

Study on the Influencing Factors of L2 Reading Ability and Its Regulation Strategies

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This paper takes college students as research subjects to investigate the factors affecting L2 Reading ability and their regulation strategies through scale surveys. The findings are as follows: (1) Linguistic factors have significant impacts on L2 Reading ability, and the influence of non-linguistic factors, such as non-intellectual factors and cultural background knowledge, is also important; and (2) flexible use of reading regulation strategies according to the learning conditions (such as the information extraction strategy, the metacognitive reading regulation strategy, and the interactive reading strategy) can effectively improve learners' L2 Reading ability. The findings of this study have important theoretical and practical value for improving L2 learners' Reading ability.

Keywords: L2 Reading ability, influencing factors, reading regulation strategies

Introduction

L2 Reading is the basic component and important method of L2 acquisition, and It is also a key skill that students must master in order to communicate internationally. Foreign studies on L2 Reading began in the 1970s. Domestic scholars studied L2 Reading strategies relatively late, starting from the late 1990s, and most of the studies focused on English reading strategies. Since entering the 21st century, the amount of relevant research literature has greatly increased, forming a large number of valuable research results. Since the end of 1990s, most of the researches on L2 Reading strategies have been focused on English reading strategies.

Previous Studies

Reading ability refers to various cognitive and language skills shown by individuals in the process of reading comprehension, including the ability to effectively acquire written text information, and involving relatively advanced cognitive processes and language application skills, such as reasoning, analysis, assessment, critical thinking, communication, etc.

L2 Reading is a complex, dynamic, multi-components and multi-dimensional interaction process, involving the multiple roles of reader factors and text factors (Wu & Wang, 2020). The influencing factors of L2 Reading

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ability can mainly be divided into two parts: linguistic factors and non-linguistic factors. Linguistic factors, such as vocabulary knowledge, grammatical knowledge, and native language reading ability of L2 learners, can affect L2 Reading. Knowledge of L2 vocabulary and grammar can help learners understand the surface deep meanings of L2, and reading ability of one's native language can also have effects on the understanding of L2. Non-linguistic factors can be divided into intellectual factors (the sum of cognitive abilities, which is the mental rationality shown by people in their understanding of things) and non-intellectual factors (emotions, interests, etc., which are not directly involved in the cognitive process). Reading ability of one's mother tongue under different cognitive load tasks (Wu & Wang, 2019) and interactivity of memory system (Ni & Wang, 2020) are all related to intellectual factors, such as memory and imagination. Similarly, non-intellectual factors also affect L2 Reading ability. For example, Brown (1973) put forward the concept of affective domain, arguing that affective variables are related to reading achievements.

Different influencing factors in L2 Reading have corresponding reading strategies. For example, in terms of linguistic factors, the accumulation of such knowledge as vocabulary (lexical breadth and depth) and grammar is the basis of L2 Reading comprehension, not only related to reading ability, but also helping predict learners' reading comprehension proficiency to a large extent (Zhu & Chen, 2023). In L2 acquisition, the first part of learning is the recognition of letters and the accumulation of vocabulary. Only after the accumulation of certain amount of vocabulary can reading comprehension be carried out. Song and Huo (2019) believed that reading comprehension will improve correspondingly when one's vocabulary expands, and however, when the vocabulary reaches 5,000-word group, the improvement of reading comprehension is not obvious. At this time, other cognitive abilities could be employed to improve reading ability accordingly. Therefore, the role of grammatical knowledge is highlighted, and L2 learners would use grammatical knowledge to organize and analyze the reading text in the process of reading, so as to achieve the purpose of text comprehension.

In terms of non-linguistic factors, the information extraction strategy, the metacognitive reading regulation strategy, and the interactive reading strategy play important roles in L2 acquisition. The information extraction strategy means that L2 Reading comprehension requires readers to mobilize the memory information stored in their minds to complete reading tasks, and the application of this strategy can promote the construction and integration of L2 learners' language knowledge to a certain extent, thus playing an important role in improving L2 Reading ability (He, Ni, Tan, & Lu, 2022). The metacognitive reading regulation strategy is embodied in certain metacognitive activities when completing specific learning tasks, and the metacognitive activities in reading are called metacognitive activities (Gu, 2020). This strategy refers to the ability of readers to monitor, adjust, and evaluate their reading behaviors in the process of reading, involving self-reflection, self-evaluation, goal setting, and reading monitoring and some other intellectual abilities, similar to the ability of repetition mentioned in our lives. The interactive reading strategy refers to the ability to improve understanding and analysis through interaction with the text, including such intellectual factors as raising questions, answering questions, predicting, speculating, establishing connections, summarizing, and evaluating. At the same time, it also requires real-time interaction between the reader and the text.

In recent years, the empirical research on reading strategies has attracted people's attention. Previous relevant studies mainly focus on cognitive style and reading strategies, reading strategies, and reading achievements, and the correlation between various strategies (Li & Pu 2017). Li Ying et al. (2009, pp. 107-111) studied the relationship among learners' cognitive style, reading strategies, and English reading proficiency.

Wang and Fang (2009, pp. 221-222) studied the correlation among English reading anxiety, reading strategies, and reading scores, finding that reading anxiety was negatively correlated with reading scores, reading strategies were positively correlated with reading scores, and reading anxiety was negatively correlated with the use of reading strategies. Liu (2008, pp. 64-73) also found that the use of metacognitive strategies was related to the reading scores of the students.

Research Design

In this study, the effects of linguistic and non-linguistic factors on L2 Reading and the strategies of reading regulation were investigated by means of a scale survey, with the purpose of finding effective ways to improve L2 Reading ability. The participants were 160 L2 English learners in a university in Shanghai, including 31 English majors and 129 non-English majors.

The scale survey involves the examination of 160 college students' agreement degree of the statements of "the influence of linguistic factors and non-linguistic factors on L2 Reading ability" and "the relevant reading regulation strategies". The scale survey is measured by Likert seven-level scale, and Values 1-7 respectively represent seven levels with equal differences in the agreement degree of adjacent items from low to high, such as "disagree", "basically disagree", "somewhat disagree", "uncertain", "somewhat agree", "basically agree", and "agree". The participants were asked to complete the selection of agreement degree for each of the statements, and then the author of this paper conducted relevant statistical analysis, based on the mean value, standard deviation, and Z-test of the participants' agreement degree for each statement.

Data Collection and Analysis

The data of the scale survey are shown in Table 1.

Table 1

The Scale Survey Data

Category	Statement	Mean	SD	R ₁ vs. R ₂	Z-value
Linguistic factors and English L2 Reading ability	The ability of mother tongue has an important influence on L2 Reading ability.	5.575	1.394	0.544/0.025	12.319
	Linguistic factors are important factors affecting L2 Reading ability.	5.656	1.401	0.600/0.031	13.878
	Vocabulary, grammar, and other language knowledge have absolute influence on L2 Reading ability.	5.575	1.399	0.556/0.031	12.500
	The difficulty of reading materials, excessive amount of new words, complex sentence structures, and some other language reasons will affect reading comprehension.	5.625	1.331	0.581/0.025	13.561
	Vocabulary, grammar, and other linguistic factors have nothing to do with L2 Reading ability.	3.619	2.018	0.194/0.356	-3.306
Non-linguistic factors and English L2 Reading ability	Non-linguistic factors have significant influences on L2 Reading ability.	4.806	1.438	0.325/0.356	-0.585
	The level of L2 Reading ability has nothing to do with intellectual factors.	4.188	1.778	0.244/0.175	1.533
	Non-intellectual factors have important influences on the improvement of L2 Reading ability.	5.444	1.278	0.506/0.187	6.380
	The improvement of L2 Reading ability has nothing to do with reading habits.	3.800	1.903	0.212/0.287	-1.563
	Personal cultural background knowledge has an important influence on the level of L2 Reading ability.	5.513	1.293	0.538/0.019	12.659

(Table 1 to be continued)

Reading regulation strategies and English L2 Reading ability	Identifying the main factors that affect L2 Reading ability is of great help to the improvement of reading regulation strategies.	5.413	1.281	0.513/0.019	12.049
	The use of reading strategies does not need to be adjusted according to the level of L2 Reading ability.	4.225	1.887	0.281/0.238	0.878
	Language means such as expanding vocabulary and accumulating grammatical knowledge are the most effective reading regulation strategies for developing L2 learners' reading ability.	5.525	1.259	0.531/0.019	12.488
	The practice of the interactive reading strategy can effectively improve the capacity of L2 working memory and the efficiency of L2 Reading.	5.419	1.241	0.500/0.025	11.585
	Information extraction strategies can effectively improve the reading ability of L2 learners.	5.456	1.243	0.525/0.019	12.341
	Metacognitive reading regulation strategies are of great help to improving L2 Reading ability.	5.394	1.294	0.494/0.019	11.659
	The stimulation of reading interest, the enhancement of reading motivation, the adjustment of emotional state, and some other strategies are of great help to the improvement of L2 Reading efficiency.	5.506	1.269	0.544/0.025	12.659
	Social interaction regulation strategy can effectively improve the efficiency and ability of L2 Reading.	5.431	1.232	0.494/0.013	11.732

Notes. (1) There were 160 participants; and (2) R₁ and R₂ are the ratio of the number of people who choose Value Points 6-7 of the statements and the number of people who choose Value Points 1-2 of the statements to the total number of participants respectively.

The researchers conducted a Z-test for the difference of pairwise population proportion in participants' agreement degree with each statement (see Table 1). In terms of the relationship between linguistic factors and L2 Reading ability, Table 1 shows that Z-value of the overall proportion difference among "Linguistic factors are important factors affecting L2 Reading ability", "Difficult reading materials, excessive amount of new words, complex sentence structures, and some other language factors will affect the reading comprehension", "Reading ability mother tongue has an important impact on L2 Reading ability", and "Vocabulary, grammar and other linguistic knowledge has an absolute influence on L2 Reading ability". The values (13.878, 13.561, 12.319, and 12.500, respectively) were all larger than the critical value ($Z_{0.05} = 1.645$), inferring that the proportion of the participants who agree or basically agree with these statements is significantly higher than the proportion of the participants who disagree or basically disagree, reflecting that the accumulation of language knowledge plays an important role in the process of L2 Reading. Similarly, the absolute value of the Z-test for the difference between the number of the participants who chose Value Points 6-7 and the number of the participants who chose Value Points 1-2 in the total number of subjects is also greater than the critical value. Therefore, it can be inferred that linguistic factors have significant influences on L2 Reading ability, which is mainly reflected in the difficulty of reading topics, the amount of new words, the complexity of sentence structures, and some basic grammatical knowledge.

In terms of the relationship between non-linguistic factors and L2 Reading ability, for the participants who state that "Non-linguistic factors have very significant impacts on L2 Reading ability" and "The improvement of L2 Reading ability has nothing to do with reading habits", the ratios of the participants who chose Value Points 6-7 to the total number of participants were 0.325/0.356, 0.212/0.287, and 0.212/0.287 respectively. The Z-value of the difference between the two population ratios (-0.585 and -1.563, respectively) is negative, and its absolute value is less than the critical value ($Z_{0.05} = 1.645$). Therefore, it can be inferred that the respondents do not

consider the influence of all the non-linguistic factors (and non-intellectual, etc.) and reading habits on L2 Reading ability to be very significant. It was found that the Z-test value (1.533) was less than the critical value ($Z_{0.05} = 1.645$) for the difference between the number of people who state that “The level of L2 Reading ability has nothing to do with intellectual factors” and the number of people who chose the ratio of Points 1 to 2 to the total number of participants (0.244/0.175). Therefore, it can be inferred that the level of L2 Reading ability is related to intellectual factors (e.g., cognitive abilities, such as memory, observation, thinking, etc.), which means that cognitive abilities, such as attention, imagination, etc., have a certain effect on second language reading ability, but the effect is not significant. The study also found that the absolute value of Z-test of the difference between the number of people who state the choice of Value Points 6-7 and the number of people who choose Value Points 1-2 in the total number of participants, is greater than the critical value. Therefore, it can be inferred that individual traits such as interest in the subject matter of the article and the reader’s mood at the time, which are important influences on the individual’s behavioral activities, affect the reader’s reading efficiency, and thus affect the overall L2 Reading ability. In other words, non-intellectual factors (e.g., personality, interest, emotion, etc.) and personal cultural background knowledge have a significant influence on L2 Reading ability.

In terms of reading regulation strategies, the Z-test value (0.878) of the differences between the overall proportion of those who state that “The use of reading strategies does not need to be adjusted according to the level of L2 reading ability” and the number of people who choose Value Points 6-7 and the number of people who choose Value Points 1-2 as a percentage of the total number of participants was 0.281/0.238, and it can be inferred that the use of reading strategies needs to be flexibly adjusted according to the level of L2 Reading ability. However, it is also necessary for readers to effectively assess their own level of L2 Reading ability. In addition, the absolute value of the Z-test for the difference between the number of participants choosing Values 6-7 and the proportion of participants choosing Values 1-2 for the rest of the statements is much larger than the critical value. It can be inferred that the participants’ consciousness of recognizing language tools, such as expanding vocabulary and accumulating grammatical knowledge as very effective reading regulation strategies to improve reading ability of L2 learners is high; reading regulation strategies of using such intellectual factors as the interactive reading strategy, the information extraction strategy, and the metacognitive reading regulation strategy are also recognized; and the reading regulation strategies of using intellectual or non-intellectual factors, such as stimulating reading interest, enhancing reading motivation, and adjusting affective state and social interaction regulation strategies are also recognized; and reading regulation strategies, such as stimulating reading interest, enhancing reading motivation, adjusting affective state, and adjusting affective state are also recognized. Therefore, it can be inferred that the participants believe that the effective use of reading strategies is beneficial to the improvement of L2 Reading ability, and that there is a significant difference between the proportion of those who agree or basically agree with the statements about reading regulation strategies and English L2 Reading ability and the proportion of those who disagree or basically disagree with the statements.

To sum up, in the scale survey of the impacts of linguistic factors, non-linguistic factors, and reading regulation strategies on L2 Reading ability, the most highly recognized factors among the respondents are the linguistic factors, exerting significant influences on L2 Reading ability, and it is believed that the accumulation of vocabulary and grammatical knowledge has great impact on reading efficiency. The degree of recognition of the influence of non-linguistic factors on L2 Reading ability is also important, though not significantly. As for the role of reading regulation strategies in improving L2 Reading ability, the respondents’ recognition is also

significant, and it is believed that the effective use of various reading regulation strategies is beneficial to the improvement of L2 Reading ability.

Discussion

It is found in this study that most of the participants believe that linguistic factors have significant effects on the improvement of L2 Reading ability. Vocabulary breadth has an impact on L2 Reading and there is a significant positive correlation between the two (Schmitt, Jiang, & Grabe, 2011; Li, 2007). Vocabulary is the basis for comprehending texts, and L2 learners need to acquire sufficiently large vocabulary to comprehend the reading materials. Lexical choice and use in specific contexts have great impacts on reading comprehension. In addition, grammatical structures and rules also play important roles in sentence or text reading comprehension, and only when L2 learners have mastered basic grammatical knowledge can they correctly understand the sentence structure and logical relationship in a text, and then interpret the text on a deeper level. Non-linguistic factors can affect L2 Reading ability to a certain extent as well. For example, personal knowledge of cultural background, motivation, interest, emotion, and some other non-intellectual factors can significantly affect L2 Reading ability. Motivation determines the degree of commitment and initiative of learners in reading, interest can stimulate learning and increase the enjoyment of reading, and affective factors, such as preferences and emotional attitudes, can affect the attitude and comprehension of the text and so on. Non-intellectual factors can directly or indirectly affect learners' motivation and emotional experience, which in turn have significant impacts on L2 Reading ability.

Reading regulation strategies can help improve the efficiency of L2 reading. Most of the participants believe that non-linguistic regulation strategies, such as reading interest stimulation, reading motivation enhancement and emotional state adjustment, as well as verbal control strategies, such as expanding vocabulary and accumulating grammatical knowledge, are of great help to the development of L2 reading ability. In addition, the participants agree with the idea that reading regulation strategies need to be applied flexibly in different reading contexts according to the level of their own L2 Reading ability, and the idea that identifying the main factors affecting their own L2 Reading ability is of great help to the improvement of reading regulation strategies. Choosing appropriate reading strategies according to reading purposes and needs is an important way to improve L2 Reading ability. When it is necessary to get specific information from a text, information extraction strategies can be used to scan, sweep, look for key words, pay attention to the structure of the passage, etc., in order to quickly and accurately identify the information needed. When encountering difficult vocabulary or sentences, metacognitive reading regulation strategies, such as reflecting, rereading, and seeking out supplementary materials, can be used to improve reading comprehension. The use of interactional reading strategies can provide in-depth understanding of text contents, thus facilitating the translation and application of linguistic knowledge, among some strategies.

Conclusion

This study explores the influencing factors of L2 Reading ability and its regulation strategies through a scale survey. It was found that linguistic factors have significant impacts on L2 Reading ability, and some non-linguistic factors such as non-intellectual factors and cultural background knowledge also have significant impacts on L2 Reading ability. The use of such reading regulation strategies as information extraction strategies, metacognitive regulation strategies, and interactive reading strategies can effectively improve the efficiency of

L2 reading, and then improve the reading comprehension level of L2 learners. Therefore, the flexible use of reading regulation strategies according to learners' own conditions can help improve their L2 Reading ability.

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