

Mixed Method in Language Learner Cognition

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Research on mixed method has made great development. In order to explore the practical application of mixed method, this article starts from the perspective of language learner cognition and selects *The Modern Language Journal* and *Language Teaching Research* as the research journals. It explores some empirical papers that used mixed method to learn the specific research designs of mixed method as well as the main means of its application. The study finds that mixed method has been applied in several fields and is more scientifically reliable than qualitative and quantitative methods especially in language learner cognition, and the different research tools used in the field of language learner cognition demonstrate the flexibility and relevance of mixed method data collection.

Keywords: mixed method, mixed method design, language learner cognition

Introduction

The mixed method is another major research method following the quantitative and qualitative research methods, which combines quantitative and qualitative methods to form a new set of research method. In order to investigate the practical application of mixed method, this paper searched *The Modern Language Journal* and *Language Teaching Research* for empirical papers using mixed method in the decade from 2013 to 2023. In *The Modern Language Journal*, there were 31 articles using mixed method, while there were 43 articles on mixed method in *Language Teaching Research*. They cover a wide range of research directions, including cognitive, pedagogical, and language research, so it is evident that mixed method has gained an important place in language learning.

Among a total of 74 articles in these two journals, cognitive studies accounted for a large proportion, whether it is teacher cognition or language learner cognition, indicating that mixed method plays a great role in this aspect of cognitive studies. Moreover, mixed method can provide a more accurate, comprehensive and in-depth data source for language learner cognition research, which helps pedagogues to improve the quality of teaching from the perspective of language learner cognition. In order to explore how the cognition field is using mixed method to do research, 74 articles were selected as the articles with language learner cognition and will be explored.

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Status of Research

Mixed method is another major research methodology in addition to qualitative and quantitative research methods, and there are numerous studies on mixed method proposed by various scholars. The prime representatives are Creswell (2017), Morse (2010), Johnson and Onwuegbuzie (2004). Creswell (2017) proposed four mixed method designs as: convergent design, embedded design, explanatory sequential design and exploratory sequential design. Morse (2010) proposed eight mixed method designs, but the research designs agreed by worldwide are QUAL+quan (qualitative-based method, qualitative and quantitative methods are carried out at the same time), QUAL→quan (qualitative-based method, qualitative method is first and followed by quantitative method), QUAN+qual (quantitative method is dominant, qualitative and quantitative methods are carried out simultaneously) and QUAN→qual (a mixed method research design in which quantitative method is dominant, followed by qualitative method). Johnson and Onwuegbuzie (2004) proposed nine mixed-method designs, but in the final analysis, it is still the same four mixed-method designs as with Morse (2010) that are recognized by worldwide.

The number of empirical papers using mixed methods is also increasing year on year, and there have been significant breakthroughs in numerous studies on language learner cognition, which of course encompasses many aspects. Emotions, for example, are a major influence on language learners, and mixed method design combining quantitative and qualitative methods has explored what role emotions play for language learners (Sato, 2013; Teimouri, 2018; Pfenninger, 2020; Kormos, 2016). Spoken language plays an important role in communication, and developing spoken language of children has also become an important area of research for scholars to explore research method using mixed method (Li, 2021; Hanzawa, 2023). Peer feedback is more acceptable to students than teacher feedback, so learning and feedback efficiency of students are greatly improved (Kessler, 2020; Banister, 2020). As the centre of learning moves to the student, the focus of learning has shifted from the teacher to the student, so this kind of teaching and learning phenomenon was investigated by Yi Wang (2020). Also, Lee (2021) explored the effects of text enhancement and task manipulation on attentional processes of L2 learners and development of grammatical knowledge. Researches on language learner cognition encompass many aspects and there will be more researches on language learner cognition or other research areas in the future.

Research Process

Tool Selection and Object Acquisition

The tool used in this paper is the “Literature Search Tool”, which selects relevant research papers from two important international journals and explores the empirical papers that use mixed method in these journals. As those empirical papers are from journals, we require the accuracy and real-time availability of the journals, and the use of the literature search tool can not only accurately locate the required literature, but also timely access to the latest academic literature, which improves the efficiency and accuracy of the search. Compared with the traditional manual collection method, the literature search tool saves a lot of time and money, and also solves the problem of geographical limitations, giving us more choices and flexibility to get the most accurate papers.

The journals selected for this paper are *The Modern Language Journal* and *Language Teaching Research*, both of which have an important position in foreign language research. *The Modern Language Journal* is a famous research journal on language education, and it is one of the leading journals on language education. The journal covers all aspects of language education, including language acquisition, grammar and culture. It

publishes high-quality papers and provides educators and researchers with the latest research results in the relevant fields. *Language Teaching Research* is an international journal of language teaching and research in the field of language education and provides a platform for linguists, educators and researchers to discuss the latest theories and practices of language teaching and learning, and also provides an important direction for research specialization in language teaching and learning. These two journals are chosen for this study because they have international standing, because they publish the latest research findings, and because they provide educators and researchers with easy access to a comprehensive range of papers on the theory and practice of language teaching and learning.

Implementation of the Research Process

These papers were searched in two journals—*The Modern Language Journal* and *Language Teaching Research*, using the keywords as “mixed method, mixed methods, mixed-method, multi-method, multiple methods/approaches”, and all of them were restricted the years from January 2013 to September 2023. After articles were searched, then they were filtered for the mixed method used, and these empirical papers that conformed to the mixed method were identified as the main articles. Finally, the empirical papers using mixed method were then categorized to explore what these empirical papers studies included and to analyze the results of research using mixed method in this area of language learner cognition.

In conducting the content analysis phase, this paper studied each article carefully, paying particular attention to their research design, data collection methods and instruments. In examining the design and analysis of mixed method, the theoretical framework of mixed method designs of scholars such as Creswell (2017), Morse (2010), as well as Johnson and Onwuegbuzie (2004) is mainly referenced.

Analysis of Mixed Method in Language Learner Cognition

Practical Application of Mixed Method

After searched these two journals—*The Modern Language Journal* and *Language Teaching Research*, it found that a total of 31 empirical papers using mixed method in *The Modern Language Journal*, and 43 empirical papers using mixed method in *Language Teaching Research*. The research directions are in the areas of learner cognition, teacher cognition, learner motivation, learner behaviour, etc.. The numbers are shown in the Table 1 below:

Table 1
Numbers of Empirical Papers Using Mixed Method

	LC	LM	LB	TC	SC	CL	PC	ETM	SLA	P	TR	E	T
T.M.L.J.	5	4	3	5	1	2	2	2	1	1	3	2	31
L.T.R.	5	2	0	9	0	2	1	10	8	1	1	4	43

LC=Learner Cognition, LM=Learner Motivation, LB=Learner Behaviour, TC=Teacher Cognition, SC=Social Climbing, CL=Classroom Learning, PC=Peer Cooperation, ETM=Educational Teaching Methods, SLA=Second Language Acquisition, P=Policy, TR=Test Research, E=Else, T=Total, T.M.L.J.=The Modern Language Journal, L.T.R.=Language Teaching Research

Through the data, it was found that our research methodology is no longer limited to only qualitative or quantitative research methods, but the combination of the two methods forms a new research methodology. The fact that mixed method has been around for a while, but it has already developed in various fields, and it suggests that mixed method become a research design and establish in applied linguistics research, that can help us to

conduct researches in different areas of learning. The fact that mixed method research has grown from nonexistence to pass into existence, even to the extent that it has been used extensively in a particular field of study, showing that mixed method is more scientific and more reliable than purely qualitative and purely quantitative methods.

In *The Modern Language Journal*, the three main categories with high research hotspots are learner cognition, learner motivation and teacher cognition. And in *Language Teaching Research*, the four main categories with high research hotspots are educational teaching methods, teacher cognition, second language acquisition and learner cognition. In addition, the focus areas of mixed method research in both journals reveal that learner cognition, teacher cognition and motivation are very important factors for language learning and education. Therefore, in future research, we can pay more attention to these areas and better explore the phenomena and mechanisms of language learning and education through mixed method research, so as to provide a more scientific and reliable basis for language teaching and research.

Instruments of Mixed Method in Language Learner Cognition

Five articles in *The Modern Language Journal* (2013-2023) for the mixed method of language learner cognition are categorized as: *Beliefs About Peer Interaction and Peer Corrective Feedback: Efficacy of Classroom Intervention* (Sato, 2013), *Differential Roles of Shame and Guilt in L2 Learning: How Bad Is Bad?* (Teimouri, 2018), *The Dynamic Multicausality of Age of First Bilingual Language Exposure: Evidence From a Longitudinal Content and Language Integrated Learning Study With Dense Time Serial Measurements* (Pfenninger, 2020), *A Control-Value Theory Approach to Boredom in English Classes Among University Students in China* (Chengchen Li, 2021), and *How do Learners Perceive Task Repetition? Distributed Practice Effects on Engagement and Metacognitive Judgement* (Hanzawa, 2023). The instruments used in Sato's (2013) study were questionnaires and semi-structured interviews. Teimouri (2018) used both questionnaires, including that qualitative studies used open-ended questionnaires and quantitative studies used surveys. Pfenninger (2020) used the main instruments of verbal and written crafting tasks, motivational questionnaires and personal semi-structured interviews. Chengchen Li (2021) used the main instruments of questionnaires, semi-structured interviews and follow up interviews. Hanzawa (2023) used picture narratives and questionnaires as the main instruments. By judging the data collection and analyses methods of these five articles, it was found that the main instruments were questionnaire survey and semi-structured interview. Questionnaire survey was a typical quantitative data collection instrument and interview was a typical qualitative data collection instrument.

Another five empirical papers using mixed method for language learner cognition in *Language Teaching Research* (2013-2023) are categorized as, respectively, *Affective Factors Influencing Fluent Performance: French Learners' Appraisals of Second Language Speech Tasks* (Kormos, 2016), *Synchronous VCMC with TalkAbroad: Exploring Noticing, Transcription, and Learner Perceptions in Spanish Foreign-language Pedagogy* (Kessler, 2020), *The Complexity of Control Shift for Learner Autonomy: A Mixed-method Case Study of Chinese EFL Teachers' Practice and Cognition* (Yi Wang, 2020), *Exploring Peer Feedback Processes and Peer Feedback Meta-dialogues with Learners of Academic and Business English* (Banister, 2020) and *Effects of Textual Enhancement and Task Manipulation on L2 Learners' Attentional Processes and Grammatical Knowledge Development: A Mixed Methods Study* (Lee, 2021). The instruments used to collect data in

Kormos' (2016) study were questionnaires, monologue narrative tasks and interviews. Kessler (2020) used two questionnaires and a semi-structured interview. Yi Wang (2020) used classroom practice (classroom observation), after-school discussions, personal interviews and literature analysis. Banister (2020) used research methods such as observation responses, classroom discussions and surveys. Lee (2021) took the survey by means of a pre-test questionnaire, a post-test questionnaire, a background questionnaire, a post-reading questionnaire, an exit questionnaire and a stimulated recall session. In this journal, quantitative and qualitative methods were enriched with quantitative means such as questionnaires and classroom surveys while qualitative means were interviews, narratives and stimulated recall sessions.

The choices of these methods are closely related to the research questions and research designs, and can fully combine the advantages of various data collection methods to better answer the research questions. In addition, the mixed method research in the field of language learner cognition in journals shows that the involved issues include a variety of aspects such as motivation, cognitive processes, affective factors, etc., and the means of research are also different in language learning. Compared with the traditional qualitative and quantitative research methods, it can be found that mixed method integrates the data collection tools of qualitative and quantitative methods, and the drawn conclusions are more convincing as well as they increase the accuracy of the data. To sum up, mixed method has good flexibility and relevance, and appropriate data collection and analysis methods can be selected according to the different research questions, so as to obtain more convincing and reliable research conclusions.

Conclusion

By searching for mixed method research in two journals, it found that mixed method has become a common research design in applied linguistics research, fully incorporating both quantitative and qualitative data collection instruments so as to address the research questions more fully and accurately. Taking the fields of language learner cognition, teacher cognition, learner motivation and learner behaviour as an example, mixed method has been widely used and has already had a certain research foundation. In addition, by analyzing the research hotspots of mixed method research in *The Modern Language Journal* and *Language Teaching Research*, it found that the application of mixed method is more prevalent in these two journals in the fields of learner cognition and teacher cognition. This conclusion shows that mixed method has a wide application prospect in the field of applied linguistics and has become a scientific and reliable research method. Both quantitative and qualitative data collection instruments have been widely used in mixed method research in the field of language learner cognition. The choices of these instruments are usually based on the differences in the types of inquiry questions and data, aiming at obtaining data that are comprehensive and detailed as soon as possible in order to achieve the purpose of mixed method research. By judging the data collection and analysis methods of these studies, it is clear that mixed method is widely used in the field of language learner cognition, and that it allows for a flexible and targeted choice of data collection instruments to be employed, saving a great deal of time and effort in obtaining data for analysis. We look forward to exploring more areas of research using mixed method in the future, and developing our techniques to improve learner learning and researcher exploration in all areas.

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