Mixed-Methods Research in an EFL Context: A Quality Assessment Perspective

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Article Info	ABSTRACT
Article type: **Research Article** **Received:** **26/10/2020** **Accepted:** **23/02/2021**	Beyond the mono-method quantitative and qualitative research syntheses (e.g. meta-analysis and meta-ethnography, respectively) and with a pragmatic perspective on conducting mixed methods research (MMR), recently a very few research synthesists have adopted a *Mixed Methods Research Synthesis* (*MMRS*) approach to answer complex review questions. Therefore, to better understand the issue of quality, this study takes the initiative in aligning the mixed methods research quality with the Plonskyian views with specific reference to study quality proposed in methodological synthesis literature. The main purpose of the methodological synthesis here was to provide empirically-based evidence for describing and evaluating mixed methods studies in an Iranian EFL (English as a Foreign Language) context. We synthesized mixed methods theses in an Iranian EFL context by describing and evaluating three interrelated components of study quality through focusing on transparency and reporting practices related to: (a) MMR formulation stage (or MMR problem specification stage), (b) MMR design-related features, and (c) MMR interpretation and integration (or MMR implementation stage). The cumulative findings highlighted a set of deficiencies and strengths across MMR studies in the respective EFL setting. Of notable results were unsatisfactory attention to the issue of integration and transparency at the levels of design, method, and interpretation. The study has implications for designing and implementing sound MMR studies. Furthermore, it includes suggestions for doing solid MMR research as well as writing and preparing well-founded mixed methods articles. ***Keywords:*** EFL Setting, Mixed-Methods Research, MMR Quality Research Synthesis

1. Introduction

It is for over half a century that researchers in the social and behavioral sciences have established Mixed Methods Research (MMR) as a pragmatist methodological approach to conduct research (Dörnyei, 2007). This integrative approach is primarily used to corroborate findings from the quantitative and qualitative camps to initiate and spread human knowledge. The literature on mixed methods research, as Creswell (2009) asserts, has motivated five lively lines of research: (a) MMR techniques, (b) theoretical and philosophical issues, (c) the nature of MMR, (d) the use and adaptation of MMR, and (e) politicization of mixed methods. Notably, the fourth strand—the use and adaptation of MMR—has received considerable attention in the literature (see Creamer, 2018; Fetters, 2020; Molina-Azorin & Fetters, 2016).

One of the most challenging issues in this strand in particular and in mixed methods research in general has been related to the issue of quality. As Cooper (2016) stated "trustworthy accounts that describe past research are necessary steps in the orderly development of scientific knowledge" (p. 2). Likewise, the importance of the cumulatively transparent report of previous studies is emphasized given the recent call for the Evidence-Based Practice (EBP) movement, which has put a renewed emphasis on the importance of how a research study is conducted, what it determined, and "what the cumulative evidence suggests is the best practice movement" (Cooper, 2016, p. 3; see also Heyvaert et al., 2016).

Quality standards or quality assurance in the MMR literature is a hotly-debated issue so that the "application of quality criteria is still a subject of discussion" (Poortman & Schildkamp, 2012, p. 1738). However, different scholars set different benchmarks for assessing quality in MMR research and they have not unanimously reached an agreement on what criteria should be set and on how to evaluate mixed methods research studies (e.g. Bryman, 2014; Creamer, 2018; Creswell, 2015; Onwuegbuzie & Corrigan, 2014; Riazi, 2017).

As Plonsky and Gass (2011) cogently put, "progress in any of the social sciences including applied linguistics depends on sound research methods, principled data analysis, and transparent reporting practices" (p. 325). Drawing on the EBP movement and research methodological awareness, applied linguists have recently witnessed an increasing awareness and tendency towards meta-research—"the study of research itself: its methods, reporting, reproducibility, evaluation, and incentives" (Ioannidis, 2018, p.1). This meta-researchism has highlighted the significant role of research synthesis in evaluating the quality of studies (Amini Farsani & Babaii, 2020; Plonsky, 2013).

More specifically, in the field of applied linguistics, unlike the prior methodological studies that minimally evaluate research practices (e.g. Duff & Lazaraton, 2000; Henning, 1986; Lazaraton, 2005), and that such accounts were mainly "anecdotal rather than based on systematic inquiry of primary empirical studies" (Liu & Brown, 2015, p. 66), Plonsky and his colleagues used research synthetic techniques in a series of studies—defining the domain, locating the primary-level studies, developing a coding sheet, searching the literature, collecting information from studies (see Plonsky, 2013)—in accounting for quality features and "methodological phenomena" (Plonsky & Gonulal, 2015, p. 10). This fresh look at methodological practices has been of great importance in applied linguistics (Liu & Brown, 2015), and has inspired a series of studies (Amini Farsani & Babaii, 2020; Plonsky, 2013, 2014; Plonsky & Gass, 2011; Plonsky & Gonulal, 2015).

Accordingly, in order to better understand the issue of quality, this study takes the initiative in aligning the mixed methods research quality with the Plonskyian views with specific reference to study quality proposed in the methodological synthesis literature (see Plonsky, 2013; Plonsky & Gass, 2011). Unlike the previous studies which were mainly based on *individualistic*, *theoretical*, and *idiosyncratic ideology* (see Fàbregues & Molina-Azorín, 2017, emphasis added), research quality in mixed methods research in the present study is viewed through the lens of a synthetic research ethic (Norris & Ortega, 2006; Ortega, 2015) as a guidepost which, in turn, would strengthen collaboration, transparency, objectivity, systematicity, and boost synthetic thinking and acting with regard to the issue of quality.

Given the fact that educational methodologists and mixed methods researchers have not unanimously reached an agreement on what criteria should be set and on how to evaluate mixed methods research studies (Creswell, 2015; Onwuegbuzie & Corrigan, 2014; Riazi, 2017), and due to the presence of numerous number of quality benchmarks and considerations in the literature (e.g. Bryman, 2014; Creswell, 2015; Creswell & Plano Clark, 2011; Heyvaert, Hannes, & Onghena, 2016), we have adopted and modified those criteria, which, to some extent, were consistent with the Plonskyian views on study quality in the methodological synthesis literature (see Plonsky, 2013; Plonsky & Gass, 2011). More specifically, the following research questions are addressed:

1. To what extent have various mixed methods research (MMR) designs and MMR sampling designs been properly utilized in EFL research?

2. To what extent has EFL research adhered to the standards of rigor and transparency in MMR studies?

2. Literature Review

Plonsky (2013) investigated 606 quantitative research studies in terms of research designs, statistical techniques, and reporting practices in the top-tier journals of *Language Learning* (LL) and *Studies in Second Language Acquisition* (SSLA). The results revealed that mean-based analyses were frequently used with analyses of variance (ANOVAs) and *t* tests being the most prevalent statistical techniques. Advanced statistical techniques were applied sporadically. However, there exists dissatisfaction with reporting practices: reliability measures (occurred in 45% of the data), effect sizes (occurred in 26% of the data), checking of statistical assumptions (occurred in 17% of the data), confidence interval (occurred in just 5% of the data), and power analysis (occurred in only 1% of the data).

Other methodological syntheses describe and evaluate a particular feature of L2 research (e.g., reliability issues, factor analysis, instrument practices, eta-square effect sizes, and multiple regressions in L2 research). For instance, in a study on the applications of effect-size indices, Norouzian and Plonsky (2018), using research synthetic techniques, described and evaluated the uses of eta-squared and partial eta-squared in L2 research. Having outlined the conceptual and functional values of these two frequently used indices, they maintained that L2 researchers mistakenly represented partial eta-squared as eta-squared.

In sum, authors of methodological research synthesis studies sought to evaluate second language research and particular L2 research features in general and domain-specific research issues in particular. Retrospectively, they noted the strengths and deficiencies of L2 quantitative research studies in a wide range of sources such as *published journals*—more prevalently than other sources such as book chapters, and unpublished dissertations (emphasis added). They prospectively also offered systematic, objective, and transparent insights into the *quality of L2 research* (emphasis added) and put forward empirically grounded suggestions for improving the research issues (e.g. research designs, statistical analyses, and reporting practices).

However, these researchers recruited various systematic sampling strategies (i.e. purposive or exhaustive) for locating the target sample and only evaluated quantitatively oriented research studies in applied linguistics. Johnson, Onwuegbuzie, and Turner (2007) maintain that

> We currently are in a three methodological or research paradigm world, with quantitative, qualitative, and mixed methods research all thriving and coexisting and a triple methodological world might be

healthy because each approach has its strengths and weaknesses and times and places of need. (p. 117)

Research synthesis, as Plonsky and Oswald (2015) maintain, is "the microscope through which past L2 research is interpreted as well as the telescope through which future L2 research efforts will be directed" (p. 121). Accordingly, we also took a retrospective-and-prospective approach to attend to both past MMR and future MMR endeavors in an EFL context. More specifically, we hoped to contribute to the future of mixed methods research by examining its past in an EFL context (see Heyvaert et al., 2016; Plonsky, 2013).
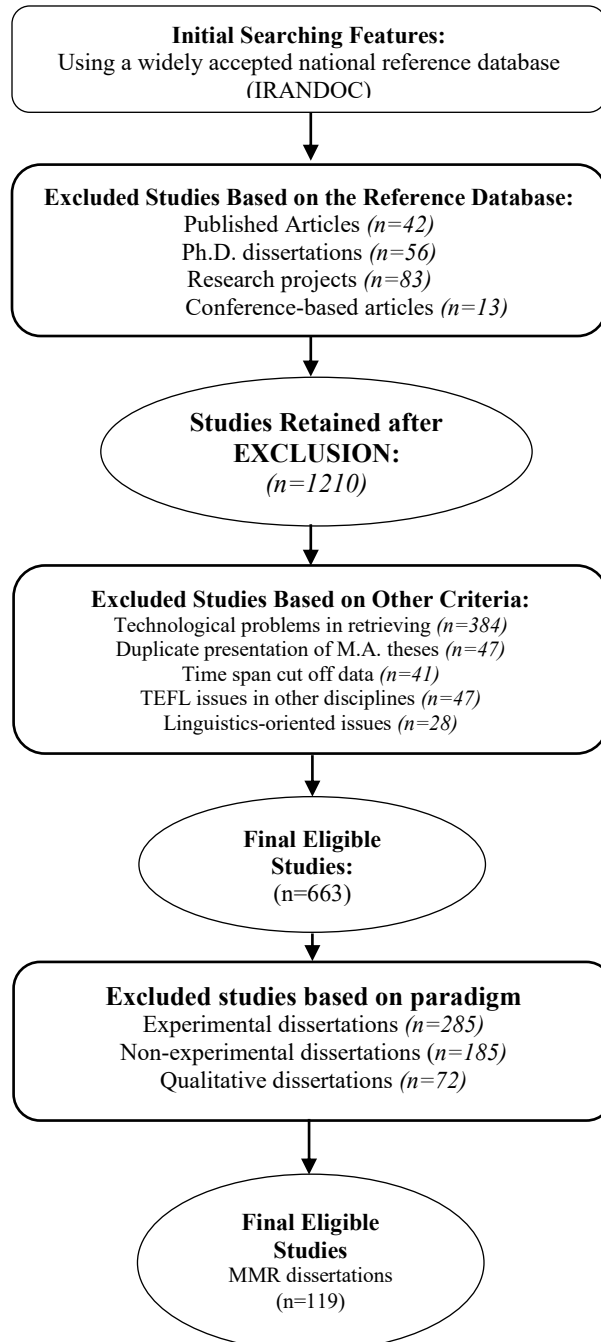
3. Method

We adhere to research synthetic techniques (Plonsky, 2013; Plonsky & Oswald, 2015) to examine the issue of quality in mixed methods research. To objectively evaluate the studies, we operationalized the issue of quality in light of three interrelated components of synthetic approach: (a) domain, (b) content, and (c) scope. We address these components in what follows.

3.1. Study Identification and Retrieval

Here, we adhered to a detailed set of steps to conduct research synthesis in applied linguistics (see Plonsky & Oswald, 2015). To begin with, this study, unlike the previous methodological syntheses in applied linguistics, synthesized unpublished dissertations between 1987 and 2015 which were recorded in "*the Iranian Research Institute for Information, Science, and Technology (IRANDOC) Institute.*" This long-established institute, affiliating with *the Iranian Ministry of Science, Research, and Technology (*MSRT), is a local and rich research-based center with an aim to collect, record, and disseminate research articles, research reports, government reports, and theses (see http://irandoc.ac.ir/about/overview). Furthermore, in order to examine a comprehensive range of research and trace advancements across time in EFL research context, a three-decade period of research was selected based on the statistical reports of EFL higher education in Iran (*https://irphe.ac.ir/index.php?sid=25*).

In this all-inclusive methodological synthesis, the quality of dissertations was established as "a posteriori question, not an a priori matter of opinion" (Glass, McGaw, & Smith, 1981, p. 222). Therefore, based on the aforementioned criteria concerning location, time, and content, our initial search revealed a large number of research outputs that appeared to fit the criteria. As Figure 1 illustrates that the researchers' final search led to 119 mixed methods theses.

Figure 1

Flow Diagram for Screening the Studies

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┌─────────────────────────────────────────────────┐
│           Initial Searching Features:            │
│  Using a widely accepted national reference      │
│              database (IRANDOC)                  │
└─────────────────────────────────────────────────┘
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                        ▼
┌─────────────────────────────────────────────────┐
│  Excluded Studies Based on the Reference         │
│                 Database:                        │
│            Published Articles (n=42)             │
│           Ph.D. dissertations (n=56)             │
│            Research projects (n=83)              │
│          Conference-based articles (n=13)        │
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                        ▼
            ╭───────────────────────╮
            │  Studies Retained after│
            │      EXCLUSION:        │
            │        (n=1210)        │
            ╰───────────────────────╯
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┌─────────────────────────────────────────────────┐
│   Excluded Studies Based on Other Criteria:      │
│  Technological problems in retrieving (n=384)    │
│  Duplicate presentation of M.A. theses (n=47)    │
│      Time span cut off data (n=41)               │
│   TEFL issues in other disciplines (n=47)        │
│      Linguistics-oriented issues (n=28)          │
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            ╭───────────────────────╮
            │     Final Eligible     │
            │        Studies:        │
            │        (n=663)         │
            ╰───────────────────────╯
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┌─────────────────────────────────────────────────┐
│        Excluded studies based on paradigm        │
│       Experimental dissertations (n=285)         │
│      Non-experimental dissertations (n=185)      │
│       Qualitative dissertations (n=72)           │
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            ╭───────────────────────╮
            │     Final Eligible     │
            │        Studies         │
            │     MMR dissertations  │
            │        (n=119)         │
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3.2. Coding: Designing Coding Sheet and Coding Procedures

In order to bring MMR quality into alignment with methodological synthesis, the following procedures were taken. In line with Plonsky's (2013) definition, study quality is characterized as "adherence to standards of contextually appropriate, methodological rigor in research practices and transparent and complete reporting of such practices" (p. 658). In parallel with this, and somewhat in line with those mixed methods scholars who are fervent supporters of parsimoniously agreed-upon set of core benchmarks for study quality rather than MMR particular long-list criteria (Bryman, 2014; Creswell, 2015; Creswell & Plano-Clark, 2011; Fàbregues & Molína-Azorin, 2017), we synthesized mixed methods theses in Iranian EFL context by describing and evaluating three interrelated components of study quality. These quality features are :(a) transparency and reporting practices related to MMR formulation stage (or MMR problem specification stage), (b) transparency and reporting practices associated with MMR design-related features, and (c) transparency and reporting practices related to MMR interpretation and integration (or MMR implementation stage).

This categorization was, to some extent, consistent with that of Onwuegbuzie and Corrigan (2014) wherein rigor is defined as conducting and reporting a mixed methods research study, which is comprehensive, systematic, evaluative, defensible, and transparent. The first three features reflect rigor in conducting MMR studies; the last two components represent rigor in reporting MMR studies. It seems that by aligning MMR agreed-upon set of core benchmarks with Plonskyian research quality criteria, one can argue for shaping a posteriori category based on empirical MMR data rather than a priori category based on pre-determined theoretically decontextualized criteria.

3.3. Coder Issues and Reliability Estimates

The following procedures were taken in order to boost the reliability of codes and address subjectivity in coding: (a) a reliability team was created including three Ph.D. students who had the research backgrounds and two experienced mentors who had been involved in teaching EFL research methodology at M.A. and Ph.D. levels; (b) three training sessions (each for 2 hours) were held in order to delineate the purposes of the study, the coding sheet components, and coding procedures; (c) coding guides or manuals accompanying coding sheets were distributed among the coders; (d) the coders were independently supposed to rate five M.A. theses retrieved from the IRANDOC research database; (e) the coders were asked not to look at the study identifiers of a given study because it might have an influence on

coding; and (f) in case of any questions and inconsistencies, the researchers relied on the related literature and research synthesists.

The overall inter-rater reliability of rated theses for mixed methods research studies was 0.83. Furthermore, in order to depict a thorough and comprehensive picture of coder consistency, "it is essential that reliability be considered and reported not simply overall, but rather for each category under examination (Norris & Ortega, 2006, p. 26). Table 1 presents the results of inter-rater reliability with several categories.

Table 1

Reliability Reports for Different Categories of Mixed Methods Research Dissertations

MMR features	Reliability
Formulation stage	.87
Design-related features	.79
Integration-related features	.75
Nomenclature	.91

4. Results and Discussion

4.1. Results

In this section, we synthesized mixed methods theses in an Iranian EFL context by describing and evaluating three interrelated components of study quality: (a) transparency and reporting practices related to MMR formulation stage (or MMR problem specification stage), (b) transparency and reporting practices associated with MMR design-related features, and (c) transparency and reporting practices associated with MMR interpretation and integration (or MMR implementation stage).

4.1.1. Transparency and Reporting Practices Related to MMR Formulation Stage

Comprehensive and thorough reporting of the MMR formulation stage, as "the first step in any research endeavor" (Cooper, 2016, p. 20), empowers primary-level research consumers to better understand authors' "mixed methodological way of thinking" (Onwuegbuzie, 2012, p. 204). Table 2 presents the extent to which the MMR theses adhered to standards of transparency and rigor in the reporting of the interconnected components (i.e., working titles, research questions, rationale, and philosophical clarity).

Table 2

Reporting Practices Related to Mixed Methods Research Formulation Stage

	Reported		Not Reported	
	K	%	K	%
Title	2	1.68	117	98.31
Research Questions	115	96.63	4	3.36
Rationale	42	35.29	77	64.70
Philosophical clarity	0	0	119	100

Table 2 revealed that only two studies (2%) included the term mixed methods and related terms. Approximately 98% of the studies did not embrace the words of mixed methods or related terms in their titles. Furthermore, 14% of the studies (n=17) conveyed quantitative orientation in their titles; approximately 6% of the studies (n=7) conveyed qualitative orientation in their titles. This revealed that approximately one quarter of the studies leaned toward mono-method rather than mixed methods orientation in reporting the titles. Furthermore, a great portion of the studies (79%, n=94) was guided by separate research questions. That is, there existed at least one quantitative-led research question accompanied by at least one qualitative-led research question without a clear mixed methods research question. However, the second most frequent type was what Plano Clark and Badiee (2010) referred to as *combination research questions* (9.24%, n=11), wherein the EFL authors initially posed separate mono-method (i.e., quantitative-led and qualitative-led) research questions followed by a transparent mixed methods research question. The least prevalent research question type was concerned with what Plano Clark and Badiee (2010) referred to as *hybrid research questions* (8.4%, n=10) through which the EFL authors initially posed an overall research question consisting of two distinct strands. Then, they employed a quantitative-oriented approach to address one strand and used a qualitative-oriented approach to deal with the other strand.

The results also revealed that approximately 35% of the studies (n=42) explicitly outlined the rationale for using a mixed methods research approach. To put it differently, a great portion of the researchers (65%, n=77) did not explicate the reasons for using a mixed methods research approach. Therefore, it is not clear whether mixed methods research in 65% of the studies is more appropriate than mono-method approach to answer the research questions. The last feature in the formulation stage is the extent to which philosophical clarity was explicitly reported in the data set. Philosophical clarity, as Collins, Onwuegbuzie, and Johnson (2012) assert, is "the degree that the researcher is aware of and articulates her/his philosophical proclivities in terms of philosophical assumptions and stances in relation to all components, claims, actions, and uses in a mixed research

study" (p. 855). It is incumbent on the MMR authors to clarify his/her philosophical positioning in a given study. However, unfortunately, philosophical stances as a major indicator of the MMR style of thinking (Onwuegbuzie & Corrigan, 2014) was completely absent in the M.A. theses.

4.1.2. Design-Related Features in MMR

With regard to the purpose of mixing quantitative and qualitative phases (see Table 3), the results revealed that approximately 61% of the MMR theses (n=73) identified (implicitly and explicitly) the purpose for mixing quantitative and qualitative phases in a given study. As for purpose types, the complementarity purpose (37%, n=44) in which the authors seek to elaborate, to enhance, to illustrate, and to clarify "the results from one method with the results from the other method" (Johnson & Christensen, 2014, p. 502), was, by far, the most prevalently represented purpose in the data set. To a lesser degree, the triangulation purpose (13%, n=15) in which the authors seek to converge and to corroborate the results from different angles or research approaches (Greene et al.,1989) was identified as the second purpose. This was closely followed by the development purpose (12%, n=14) through which the authors attempt to utilize "the results from one method to develop or inform the other method" (Johnson & Christensen, 2014, p. 502). Prominently absent in the data set were initiation and expansion purposes.

Table 3

Frequency and Percentage of the Mixed Methods Research Theses with Different Purposes for Mixing along with Examples

Rationale	Reported		Instances
	K	%	
Complementarity	44	37	1. In order to gain a **more comprehensive view** of the issue, the author employed the interview…(code 21, p. 52). An interview followed the questionnaire to **gain more details** and **explanations** regarding…(code 32, p. 48)
Triangulation	15	12.6	A **triangulation** of both qualitative and quantitative methods was used..(code 102, p.61). In this study , the author aimed at **corroborating** the results from qualitative data with those from quantitative data…(code 118, p. 45)
Development	14	11.8	The results of each step **led to preparing data** for the next step…(code 17, p. 57); The results of first phase were the **basis** of the second phase in which a questionnaire was used..(code 42, p. 46)
Not stated	46	38.7	

According to Figure 2, as for timing in the MMR designs, the results revealed that around 60% of the MMR studies (n=69) were implemented in two distinct phases. That is, most of the EFL authors conducted the studies

sequentially through which two strands of quantitative and qualitative approaches occurred one after another. Around 29% of the MMR studies were implemented simultaneously in a single phase. That is, around 29% of the EFL authors (n=35) conducted the studies concurrently through which the quantitative and qualitative phases occurred at almost the same time. A very small percentage of the studies (6%, n=7) was conducted in multilevel phases.

Figure 2

Percentage of the MMR Studies with Regard to Timing of the Quantitative and Qualitative Strands
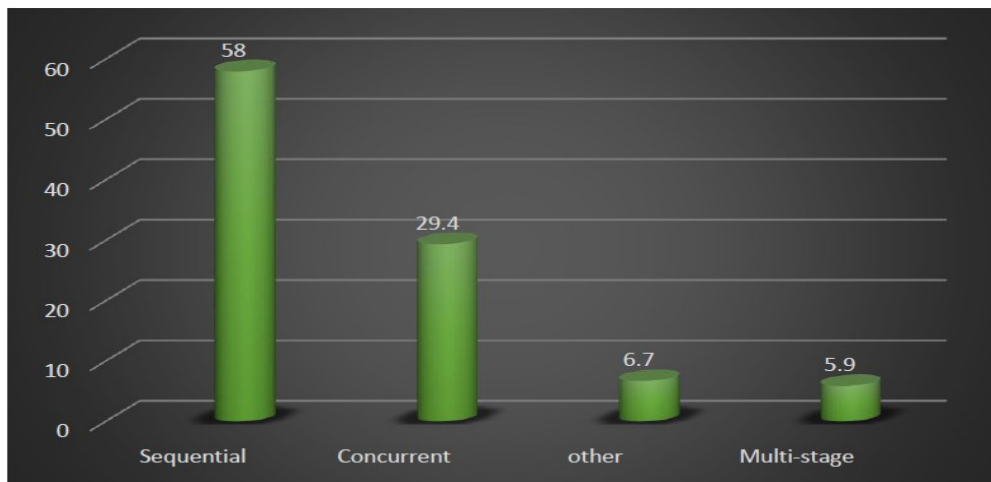
The results further revealed that the EFL authors used a variety of mixed methods research designs. It was found that the most frequently used design in the theses was an explanatory sequential design (41.2%, n=49) with the aim of surveying the intended problem(s) quantitatively at the beginning, and then exploring the problem qualitatively to help explain the quantitative-led results at the end. The second most frequently reported design in the theses was the embedded concurrent design (19.3%, n=23). Conversely, the embedded sequential design (6%, n=5) received the least attention in the data set. Finally, the exploratory sequential design (12.6%, n=15) and the triangulation concurrent design (11%, n=13) were used sporadically (see Table 4).

Table 4

Percentages of Mixed Methods Research Designs in the Theses

Sequential designs								Concurrent designs					
Explanatory		Exploratory		Embedded		Embedded		Triangulation		Other designs	
K	%	K	%	K	%	K	%	K	%	K	%
49	41.2	15	12.6	6	5	23	19.3	13	10.92	13	10.92

With regard to the nomenclature of MMR designs, two evaluative questions were included (i.e., Is the specific type of design clearly stated? Or is the specific type of design identified based on main components from the corpus?). Surprisingly, the results revealed that just the author of one study described explicitly the name of specific type of MMR design (i.e. the name of design was multiple stage mixed methods research; see Creswell & Plano-Clark, 2018). Almost all of the specific MMR designs (99%, n=118) were identified based on the main elements of mixed methods research design from the documentation.

Finally, regarding the issue of rigor (i.e. the strengths of MMR designs in comparison to mono-method research approach) in the MMR designs employed, the results showed that the reporting of rigor in relation to the MMR designs employed was completely missing in the data set. That is, the EFL authors rarely highlighted or reported issues of rigor in relation to the MMR designs.

4.1.3. Reporting Practices in Sampling-Related Features

As depicted in Table 5, the results revealed that the EFL authors used a variety of mixed methods sampling designs. As can be seen, in line with the total frequencies of MMR designs in Table 5, sequential and concurrent sampling designs were reported in 57% and 30% of the data set, respectively. These percentages were somewhat close to the percentages of the M.A. theses employing sequential (60%) and concurrent (29%) research designs. This signified the fact that there existed a regular and direct relationship between sampling designs and research designs.

Table 5

Percentages of Mixed Methods Sampling Designs in the Theses

Sequential sampling designs								Concurrent sampling designs							
Nested		M-level		Identical		Parallel		Identical		Nested		Multi-level		Parallel	
K	%	K	%	K	%	K	%	K	%	K	%	K	%	K	%
45	37.8	14	11.8	7	5.9	2	1.7	15	12.6	13	10.9	6	5	2	1.7

The overall results further revealed an inconsistent picture of sampling designs in the data set. For example, the most frequently represented sampling design was related to what Collins et al. (2006) referred to as *sequential designs utilizing nested samples* (38%, n=45) for the qualitative and quantitative strands of the M.A. theses. Then, it was followed by a sequential design with multistage samples (12%, n=14). However, within sequential designs, parallel (2%) and identical (6%) sampling designs received less emphasis than did multilevel and nested sampling designs. As for the concurrent designs, on the other hand, the most prevalent design was identical sampling design (13%, n=15), followed closely by nested sampling (11%, n=13). The least frequent was related to parallel (2%) and multilevel (5%) sampling designs, respectively. Surprisingly, the results showed that none of the authors of the M.A. theses attended to explicit description of a specific type of MMR sampling design. This means that all of the specific MMR sampling designs were implicitly identified based on the main elements of the sampling designs from the documentation.

4.1.4. Reporting Practices with Regard to Integration-Related Issues

In an attempt to better understand the transparency and reporting practices for integration and to figure out the degree to which the authors of M.A. theses implement this cornerstone factor for the MMR community (see Creswell, 2015), this section of analysis first reports the instances of the stage of integration along with frequencies and percentages. The results, as shown in Table 6, revealed that integration at the level of interpretation and reporting (29.4%, n=35), typically represented in the discussion and conclusion sections, was reported more frequently than at the level of methods (27%) and design (25%), respectively.

More specifically, the analysis of discussion and conclusion sections of the M.A. theses revealed that no distinct or separate part in the theses was given to meta-discussion. Also, in a great portion of the studies (71%), meta-inferences were not drawn according to both quantitative and qualitative inferences. However, as can be seen in Table 6, approximately 30% of the studies made general inferences based on the data from quantitative and qualitative strands (Riazi, 2017).

As for mixing strategies, integration via narrative means (28%, n=33) was identified as the most prevalent mixing strategy at the level of interpretation. Data transformation and joint display approaches received less and/or no emphasis. With regard to mixing strategies at the level of methods, it was found that the connecting approach (17%, n=20) and the building approach (10%, n=12) reported as the most prevalently used approaches. Remarkably, the merging approach wherein researchers bring the two strands

of quantitative and qualitative together for comparison and analysis, and the embedding approach, wherein researchers link data collection and data analysis at interrelated stages, were completely missing in the data set. Notably, it was found that none of the authors of the M.A. theses attended to explicit description of specific stages of integration at different levels. This means that all of the specific MMR integration types were implicitly identified based on the main indicators from the corpus.

4.2. Discussion

4.2.1. Transparency and Reporting Practices at MMR Formulation Stage

Approximately 98% of the authors did not use the words of mixed methods or related terms in their titles, despite the fact that some mixed methods research authors recommend that the title of any MMR reports should transparently convey and embrace the words of mixed methods or related notions (e.g. Creswell, 2015; Creswell & Plano Clark, 2011; Plano Clark & Badiee, 2010). Considering that some MMR authors believe that MMR researchers must "stay away from words that convey a qualitative leaning, such as explore, meaning, or discover and stay away from words that convey a quantitative orientation, such as relationship, correlation, or explanation" (p. 10), the findings revealed that approximately one quarter of the studies (24%) leaned toward mono-method orientation (i.e. a quantitative *OR* qualitative connotation) rather than including mixed methods in the title.

With regard to the mixed methods research question, the rather minimum use of mixed methods research questions might be attributed, in part, to the lack of adequate attention in the MMR literature given to the issue (Riazi, 2017), the relative unfamiliarity of researchers with the pivotal role of research questions in MMR (Tashakkori & Creswell, 2007), the lack of due attention to the challenge of integration of quantitative and qualitative data (Riazi, 2017), and predominant focus of MMR literature on design-related features, challenges, and integrations (see Creswell, 2015). Another reason for the minimal posing of research questions might be related to the impact of schooling and training on raising postgraduate authors' awareness of writing research questions in MMR studies, which lends support to Onwuegbuzie and Leech's (2006) contentions that "it is surprising that an extensive review of the literature revealed no guidance as to how to write research questions in mixed methods studies" (p. 477), which, in turn, should embrace "quantitative questions, the qualitative questions, and a mixed methods question" (Creswell, 2014, p. 148).

The findings further revealed that a large portion of the authors (65%) did not explicate the reasons for using mixed methods research. Therefore, it is not clear whether mixed-methods research in 65% of the studies is a more

appropriately fit than the mono-method approach to answer the research questions (see Creswell, 2015; Riazi, 2017). This reveals that a significant majority of M.A. authors did not check whether or not research problems would warrant an approach "that combines quantitative and qualitative research or a mixed methods inquiry" (Creswell & Plano Clark, 2011, p. 8).

Finally, the findings revealed that philosophical clarity, a major indicator of the MMR style of thinking (Onwuegbuzie & Corrigan, 2014), was conspicuously absent in the data set. Despite the fact that the MMR authors need to clarify their philosophical positioning (Creswell, 2015; Riazi, 2017), the M.A. authors did not justify and explicate their "philosophical proclivities in terms of philosophical assumptions and stances in relation to all components, claims, actions, and uses in a mixed research study" (Collins et al., 2012, p. 855).

All in all, despite the fact that the MMR formulation stage need to provide adequate information for primary-level research consumers in order to better understand authors' "mixed methodological way of thinking" (Onwuegbuzie, 2012, p. 204), the current findings demonstrated that the reporting of the aforementioned features, representing the MMR formulation stage, is far from satisfactory in an EFL setting. This methodological style of thinking or reasoning, as Greene (2007) asserts, is

> … generative and open, seeking richer, deeper, better understanding of important facets of our infinitely complex social world. … [This] way of thinking generates questions, alongside possible answers. It generates results that are smooth and jagged, full of relative certainties alongside possibilities, and even surprises, offering some stories not yet told. (p. 20)

Accordingly, this finding might reveal a predisposition among EFL postgraduate students not to be mindful of their set of beliefs as to the nature of knowledge, training, ethics, knowledge accumulation, and quality benchmarks, coupled with the core notions of epistemology, ontology, and axiology (see Onwuegbuzie & Corrigan, 2014; Onwuegbuzie et al., 2009; Riazi, 2017).

4.2.2. Transparency and Reporting Practices in Design-Related Features

As for purposes of MMR theses, our finding was inconsistent with Riazi and Candlin's (2014) findings in which triangulation was the most frequent purpose. Prominently absent in the data set were initiation and expansion purposes. The lack of expansion purpose contradicts the finding of Greene et al. (1989). The higher employment of the complementarity purpose, lending support to Bryman's (2014) findings, demonstrated that M.A. authors seek to elaborate, enhance, illustrate, and clarify "the results

from one method with the results from the other method" (Johnson & Christensen, 2014, p. 502), which, in turn, "expand the explanatory power of any MMR study". To put it differently, "MMR studies with complementarity purposes are robust because they are able to investigate and explain more complex social and educational phenomena" (Riazi & Candlin, 2014, p. 144).

The conspicuous missing of MMR studies with initiation and expansion purposes was not certainly unexpected because their implementation requires MMR researchers to spend a great time and money and need maximum level of skills and expertise, which definitely is "beyond the capabilities of novice researchers" including M.A. students (Riazi, 2017, p. 72).

With regard to MMR designs, the findings revealed that the EFL authors gave a disproportionate degree of emphasis to the various mixed methods research designs. More specifically, the current findings demonstrated that sequential designs (60%) were implemented more prevalently than were the concurrent designs (29%), which is inconsistent with those of prior studies in social sciences (Christ, 2007; Collins et al., 2006) and particularly represents a pattern opposite to Hashemi and Babaii's (2013) findings (71.71% for concurrent designs vs. 24.88% for sequential designs) in applied linguistics. The rather higher employment of the sequential explanatory design might be related to the developmental nature of quantitative and qualitative data collection and analysis, which, in turn, makes sequential designs more straightforward for researchers to utilize (Creswell & Plano Clark, 2011; Ivankova & Greer, 2015; Morse & Niehaus, 2009).

4.2.3. Reporting Practices with regard to Integration-Related Issues

Due to the fact that "the most dynamic and innovative of the mixed methods designs are mixed across stages" (Teddlie & Tashakkori, 2009, p. 46), the present study, following Fetters and Freshwaters (2015a) and Creswell's (2015) works, operationalized integration in terms of designs, methods, and interpretations, which, in turn, can be located within the data collection, data analysis, and discussion and conclusion components of a given study. Although not satisfactory, the findings revealed that integration at the level of interpretation (29.4%), typically appeared in the discussion and conclusion sections, being reported more frequently at the level of methods (27%) and design (25%), respectively.

As such, despite the fact that meta-inferences, stemming from both quantitative and qualitative inferences, are a leverage that can help improve the quality of MMR findings and boost their value, the current findings, resonating Bryman's (2006) contentions and Hashemi and Babaii's (2013) findings, demonstrate that integration at the level of interpretations, methods,

and designs have received unwelcome attention in EFL setting. This finding regarding integration strategies is also in vivid contrast with Creswell's (2015) recommendation, which asserts that researchers need to explicate the specific strategies of integration (e.g. merging, building, connecting, embedding, and joint display) in a given study. However, considering the most prevalent use of narration at the point of interpretation, the current finding partially supports Fetters and Freshwater's (2015a) assertion that in research studies "where there was little or no integration provided during the methods or results, by default, integration through narrative in the discussion is critical" (p. 212).

Taken together, it can be inferred that the quantitative and qualitative strands are simply represented sequentially, concurrently, or in a multilevel manner, with them less interacting and intersecting in any particular phase (i.e. method, design, interpretation). Accordingly, such studies, as Brown (2014) asserts, might more "aptly be labeled multi-method research studies" (p. 9). To put it differently, the findings signify the fact that just using different MMR designs cannot certainly guarantee a well thought-out and sound mixed methods research. Therefore, the more a given study integrates across stages, the more mixed methods "as opposed to multiple studies, is taking place" (Yin, 2009, p. 42).

The current practices in MMR with regard to integration issues cannot also be considered satisfactory because there was a minimum presence of integration across three points of reference. This omission might be attributed to the complicated nature of integration (Fetters & Freshwater, 2015a), its elusive nature (Bryman, 2014), researchers' unfamiliarity with and difficulty in writing up MMR discussions and conclusions (Creswell, 2015), lack of expertise and awareness of its efficiency in MMR quality (Maxwell, 2016; Tashakkori et al., 2012), and lack of training (Bryman, 2014; Creswell, 2015). Therefore, raising the graduate student's consciousness about the value of integration at various points of inferences, and adopting unanimous, steady, and innovative strategies to work out the mathematically challenging "integration equation of 1+1=3" might be a significant pedagogical practice to pursue in an EFL context seeking to "reap the rewards of the integration equation" (Fetters & Freshwater, 2015b, p. 204; see also Greene, 2015).

4.2.4. Language of MMR or MMR Nomenclature

The findings demonstrated that almost all of the authors of selected studies failed to specify explicitly the name of the MMR design, sampling scheme, and integration procedure. Despite the fact that designating appropriate MMR nomenclature and terminologies has been considered as one of the indicators of scientific advancement (Creswell, 2015), the current

findings revealed a considerably unfortunate state in designating methodologically specific notions for MMR studies in an EFL setting. This implies that EFL postgraduate students failed to apply and adopt the MMR appropriate terminologies in their studies, and it seems that this context is drastically different "from the later, self-conscious development of mixed methods as a distinct methodology, which has been largely characterized by typological conceptions of design" (Maxwell, 2016, p. 20). In the absence of MMR terminologies, an understanding of the breadth and depth of combining quantitative and qualitative strands in terms of design, method, and integration might be superficial and further "problematizes the assumption that these are essential for the development and informed practice of mixed methods research" (Maxwell, 2016, p. 22). Moving forward, researchers need to clarify their decisions about "these decisions, rather than leaving them hidden, and to consider the implications of the choice for the way that the study can be interpreted" (Curtis et al., 2000, p. 1012).

5. Conclusion

To gain a better understanding of mixed methods research and reporting practices in EFL contexts, we, drawing on the methodological research synthesis, sought to describe and evaluate MMR research in unpublished M.A. mixed methods theses over three decades. Retrospectively, under the microscope-led perspective, our findings singled out several patterns of research strengths and weaknesses in mixed methods research approach in an EFL context. The important message echoed, based on the findings, is that most EFL theses take what Riazi (2017) has referred to as *eclectic mixed methods research* where authors try to expand the scope of their studies "by adding some breadth or depth to a predominantly qualitative or quantitative study without necessary mixing the two methods in principle" (p. 35).

Moving forward, under the telescope-led perspective, these obtained patterns can then inform the present status quo of conducting mixed methods research in EFL contexts and put them on the right path of reporting future studies by presenting a set of recommendations to boost the strengths and amend the weaknesses. Accordingly, in order to depict both strengths and weaknesses of the studies, we present a research agenda for conducting mixed methods research in Table 7.

Table 7

A Research Agenda for Conducting Mixed-Methods Research

The current findings	Areas for improvement
(a)MMR formulation stage	1. Need to mention the terms of mixed methods and related terms. 2. Researchers should stay away from words that convey qualitative and quantitative leaning in titles. 3. Whenever feasible, researchers should formulate MMR research questions. 4. Researchers should explicate the reasons for using mixed methods research in order to find out whether or not a given issue is compatible with MMR approach. 5. EFL researchers should justify and explicate clearly their philosophical assumption and stances in a given MMR study.
(b) Design-related issues in MMR 1. A good percentage of M.A. theses (61%) identified (implicitly and/or explicitly) the purposes for mixing quantitative and qualitative phases. 2. The complementarity (37%), triangulation (13%), and development (12%) purposes were by far the most prevalent purposes for conceptualizing mixed methods rationales, respectively. 3. A majority of the researchers used the sequential explanatory design.	1. Researchers need to conduct MMR studies with initiation and expansion purposes. 2. Advanced and innovative mixed methods research should be emphasized.
(c) Sampling-related issues in MMR 1. The sampling designs are accompanied by mixed methods designs in the data set.	1. Due to the incomplete reporting of sample sizes, the EFL researchers did not provide adequate information. Therefore, in order to provide and maintain interpretive consistency, the researchers need to provide adequate information on adequacy and representativeness of sample sizes in both quantitative and qualitative strands.
(d) Integration issues in MMR	1. Due to the fact that integration at the level of interpretations,

1. Although not satisfactory, the findings revealed that integration at the level of interpretation was reported more frequently at the levels of method and design, respectively.	methods, and designs has received unwelcome attention in EFL setting, researchers need to embrace integration at three points of inference (i.e., design, method, and interpretation) and further explicate the specific strategies of integration they are going to employ. 2. EFL researchers need to shift their attention away from the dominant presence of eclectic MMR to focus on the principled MMR studies in EFL settings. As such, they need to be well aware of the value of integration at various points of inferences, and adopting unanimous, steady, and innovative strategies to work out this oft-cited challenge. 3. The lack of correspondence and congruity between meta-inferences and MMR purposes was discernable in some studies. In order to maintain inference consistency, EFL researchers should attend to both purposes and inferences in a steady mode.
(e) MMR Nomenclature	1. Due to the fact that almost none of the studies specify explicitly the name of specific type of MMR designs, sampling schemes, and integration procedures, EFL researchers need to mention the specific strategies at each phase of a MMR study. This means that EFL researchers need to apply and adopt the MMR appropriate terminologies in their studies.

In this study, we examined unpublished M.A. theses over three decades. During the coding, we found out that some universities didn't submit the M.A. theses to the database. Likewise, there were some technological malpractices in submitting and retrieving the theses, which might affect the findings of the study. Thus, future studies can expand the scope of this study by investigating the issue of quality in mixed methods research synthesizing methodological issues in published articles and Ph.D. dissertations. Furthermore, similar studies can be conducted on cross-comparing published mixed methods research across different disciplines.

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