Foreign language reading anxiety in a Chinese as a foreign language context

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Abstract

This study examined the foreign language (FL) reading anxiety level of learners of Chinese as a FL ($n = 76$) in the United States. Data from an FL reading anxiety survey, a background information survey and a face-to-face interview indicated that there was no significant difference in reading anxiety level among four course levels. In general, Chinese L2 learners experienced a medium level of reading anxiety. 100- and 400-level students experienced higher levels of reading anxiety compared to 200- and 300-level students. A regression model with background variables such as years of learning Chinese, heritage learner status, the number of foreign languages learned, and time spent in China significantly predicted learners' reading anxiety levels and explained 15% of the variance in their reading anxiety. Worries relating to comprehension, unfamiliar topics, unknown pronunciation, and feeling uncomfortable reading aloud were identified as major sources of FL reading anxiety.

Keywords: FL reading anxiety, Chinese as a FL, class level, background variables

As a complex, multidimensional phenomenon, foreign language (FL) anxiety has been widely researched (Horwitz, 1986, 2001; Horwitz & Young, 1991; Horwitz, Horwitz, & Cope, 1986; MacLyntyre & Charos, 1996; MacIntyre & Gardner, 1989; Onwuegbuzie, Bailey, & Daley, 1999; Phillips, 1992; Proulx, 1991; Saito, Garza, & Horwitz, 1999; Shao, Yu, & Ji, 2013; Tran, Baldauf, & Moni, 2013; Yan & Horwitz, 2008). However, FL reading anxiety as an independent construct has only recently drawn researchers' attention, and reading anxiety in Chinese as a FL has been under-researched. This study examined the difference in FL reading anxiety levels across four course levels and the contribution of background variables to FL reading anxiety among learners of Chinese as a FL.

It is important to first distinguish FL anxiety from FL reading anxiety. FL anxiety was defined by Horwitz et al. (1986) as "a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (p. 128). FL anxiety is related to the general FL learning experience and can be detected by teachers as learners struggle to communicate in the target language (Horwitz et al., 1986). According to Saito et al. (1999), FL anxiety is most associated with the oral aspects of

language use: listening and speaking. The primary research in FL anxiety has centered on the difficulties caused by anxiety on oral performance (Aida, 1994; Horwitz et al., 1986). In contrast, FL reading anxiety is related to a specific language skill. It is the anxiety that learners experience while they are reading a passage in the target language. Saito et al.'s (1999) study found a correlation coefficient of .64 between FL anxiety and FL reading anxiety, which meant that the two measures shared approximately 41% of the variance. Thus, around 59% of the variance was not shared by the two measures. The researchers concluded that "FL reading anxiety is a phenomenon related to, but distinct from, general FL anxiety" (Saito et al., 1999, p. 211).

Researchers have found that FL reading anxiety is negatively correlated with FL reading performance (Saito et al., 1999; Sellers, 2000; Shi & Liu, 2006; Zhao, Guo & Dynia, 2013). For example, in Zhao et al.'s (2013) study, there was a significant negative correlation between FL reading anxiety and FL reading performance for elementary ($r = -0.45$, $p < 0.01$) and intermediate level participants ($r = -0.41$, $p < 0.05$). In Shi and Liu's (2006) study, students with high FL reading anxiety tended to score lower on English proficiency tests and reading comprehension tests. However, Joo and Damron (2015) found a medium positive correlation between FL reading anxiety and reading comprehension scores of second-year students ($r = .482$, $p < .05$), although no significant correlation was reported with other groups of students.

As for what causes FL reading anxiety, Saito et al. (1999) hypothesized that unfamiliar scripts and writing systems, as well as unfamiliar cultural material seem to have great potential in eliciting anxiety. With regard to unfamiliar writing systems, it seems that the less the reader can depend on the readability of a specific system of sound-symbol correspondence, the more anxiety he or she is expected to experience. While reading in a FL, the reader would first encounter the forms, decode them into sounds, build sound-form correspondences, and then try to process the meaning of the text. At this point, some readers may find that the words they decode do not constitute a meaningful message entity because of "the incomplete knowledge of the cultural material underlying the text" (p. 203). In their study of 383 English L1 students enrolled in university French, Japanese, and Russian courses, the findings showed that learners of Japanese were the most anxious ($M = 56.01$), followed by the French learners ($M = 53.14$), with Russian learners experiencing the lowest levels of anxiety ($M = 46.64$). The fact that the Japanese learners experienced the highest levels of anxiety was anticipated because of the unfamiliar and non-Roman writing system as well as the unfamiliar cultural content. However, since American students should be more familiar with the French writing system than the Russian one, which uses Cyrillic symbols, the finding that Russian provoked less anxiety than French was not expected. One potential interpretation may be that although Russian uses the Cyrillic alphabet, it is "phonetically dependable once learned" (Saito et al., 1999, p. 212). Even though French uses the Roman alphabet, it is "phonetically complex and divergent from English" (Saito et al., 1999, p. 212).

Chinese has a distinct writing system and reading Chinese may cause FL reading anxiety in learners of Chinese, especially in English-speaking learners of Chinese. Chinese and English writing systems require different word recognition skills (Perfetti & Liu, 2005; Smythe et al., 2008). Based on some eye movement studies and Event Related Potential (ERP) studies (Perfetti & Liu, 2005; Symthe et al., 2008), reading Chinese and English require different graphic, phonological, and semantic processing activities. Learners learning to read in Chinese need to

adjust to Chinese word recognition strategies, and a failure to do so might cause difficulties and make FL reading anxiety a salient factor. Zhao et al.'s (2013) study argued that FL reading anxiety specific to English speaking learners of Chinese may be high because of the large disparity between the two writing systems.

Unfamiliar writing systems and cultural content are only two possible causes of FL reading anxiety and they cannot explain all causes of reading anxiety. As Saito et al. (1999) concluded, the causes and manifestations of reading anxiety are probably more subtle and complex than their original hypothesis, suggesting the need to investigate the effects of other factors.

Zhao et al.'s (2013) study intended to investigate the relationship between certain background variables and the FL reading anxiety of 114 English L1 learners of Chinese. A regression model with gender, course level, and experience in China as independent variables, and FL reading anxiety as a dependent variable explained approximately 7.1% of the total variance. Gender was not a significant predictor ($\beta = 0.13$, $p > 0.05$), while course level ($\beta = 0.25$, $p < 0.05$) and experience with China to study Chinese ($\beta = -0.23$, $p < 0.05$) were significant predictors. To be more specific, students in Elementary Level I had significantly lower levels of FL reading anxiety than students in the Intermediate Level classes, but similar levels of FL reading anxiety to students in Elementary Level II. The results suggested that the relationship between course level and FL reading anxiety level was complex.

One limitation of Zhao et al.'s study was that an advanced group of students was not included in the research design. Since the advanced students read more authentic texts on a wider variety of topics, it would be interesting to investigate their FL reading anxiety level.

Experience with the target country was another background variable investigated by the researchers. Studies showed that an experience in the target country greatly reduced students' general FL anxiety levels (Aida, 1994; Huang, 2001). Aida found that for learners of Japanese, the experience of going to Japan had a significant impact on reducing anxiety levels. As for the relationship between experience with the target country and FL reading anxiety, Zhao et al.'s (2013) study showed that students who had been to China to study Chinese had a significantly lower level of FL reading anxiety compared to students who had not. However, the anxiety level was similar between those who did not go to China and those who had been to China for other purposes (e.g., travel).

Since the three predictors in Zhao et al.'s (2013) study only explained around 7% of the total variance in FL reading anxiety, it is essential to examine other background variables, which may have a greater explanatory power. The amount of time spent learning the target language and the number of foreign languages learned are two additional possible factors. As MacIntyre and Gardner (1991) put it, FL anxiety declines as learners' experience and proficiency increases. There are no studies directly investigating reading anxiety and the length of learning the target language. However, reading research has shown that the more one reads, the better one will become (Day & Bamford, 1998). Learners who have spent more time studying the target language may accumulate more vocabulary, grammatical structures and textual knowledge, which would facilitate the reading process and reduce FL reading anxiety. I hypothesize that the longer the learners learn the target language, the lower their reading anxiety will be. This study will explore the relationship between these two variables and FL reading anxiety.

The number of foreign languages learned is another factor worth investigating. Reading studies suggest that reading strategies, metacognition and metalinguistic knowledge are transferable from one language to another (Grabe, 2009). If this is the case, it is expected that as learners studies more languages, they will become more experienced readers, leading to reduced reading anxiety. However, research findings in FL anxiety have indicated that FL anxiety is "a stable personality trait" (MacIntyre & Gardner, 1991, p. 297), suggesting that FL reading anxiety may not be affected by factors like the number of foreign languages learned. Joo and Damron (2015) found that the number of foreign languages learned was a significant predictor of FL reading anxiety. Thus, it is worthwhile to investigate the relationship between the number of foreign languages learned and the level of FL reading anxiety among learners of Chinese.

The last factor to investigate is heritage learners. Xiao and Wong's (2014) study investigated Chinese heritage learners' anxiety about learning Chinese. They used anxiety scales for speaking, listening, reading, writing and a general FL anxiety scale. The study showed that writing anxiety received the highest mean value ($M = 3.02$, $SD = .65$), followed by reading anxiety ($M = 2.77$, $SD = .64$), speaking anxiety ($M = 2.65$, $SD = .87$), and listening anxiety ($M = 2.51$, $SD = .74$). However, there is no study investigating the difference in reading anxiety level between heritage and non-heritage learners.

The Puropose of the Present Study

The purpose of this study is threefold: first, I explore the relationship between four course levels and FL reading anxiety. Second, I examine the relationship between four background variables and FL reading anxiety, hoping that those four variables will explain a larger portion of variance compared to Zhao et al.'s (2013) study, which explained around 7% of the total variance in FL reading anxiety. Third, through interviews and analysis of survey results, I examine other possible sources of reading anxiety. The following three research questions will be addressed:

1. To what extent do learners of different course levels experience similar levels of FL reading anxiety?
2. To what extent is FL reading anxiety related to background variables like heritage learner status, knowledge of additional languages, time spent in China, and length of learning Chinese?
3. What are other possible causes of reading anxiety?

Method

Participants

The participants in this study were 76 learners of Chinese at a university in the United States (see Table 1). Twenty-two students (28.9%) were from the 100-, or beginning level; 20 were (26.3%) from the 200-level; 14 were (18.4%) from the 300-level and 20 were (26.3%) from the 400-level. The ages of the participants ranged from 18 to 52 ($M = 22$; $SD = 6.58$). Of the 76 participants,

fifteen were freshmen (20.5%); 19 were sophomores (26%); 13 were juniors (17.8 %); 20 were seniors (27.4%) and six were graduate students (8.2%). Thirty-six participants (47.4%) had not learned any other FL except Chinese; 26 participants (34.2%) had learned another FL besides Chinese; eight participants (10.5%) had learned two other foreign languages besides Chinese, and six (7.9 %) had learned four foreign languages, including Chinese. The number of years of Chinese study ranged from five months to 12 years, with a mean of 3.43 years. Among the 76 participants, fourteen (18.7%) were heritage learners and 61 (81.3%) were non-heritage learners. Participants were coded as heritage learners if they were born in China and selected Chinese as their native language on the background information questionnaire. Fifty-six participants (75.7%) had been to China previously. The length of stay ranged from one week to 15 years, with an average length of stay of 1.36 years. Eighteen participants (24.3%) had never been to China.

Table 1. *Descriptive statistics of the participants*

Variable	Category	Frequency	Percentage
Class level	100 level	22	28.9%
	200 level	20	26.3%
	300 level	14	18.4%
	400 level	20	26.3%
Grade	Freshman	15	20.5%
	Sophomore	19	26%%
	Junior	13	17.8%
	Senior	20	27.4%
	Graduate	6	8.2%
Number of foreign languages learned	1 (Chinese)	36	47.4%
	2 (Chinese and another)	26	34.2%
	3 (Chinese and another two)	8	10.5%
	4 (Chinese and another three)	6	7.9%
Have been to China	Yes	56	75.7%
	No	18	24.3%
Heritage learners	Yes	14	18.7%
	No	61	81.3%

Instruments

FL reading anxiety scale. The FL reading anxiety scale (Appendix A) was adapted from the FL Reading Anxiety Scale (FLRAS) by Saito et al. (1999). The words, *English, French, Japanese* and *Russian* in the original were substituted for the word, *Chinese*. Participants were asked to indicate the extent to which they agreed or disagreed with statements on the form using a 5-point Likert-type scale from 5 (strongly agree) to 1 (strongly disagree). The negatively worded items were reverse scored, so that high scores on the anxiety instrument represented high levels of anxiety. The Cronbach's α analysis of scale reliability was .88, which indicated that the scale was a reliable measure of reading anxiety.

Background information questionniare. The background information questionnaire (Appendix B) was designed to solicit information about various aspects of learner differences, including course level, age, year, major, native language, birthplace, number of foreign languages learned, years spent learning Chinese, travel to China, and so on. For the present study, we used the data

regarding course level (100-, 200-, 300-, and 400-level), travel to China, the number of foreign languages learnerd, and heritage learner status.

Interview. On the background information questionnaire, participants could choose whether they were willing to be interviewed. Among those who indicated they were willing to be interviewed, two learners with a low level of reading anxiety and two with a high level of reading anxiety were selected for a face-to-face interview. The interview was composed of two parts. The first part used FL reading anxiety items as prompts and asked the interviewees the reasons why they circled a certain number on the scale. The second part began with general questions about how participants felt about Chinese reading and then continued to more specific questions on the difficulties of and strategies used in reading Chinese (Appendix C). The 80-minute interviews were audio-recorded. Emerging themes were identified from the students' responses regarding the causes of reading anxiety.

Results

RQ1:   To what extent do learners of different course levels experience similar levels of FL reading anxiety?

A one-way ANOVA was conducted to examine whether learners of different course levels had similar or differing levels of reading anxiety. As displayed in Table 2, overall, learners of Chinese experienced an above medium level of reading anxiety ($M = 2.80$, $SD = .57$). The 100-level learners experienced the highest level of reading anxiety, with a mean of 2.84 ($SD = .53$), followed by the 400-level learners ($M = 2.81$, $SD = .51$). The 200-level students experienced slightly higher reading anxiety ($M = 2.79$, $SD = .57$) compared to the 300-level learners ($M = 2.73$, $SD = .74$). Figure 1 shows the mean distribution of reading anxiety of participants across four course levels.

Table 2. *Descriptive Statistics for FL Reading Anxiety of Different Course Levels*

	N	*M*	*SD*	95% CI	Min	Max
100-Level	22	2.84	0.53	[2.60, 3.07]	1.8	4.05
200-Level	20	2.79	0.57	[2.51, 3.07]	1.85	4.05
300-Level	14	2.73	0.74	[2.31. 3.16]	1.35	3.85
400-Level	20	2.81	0.51	[2.57, 3.04]	1.85	3.8
Total	76	2.8	0.57	[2.67, 2.93]	1.35	4.05
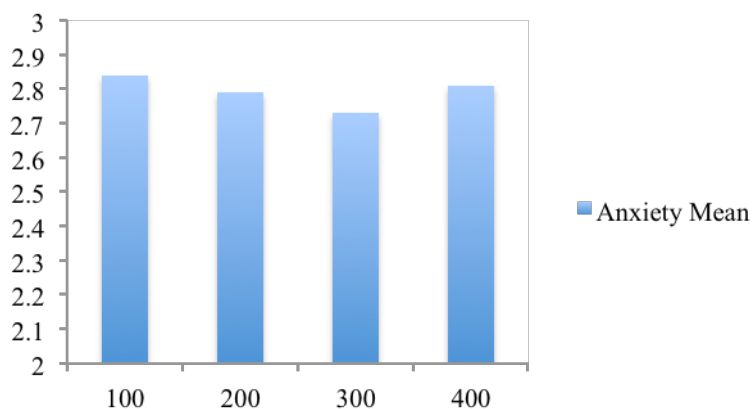
Figure 1. Mean plot of FL reading anxiety across four course levels

However, even though 100- and 400-level learners had higher levels of reading anxiety compared to the 200- and 300-level learners, the differences among course levels were not significant ($F = 0.10$, $p > 0.05$).

RQ2:   To what extent is FL reading anxiety related to background variables like heritage learner status, knowledge of additional languages, travel to China, and length of time spent learning Chinese?

To answer this research question, a multiple linear regression analysis was undertaken to examine variance in FL reading anxiety. Four predictors (the length of studying Chinese, the number of FLs learned, heritage learners status, and travel to China) were loaded into the model using the "Enter" method. Heritage learners were dummy coded to one variable (1 = heritage learners; 0 = non-heritage learners). Having been to China was coded as one, and not having being to China was coded as zero. The length of time spent studying Chinese and the number of foreign languages learned were regarded as continuous variables.

Before performing the analysis, evaluation of normality of error distribution was conducted to ensure that the assumptions for multiple regression were met. The results showed that there was no violation of the assumptions of multiple regression analysis. Outliers were also checked, and the Casewise diagnostics output showed that no outliers were found. Multicollinearity was also checked, and no two predictor variables were highly correlated.

The model was significant, $F(4, 68) = 3.078$, $p < 0.05$, which indicated that the four independent variables significantly predicted learners' FL reading anxiety level (Table 3). Altogether, the four independent variables explained 15% of the variance ($R = .392$) in FL reading anxiety.

Table 3. *Multiple Linear Regression Analysis of FL Reading Anxiety*

Predictor variable	R^2	F	P	Constant	B	T	P	95% of CI for B	
								Lower	Upper
Model	0.153	3.078	0.02	56.7					
Heritage learner					-8.709	-2.595	0.012	-15.407	-2.011
Being to China					2.537	0.814	0.419	-3.684	8.759
Number of FL					1.689	1.241	0.219	-1.028	4.406
Years of Chinese					-1.193	-2.074	0.042	-2.341	-0.045

Two of the background variables, years learning Chinese (β = -.1.193, t = -2.074, p < 0.05) and heritage learner status (β = -8.709, t = -2.595, p < 0.05), were significant predictors of learners' FL reading anxiety. A correlation analysis was also conducted to assess the relationship between length of Chinese learning and FL reading anxiety. Years spent learning Chinese was found to be negatively associated with FL reading anxiety (r = -.216), indicating that the longer an individual learns Chinese, the lower his or her FL reading anxiety. In addition, heritage learners (M = 2.47, SD = .54) experienced significantly lower levels of reading anxiety compared to non-heritage learners (M = 2.87, SD = .55).

As for the variable, travel to China, those who had been to China (M = 2.78, SD = .57) had a lower level of reading anxiety compared to those who have not been to China (M = 2.83, SD = .60); however, the difference was not significant.

The number of foreign languages learned was not a significant predictor of FL reading anxiety. The mean analysis found that the learners who only studied Chinese (M = 2.79, SD = .58) or Chinese and another FL (M = 2.67, SD = .51) had lower FL reading anxiety than those who had studied three (M = 3.03, SD = .60) or four foreign languages (M = 3.08, SD = .65). It seems that the experience of learning more foreign languages did not reduce anxiety in learning to read in Chinese.

RQ 3: What are possible reasons leading to reading anxiety?

The mean scores of all items in the FL reading anxiety scale were calculated and items 1, 4, 5, 8 and 17 were found to have a mean larger than 3. Item 1 (I get upset when I am not sure whether I understand what I am reading in Chinese) had a mean of 3.17, item 4 (I feel intimidated whenever I see a whole page of Chinese in front of me) had a mean of 3, and item 5 (I am nervous when I am reading a passage in Chinese when I am not familiar with the topic) had a mean of 3.21. Item 8 (M = 3.20) was concerned with the pronunciation of Chinese (It bothers me to encounter words I can't pronounce while reading Chinese). Lastly, item 17 (M = 3.11) was concerned with reading aloud (I don't mind reading to myself, but I feel very uncomfortable when I have to read Chinese aloud). A scale of 3.0 reflects a response of "neutral" on the FL reading anxiety scale, thus a score above 3 indicates that participants tended to "strongly agree" or "agree" with the item. Based on learners' responses to those items and the face-to-face interview data, several sources of reading anxiety were identified: unfamiliar topics, worries about comprehension, unknown pronunciation, and reading aloud.

Unfamiliar topics. Topic unfamiliarity was one of the main sources of FL reading anxiety. Forty-

nine percent of the participants strongly agreed or agreed that they felt worried if they were not familiar with the topics. In (1), the interviewer read item 5 on the FL anxiety scale and invited the interviewee to explain why he chose a certain point value. The interviewee explained why unfamiliar topics caused reading anxiety.

(1)
IR: I am nervous when I am reading a passage in Chinese when I am not familiar with the topic.
IE: usually when it's new topic, it's new vocabulary, and new grammar, so it is like all brand new stuff. Then when you start to read it, it is more difficult.

Unknown pronunciation. Forty-nine percent of the participants strongly agreed or agreed with item 8, "it bothers me to encounter words I can't pronounce while reading Chinese." The interviewee in (2) stated that unknown pronunciation bothered him because pronunciation was one of his strong points. In (3), another interviewee mentioned the importance of phonetic radicals in Chinese.

(2)
IR: Eight, it bothers me to encounter words I can't pronounce while reading Chinese, why you chose agree? It seems you are very good at reading.
IE: I would not say I am good at it, but I would say I am better at it than other aspects of Chinese. So when I encounter a word that I can't pronounce, that is a disappointing feeling because you know if this is one of my stronger aspects and I can't do it, and what does that say?

(3)
IR: Eight, it bothers me to encounter words I can't pronounce while reading Chinese. Strongly agree.
IE: yeah, so then I see a word that I remember, oh this looks so familiar but I don't know how to say it, so that makes me mad cause I have learned this before but it had not stuck.
IR: Then do you think like knowing how to read, pronounce the word will help your reading?
IE: I think so. I think so.
IR: like why?
IE: Usually in Chinese, I have noticed that there are a lot of patterns, like "fu," even though there are different kinds, there is one radical that has the same, that might tend to have the same pinyin, just different tones. I noticed that if you know a radical, you know how to say it, it helps. If you see another character that is totally foreign, and you can guess and you might be right.

Reading aloud. Forty-five percent of the participants indicated that they either agreed or strongly agreed that they did not mind reading aloud to themselves, but that they felt very uncomfortable when they had to read Chinese aloud in front of others. The interview data showed that this discomfort was related to and affected by the context. As indicated in (4), having classmates who were better Chinese speakers was the reason why the interviewee felt uncomfortable reading aloud in class. In (5), the learner did not mind reading aloud if he knew how to pronounce the words.

(4)
IR: 17, I don't mind reading to myself, but I feel very uncomfortable when I have to read Chinese aloud.
IE 1:   So at home, I read to myself, but then in the class where there is a lot of Chinese speakers, better Chinese speakers, and it is a little bit intimidating.

(5)
IR: 17, I don't mind reading to myself, but I feel very uncomfortable when I have to read Chinese aloud. So you chose disagree.
IE 2:   As long as I can pronounce the word, it is not so bad.
IR: Um, do you think reading aloud helps your, like reading?
IE 2:   Yes, I think so.

Worry about comprehension. Worry about comprehension was another major source of FL reading anxiety. Forty-two percent of the participants agreed or strongly agreed with item 1, "I get upset when I am not sure whether I understand what I am reading in Chinese." In (6), the interviewee explained how reading does not equal to comprehension.

(6)
IR: so first, I get upset when I am not sure whether I understand what I am reading in Chinese, why did you choose "agree"?
IE: Um, because it can be frustrating sometimes, actually I feel like a lot of times I recognize the character, and I recognize, and I know how to say it, how to pronounce, and I know the Pinyin, but I don't really understand the word or or maybe the phrase or the sentence. And I think it is one thing to be able to like read a paragraph, or a page, or whatever, it is another thing to comprehend.
IR: yes, yes, I agree!

Discussion

This study was undertaken to address issues concerning (a) the level of FL reading anxiety of learners of Chinese as a FL across four course levels, (b) the extent to which four background variables, length of study of Chinese, travel to China, heritage learner status, and the number of foreign languages learned can predict learners' FL reading anxiety, and (c) the main sources of FL reading anxiety.

FL reading anxiety across course levels

The results showed that in general, learners of Chinese as a FL experienced an above medium level of reading anxiety ($M = 2.80$), which is slightly higher than the mean reported in Zhao et al.'s (2013) study ($M = 2.68$). To be more specific, 100-level learners experienced the highest levels of reading anxiety. From the 100- to the 300- level, learners' FL reading anxiety decreased as course level went up. However, the 400-level learners experienced a level of reading anxiety similar to that of the 100-level students, indicating that other factors besides

course level were affecting their reading anxiety levels. The results of this study partially support Zhao et al.'s findings. In their study, Elementary Level I students experienced similar levels of reading anxiety as Elementary Level II students, but the elementary level students experienced significantly lower anxiety levels than the intermediate students. In this study, reading anxiety levels decreased as course level increased from the 100- to the 300-level.

The reason why 100-level students experienced the highest level of reading anxiety may be due to the fact that those in the 100 level were not very familiar with the Chinese writing system. Chinese character recognition may cause a lot of anxiety for these students. Even though in 100-level textbooks, Pinyin, the Romanized Chinese pronunciation system, is provided to help students build sound-form correspondence, character recognition is highly encouraged and required. In addition, quizzes and tests did not provide Pinyin for Chinese characters, which further showed that recognizing characters was essential.

Word recognition is a lower-level processing activity, and it is essential to recognize the role played by lower-level processing. According to Grabe (2009), word recognition is one of the most important processes contributing to reading comprehension. Fluent reading comprehension is not possible without rapid and automatic recognition of a large number of sight vocabulary. Word recognition involves the interaction of activated orthographic, phonological, semantic and syntactic processes (Perfetti, 2007). The longer lower-level processing takes, the lesser the capacity for higher-level processing, or comprehension of the meaning of the passage. Previous research has shown that English-speaking learners usually cannot successfully adjust to different word recognition activities in Chinese and they tend to rely on Pinyin while reading in Chinese (Everson, 1994; Hayes, 1988). Thus, inefficient word recognition may lead to unsuccessful reading comprehension, and as a result, to reading anxiety.

The 200- and 300-level students had lower reading anxiety. One way to explain this result is that familiarity with Chinese characters, and an increase in knowledge of radicals and sound-form correspondence may lead to more efficient word recognition skills. With more efficient word recognition skills, learners may be able to allocate more cognitive resources to comprehending the message of the reading passage. One student interviewed made use of phonetical radicals in Chinese to increase the efficiency of character recognition. Another participant stated that as long as one got used to reading Chinese, it was not that intimidating. Hence, as students' proficiency level increased, their reading anxiety level decreased, at least through the 300-level.

The 400-level students experienced the second highest level of reading anxiety. Reading material may be one of the reasons. In this study, the 100- and 200-level students were using *Integrated Chinese* by Liu, Yao, & Yao (2010) as their textbook. The 300-level students were using *Chinese Reader*, which was edited by Shen, Zhou, & Zhao (2013). One commonality between the two textbooks was that they did not include authentic reading materials. The dialogues and short passages in *Integrated Chinese* were written for beginning- and intermediate-level students. Even though the reading passages in *Chinese Reader* were mainly selected from online versions of Chinese newspapers, "the authors of this textbook made considerable modifications to the selected materials from the newspapers to fit the learning level" (Shen et al., 2013, p. XXVI). To the best of my knowledge, the 400-level students were using authentic readings selected from Chinese newspapers. Authentic text is defined as "unedited, unabridged text that is written for

native speakers" (Scarcella & Oxford, 1992). It seems that although the students reached the 400-level, authentic texts were still a bit too difficult for them. Authentic texts usually mean more advanced vocabulary and grammar, and therefore require more resources from readers to comprehend the messages of the passage, thus raising the potential for a higher level of anxiety. This possibility is also backed up by Brantmeier's (2005) study, in which learners of Spanish reported higher levels of reading anxiety with more difficult Spanish courses than with less difficult ones.

The relationship between background variables and FL reading anxiety

Our second main finding was that a model with four predictors significantly explained 15% of the variance in FL reading anxiety. Among the four predictors, heritage leaner status and amount of time spent learning Chinese were two significant predictors of reading anxiety. In general, heritage learners experienced a slightly below medium level of reading anxiety ($M = 2.47$). Xiao and Wong's (2014) study examined the listening, speaking, reading and writing anxiety of heritage learners of Chinese. The results indicated that the highest anxiety experienced by heritage learners was writing anxiety, followed by reading anxiety, speaking anxiety, and then listening anxiety. The Chinese heritage learners in their study experienced a slightly above medium level of reading anxiety ($M = 2.70$). As pointed out by Xiao and Wong (2014), even though heritage learners have acceptable speaking skills, heritage students are not immune to reading and writing anxiety. The main reason may be that despite heritage learners having a large amount of listening input and speaking output, reading input and writing output may not be insufficient. Thus, the reading anxiety of heritage learners should receive more attention from researchers and educators.

Despite heritage learners experiencing a medium level of reading anxiety, their reading anxiety level was significantly lower than non-heritage learners. This could be explained through better phonological processing and faster word recognition. Phonological processing is a key aspect of word recognition and a universal aspect of reading. According to Hulme, Snowling, Caravolas, & Carroll (2005, as cited in Grabe, 2009), for the majority of words that were processed while reading, phonological activation of the form played a major role. Past research has shown that learners of Chinese made use of phonological clues in the characters and use phonological information from the initial point of character recognition (Chow, McBride-Chang, & Burgess, 2005; He, Wang, & Anderson, 2005; Perfetti, 2003). Heritage learners, through listening and speaking, build phonological knowledge of Chinese before learning to recognize characters, which would enable them to build faster sound-form correspondences and facilitate their character recognition.

Learning to read Chinese takes time. Even though it is difficult at the beginning, with more experience with the language and an increasing proficiency level, learners may find reading in Chinese less intimidating, which would explain why learners who studied Chinese longer had significantly lower levels of reading anxiety than those who studied Chinese for a shorter period of time.

The number of foreign languages learned was not a significant predictor of reading anxiety. This finding contradicts the findings of Joo and Damron (2015) who found that the number of foreign

languages learned was a sifnificant predictor of reading anxiety. The results of the present study reveal that students who learned a smaller number of foreign languages had lower levels of reading anxiety compared to learners who had learned more than two foreign languages. It seems that reading anxiety is not related to the number of foreign languages one has learned, but to how long a learner has been learning the target language. Saito et al.'s (1999) reading anxiety levels were dependent on the specific target language. Because of its unique writing system, Chinese may cause higher levels of anxiety even for learners who have rich language learning experience. As for why learners who learned more foreign languages had higher levels of reading anxiety in Chinese, one explanation may be that learners who chose to learn more foreign languages were highly motivated and put more effort into learning Chinese, hoping to be better learners of Chinese. However, because of the unfamiliar script, they felt more anxious.

Learners who had experience in the target country experienced lower levels of reading anxiety compared to those who had never been to the country. This result is supported by previous studies (Aida, 1994; Zhao et al., 2013). Opportunities to study Chinese in China, travel in China, visit family members in China, and do internships in China all facilitate the learning of Chinese and reduce reading anxiety. Traveling to China results in more opportunities for reading Chinese in and out of classes, which can be expected to reduce reading anxiety. However, this factor was not a significant predictor of FL reading anxiety.

Main sources of FL reading anxiety

The last major finding of the study was concerned with the sources of reading anxiety. Worry about comprehension, unfamiliar topics, unknown pronunciation, and feeling uncomfortable reading aloud were identified as major sources of reading anxiety. These findings expand on Zhao et al.'s (2013) sources of reading anxiety by adding two new sources of reading anxiety: unknown pronunciation and discomfort reading aloud. Worry about comprehension occurred when learners could understand single words, but still could not decode the meaning of the reading passage, or when learners spent too many cognitive resources on lower-level word processing, and could not allocate more resources to higher-level meaning processing. The Chinese writing system has its own unique features. For example, there are no spaces between Chinese characters. According to Shen and Ke (2007), a Chinese word can be composed of one, two or three characters, but two-character words compose 74% of the total corpus of commonly used words. This fact indicates that learners not only need to conduct orthographical and phonological processing, but also need to combine characters together into meaningful two-character or three-character words. Without a large amount of sight vocabulary, this lower-level processing is very time-consuming and may not be successful. This finding is also supported by students' interview data. One student said that he could pronounce each word and recognize the characters, but still could not understand the meaning of the sentence.

Feeling uncomfortable reading aloud is another source of reading anxiety. Benefits of reading aloud is a debatable issue. According to Gibson (2008), reading aloud can help reading by reinforcing graphic-phonemic correspondences and aiding the acquisition of prosodic features of the target language. It can also help the development of writing skills through oral proofreading. However, reading aloud seems to have been discouraged in communicative teaching methodologies for the past three decades. The main objection is that, "it is dull and boring,

anxiety provoking, and of negligible benefit for the students" (Gibson, 2008, p. 29). From the interview, one student said that she does not mind reading aloud to herself, but feels uncomfortable reading aloud in class. Another student told the researcher that if he knows how to pronounce the words, he does not mind reading aloud. Thus, as Gibson (2008) pointed out in the conclusion of his article, if the teachers want to use reading aloud successfully, it needs to be used "sparingly, sensitively and appropriately" (p. 35).

Pedagogical implications

Recognizing reading anxiety and its sources would allow teachers to adopt supportive approaches to deal with the issue. Horwitz et al. (1986) suggested two options: (a) help students cope with anxiety-producing situations and (b) make the learning context less stressful. First, teachers should be aware of reading difficulties and teach students reading strategies they can use to overcome those difficulties. A common phenomenon among less experienced readers is that they try to understand everything they read and end up translating word by word but still cannot decipher the message of the passage. Reading strategies instruction can help learners become better readers.

Second, in order to help readers become better at reading, teachers should enhance learners' lower-level reading skills, such as word recognition and semantic parsing. Only with successful and efficient lower-level processing can cognition resources be allocated to higher-level processing of the meaning of the passage.

Third, one method to improve lower-level processing is to read extensively on a variety of topics. Extensive reading (Day & Bamford, 1998) has been a very efficient way to motivate readers and to enhance reading fluency. Ro and Chen's (2014) study also showed that extensive reading could motivate FL learners. Teachers can draw on extensive reading research and adopt the extensive reading approach in their reading curriculum. *Chinese breeze* (汉语风), which was edited by Liu and Chu (2008), is an example of a series of graded readers in Chinese that can be used by students and teachers. One interviewee in the present study had extensive reading experience when she was young. Her sister worked in a bookstore in Taiwan and brought her books to read. She developed a very positive attitude toward reading in Chinese and her reading anxiety was very low. This interviewee recommended reading on a variety of topics.

Lastly, reading aloud can be adopted as a teaching tool in class, but teachers should do a lot of preparation work in advance. For example, the teacher can ask students to read in small groups first before identifying a certain student to read aloud to the class.

Conclusion

The present study is consistent with previously reported quantitative findings on FL reading anxiety experienced by learners of Chinese as a FL (Xiao & Wong, 2014; Zhao et al., 2013). This study also furthers our understanding of factors associated with reading anxiety (Joo & Damron, 2015; Onwezgbuzie et al., 1999; Saito et al., 1999; Zhao et al., 2013).

It is not surprising that reading is a subject of anxiety, and it is important to understand the functions and the sources of anxiety. The present study found that learners' anxiety levels decreased as their course level increased, and after they had accumulated more experience learning the language. However, other factors may play a role as well. For 400-level learners, authentic reading materials may lead to higher levels of reading anxiety.

Using multiple-regression, the present study also built a model with four predictors of FL reading anxiety levels. Travel to China, heritage learner status, length of time spent learning Chinese, and number of languages known can successfully predict approximately 15% of the total variance in reading anxiety. In particular, heritage learners experienced significantly lower levels of reading anxiety compared to non-heritage learners and those who have been learning Chinese for a longer period of time experienced a significantly lower level of reading anxiety than those who have been learning Chinese for a shorter period of time.

More sources of reading anxiety were also identified in the present study. In particular, unknown pronunciation and reading aloud were found to provoke anxiety in learners of Chinese. Future studies of reading anxiety should direct attention to the textual, personal and sociocultural factors associated with FL reading anxiety.

Acknowledgments

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Appendix A

Foreign Language Reading Anxiety Scale

CHN _____Your name_____

Directions: Statements 1 through 20 refer to how you feel about reading Chinese. For each statement, please indicate whether you (1) strongly agree, (2) agree, (3) neutral, (4) disagree, or (5) strongly disagree by circling the appropriate number on the line following each statement. Please give your first reaction to each statement and circle an answer for every statement.

1.   I get upset when I'm not sure whether I understand what I am reading in Chinese.
        (1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree
2.   When reading Chinese, I often understand the words but still can't quite understand what the

author is saying.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

3. When I'm reading Chinese, I get so confused I can't remember what I'm reading.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

4. I feel intimidated whenever I see a whole page of Chinese in front of me.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

5. I am nervous when I am reading a passage in Chinese when I am not familiar with the topic.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

6. I get upset whenever I encounter unknown grammar when reading Chinese.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

7. When reading Chinese, I get nervous and confused when I don't understand every word.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

8. It bothers me to encounter words I can't pronounce while reading Chinese.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

9. I usually end up translating word by word when I'm reading Chinese.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

10. By the time you get past the funny letters and symbols in Chinese, it's hard to remember what you're reading about.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

11. I am worried about all the new symbols I have to learn in order to read Chinese.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

12. I enjoy reading Chinese.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

13. I feel confident when I am reading in Chinese.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

14. Once you get used to it, reading Chinese is not so difficult.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

15. The hardest part of learning Chinese is learning to read.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

16. I would be happy to learn to speak Chinese rather than having to learn to read as well.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

17. I don't mind reading to myself, but I feel very uncomfortable when I have to read Chinese aloud.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

18. I am satisfied with the level of reading ability in Chinese that I have achieved so far.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

19. Chinese culture and ideas seem very foreign to me.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

20. You have to know so much about Chinese history and culture in order to read Chinese.
(1) strongly agree (2) agree (3) neutral (4) disagree (5) strongly disagree

Thank you so much!

Appendix B

Background Information Survey

1. Name: (English) _____ Age _____
2. Year (Circle one): Fr. So. Jr. Sr. Graduate Student
3. Concentration (Major): _____

4. What is your native language? _____
5.1 I was born in US
5.2 I was not born in the US
    I came from _____, at age _____, I have been in the US for _____ years
6. Have you taken any foreign languages? Yes/No (circle one)
    Language   up to what level   # of years

    _____   _____   _____
    _____   _____   _____
    _____   _____   _____
    _____   _____   _____

7. How many years of Chinese have you taken?
    Where (names of institutions or countries)   to what level   Years
    College _____ _____ _____
    High School _____ _____ _____
    Study Abroad _____ _____ _____
    Heritage School _____ _____ _____
    Elementary School_____ _____ _____
    others (Churches, Tutoring, etc.) _____ _____ _____
8. Have you ever been to China, Hongkong or Taiwan? Yes/ No (circle one)
    If yes, where _____, for how long_____
    For what purpose: travel/study abroad/ internship/ other_____(circle one)

    Thank you so much!

    Signature: _____ Date:_____

Appendix C

Interview Questions (Part Two)

1. How do you feel about Chinese reading?
2. What is the most difficult part in learning to read in Chinese?
3. Will that make you feel anxious?
4. What do you think will make you improve in Chinese reading?

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