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A Research Review of Metacognitive Theory and EFL Teaching & Learning in Recent Eleven Years

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Abstract

Metacognitive theory plays an important role in the field of learning. The application of metacognitive strategies is closely related to the success of foreign language learning. This paper retrieves EFL teaching and learning papers related to metacognitive theory published in domestic core journals from 2010 to 2020 and analyzes their research contents, research methods, and research objects. It aims to reveal the overall research situation of metacognitive theory and EFL teaching and learning in China in the past eleven years, and explores its development trends and deficiencies.

Keywords

Metacognitive theory; EFL teaching and learning; Research review.

1. Introduction

In the 1970s, Flavell, an American cognitive psychologist, first proposed the concept of metacognition. Metacognition is the cognition of cognition, which has important practical significance in the field of education. Since the 1980s, studies on metacognitive theory have been carried out in English area in China, involving listening, speaking, reading, writing, translation and so on. However, the combination between metacognitive theory and English teaching are rarely reviewed. Therefore, it is necessary to review the relevant research in China, and summarize the current research status, development trend and shortcomings of relevant topics, in order to promote the further integration of metacognitive theory and English teaching.

2. Metacognitive Theory

In Cognitive Development, the famous American psychologist Flavell [1] first put forward the concept of metacognition, and later elaborated the connotation of this concept into two closely related aspects: metacognitive knowledge and metacognitive regulation. On the basis of Flavell's classification, which provides a systematic theoretical framework for subsequent studies, Brown [2] further divided metacognitive regulation into three main forms, including pre-task planning strategies, monitoring strategies that act on the learning process, and post-learning outcome assessment strategies. These strategies are generally called metacognitive strategies or metacognitive skills. Hennessey [3] believes that metacognition has the following characteristics: (1) knowing one's own thoughts; (2) understanding the content of your ideas; (3) actively monitoring their own cognitive processes; (4) trying to regulate cognitive processes related to further learning; (5) using a set of heuristics as an effective tool to help people organize problem-solving methods.

Metacognitive theory plays an important role in many kinds of cognitive behaviors related to problem solving. Examples include oral communication, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, perception, attention, memory, logical reasoning, social cognition, and various forms of self-direction and self-control [2].

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3. Scope of Literature

Based on CNKI Full-text Database of Chinese Journals, the relevant articles are searched which published in domestic core journals from 2010 to 2020 with "metacognitive" and "English" as keywords, topics, abstracts and titles. 271 related literatures were retrieved, and 125 were selected as the research objects of this paper after screening and induction.

Because the research objects are all domestic core journals, it can basically represent the research level and development direction of this direction.

4. Research Status

4.1. Method of Literature Classification

(1) By year and number of relevant articles published to understand the overall trend of research in this field over eleven years;

(2) By categories and years of publication, in order to understand the research status of metacognition in different areas of English teaching (listening, speaking, etc.);

(3) By research methods (empirical research or non-empirical research), the year of publication and the category of the papers, in order to understand the change of research methods in metacognition and English teaching research and the different research methods in different areas of English teaching in the eleven years;

(4) By the number and year corresponding to different research objects (primary school students, middle school students, etc.), so as to understand the tendency change of research objects in this field in the eleven years.

4.2. The Basic Trend

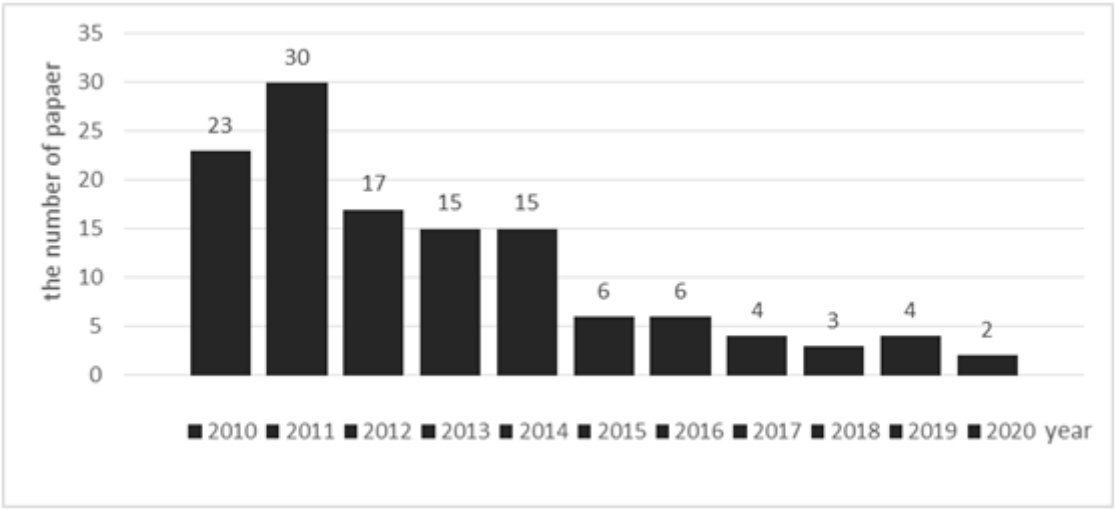

Figure 1. Distribution of metacognitive theory and English teaching papers published in domestic core journals from 2010 to 2020

As can be seen from Figure 1, during 2010-2020, a total of 125 articles related to metacognitive theory and English teaching were published in domestic core journals. In the first two years (2010-2011), 53 articles were published, accounting for 43% of the total. In 2011 and before, the development momentum of relevant research was prosperous, and reached the peak in that year. After 2011, the number of studies in this field gradually decreased, although there were small fluctuations, but the overall trend of decline indicates that the attention of domestic researchers to metacognitive theory and English teaching gradually decreased.

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4.3. Research Focus and Content

Table 1. Distribution of research fields on metacognitive theory and English teaching in domestic core journals from 2010 to 2020

Category/year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total	Percentage
Listening	3	8	1	5	4	2	3		1		1	28	23.0%
Speaking				1	2							3	2.4%
Reading	3	7	3	1	1	2					1	18	14.4%
Writing	2	2	4	1	1		1	2		2		15	12.0%
Translating				1			1	1	1			4	3.2%
Independent study	8	3	3	2	3					1		20	16.0%
English teaching construction	2	1	2		2	1			1	1		10	8.0%
Learning strategies	3	6	1	3		1						14	11.2%
Others	2	3	3	1	2		1	1				13	10.4%

Table 1 shows that papers on metacognitive theory and English teaching research involve a wide range, which not only include the traditional fields such as listening, speaking, reading, writing and translating, but also include independent study, English teaching construction and learning strategies, etc, among which papers on independent study include a total of 20 articles, accounting for 16% of the total, which rank only second to metacognitive theory and English listening study. From 2010 to 2020, there were 65 research papers on the five basic English teaching parts as listening, speaking, reading, writing and translation, accounting for 52% of the total number of papers. At the same time, it should be noted that listening, reading and writing are the research focus of the five basic areas, while there are only four articles in speaking and translating studies, less than 1% of the total number of articles. As two inseparable parts of English learning, they have not been attracted enough attention from researchers.

Specifically, detailed information on the concrete content of these papers are illustrated as below:

4.3.1. Research on Metacognitive theory and English listening

The research institute of Metacognitive theory and English listening retrieved the most papers, 28 in total. Related researches mainly focus on the use of metacognitive strategies and the cultivation of metacognitive awareness.

According to He Xiaoyin [4] the classification and characteristics of metacognitive strategies, metacognitive strategies in listening teaching can be divided into pre-class strategy and after-class strategy. Furthermore, he proposed that in English teaching for students in independent colleges, the training of metacognitive strategies can be carried out from three aspects: self-monitoring, self-management and self-assessment. Chang Pengyun et al. [5] explored the impact of metacognitive strategy training on English listening teaching activities through empirical research. The research showed that by training students' metacognitive strategies, their metacognitive awareness was cultivated, and their self-monitoring and adjustment ability was improved, besides, their listening scores were effectively improved. Ma Ying [6] adopted the methods of questionnaire and interview survey to explore problems that non-English major college students have in using metacognitive strategy in listening class, and pointed out the problems such as lacking self-consciousness and blind listening learning in listening teaching activities. Based on the above, they put forward the improvement method of applying metacognitive strategy to guide teaching. Liu Xianlong [7] investigated the use of metacognitive strategies in college students' English listening learning, and found that the level of metacognitive strategies was positively correlated with listening performance. On this basis, the relationship between metacognitive awareness, listening level and listening anxiety of

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Chinese non-English majors through empirical research was analyzed, and targeted suggestions for English listening teaching were put forward by analyzing the research results. Shen Yunhua and Zhang Jun [8] conducted an empirical study to explore the correlation between metacognitive awareness and listening level which showed that there was a significant correlation between metacognitive awareness and listening ability, which was conducive to the improvement of learners' listening ability. Based on this, students' listening self-assessment materials and tools in the online learning environment were introduced to consciously train learners to use metacognitive strategies, so as to improve effect of their listening.

4.3.2. Research on Metacognitive theory and English speaking

Liu Fang and Deng Zehua [9] investigated the psychological barriers of English speaking learners through empirical research, and pointed out that metacognitive strategies can help learners eliminate psychological barriers and improve their oral English performance. Peng Ninghong [10] investigated the differences in phonological learning strategies between English and non-English majors, and the analysis showed that learning strategies were correlated with learners' oral performance, among which metacognitive strategies were significantly positive correlated with phonological performance. Zhang Yi [11] discussed the cultivation of metacognitive strategies in English speaking learning of non-English college students, and put forward suggestions for teachers to cultivate learners' metacognitive strategies.

4.3.3. Research on Metacognitive Theory and English Reading

Qu LiLi [12] investigated learners' use of reading strategies in English reading teaching, and the empirical study finds that the metacognitive strategy level was correlated with reading ability, that is, metacognitive strategy have a significant impact on English reading level, and they put forward suggestions for the improvement of metacognitive strategy in English reading. Based on this, the relationship between metacognitive knowledge, vocabulary breadth and second language reading level was empirically explored. Li Shaoling [13] discussed the application of metacognitive strategies in English reading teaching in view of the critical importance of reading in the basic stage of English learning, and discussed how to improve learners' metacognitive strategy ability to improve their reading level. The corresponding suggestions were put forward.

4.3.4. Research on Metacognitive Theory and English Writing

Pang Hui [14] conducted an empirical study to investigate the use of metacognitive strategies in English writing by English majors and non-English majors, and they compared and analyzed the differences in the use of various factors in metacognitive strategies. On the basis of such empirical studies, the ways to improve English writing teaching under metacognitive strategies, so as to improve students' metacognitive ability were explored. Qin Limin et al. [15] developed a metacognitive strategy scale for English writers in a multimedia environment with the help of a multimedia writing platform, taking second-year non-English college students as the research objects. Xu Lihua [16] discussed the application of metacognitive theory in English writing teaching, and pointed out that the overall writing level should be improved from three aspects: metacognitive experience, metacognitive knowledge and metacognitive monitoring. Liu Fang [17] integrated domestic empirical studies on the correlation between college English learners' English writing ability and metacognitive strategies, and put forward suggestions on how to apply these results into teaching practice.

4.3.5. Research on Metacognitive Theory and English Translating

Xu Yi and Mu Lei [18] constructed the framework of the scale of interpreting strategy competence based on the metacognitive theory, and elaborated the methods and steps of producing the scale through consecutive interpretation practice. Zhang Huali [19] innovated and developed translation course teaching models based on metacognitive theory, namely metacognitive knowledge and translation course preparation, metacognitive experience and

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translation course process control, metacognitive monitoring and translation course extracurricular sublimation, etc. Wang Xiangling et al. [20] explained the correlation between translation ability and metacognitive monitoring by comparing the influencing factors of metacognitive monitoring between professional translators and non-professional translators. Hu Zhenming and Wang Xiangling [21] interpreted the essence of translation ability from a metacognitive perspective by referring to domestic and foreign scholars' research on translation ability under the guidance of multiple view and minimalism view of translation ability.

4.3.6. Research on Metacognitive Theory and English Learning Strategies

Yu Ting [22] investigated the vocabulary learning strategies of college students and analyzed the important role of metacognitive strategies in vocabulary learning. To compare with this study, the mastery of English learning strategies among students of different categories was investigated and their use of metacognitive strategies was analyzed, and it was pointed out that students' English learning strategies included the implementation and guiding strategies of metacognitive strategies, and discussed the guiding role of metacognitive theory in English learning strategies. Zhang Yonghua [23] took metacognitive strategies as theoretical basis and pointed out the shortcomings of learning strategy training in English teaching activities and the necessity of training metacognitive strategies. Liu Xiaohua and Mo Jingqiang [24] explored the English teaching methods incorporating metacognitive strategies through empirical research, and it was proved that the combination of metacognitive training and classroom with self-questioning training, learning files or learning diaries after class could significantly improve the effect of metacognitive training.

4.3.7. Research on Metacognitive Theory and Independent Study

Zhang Huanrui et al. [25] analyzed the relationship between metacognitive strategies and independent English learning by means of questionnaire survey, test, classroom observation, reflection log and semi-structured interview. The results showed that learners' metacognitive strategy level is significantly positively correlated with their independent learning ability. Wang Xiaojing [26] exchanged the independent variables and dependent variables in previous studies, and conducted an empirical study to explore the relationship between non-English majors' autonomous learning motivation and metacognitive strategies. The results showed that there was a significant positive correlation between the two, and the stronger the autonomy of motivation, the higher the correlation with metacognitive strategies. Chang Mei and Yu Yun Ling [27] explored the teaching mode to improve the efficiency of English autonomous learning and the methods to cultivate students' metacognitive strategy ability by empirical research, from the perspective of relationship between metacognitive strategies and English autonomous learning, and correspondingly proposed the problem of how to use metacognitive theory to guide college English teaching. Li Houye [28] deeply discussed the methods of integrating metacognitive strategy training into English teaching to improve students' metacognitive awareness and manage their independent learning behavior based on previous empirical studies on metacognitive theory and English autonomous learning.

4.3.8. Research on Metacognitive Theory and English Teaching Construction

Li Ling [29] discussed the importance of metacognitive strategies in teaching activities, and the important role of teachers in guiding students to use metacognitive strategies, and gave specific practices of teachers in cultivating students' metacognitive awareness in the absence of actual language environment in English teaching in China. Wang Xiaojun and Lu Jianru [30] put the research into the perspective of college English teaching team building, and discussed the metacognitive strategies used in the process of teaching team building, so as to ensure the scientific, sustainable and effective of team building.

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4.4. Research Methods

In order to further understand the research methods of metacognitive theory and English teaching in China in the past eleven years, according to the standards of Wen Qiufang and Ren Qingmei [31], the literature retrieved is divided into empirical research and non-empirical research. That is, as long as the article provides detailed information about "research objects, research tools, data collection and analysis" are classified as empirical research, otherwise they are non-empirical researches.

Table 2. Classification of metacognitive theory and English teaching literature research methods in domestic core journals from 2010 to 2020

Category/year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	total
Listening	1/2	7/1	1/0	4/1	3/1	2/0	3/0		0/1		0/1	21/7
Speaking				1/0	1/1							2/1
Reading	3/0	3/4	2/1	1/0	1/0	2/0					0/1	12/6
Writing	1/0	2/0	2/2	0/1	1/0		0/1	2/0		2/0		10/5
Translating				1/0			1/0	1/0	0/1			3/1
Independent study	6/2	1/2	2/1	1/1	3/0					1/0		14/6
English teaching construction	0/2	1/0	1/1		0/2	0/1			0/1	0/1		2/8
Learning strategies	1/2	3/3	1/0	3/0		1/0						9/5
Others	2/0	2/1	2/1	1/0	1/1		1/0	1/0				10/3
Total	14/9	19/11	11/6	12/3	10/5	5/1	5/1	4/0	0/3	3/1		83/42

xx/xx: the former represents empirical studies, and the latter are unempirical studies.

Table 2 shows that in addition to metacognition and English teaching, metacognition and the cultivation of metacognitive strategies in English teaching, empirical studies always outnumber non-empirical studies in terms of research methods. It is believe that English teaching and the cultivation of metacognitive strategies are both relatively broad topics, so researchers usually made further discussions based on previous empirical studies. While other categories are closely related to teaching activities, which is convenient for researchers to consciously carry out empirical research and record it.

As can be seen from Table 2, during 2010-2020, there were 83 empirical studies, accounting for 66% of the total, and 42 non-empirical studies, accounting for 34% of the total. During the eleven years, the proportion of non-empirical research and empirical research fluctuated slightly, but the overall trend is down, and the empirical research has a comparative advantage, indicating that in recent years, the empirical research method has been more and more favored by researchers.

4.5. Research Participants

Table 3. Distribution of different research participants in metacognitive strategy and English teaching in domestic core journals from 2010 to 2020

Participants/Year		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Primary school students					1					1			2
Middle school students		2			1				2			1	6
College students	English major	2	3	2	2	2				1	1		13
	Non-English major	15	23	11	10	7	6	6	1		2	1	82
	Both English and non-English major				1	3							4
	Teachers					1							1
	Undefined	4	4	4		2			1	1	1		17
Total		23	30	17	15	15	6	6	4	3	4	2	125

It is shown that the research participants of the studies on metacognitive theory and English teaching in the eleven years are diverse, involving primary school students, middle school

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students, college students and teachers. Some of the papers can not be clearly defined in terms of research content, because the group is not clearly defined. As can be seen from the table, the majority of the research participants are college students, with a total of 99 studies, accounting for 80% of the total. Among college students, 82 are non-English majors, accounting for 66% of the total, indicating that the majority of relevant papers in this field take non-English majors as the research participants.

5. Existing Problems in Current Study

5.1. Single Research Participants

In the past eleven years, the relevant research participants of metacognitive theory and English teaching are mostly concentrated on college students, especially non-English majors, while primary school students, middle school students and even graduate students are ignored greatly. It is thought that the causes of this phenomenon are that researchers are mainly concentrated in colleges and universities, and there is a good scientific research atmosphere. Moreover, the pressure of professional title evaluation of college teachers is often greater than that of primary and secondary school teachers, so college students have become the mainstream participants of research. However metacognitive theory has different degrees of role for people of all ages, and is subject to the influence of age (Wang Feifei et al. 2012), therefore, there are differences in metacognitive levels among students of different ages. As a consequence, due to the limited research participants involved in current relevant studies, their help to English teaching is limited.

5.2. Unbalanced Research Field

In China, there are a wide range of studies on metacognitive theory and English teaching, but most of them focus on listening, reading, writing and autonomous learning, while English speaking and translation are also basic skills of English learning, but they have not received enough attention, especially in the field of English translation research. At the same time, current research areas lack depth, such as online and offline writing based on English writing can be distinguished, English writing peer evaluation, etc.

5.3. Relatively Low Proportion of Empirical Research

Since 1990s, many domestic scholars have been calling for the empirical research method to replace the lack of scientific evidence argument research (Gui Shichun, 1997). However, though empirical research in eleven years has been developing a litte, but the distance to become mainstream research methods in this field is still far insufficient. Besides, in the empirical research, there are problems such as short research period, small number of research samples and rough analysis of research results which is difficult to draw a convincing conclusion from the research.

5.4. Small Number of Researches

Metacognitive learning plays a vital role in learning. However, domestic core journals in nearly eleven years for the study of metacognitive theory and English teaching accunt for a really small proportion, and after 2016, the researches further reduce, and research situation is gradually declining. Pang Guoping, Wang Xiong (2001) proposed that the domestic is still in the initial stage on the study of metacognition, maybe the research methods are still immature.

In the past eleven years, the researches on learning strategies and metacognitive strategy training in English teaching construction accounted for 20% of the total number of papers. However, such research fields have not been combined with any aspect of English teaching, and are too broad, and not targeted.

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6. Future Expectations

Reviewing the past eleven years, it is not difficult to find that domestic scholars have made some achievements in the research field of metacognitive theory and English teaching. However, as this is a relatively new field (Xu Jinfen, 2005), the research in this field is not mature yet, but faced with the dilemma that the enthusiasm of researchers in this field is gradually fading. Therefore, there is still much to be done in the future.

6.1. Expand Participants.

Research participants need to be further expanded on this basis, in addition to high school students and teachers for elementary school students study, there still need to extend beyond these group studies, such as the study of young children. In addition, the study on the number of non-English major college students needs to be further explored, and also in the study of other groups, so as make the study present a balanced situation.

6.2. Broaden Research Field

The research field needs to be further expanded and the relevant research needs to further highlight the guiding role of metacognition in English teaching. In addition to the macro field of listening, speaking, reading, writing and translation, it is also necessary to go deep into various fields to make the research more detailed. Metacognitive strategy training needs to be applied to all aspects and combined with listening, speaking, reading, writing and translation to form more empirical studies.

6.3. Enrich Research Methods

From the perspective of the development trend in the field of social science, it can be foreseen that in the coming decades, empirical research will still occupy the mainstream position in the accurate research method based on the fact. In the following research on metacognitive theory and English teaching, more empirical research, especially qualitative and quantitative research methods should be applied.

7. Summary

To sum up, the present situation of the development of metacognitive theory and English teaching in China in the past eleven years is summarized in the hope that this paper can provide some enlightenment for domestic researchers to explore more content in this field, so as to promote the theory of metacognition to play a better role in English teaching.

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