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**Research Note**

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## **Current Trends in Mixed-methods Research: Potential for Use in Applied Linguistics**

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### **Abstract**

This paper reviews the literature on mixed-methods research (MMR) and studies that have employed MMR designs in the fields of education, particularly in applied linguistics. I explore what MMR is in terms of its definitions, major purposes of conducting MMR, and the development of MMR as a self-standing research paradigm represented by pragmatism, the qualitative-quantitative continuum, and pluralistic worldviews. The paper then chooses and discusses one exemplar MMR study on second language (L2) learning motivation to illustrate what characteristics make the study MMR by various criteria. Finally, it discusses potential benefits and challenges of conducting MMR in applied linguistics.

### **Key words**

Mixed-methods research (MMR), Research paradigm, Pragmatism, Pluralism

### **要 旨**

本稿は、混合研究手法（ミックスメソッドリサーチ、以下MMR）についてこれまでに出た主な文献を参考に、MMRの定義と目的、また、実用主義、質的・量的研究の連続性、多元的世界観を基として、MMRが独立した一つの研究パラダイムとしてどのように発展してきたのかを概観する。また、教育分野の一つである応用言語学において、MMRの手法をとった論文の1つ（第二言語学習モチベーションについての研究）を例に挙げ、何をもってMMRとするか、その要件について批評を行う。最後に、応用言語学研究においてMMR手法を取り入れる利点と可能性、課題を議論する。

### **キーワード**

混合研究手法（MMR）、リサーチパラダイム、実用主義、多元主義

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## 1. Introduction

Mixed-methods research (MMR) has become popular in practice-based fields such as information technology, education, business, engineering education, nursing and health care. Among those, the second largest number of MMR studies were published in the field of education (Ivankova & Kawamura, 2010). Jang, McDougall, Pollon, Herbert, and Russell (2008), for instance, in their investigation of school success in public schools in Canada, transformed quantitative data to narratives and qualitative data to numbers to narrow down their investigation foci at the analysis stage. Conducting MMR is claimed to have many benefits (e.g., Sammons, 2010). Its popularity, however, seems to vary depending on (a) areas of inquiry, (b) types and combinations of analytical approaches, and (c) where studies are conducted. In fact, Bryman (2007), reviewing 232 MMR studies in social sciences, reported that (a) fewer “language related” studies employ MMR; (b) discourse analysis is rarely combined with other methods; and (c) MMR is mostly conducted in the US. It looks as if there are still some tensions among researchers regarding whether or not MMR is a self-standing research paradigm, depending on the research community involved.

This paper reviews the literature on MMR and studies that have employed MMR designs in applied linguistics. First, I will provide an overview of MMR in regard to its definitions, purposes, and philosophical stances. Choosing an exemplar study to discuss, I will then illustrate the characteristics of a MMR study. Finally, I will discuss potential benefits of conducting MMR, particularly in applied linguistics.

## 2. Definition

MMR combining quantitative and qualitative methods in one study has developed since Greene, Caracelli, and Graham (1989) first identified it as a distinctive research design in evaluation studies.

Broadening the scope to social science and education, researchers have defined MMR mainly in regard to where and to what degrees mixing takes place (e.g., questions, data collection, analysis, inferences, concepts, language) (Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2003). Creswell and Plano Clark (2007) claimed that this mixing gives MMR an overall strength “greater than either qualitative or quantitative research” (p. 4). Reviewing 19 definitions provided from 36 leading MMR researchers in their survey, Johnson, Onwuegbuzie, and Turner (2007) provided the education field with the following generic definition of MMR:

Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purpose of breadth and depth of understanding and corroboration (p. 123).

This definition is commonly used in recent MMR literature (e.g., Creswell, 2010) as the latest and most neutral. This definition centers on (a) who conducts the research, (b) by mixing what phases of research, (c) for what beneficial purposes. In principle, MMR needs both qualitative and quantitative aspects. Thus, combining methods that are all qualitative or all quantitative (i.e., multimethod) (e.g., Brewer & Hunter, 2006) does not meet the requirements. Also, a combination of different inquiries within a study is simply called mixed-models.

## 3. MMR Purposes

MMR originates in a study by Campbell and Fiske (1959), who discussed the importance of data triangulation, in which researchers use different

methods to *measure* the same phenomenon to increase the validity of their construct and to make strong inferences by reporting convergence of results. Triangulation has been very popular in MMR for a long time.

Greene et al. (1989) proposed four other purposes for conducting MMR in addition to (a) triangulation; they are (b) complementarity, (c) development, (d) initiation, and (e) expansion. Complementarity is using different methods to *explore* different facets of the same complex phenomenon. This purpose assumes different facets complement to each other by elaborating, enhancing, deepening, and broadening the overall interpretations and inferences. MMR is also used for *developing* one phase of a method (e.g., survey) based upon results from an earlier phase (e.g., interview). In such cases, both methods assess the same phenomenon. The first three purposes generally report convergence of results to strengthen a study. Greene et al. (1998), however, suggest that reporting divergence or dissonance of results is equally important in social sciences. This is called “initiation,” because by using different methods, such studies *explore* various diverging facets of the same complex phenomenon. Finally, MMR can be used to *expand* a researcher’s scope to different constructs or phenomena within a study, choosing the most appropriate method for each construct, not limiting their method choices to one traditional.

Greene (2007) emphasizes that all MMR studies, whatever their purpose, aim to develop better understanding of complex phenomena by mixing methods. Educational and social phenomena are oftentimes multifaceted; thus, some research problems benefit from employing MMR, particularly when researchers care about pedagogical implications, implementing findings in practice. At the same time, some research problems can be explored only through particular conventional analytical approach.

#### 4. Research Paradigm

“Research paradigm,” or worldview, is the philosophical assumptions that lead researchers to make certain decisions in terms of their theoretical lens and analytical approach in their scientific inquiries. Historically, there were two dichotomous, mutually exclusive paradigms in the research community: the post/positivist paradigm associated with quantitative (QUAN) research and the social constructivist paradigm strongly linked to qualitative (QUAL) research. These two paradigms view the world differently in terms of a reality/realities (i.e., ontology), the relationship between the knower and the known (e.g., epistemology) and value free/bound in the inquiry (i.e., axiology), methodology, and rhetoric.

Post/positivists, on the one hand, consider the social reality as determined and objective; thus, the researchers (the knowers) test a hypothesis to further verify a construct or study subjects (the known) by conducting statistical analysis. The social constructivists, on the other hand, consider that there are multiple, fluid, discursive social realities constructed or reproduced by people in a given context. They usually take more subjective, interpretative approaches to explore people or phenomena. In this view, researchers and participants reciprocally influence each other. Each of these paradigms rejects the other as “purists” and Tashakkori and Teddlie (1998) calls it is like “paradigm wars.”

MMR researchers view the world differently, however, believing that research communities have shifted their eyes from this QUAL-QUAN dichotomy to the QUAL-QUAN continuum in the last two decades (Teddlie & Tashakkori, 2009). This new worldview is called “the third research paradigm” (Johnson & Onwuegbuzie, 2004). As the two historical paradigms had their philosophical backgrounds, the overarching philosophy supporting this third paradigm is pragmatism, initially advocated by John Dewey. This pragmatism allows researchers to

choose and combine theoretical lenses and methodological approaches that work best to understand a complex research problem.

This third position, instead of rejecting the two traditional paradigms, considers that (a) QUAL and QUAN methods are compatible and (b) researchers can adjust their position along the continuum between the two extremes depending on the nature of their inquiry (Tashakkori & Teddlie, 1998; Teddlie & Tashakkori, 2009). Many researchers constructively claim this position, highlighting the commonalities between QUAL and QUAN inquiries (Sale, Lohfeld, & Brazil, 2002), emphasizing the important role of qualitative data in MMR (Howe, 2004), and admitting various challenges that MMR may encounter (Bryman, 2007).

The traditional QUAL and QUAN paradigm each has various stances within itself; likewise, MMR researchers, while supporting overarching pragmatism, have claimed various philosophical stances (e.g., Creswell, 2009; Creswell & Plano Clark, 2007; Greene, 2007; Onwuegbuzie & Combs, 2010). This paper will not review most of such stances, but will briefly discuss two major stances: (a) a-paradigmatic stance and (b) dialectical perspectives.

The a-paradigmatic stance advocates pragmatism as the primary philosophy having an epistemological influence on MMR (e.g., Johnson & Onwuegbuzie, 2004; Patton, 2008; Tashakkori & Teddlie, 1998; Teddlie & Tashakkori, 2009, 2010). It recommends that researchers choose “whatever philosophical and/or methodological approach works for the particular research problem under study” (Tashakkori & Teddlie, 1998, p. 5).

The dialectical perspectives, on the other hand, recognize and respect the importance of competing paradigms that co-exist within one study (e.g., Greene, 2007; Greene & Caracelli, 1997, 2003; Rocco, Bliss, Gallagher, & Perez-Prado, 2003). By using competing paradigms intentionally, researchers ex-

plore divergence or dissonance of results to understand the phenomena more in depth. Therefore, in some cases, this position “explicitly seeks for synergistic benefits from integrating both the post/positivist and constructivist paradigms” (Rocco et al., 2003, p. 21). Greene and Caracelli (1997) explain that mixing methods is more ethical “in order to represent a plurality of interests, voices, and perspectives” (p. 14).

As Greene and Caracelli (1997) used it above, MMR researchers often use the term “pluralism” to represent MMR’s worldview along with “pragmatism” and “continuum,” (Denscombe, 2008; Harrits, 2011; Johnson et al., 2007). Harrits (2011), for example, highlights two contrasting usages of MMR: one for gaining causal leverage by using QUAN to identify patterns and QUAL to trace causal mechanisms of a phenomenon; the other for solving epistemological “double hermeneutics” by using QUAN to obtain an objective perspective and supporting it with more interpretative perspectives obtained through subjective QUAL analysis. Denscombe (2008) also claims that MMR as a practice-based research approach needs the flexibility to change and develop, and has the potential to do so, according to the pluralism evolving in social science research. The varieties within MMR and discussions about the philosophical stances beyond the QUAL-QUAN dichotomy prove the maturity of MMR as a self-standing paradigm. MMR is also beneficial to promote pluralistic understanding of research issues.

## 5. MMR in Applied Linguistics

The MMR literature explains that collecting both qualitative and quantitative data does not automatically makes a study MMR. In applied linguistics, oftentimes, researchers combine QUAL and QUAN methods without special considerations or publish articles simply noting that they employed

“mixed-methods research” without meeting requirements for MMR.

In regard to MMR trend in applied linguistics, Hashemi (2012) conducted a content analysis of journal articles that self-identified as MMR or combined QUAL and QUAN methods. Of 273 articles he analyzed, 205 articles actually combined both types of data. Of the 205 articles, 71% of those concurrently collected QUAL and QUAN data with equal importance (i.e., “concurrent triangulation”).

To identify the best exemplar study to illustrate MMR characteristics, I explored recent journal publications that clearly noted that they conducted MMR or combined QUAN and QUAL in their abstracts. The sequential explanatory design (QUAN→quan) was the most popular in that researchers first administered a survey for the whole group, sampling participants for interviews.

I will now illustrate MMR characteristics by reviewing Wesely (2010). I chose this study because the study employed this survey–interview data comparison with the clearest explanation regarding how she conducted her MMR. Also, I believe the combination of survey and interview is even more popular among applied linguistics studies that do not qualify as MMR. Wesely both provides a strong rationale and demonstrates method mixing in many aspects of her study.

### 5.1. Exemplar Study

Wesely (2010) explored the relationship between students’ second language (L2) motivation and their persistence in and attrition from five elementary-level French immersion programs in the U.S. She conducted an MMR study to explore the complexities of L2 learning motivation. She first administered a survey (i.e., Gardner’s Attitude/Motivation Test Battery; AMTB) with 131 graduates from five immersion programs and their parents. She then interviewed 33 of those students individually. Her survey

results demonstrated that students who left the program at the elementary level had more positive feelings about L2 learning than those who continued the immersion program in middle school. Their attitudes toward L2 learning were varied depending on which school they attended. Her interview results revealed that the students considered their L2 learning “as a mysterious process, a grammar-focused experience, or (when successful) as a result of effort and work” (p. 308).

She interpreted the results, reporting that (a) some students likely had misunderstandings about L2 learning, (b) they associated their L2 learning experience with a whole schooling process, not with particular learning events, and (c) a potential disconnection existed between their attitudes and their decisions about L2 learning (i.e., whether or not they continued in immersion programs).

### 5.2. Rationale and Purpose

Based on the previous literature on motivation studies predominantly QUAN, and later studies that focused on emic motivation, Wesely rationalized her MMR as addressing “a problem where both qualitative and quantitative approaches have produced inconsistent or contradictory findings” (p. 299). Of Green et al.’s (1989) five MMR purposes, she specified “initiation” as her study purpose, exploring “the complexities of L2 learning motivation in immersion graduates” (p. 299). In such a way, having a strong rationale and study purpose supports researchers’ decision to conduct a MMR study.

### 5.3. Research Questions

The MMR literature claims that research questions guide or dictate MMR investigation (Teddle & Tashakkori, 2009). The first question that Wesely asked encompassed both QUAL and QUAN in nature, exploring issues that had emerged from her examination of L2 motivation. Her second question

was more specific, as she chose one “important issue” from her findings from the first question: “How do the data collected through student interviews compare with the data gathered by the results of the Attitude/Motivation Test Battery?” (p. 299). To address this question, Wesely compared QUAL and QUAN findings to explore one specific issue, namely “persistence in and attrition from immersion programs.”

#### 5.4. Philosophical Stance

Of the two major philosophical stances (i.e., a-paradigmatic, dialectic) supporting the current MMR paradigm, Wesely identified her philosophical stance as dialectic, exploring potential divergence or tension of QUAL and QUAN findings to understand the complexity of L2 learning motivation in depth. Taking this stance, she employed Gardner’s socio-educational model as the primary theoretical framework, which was strictly attached to the QUAN paradigm. At the same time, she incorporated three other concepts of motivation informing holistic QUAL views on motivation as the secondary theoretical frameworks.

#### 5.5. Research Design

By employing an explanatory design (Creswell & Plano Clark, 2007) with modifications, Wesely designed her study to use “qual” data from interviews (the notation is in lower case) “to expand on or elaborate on” (p. 299) QUAN data obtained from a survey. Although she did not specify this, her design is “sequential explanatory MMR (QUAN→qual),” first administering the questionnaire to all students and then conducting interviews with one-third of the students, with the priority given to QUAN over “qual” components. Her study is a “marginally mixed study” because mixing occurs at the designing and the interpretation stages only, while she collected and analyzed the two data types separately.

In interviews, she asked questions about each sub-scale of the AMTB.

#### 5.6. Research Process and Phase

To achieve construct validity, QUAN studies report the reliability of the analysis, whereas QUAL studies report dependability. MMR studies, on the other hand, go back and forth between QUAL and QUAN to achieve legitimation (Onwuegbuzie & Johnson, 2006). Although she analyzed the data separately, Wesely sequenced her analysis in six phases, by analyzing the QUAL data first to minimize potential bias that she might have from the QUAN results. She first took theme notes during interviews (phase 1) and generated interpretative codes from the transcribed interview data (phase 2). She then analyzed the survey data (phase 3), computing effect sizes of groupings for comparisons for which she found statistical significance. She then went back to her QUAL data to refine the earlier codes and to group students’ statements by commonalities (phase 4). At phase 5, she explored her integrated findings by comparing the QUAL and QUAN findings. Finally, in phase 6, she conducted a close investigation of selected students across all data sources as case studies.

#### 5.7. Reporting Findings

Creswell (2009) explains that MMR designs inform how researchers present results. In particular, sequential MMR studies report the QUAN component first and then move to the QUAL findings, followed by comparisons and contrasts of both sets of findings. Wesely first reported QUAN and QUAL findings separately and then compared the findings in the third section of her discussion. In her conclusion, she highlighted the usefulness of collecting both types of data to understand “contradiction and paradox in the data” (p. 309).

### 5.8. Visual representations

Teddle and Tashakkori (2010) pointed out that MMR studies tend to rely on figures and diagrams in reporting research designs, procedures, and results. Wesely used figures and diagrams to illustrate her research design and data analysis, addressing to what extent she incorporated both QUAL and QUAN aspects throughout her research.

### 6. Benefits of Applied Linguistic MMR

Identifying benefits of conducting MMR studies in applied linguistics, several leading researchers recently recommended MMR as the third methodological option that allows researchers to address complicated research problems purposefully. Dörnyei (2007) explained, in addition to Greene et al.'s (1989) purposes, that conducting MMR allows for reaching multiple audiences. Oxford (2011) also highlighted the importance of MMR in L2 learning strategy research to reveal meaning “in practical outcome and consequences” (p. 231). Most recently, Brown (2014) emphasized that MMR researchers “make  $1 + 1 = 3$  by carefully combining qualitative and quantitative data and analyses to create a whole that is greater than the sum of the parts.” Brown also pointed to the uniqueness of MMR that allows researchers to build arguments not only about the convergence, but also about “divergence, elaboration, clarification, exemplification, and interactions” (p. 16) of findings. Several other researchers (e.g., Hashemi, 2012; Ying, 2006) have explained that QUAL works explore the process, while QUAN works measure outcomes. L2 writing research works with both the process and products. As Hashemi (2012) has claimed, little research has addressed the integration of qualitative and quantitative methods. Recent calls for MMR often propose the integration of qualitative approaches to specific topics that have predominantly been studied quantitatively (e.g., evaluation, assessment, motivation, and other L2

learning issues).

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