An investigation of the language learning strategies used by Brazilian students learning Chinese as a foreign language

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ABSTRACT

This study aimed to examine the strategy use of Brazilian students learning Chinese as a foreign language (CFL) and the factors that might affect the variations in strategy use. The Strategy Inventory for Language Learning was employed as the research instrument, and altogether 120 students in a Confucius Institute in Brazil participated in the questionnaire survey. Statistical analyses of the data revealed that metacognitive and social strategies were the most frequently employed strategies by the participants. No significant differences were observed in the use of either overall or individual strategies by gender, age, or education level. Chinese proficiency level was found to impose main effects on the learners' overall strategy use as well as on the use of memory and cognitive strategies. This study has pedagogical implications for CFL teachers, as findings related to the learners’ strategy use and the influencing factors can help CFL teachers tailor their instructions to the learner groups.

1. Introduction

Research on language learning strategies (LLS) started in the 1970s with the attempt by Rubin (1975) and Naiman et al. (1978) to identify the characteristics of successful language learners. Great quantities of studies have been conducted in this field since then. However, LLS research has encountered a bottleneck due to the vagueness in the definitions of learning strategies (Cohen, 2011; Griffiths, 2008) and the criticism on the research instruments (Tseng et al., 2006; Griffiths and Oxford, 2014). Despite these controversies, it is acknowledged by researchers that research on and training of learning strategies can benefit language learners’ autonomous learning and teachers’ classroom instruction (Cohen, 2011; Rubin, 1975).

While the past few years has witnessed the increasing popularity of Chinese learning around the world (Cáceres-Lorenzo, 2015; Lee-Thompson, 2008), research on Chinese learning strategies remains comparatively scant (Chu et al., 2015). In the meantime, existing research on this topic has largely been restricted to students in English-speaking countries (e.g. Bruen, 2017; Shen, 2005; Zhang, 2011) or in Chinese-speaking countries (e.g. Chu et al., 2015; Lin and Liu, 2005).

Since 2008, China has established 10 Confucius Institutes in Brazil. While Chinese is gaining popularity as a foreign language in Brazil, so far there has been little research on the LLS of Brazilian learners of Chinese as a foreign language (CFL). In her study of Brazilian students’ learning beliefs, Barcelos (2000) highlighted the difference in the participants’ belief about English learning in Brazil and in the U.S. Owing to the limited class hours and insufficient exposure to the target language, some participants viewed English learning in Brazil as unauthentic. Brazilian students learning Chinese might likewise hold different beliefs from those who learn Chinese in other countries, particularly in Chinese-speaking countries. According to LoCastro (1994), learners’ choice of learning strategies might vary across learning contexts, because the beliefs embedded in different contexts are diverse. The present study, therefore, aims to examine the learning strategies adopted by Brazilian CFL learners and the contributing factors, so as to generate further understanding of Chinese learning strategies in diverse learning contexts.

2. Literature review

2.1. Defining and assessing LLS

There has been no consensus on the definition and classification of LLS. However, as Griffiths (2008) points out, a clear definition is essential for meaningful research. Therefore, this study adopts the famous definition provided by Oxford (1990) that LLS are “specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations” (p.8). According to Oxford (1990), LLS can be divided into direct

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strategies and indirect strategies. The former refers to strategies that are directly involved in the learning of the target language and requires processing of the language in the brain. The latter indirectly supports language learning via means such as focusing, planning, evaluating, seeking opportunities, controlling anxiety, enhancing collaboration, and empathy. Direct strategies are further classified into memory, cognitive and compensation strategies, while the indirect ones include metacognitive, affective and social strategies. These two types of strategies are interrelated and mutually supportive. This taxonomy serves as the basis of the Strategy Inventory for Language Learning (SILL) designed by Oxford, which is one of the most widely applied instruments for assessing LLS.

SILL has been questioned by some researchers for its focus on frequency and for whether it is applicable in diverse contexts. Yamamori et al. (2003) stated that one could not judge a learner’s success merely by how frequently he or she employed LLS. Tseng et al. (2006) noted that “it is not the quantity but the quality of the strategies that is important” (p.83). Despite the criticism, instruments measuring the frequencies of strategy use possess their own value, as Macaro (2001) argued that frequency offered researchers a way to “understand mental activity connected with language learning” (p.48). The concern that LLS research should be sensitive to contextual variation has also been addressed in several studies. Oxford and Burry-Stock (1995) synthesized studies employing SILL, concluding that this instrument featured a high reliability across various cultural contexts. Likewise, Hsiao and Oxford (2002) compared multiple LLS theories and argued that SILL was the most consistent instrument in measuring strategy use.

### 2.2. Strategies in CFL

Shen (2013) notes that CFL learners might employ learning strategies in unique ways owing to the distinctive cognitive process involved in learning Chinese characters. Research on the strategies employed by CFL learners thus can shed new light onto the field of LLS. Many researchers (see Jiang and Cohen, 2012) have conducted research on the strategies used by CFL learners from different countries and backgrounds. One of the most famous studies on CFL learning strategies was conducted by Shen (2005). She identified 30 most common Chinese character-learning strategies in her survey of 95 CFL learners, among which 25 were cognitive strategies and 5 were metacognitive strategies. Similarly, the bottom-up and top-down strategies identified by Lee-Thompson (2008) were mainly cognitive and metacognitive in nature. More recently, Zahradníková (2016) employed content analysis to identify the strategies utilized by 50 Czech university students to learn Chinese vocabulary. Altogether 10 common strategies were identified, among which story, radical, and imagination were the most popular. It is noteworthy that these studies focused on one specific field of Chinese learning, namely, literacy. This focus is no surprise, since Shen (2004) stated that character-learning imposed the greatest challenge on CFL learners. A mere focus on strategy for acquiring Chinese literacy, however, cannot paint the whole picture of LLS in a CFL context.

While cognitive and metacognitive strategies seem to be the most prevalent in character-learning, studies that investigated the general strategy use of CFL learners yielded no consistent findings on the most frequently used strategies. For instance, Lin and Lü (2005), Zhang (2011) and Yu (2020) all found that metacognitive strategies and social strategies were the most frequently used LLS among the participants in their studies on Vietnamese, American and Thai CFL learners respectively. Social strategies, however, were among the least preferred strategies in the study by Cáceres-Lorenzo (2015) on teenage CFL learners in Spain. Bruen (2017) found that cognitive and compensatory strategies emerged as the most important when learners were completing reading comprehension tasks in her research on learners of Chinese and three other languages. Nevertheless, Bruen did not discuss the strategy use of learners by language, and therefore it remains unclear whether the CFL learners and other participants differed in their strategy use.

With regard to the factors affecting CFL learners’ strategy use, Zhang (2011) examined the relationship between strategy use and gender in her study, but found no significant gender difference in the strategy use of American CFL learners. Similarly, no significant correlation between gender and strategy use was found by Sung (2011) in an investigation of factors affecting 134 CFL learners’ strategy use. However, home language/culture and multilingualism were shown to have significant effects (Sung, 2011). Yu (2020) examined the effect of gender and age on the CFL strategies used by Thai government officials in China and identified no significant influence of these two factors. Factors other than gender and age have been found to significantly affect CFL learners’ strategy use. For instance, Liu (2012) conducted a questionnaire survey and statistical analyses on the application of learning strategies by CFL learners in Japan to investigate the relationships among learning motivation, year of study, order of languages learned, and learning strategies. A positive correlation was established between learning motivation and the use of learning strategies. In their study of 45 CFL learners in the University of Nottingham, Wang et al. (2009) found that there was a strong correlation between metacognitive beliefs and metacognitive strategies and that both factors affected learners’ achievement. Chu et al. (2015) examined how ambiguity tolerance, LLS and second language proficiency affected each other among 60 CFL learners in Taiwan. The effect of ambiguity tolerance on overall strategy use was found to be insignificant, though it was significantly correlated to three individual cognitive strategies, one metacognitive strategy and one social strategy.

It is worth noting from the aforementioned studies that little research has been conducted on the learning strategies of Brazilian CFL learners so far. As Oxford and Burry-Stock (1995) highlighted in their study, learners’ nationalities affected their prioritization of strategies. Lee and Oxford (2008) also noted that some strategies frequently utilized by students in western countries were less favored in an East Asian context. Therefore, tapping into the strategy use of CFL learners in other countries can provide further understanding of how strategy use varies in different contexts. Research on this topic can enable CFL teachers in Brazil to adopt appropriate teaching methods based on the features of Brazilian students.

### 2.3. Research questions

The present study aims to examine the factors that contribute to the variations in Brazilian CFL learners’ strategy use. The following specific questions are addressed in this study:

1. How frequently do Brazilian CFL learners employ the six classes of strategies as defined in SILL?
2. Are there any main effects of the following social variables on strategy use: a) gender, b) age, c) race, d) education level?
3. Are there any main effects of the following individual variables on strategy use: a) the number of years of Chinese learning, b) the amount of extracurricular hours devoted to Chinese per week, and c) Chinese proficiency level?

### 3. Methods

#### 3.1. Participants

Owing to the small number of Brazilian CFL learners, convenience sampling was used to recruit participants. All students from one of the Confucius Institutes in Brazil were invited to participate in this study. We retrieved 126 copies of questionnaires, 120 of which were judged to be valid. The demographic information of the 120 participants is as follows. 75% of the participants were from beginner classes, 23.3% from intermediate classes, and 1.7% from advanced classes. The age of the participants ranged from 12 to 62, with an average of around 28. Caucasian students accounted for 67.5% of the total, Afro-Brazilian 5%, Asian
The participants had been learning Chinese for an average of 1.2 years. They devoted 1.5 h in class and another 2 h per week after class to Chinese learning. To be more specific, 73 of them spent 1–2 h on Chinese in their free time, accounting for 60.8% of the participants. The most hard-working students may spend as many as 10 h on Chinese learning. In contrast, there were 9 students who barely spent any extracurricular time on Chinese, comprising 7.5% of the group.

Table 1 displays the education background of the Brazilian CFL learners and that of their parents. The learners’ levels of education covered a wide range, with those who held undergraduate degrees accounting for the majority (66.7%). There was also a great variation in the parents’ levels of education. Apart from four mothers who received no school education, other parents have all received education at different levels. Pearson correlation coefficient revealed no significant correlation between the education levels of Brazilian CFL learners and of their fathers or mothers ($r_{\text{CFL learners’ education level – fathers’ education level}} = 0.084$, $p > 0.05$; $r_{\text{CFL learners’ education level – mothers’ education level}} = 0.021$, $p > 0.01$).

The overall analysis suggests that the sample of this questionnaire survey is representative of the students in this Confucius Institute in terms of the structure of their age, Chinese proficiency, race, and education level. Hence further data analyses and discussion can be conducted based on the sample.

### 3.2. Research instrument

The research instrument of this study is Oxford (1990) SILL. This questionnaire has been widely administered in LLS research, and its validity and reliability to measure LLS in different contexts have been confirmed (Oxford and Burry-Stock, 1995). Owing to the variation in Brazilian students’ English and Chinese proficiency, the questionnaire was translated into Brazilian Portuguese in order to facilitate the participants’ response. We invited 8 Brazilian students to participate in a pilot study, and native speakers of Brazilian Portuguese to check the linguistic accuracy of the translated questionnaire. The questionnaire was finalized after the pilot study.

This questionnaire consists of two sections. The first section contains ten open questions on the participants’ background, including gender, age, Chinese proficiency, time devoted to Chinese learning per week, level of education, parents’ level of education, race and other information. The second section contains 50 items tapping into the six categories of learning strategies: memory, cognitive, compensation, metacognitive, affective and social. This section adopted a five-point Likert Scale to measure the frequency of the learners’ strategy use, with 1 being Never or almost never, and 5 being Always or almost always.

The overall reliability of the instrument is 0.844, and the Cronbach’s alpha for each strategy category are displayed in the Table 2 below. According to Cohen et al. (2018), the reliability level is generally considered to be acceptable if the Cronbach’s alpha is above 0.67. As can be seen, five of the six strategy categories measured by our instrument have achieved reliability. The low reliability level of affective strategies probably resulted from the ambiguity of the items to the participants or from the difficulty of categorizing strategies (Chu et al., 2015), for the learning strategies are fluid rather than fixed in categories (Oxford, 2017).

### 3.3. Data collection and analysis

Ethics approval was granted by the Confucius Institute of UNESP, Brazil before data collection. Approval to collect data was obtained from the deans of the Confucius Institute before the participants were recruited. After the questionnaire had been finalized, volunteer Chinese teachers in this Confucius Institute were entrusted to administrate the questionnaire in all classes between sessions. The teachers explained to the students the aim of this study and assured the students that their data would be held confidential and that they had the right to withdraw from the study at any time. The students were told to complete the questionnaire online if they agreed to participate in the study. Since the data were collected via online survey, no paper form of informed consent was collected. The submission of the questionnaire was viewed as the participants’ consent. As mentioned earlier, among the 170 copies that were distributed, only 126 copies were retrieved. The relatively low response rate (74%) of this survey possibly resulted from the large number of items in the questionnaire or from the fact that students were only told to complete the questionnaire whenever they had time rather than immediately after receiving the questionnaire.

The collected data were analyzed with SPSS 19.0. Statistical tests, such as one-way between-group ANOVA, Pearson correlation and independent t-tests were adopted for the research questions.

### 4. Results

#### 4.1. Overall strategy use

As shown in Table 3, metacognitive strategies were the most frequently utilized strategy. Social, memory, cognitive, affective and compensatory strategies ranked second to sixth in order of frequency. The mean scores of metacognitive and social strategies surpassed the midpoint (3.0) of the scale, indicating that the learners adopted these strategies relatively frequently. The mean scores of the other four strategy categories all fell below 3.0, which indicates these strategies were less frequently utilized. The mean score of the overall strategy use ($\text{mean} = 2.98$, $\text{SD} = .59$) suggests that Brazilian CFL learners generally paid only moderate attention to CFL strategy use.

An independent t-test was conducted to compare the overall strategy use among Brazilian male and female CFL learners. The result revealed no significant difference in the pattern of strategy use in terms of gender ($t = 1.103$, $df = 118$, $p > 0.05$). Similarly, no significant gender difference was identified in the use of the six individual strategy categories, since the $p$ value of each test is higher than 0.05.

Table 4 compares the overall strategy use of Brazilian CFL learners at various proficiency levels. The ANOVA results revealed significant differences in the mean scores among learners at low, medium and high proficiency levels ($F(2, 117) = 4.302$, $p < 0.05$). Tukey post hoc analysis showed that intermediate learners employed CFL strategies more frequently than beginners did.

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**Table 1. Education level of the Brazilian participants and of their parents.**

| Education Level | Frequency | Percentage | Father’s Education Level | Frequency | Percentage | Mother’s Education Level | Frequency | Percentage |
|-----------------|-----------|------------|--------------------------|-----------|------------|--------------------------|-----------|------------|
| Never Went to School | 1 | .8 | 0 | .0 | 4 | 3.3 |
| Primary School | 4 | 3.3 | 41 | 34.2 | 33 | 27.5 |
| Secondary School | 26 | 21.7 | 27 | 22.5 | 29 | 24.2 |
| Undergraduate | 80 | 66.7 | 43 | 35.8 | 47 | 39.2 |
| Postgraduate | 9 | 7.5 | 9 | 7.5 | 7 | 5.8 |
| Total | 120 | 100.0 | 120 | 100.0 | 120 | 100.0 |
The variation in the overall strategy use of learners with different racial backgrounds was also examined. The only indigenous Brazilian learner was removed from the sample before the significance of the variation by race was tested. The ANOVA analysis showed that the difference was insignificant ($F(3,115) = 2.152, p > 0.05$).

Similar to racial background, no variation by education background was identified in the data. Few Brazilian CFL learners had an education level below primary school (only one or zero), and thus this group was removed before the ANOVA analysis. The result indicated no significant variation in terms of the learners’ education background ($F(5,112) = 0.876, p > 0.05$). In addition, the learners’ overall strategy use did not vary significantly by the education level of their fathers ($F(7,112) = 0.824, p > 0.05$) or their mothers ($F(8,111) = 0.411, p > 0.05$).

On the other hand, Pearson correlation coefficient revealed a significant strong positive correlation between the learners’ overall strategy use and the number of years of learning Chinese and the amount of spare time devoted to Chinese learning per week respectively ($r_{strategy use \text{ - years of learning Chinese}} = 0.244, p < 0.01$; $r_{strategy use \text{ - spare time for learning Chinese}} = 0.341, p < 0.01$). These results suggest that the longer the learners learned Chinese, and the more time they devoted to Chinese learning after class, the more strategies they tended to utilize.

Overall, Brazilian CFL learners were most inclined to adopt metacognitive and social strategies, whereas their use of the other four strategies was at merely a medium frequency. Moreover, gender, race, education level of the learners and of their parents contributed little to the variation in these learners’ strategy use.

### 4.2. Metacognitive strategies

Metacognitive strategies refer to the processes by which learners become aware of, evaluate, and regulate their own Chinese learning activities. Variations in metacognitive strategy use by age, gender, race, education level and proficiency level were found to be insignificant in independent t-tests and ANOVA analyses.

Moreover, only a weak positive correlation was found between the amount of spare time spent on Chinese each week and metacognitive strategies ($r_{metacognitive\text{-spare time}} = 0.396, p < 0.001$) and between the number of years of learning Chinese and metacognitive strategies ($r_{metacognitive\text{-years of learning Chinese}} = 0.210, p < 0.05$).

### 4.3. Social strategies

Social strategies are adopted by learners to maintain social connections, improve communicative efficiency and create more opportunities for communication. Independent t-tests and ANOVA analyses revealed no significant variations in the learners’ use of social strategies with regard to age, gender, education level, and proficiency level. However, Brazilian CFL learners of different races varied significantly in their use of social strategies ($F(3,115) = 3.712, p < 0.05$). Specifically, Caucasian Brazilian CFL learners generally tended to use social strategies more frequently than mixed-race learners did (see Table 5).

Similar to the results of metacognitive strategies, the correlations of social strategies with the years for learning Chinese ($r = 0.210, p < 0.05$) and with the extra-curricular time devoted to Chinese ($r = 0.233, p < 0.05$) were positive but weak.

### 4.4. Memory strategies

When applying memory strategies, learners use association, image, sound and motion to facilitate their memories. The frequency of memory strategies used by Brazilian CFL learners was at best medium (Mean = 2.84). Similar to the aforementioned two strategies, the learners’ memory strategy use did not vary significantly by age, gender, race or education level.

Proficiency level, however, showed a significant main effect on memory strategy use ($F(2,117) = 4.185, p < 0.05$). Tukey post hoc test indicated that intermediate learners tended to adopt memory strategies more frequently than did beginners (see Table 6). No significant difference was observed between other proficiency groups. The most frequently used strategy category by intermediate learners was memory strategies. It is also noteworthy that the difference between intermediate and advanced learners was insignificant.

Despite that a significant positive correlation was found between memory strategies and the years of learning Chinese ($r = 0.187, p < 0.05$), and between memory strategies and the spare time devoted to Chinese ($r = 0.245, p < 0.01$), the correlation was weak.

### 4.5. Cognitive strategies of Brazilian CFL learners

Cognitive strategies are the methods and techniques of processing information, including effective processing and storing of information. Such strategies were not frequently employed by the Brazilian CFL learners in the present study.

Similar to memory strategies, Brazilian CFL learners’ use of cognitive strategies did not vary significantly by gender, race, age or educational level. However, learners at different proficiency levels utilized cognitive strategies differently ($F(2,117) = 7.02, p < 0.05$). Tukey post hoc analysis revealed a significant difference between intermediate and beginner groups, but not between other groups (see Table 7). As for the number of years of learning Chinese and the amount of spare time devoted to Chinese, the positive correlation of these two variables with cognitive strategies were only slight.

### Table 2. Reliability level of the six dimensions of SILL.

| Strategy category | Number of items | Cronbach’s alpha |
|-------------------|-----------------|-----------------|
| Memory            | 9               | 0.691           |
| Cognitive         | 14              | 0.801           |
| Compensation      | 6               | 0.716           |
| Metacognitive     | 9               | 0.820           |
| Affective         | 6               | 0.566           |
| Social            | 6               | 0.772           |

### Table 3. Chinese learning strategies of all Brazilian participants.

| N     | Minimum | Maximum | Mean   | SD    |
|-------|---------|---------|--------|-------|
| Metacognitive | 120     | 2.00    | 5.00   | 3.6250 |
| Social       | 120     | 1.00    | 5.00   | 3.3750 |
| Memory       | 120     | 1.22    | 5.00   | 2.8426 |
| Cognitive    | 120     | 1.14    | 4.57   | 2.8351 |
| Affective    | 120     | 1.33    | 4.50   | 2.6806 |
| Compensation | 120     | 1.00    | 4.33   | 2.5431 |
| All strategies used | 120 | 1.66     | 4.62   | 2.9898 |
4.6. Affective strategies of Brazilian CFL learners

Affective strategies, which are used for reducing anxiety in learning, were seldom used by Brazilian CFL learners (Mean = 2.68). Additionally, the results of independent t-tests and ANOVA analyses revealed no significant variation in Brazilian students’ use of affective strategies with regard to age, gender, race, proficiency level or education level. No significant correlation was found between the years of study and the use of affective strategies, whereas a marginal positive correlation was identified between the extracurricular hours spent on Chinese and affective strategies (r = .247, p < 0.01).

4.7. Compensation strategies of Brazilian CFL learners

Compensation strategies refer to the strategies CFL learners adopt to compensate for their shortage in linguistic knowledge. For example, when encountering new words, learners can guess the meanings based on context. No significant difference by proficiency level, gender, race or education background was found in Brazilian students’ use of compensation strategies.

Pearson’s r indicated a significant weak negative correlation between the age of Brazilian CFL learners and the use of compensation strategies (age - compensation strategies = -0.276, p < 0.01). Compared with their older peers, younger CFL learners were more inclined to employ guessing and other compensation strategies on a more frequent basis. No significant correlation was found between compensation strategies and the number of years of learning Chinese or the amount of spare time devoted to learning Chinese.

5. Discussion

5.1. Research question 1: frequencies of strategy use

The Brazilian CFL learners in this study used metacognitive and social strategies most frequently. This is generally consistent with previous findings (Jiang and Wu, 2016; Lin and Lü, 2005; Yu, 2020; Zhang, 2011). The tendency to use metacognitive strategies suggests that the Brazilian CFL learners have the ability to reflect on their Chinese learning processes. It is also interesting that the learners used more metacognitive strategies than cognitive strategies, which was in contrast with what Shen (2005) found in her study. According to Shen (2005), the development of metacognition tends to lag behind one’s acquisition, and therefore students tended to use fewer metacognitive strategies than cognitive ones. A possible explanation is that Shen (2005) focused only on character-learning, whereas the current study examined Chinese learning in general. Yu (2020) suggested that the frequent use of metacognitive strategies was related to the learners’ age and experience. Considering that the majority of participants in the present study were undergraduate students, it is likely that they were mature enough to self-regulate their CFL learning via metacognitive strategies. Social strategies ranked second among the strategy categories in the study. The inclination to use social strategies by Brazilian CFL learners might be attributed to their motivation to communicate in Chinese. As Jiang and Wu (2016) suggested in their study of Australian CFL learners, the learners chose to learn Chinese because they were interested in learning about the Chinese and communicating with the Chinese. Such intrinsic motivation could contribute to the learners’ use of social strategies.

Compensation strategies were found to be among the preferred SILL strategy categories by CFL learners in previous research (e.g. in Caceres-Lorenzo, 2015; Chu et al., 2015; Yu, 2020). In the present study, however, compensation strategies featured the lowest frequency (mean = 2.54). The underuse of compensation strategies might be related to the learners’ lack of relevant resources that they can resort to when their linguistic knowledge falls short, since Chinese differs drastically from Brazilian Portuguese. Owing to this discrepancy between the learners’ L1 and Chinese, the learners might encounter difficulty in using compensation strategies such as guessing.

Similar to compensation strategies, cognitive strategies were also infrequently adopted by Brazilian CFL learners. Shen (2005) noted that cognitive strategies were the most common strategy category used to learn Chinese characters, because the logograms could affect learners’ cognitive process. The contrast of the findings in the present study and Shen’s research suggests that learners might choose strategies based on specific language learning areas. It is thus insufficient to examine the use of cognitive strategies in the overall language learning process. Instead, this issue needs to be further investigated in the light of specific skill areas, such as listening, writing, speaking, and reading. Another possible explanation is that the lack of knowledge of the Chinese language impedes the learners’ use of cognitive strategies (Yu, 2020). Indeed, the present study found a significant influence of proficiency level on the Brazilian CFL learners’ use of cognitive strategies. Since most of the participants were CFL beginners, it is likely that they would choose to avoid using cognitive strategies due to their low proficiency.

5.2. Research question 2: the effects of gender, age, race and educational level

The present study found no significant effect of gender on Brazilian CFL learners’ use of all categories of strategies. Previous studies have yielded inconsistent findings regarding the role of gender in the use of CFL learning strategies. Caceres-Lorenzo (2015) found that Spanish female teenagers adopted the SILL strategies more often than did their male
counterparts. Sung (2011), on the other hand, concluded that gender was an insignificant factor to the strategy use of American CFL learners. It is worth noting that even though Sung (2011) identified no gender difference in the strategies for Chinese learning in general terms, gender difference in character-learning strategies was found among Chinese heritage language learners in the study by Sung and Wu (2011). Since the present study only investigated general CFL learning strategies, it is possible that the gender difference in strategy use in specific skill areas of Chinese learning, such as character-learning or writing, was belied. The inconsistent results regarding the role of gender in strategy use might also be explained by the variations in contexts. Lee and Oxford (2008), for example, emphasized that Korean English learners lacked communication with classmates or with native English speakers, thus resulting in the negligible role of gender in social strategy use. Therefore, there might be factors other than gender that affected Brazilian CFL learners’ strategy use.

Statistical analysis of the other variables in this study yielded mixed results. No significant influence of educational level on the use of CFL learning strategies was found. Although the effect of education level on strategy use has seldom been addressed in previous CFL research, Lee and Oxford (2008) found that Korean English learners in middle schools and universities more frequently employed learning strategies than did high school students. Their explanation was that high school students were discouraged from using many strategies due to the exam-oriented nature of their education. Considering that the instructional context in the Confucius Institute is not an exam-oriented one, it is possible that this non-exam-oriented setting allowed students to use any strategies that they had in their repertoire.

Age was found to only significantly and negatively correlate with the use of compensation strategies, yet the correlational coefficient was too low to be considered meaningful (Cohen et al., 2018). Nevertheless, the influence of age on CFL strategy use deserves more attention, as older language learners are cognitively more mature and can better understand grammar and incorporate their world knowledge into language learning (Ehrman and Oxford, 1995). Whether such age-related effects exist in Chinese learning, which involves deep orthography and distinct cognitive skills areas of Chinese, and extracurricular hours (Shen, 2013), remains to be explored.

Similarly, race was found to have a significant influence only on the use of social strategies. More specifically, the difference existed only between Caucasian and mixed-race Brazilian learners. It should be noted that the variation pattern by race does not indicate that students of one race are more successful in employing social strategies than those of another race. Rather, it only indicates that they used social strategies in diverse ways. LLS research has rarely examined the variation in strategy use by race. Nationality, which is a factor similar to race, has been examined by Griffiths (2003), who found that CFL learners from European countries significantly adopted learning strategies more frequently than did Asian and Polynesian learners. Hong-Nam and Leavell (2006) also identified nationality as an active factor, and significant difference in the use of metacognitive strategies was found between Japanese EFL learners and those from other countries. These findings pointed to the influence of culture on strategy use. Considering that social strategies are highly sensitive to cultures and contexts, and that the communities of each race are possibly diverse, the significant variation emerged in the ANOVA test requires further examination.

### 5.3. Research question 3: the effects of proficiency level, years of learning Chinese, and extracurricular hours

The lack of variation by social factors such as gender, age or educational level seems to suggest that Brazilian CFL learners’ use of learning strategies are subject to influences outside these broad social categories. Therefore, we also examined factors related to the learners’ learning effort and proficiency. However, although positive correlations were found between the number of years of Chinese learning and the use of memory, cognitive, metacognitive, affective and social strategies, the correlational coefficients were all below 0.35 and thus could offer little insight (Cohen et al., 2018). Similarly, the correlations between the amount of spare time devoted to Chinese learning and the use of the strategies were also too weak to be considered meaningful.

Brazilian CFL learners’ proficiency levels had a significant influence on the learners’ use of memory strategies and cognitive strategies. More specifically, intermediate learners employed these two types of strategies more frequently than did beginner learners. This finding echoed with the observation by Hong-Nam and Leavell (2006) that beginner students possessed little declarative knowledge of language learning and relevant strategies, whereas intermediate students possessed more declarative knowledge as well as procedural knowledge of how to apply language learning strategies. Therefore, intermediate students are more capable of utilizing memory and cognitive strategies to facilitate their Chinese learning. The lack of distinction between the intermediate and advanced groups, however, presented a more complex picture. This finding contrasted against Lee and Oxford’s observation (2008) that the more proficient the EFL learners were, the more frequently they adopted English learning strategies. It is likely that the discrepancy results from the different target language under investigation. Another possible explanation is that the difference was more qualitative, which means that learners in the intermediate and advanced groups differed not in the frequency of their strategy use, but in the range and types of strategies. Moreover, as Hong-Nam and Leavell (2006) noted, highly proficient language learners might have automatized their use of certain strategies, in which case they would no longer be conscious of how they learned.

### Table 6. Memory strategies of Brazilian CFL learners at different proficiency levels.

|       | Beginner | Intermediate | Advanced |
|-------|----------|--------------|----------|
|       | (n = 90) | (n = 28)     | (n = 2)  |
| M     | 2.74     | 3.16         | 2.78     |
| SD    | 0.64     | 0.73         | 0.68     |
| F     |          |              | 4.185    |
| Post Hoc |        | Intermediate > Beginner |

### Table 7. Cognitive strategies of Brazilian CFL learners at different proficiency levels.

|       | Beginner | Intermediate | Advanced |
|-------|----------|--------------|----------|
|       | (n = 90) | (n = 28)     | (n = 2)  |
| M     | 2.74     | 3.16         | 2.78     |
| SD    | 0.64     | 0.73         | 0.68     |
| F     |          |              | 4.185    |
| Post Hoc |        | Intermediate > Beginner |

$p^* < 0.05$.
Chinese. Therefore, advanced CFL learners might not report using strategies as frequently as did intermediate learners.

Nevertheless, it remains unclear why proficiency level had no significant influence on Brazilian CFL learners’ use of other strategies, which contrasted against findings from previous studies. Chu et al. (2015), for instance, found that proficiency had a significant influence on the use of compensation strategies by 60 CSL students in Taiwan. They argued that learners with lower proficiency level possessed insufficient knowledge of Chinese, which made them feel less confident to employ such strategies. In the present study, considering that compensation strategies were the least frequently utilized by all participants, it is possible that even intermediate Brazilian CFL learners felt unconfident to employ guessing or other compensation strategies.

6. Conclusion

The study examined the LLS used by Brazilian CFL learners and the factors that influence their strategy use. Results show that metacognitive and social strategies were the most commonly adopted strategy categories reported by the learners, which is in line with findings from previous research (Jiang and Wu, 2016; Lin and Li, 2005; Zhang, 2011). The frequent use of metacognitive strategies suggests that Brazilian CFL learners were capable of self-regulating their Chinese learning, whereas the adoption of social strategies points to the learners’ intrinsic motivation to communicate in Chinese. The present study also yielded findings that were inconsistent with extant literature. Although compensation and cognitive strategies have been found to be common strategies for CFL learners (Cáceres-Lorenzo, 2015; Chu et al., 2015; Shen, 2005), the learners in this study were less inclined to employ these two types of strategies. These discrepancies can be attributed to differences in samples, the L1 of the CFL learners and the language learning contexts, yet several other explanations are worth noting. The underuse of compensation strategies by the learners in the present study might be related to the learners’ lack of relevant linguistic knowledge and the differences between Chinese and Brazilian Portuguese. The possible explanations for the learners’ infrequent use of cognitive strategies, however, were less clear. The present study only examined LLS in general, yet since cognitive strategies tend to be associated with character learning, it is possible that further investigation into strategies related to specific language skills will yield different results.

In terms of the factors that might affect the learners’ strategy use, gender and education level were found to be insignificant in the variation of the overall and the six individual strategy categories. However, proficiency level had a significant main effect on the learners’ overall, memory, and cognitive strategy use, while race and age played a significant role in the learners’ social and compensation strategy use respectively. It is also noteworthy that there was no significant difference in the use of overall, memory, and cognitive strategies by intermediate and advanced learners. It is likely that the difference between these two groups lie in the qualitative features of their strategy use, rather than in the frequency. Hence more research is needed to understand this issue.

Apart from the salient findings, several limitations could also be identified in the present study. One limitation concerns the generalizability of the findings. The participants were students from one of the Confucius Institutes in Brazil, and therefore the findings cannot be generalized to all Brazilian CFL learners. Nevertheless, since the number of Brazilian CFL learners is relatively small, the findings might still offer insights into their strategy use. Another limitation is related to the data collection method. The instrument employed in the present study was a self-report questionnaire, yet the participants’ reported frequency of their strategy use might be inconsistent with their actual strategy use. Therefore, other instruments are needed in order to obtain more data on the students’ actual strategy use in their learning process. Moreover, the present study is unable to shed light on the strategy use of CFL learning in specific skill areas (writing, speaking, listening, and reading), because it mainly focused on the general CFL learning process. The patterns of strategy use, however, might vary depending on the specific skill areas. For example, cognitive strategies were not salient in the present study, but they are generally the most commonly observed in the acquisition of Chinese characters (Shen, 2005).

This study is the first large-scale research on learning strategies of Brazilian CFL learners. Despite the limited generalizability, the findings yielded in the present study can still offer several implications for the CFL teachers. Metacognitive strategies can contribute to students’ development as autonomous learners (Li, 2007). Thus, CFL teachers can train learners to reflect on their thoughts during language learning so as to enhance their use of metacognitive strategies. To promote learners’ use of social strategies, CFL teachers should design more class activities to boost interactive learning, and encourage learners to communicate with native or non-native Chinese speakers.

It would also be helpful if the teachers provide more instruction on CFL strategies, particularly on memory, affective, cognitive and compensation strategies, which were used by learners to a limited extent. This suggestion is particularly relevant to students at the beginner level, as learners in this group tend to possess limited Chinese linguistic knowledge and strategy awareness, and thus cannot freely utilize CFL learning strategies. Meanwhile, as learners’ strategy use can vary under the effect of factors such as age and proficiency, CFL teachers should thus understand that individual differences exist in strategy use, and utilize such knowledge to plan their courses accordingly.

Declarations

Author contribution statement

Xiaobin Yang: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Wrote the paper.

Liangjing Zeng and Zhou Xu: Analyzed and interpreted the data; Wrote the paper.

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Additional information

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