 0.87$ and $P = 0.39$.

Morphological Awareness and Reading Comprehension

Table 7 displayed the relationship between morphological awareness and reading comprehension of BA Chinese language students at the University of Cape Coast. The analysis was done using the Pearson correlation coefficient. The results showed a statistically significant positive relationship between morphological awareness and reading comprehension in Chinese language ($r = 0.27$, $p < 0.001$); thus, rejection of the null hypothesis that “*There is no significant relationship between morphological awareness and reading comprehension competence of Chinese students*”. This result implies that as the morphological awareness of Chinese language students increases, their reading comprehension in Chinese language will improve as well, all things being equal.

Table 7: Correlation coefficients

	Morphological awareness	Reading comprehension
Morphological awareness	1	
Reading comprehension	.27**	1

** . Correlation is significant at the 0.001 level (2-tailed).

Source: Field survey (2022)

DISCUSSION

The study was focused on finding out the influence of gender on morphological awareness and reading comprehension in Chinese language of BA Chinese language students at the University of Cape Coast, as well as the relationship between morphological awareness and reading comprehension in Chinese language. First, drawing from the analysis, it appeared that the general performance of Chinese language students at the University of Cape Coast in both morphology and reading comprehension was not encouraging, as majority scored less than 70% in these two aspects of the Chinese language (Table 2), and this aligned with the findings of Zhong and Adegah (2022). Among other things, this level of performance could be attributed to the fact that the Chinese programme is still young; thus, the students have not had enough exposure to most of the concepts yet. Also, with respect to gender, the female Chinese students had fairly a higher knowledge of morphology than their male counterparts (Table 3). Nonetheless, it was further revealed that this difference was insignificant. This is to say that both male and female BA Chinese students at University of Cape Coast were not different when it comes to their awareness of morphology in the Chinese language. In other words, gender has no significant influence on morphological awareness of students studying Chinese language at the University of Cape Coast.

This finding is not surprising as both male and female students involved in the study were taught by lecturers who used similar teaching materials and resources, and this might have had the same

level of influence on the morphological awareness in Chinese language of both male and female students. In like manner, it could be that the students, both males and females, were exposed to similar techniques of studying morphemes in the Chinese language. Though inconsistent with the assertions of the Lakoff's theory (Lakoff, 1975), this finding agreed with the findings of a number of prior studies (Denton et al., 2014; Logan & Johnston, 2010).

Next, though male students were revealed to have obtained a slightly higher overage score in reading comprehension in Chinese language, compared to their female counterparts, the difference appeared insignificant; implying that both male and female students reading BA Chinese language at the University of Cape Coast were not different in terms of reading comprehension in Chinese language. This also means that gender has no significant effect on reading comprehension in Chinese language. Just as the morphological awareness, this finding could be due to the fact that both the male and female students involved in the study were taught by Chinese lecturers who had the requisite qualifications to teach the Chinese language, and had the right materials and resources at their disposal. This finding was in line with that of Denton et al. (2014) and Logan and Johnston (2010), though they focused on English language.

Moreover, it could be seen from the analysis that, overall, both male and female students performed better in reading comprehension than morphological awareness in Chinese language (Tables 3 & 5), and this could mean that the students pay more attention to reading activities than how words are form and the various syllables that make up the words they read. Interestingly, morphological awareness was revealed to have a direct association with reading comprehension; suggesting that improved morphological knowledge of students might enhance the students' competence in reading comprehension. This finding corroborates the findings of Stoffelsma et al. (2020) and Van de Werff (2020) who also reported a positive association between morphology and reading comprehension among students – though their foci were on English language. In all, it can be said that morphological awareness has a noteworthy relationship with reading comprehension in Chinese language whilst gender has no influence on students' knowledge in morphology and reading comprehension in Chinese language.

CONCLUSIONS AND RECOMMENDATIONS

This study has shown that irrespective of gender of students, performance in morphology and reading comprehension in Chinese language can be enhanced, and neither male nor female students will be disadvantaged. Also, it can be concluded that improving morphological awareness in Chinese language may increase BA Chinese students' competence in reading comprehension. Nonetheless, taking into account the average performances in morphological awareness and reading comprehension, it was revealed that, though the female students performed fairly better than their male counterparts in morphological awareness, their aggregated average was still below 50%. Similarly, the male students did better in reading comprehension than the female students.

Considering the foregoing, it was recommended that Chinese lecturers at the University of Cape Coast pay more attention to morphological awareness of both male and female BA Chinese students. The lecturers should also encourage group studies among both male and female students as they will be able to make up for each other's weaknesses and learn from one another, especially reading comprehension in which the male students appeared to be more competent than the female students. Moreover, the Ministry of Education, through the Ghana Education Service (GES), should consider incorporating Chinese language into the basic and secondary education systems

so that students will get early exposure to the grammatical components of the language before progressing to the University to read BA Chinese programme.

A major limitation to the study was that the focus was on only University of Cape Coast BA Chinese students, and data was only collected from these students, thus limiting the generalisability of the findings to other Chinese students. To address this limitation to ensure that the results are more generalisable, it is suggested that further studies cover all institutions running Chinese language as a course or programme in Ghana.

Author Contributions

Conceptualization, J.O-D.; methodology, J.O-D., and B.N.; data curation, J.O-D.; validation, J.O-D., and B.N.; analyses, J.O-D.; writing – original draft preparation, J.O-D.; writing – review and editing, B.N., and J.O-D.; resources, J.O-D., and B.N.; funding acquisition, J.O-D., and B.N. All authors have read and agreed to the published version of the manuscript.

Funding

This research received no external funding.

Institutional Review Board Statement

Because of the nature of the study, and in the absence of any involvement of medication, no formal approval of the Institutional Review Board of the local Ethics Committee was required. Nevertheless, all subjects were informed about the study and participation was fully on a voluntary basis. Participants were assured of confidentiality and anonymity of the information associated with the survey. The study was conducted according to the guidelines of the Declaration of Helsinki.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest

The authors declare no conflict of interest.

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