Qualitative Data Coding and Analysis: A Systematic Review of the Papers Published in the *Journal of Second Language Writing*

A. Mahdi Riazi [a, *], Hessameddin Ghanbar [b], Reza Rezvani [c]

a Hamad Bin Khalifa University, Qatar

b Islamic Azad University, Fereshtegaan International Branch, Iran

c Yasouj University, Iran

A B S T R A C T

A challenging step in any qualitative research project is data coding and analysis. If the data coding is done appropriately, it will lead the researchers to develop patterns or themes and to make final inferences about the research problem. As such, qualitative researchers are supposed to take systematically informed steps and procedures to perform qualitative data coding and analysis. However, this is not as easy as it might be thought, and even published articles might fall short of providing a thorough explanation of their methods and procedures, making it difficult for other researchers, especially early career researchers, to aim for replication of the study. This article presents a review of the methods and data coding and analysis procedures in the field of L2 writing as a case in point. We scrutinized and analyzed all 168 articles with a qualitative orientation published in the *Journal of Second Language Writing* (JSLW) over its lifecycle. We present the results and discuss some articles to illustrate how L2 writing researchers handled qualitative data coding and analysis and showcase problematic areas. The outcomes of the review and analysis, including the showcase articles, provide some tips and guidelines for prospective L2 writing researchers and other stakeholders more broadly.

Keywords: qualitative data coding; thematic analysis; grounded theory; content analysis; second language writing

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* Corresponding author: Hamad Bin Khalifa University, Qatar
Email address: ariazi@hbku.edu.qa

Introduction

Qualitative research has enjoyed increasing popularity in social sciences over the past decades. Its use has also been growing in the second language (L2) writing research, as evidenced in Riazi et al. (2018). They reported that overall, qualitative research articles in the *Journal of Second Language Writing* (*JSLW*) outnumbered quantitative research reports over the journal's lifecycle. Benson, Chik, Gao, Huang, and Wang, (2009), Canagarajah (2016), Pelaez-Morales (2017), and Richards (2009) also reported that qualitative methods were predominant in the articles published in the journals of *JSLW*, *Applied Linguistics*, and *TESOL Quarterly,* respectively. All these reports attest to an earlier account by Lazaraton (1995), asserting that "qualitative research has made significant gains in terms of visibility and credibility in recent years" (p. 456).

Qualitative research is characterized as a natural inquiry dealing with non-numerical data (Nassaji, 2020). This methodology lends itself well to L2 writing research tending to prefer data gathered in naturalistic and authentic circumstances "not specifically set up for the research, such as via classroom observations or analyses of naturally occurring texts" (Hyland, 2016, p. 121). This trend in L2 writing research has helped researchers explore and explain L2 writing issues particularly L2 writers' experience in a more comprehensive and naturalistic way drawing on various data sources (for more details see Hyland, 2016). Questing for convergence from diverse data sources in the interest of the credibility of the research findings (Ary, Jacobs, & Sorenson, 2010) may adversely perplex the coding and analysis procedures and endanger replicability. Replicability as one of the indices of dependability and confirmability in qualitative studies (Holliday, 2013; Richards, 2009) is deemed to be critical in research quality. A replicable study is one that provides a full and adequate account of the methodology including data coding and analysis procedures. Our aim, therefore, is to investigate how this crucial criterion is observed in the L2 writing published articles.

Researchers in education and related fields have turned in recent years to systematic reviews to take stock of the findings and yet to evaluate the choices made and procedures taken in conducting research (Chong & Plonsky, 2020). However, there have been just a handful of qualitative research syntheses (as recent examples see Chong & Plonsky, 2020 and Chong & Reinders, 2020). Notwithstanding the recent preference for synthetic research and the popularity of qualitative methodology in L2 writing research, there has been a dearth of systematic reviews of how L2 researchers code their data and reach conclusions about their research problems. Analysis of the qualitative verbal data is a core and challenging procedure in the qualitative L2 writing research process. As Nowell, Norris, White, and Moules (2017) expound, the trustworthiness of the research outcomes depends on the rigor of the process and its adequate description. It is, therefore, imperative to conduct a systematic review of published articles regarding their methods and data coding and analysis procedures and the extent to which they lend themselves to replication.

To the best of our knowledge, there is no such systematic review in L2 writing despite the versatility and variation of the methods and procedures. Our purpose, therefore, is to provide an overview of the qualitative methods and data coding and analysis procedures in 168 articles published in the *JSLW* over its lifespan. We will also present and discuss four showcase sample articles, in our view, failing to provide an adequate account of the data coding and analysis procedures putting replicability at risk.

The *JSWL* is the most prestigious journals in the field of second language writing education, and hence its articles undoubtedly make a representative sample of qualitative research practices in the second language writing field. The paper is organized into five sections. After this introduction, we will review the relevant literature to contextualize the research topic (qualitative methods and qualitative data coding and analysis procedures). Next, the corpus and coding scheme of the current study will be described, and then the results of the systematic review are presented. The results are

then discussed after we showcase four articles with different data coding and analysis procedures we believe do not meet the replicability criterion. The paper concludes with some recommendations for future studies that entail qualitative methods and data coding and analysis. The present paper compensates for the current dearth of systematic reviews of L2 writing qualitative research by highlighting the problematic areas and contributing to the current knowledge of qualitative methods and procedures in this significant field.

Review of the Related Literature

L2 writing research is highly interdisciplinary and draws on various disciplines to substantiate its content and methodology. Based on recent studies (see, e.g., Benson et al., 2009; Canagarajah, 2016; Pelaez-Morales, 2017; Riazi et al., 2018; Riazi et al., 2020; Richards, 2009) qualitative methods are predominant in the articles published in the journals of *JSLW*, *TESOL Quarterly*, and *Applied Linguistics* respectively. All these reports attest to an earlier account by Lazaraton (1995), asserting that "qualitative research has made significant gains in terms of visibility and credibility in recent years" (p. 456). However, despite the visibility and credibility in recent years, "yet the purposes, assumptions, and methods of qualitative research are still debated, misunderstood, and/or ignored by some in our profession" (Lazarton, 1995, p. 456). As such, it is imperative for applied linguist researchers to know that "when doing qualitative research, it is essential to ensure its rigor and quality" (Nassaji, 2020, p. 427).

One issue regarding reporting qualitative studies in applied linguistics journals is lack of an explicitly stated use of qualitative research and its specifications. Benson et al. (2009) surveyed 10 journals related to language teaching and learning over 10 years. They found that only 154 out 477 articles designated as qualitative identified the study with a particular qualitative research tradition. The remaining two thirds did not specify their approach or method and simply used qualitative to describe their approach. Terms such as longitudinal, classroom interaction, or interview studies were also used to describe the studies. Overall, however, Benson et al. found case study as the predominant method used in the studies (n= 225) followed by discourse analysis (n= 53), and ethnography and classroom interaction (n= 49). According to Duff (2014) case studies in applied linguistics usually has been "a person (e.g., a teacher, learner, speaker, writer, or interlocutor) or a small number of individuals on their own or in a group (e.g., a family, a class, a work team, or a community of practice)" (p. 233).

Like quantitative research, qualitative research needs to meet credibility criteria. The credibility criteria are defined in terms of reliability and validity in quantitative research, while the focus in qualitative research is on trustworthiness. Reliability and validity in quantitative research are predominantly related to consistency or accuracy of tests or measures used in the research (Nassaji, 2020). However, trustworthiness in qualitative research relates to the extent to which the readers can be persuaded of the research findings (Lincoln & Guba, 1985). The principles of trustworthiness, according to Lincoln and Guba, are credibility, transferability, dependability, and confirmability. Since in this systematic review paper our focus is on the qualitative data coding and analysis, the principles of dependability and confirmability are of particular interest. As Holliday (2013) and Richards (2009) stated these two principles are among the main quality criteria in qualitative research.

Replicability is one of the indices of dependability and confirmability in qualitative studies. A replicable study is one that provides an adequate and transparent account of the methodology including data coding and analysis procedures. Admittedly, a qualitative study inherently involves a researcher's interpretation of particular cases or phenomena resting on data analysis as the most challenging part of such research (Benson, 2013). As such, "the reader must also be able to see that

this interpretation is based on rigorous treatment of data" (Benson, 2013, p. 2). In practice, however, Benson et al. (2009, p. 86) reported that "in contrast to data collection, data analysis procedures are often described rather vaguely (if at all) in most of the articles surveyed". Lew, Yang, and Harklau (2018) also confirmed Benson's assertion revealing that "only a handful of studies we reviewed gave full accounts of the analysis process" (p. 92) and that the majority of articles did not provide a detailed account of their data analysis procedures. Our aim, therefore, is to investigate how this crucial issue is addressed in the L2 writing published articles.

As Benson (2013) further elaborated, while a qualitative study may represent a researcher's interpretation of particular cases or phenomena, "the reader must also be able to see that this interpretation is based on rigorous treatment of data" (p. 2). However, Benson asserted that "(D)ata analysis is perhaps the most problematic aspect of qualitative research in applied linguistics" (p. 4). Lew, Yang, and Harklau (2018) also confirmed Benson's assertion by saying that "only a handful of studies we reviewed gave full accounts of the analysis process" (p. 92) and that the majority of articles did not provide a detailed account of their data analysis procedures.

Since qualitative data collection and analysis procedures from other fields have informed L2 writing research, it is crucial to review the literature related to the qualitative coding and analysis used in other social science fields. Such a review will provide a context for our systematic review. It will also provide a worthwhile resource to prospective L2 writing researchers, and more broadly, AL qualitative researchers.

Qualitative data coding and analysis

Qualitative data coding and analysis involves seeing and interpreting what has been said, written, or done by participants. Data analysis is usually done by reflecting on evolving categories; and inferring emergent themes and patterns. Coding is seen as the core element in qualitative data analysis (Strauss, 1987). Through coding, qualitative researchers transform, and more importantly, transcend the data (Wolcott, 1994). Charmaz (2006) describes coding as the pivotal link between data collection and explaining the meaning of the data.

A code is usually defined as a descriptive attribute researchers assign to a segment of the data to capture the salience, content, or the essence of the data portion. As such, coding entails distilling, labelling, and linking data to abstract ideas through an iterative and recursive process (Miles & Huberman, 1994). By incorporating more cycles into the coding process, richer meanings, categories, themes, and concepts can be generated from the data (Saldaña, 2015). However, there is no "one-size-fits-all" approach to coding and qualitative data analysis (see Saldaña, 2015 for numerous coding procedures). This flexibility, while worthwhile, has also posed considerable challenges to qualitative researchers. The challenges include (a) inconsistent use of terminology, for example, in some studies codes, categories, and themes may be used interchangeably, (b) a lack of a standard and agreed on process of coding, and (c) interpreting codes and categories, and making inferences from data analysis.

Miles, Huberman, and Saldaña (2014, p. 10) suggest some general steps in qualitative data analysis. These classic steps include (1) assigning codes or themes to a set of interview transcripts, field notes, or documents; (2) sorting and examining the coded materials thoroughly to identify similar phrases, relationships between factors, patterns, themes, categories or distinct differences between subgroups, and common sequences; (3) isolating the patterns, commonalities and differences, and taking them out to the field in the next wave of data collection; jotting down reflections or other remarks as memos; (4) gradually elaborating a small set of assertions, propositions, and generalizations that cover the consistencies discerned in the database; and (5) comparing those generalizations with a formalized body of knowledge in the form of constructs or theories. While

these analytic moves in sequence are helpful and have been used by qualitative researchers, they are rather broad and need substantiation.

In addition to the above general approaches, three more specific approaches to qualitative data coding and analysis stand out in the literature and are worth a focused discussion. These three approaches are 'thematic analysis', 'grounded theory', and 'content analysis'. Any other methods to qualitative data analysis can, in one way or another, be subsumed under or closely aligned with these three approaches. Each of these three approaches is discussed below.

Specific approaches to qualitative data coding and analysis

One of the challenges faced by qualitative researchers is the variety of coding approaches. Three of the prominent coding approaches are thematic analysis, grounded theory, and content analysis.

In thematic analysis, a theme or a pattern is the outcome of some sort of coding. Qualitative researchers develop themes as they delve into the data and discover the underlying patterns. The themes or patterns are used to provide theoretical explanations about different aspects of the phenomenon. As Boström (2019) states, "the process of searching for themes is a central part of various qualitative methods of analysis and involves the transformation of coded raw data into a thematic structure" (p. 1001). However, developing themes is not as straightforward as it might be thought of and does not follow a fixed procedure. It is a flexible process, and different researchers may develop themes or patterns in different ways using different qualitative data analysis procedures. The thematic analysis may take different shapes depending on the researchers' theoretical background, experiences, and personal preferences. An issue that adds to thematic analysis's complexity is that not all researchers clearly state the process they went through to develop the themes (Attride-Stirling, 2001; Lee & Fielding, 1996). The described methodological procedures are usually brief, creating problems for students and less experienced researchers who intend to use a similar analytical procedure. When it comes to data analysis, they "are left stranded" (Attride-Stirling, 2001). It is thus imperative to unpack thematic analysis so that prospective researchers can use the procedure more effectively and efficiently.

One of the most popular sources on thematic analysis is an article by Braun and Clarke (2006) titled "using thematic analysis". Other versions of this article are also published; for example, Clarke and Braun (2013). Some of the other sources that describe thematic analysis include Attride-Stirling (2001), Fereday and Muir-Cochrane (2006), Creswell (2012), Watts (2014), and Willig (2013). However, Braun and Clark stand out in explaining this qualitative data analysis procedure compared to other sources.

Braun and Clarke (2006) distinguish between a top-down or theoretical and a bottom-up data driven thematic analysis. A top-down or theoretical approach is driven by the research question and the theoretical framework from which it is derived. The question and the theoretical framework will be instrumental in developing coding categories and themes. This approach is based on Analytic Induction (AI) (Gilgun, 2005), the core concept in the Chicago school of sociology. AI involves using theory, often loosely defined, in research and especially in the processes of coding and data analysis. Gilgun (2005) also coined the term deductive qualitative analysis, an update of analytic induction, an early approach to qualitative research associated with the Chicago school of sociology. Researchers begin with a theoretical framework that guides the coding and data analysis process in the deductive coding approach. Thus, the theory becomes a source of initial codes that can be thought of as sensitizing concepts (Gilgun, 2005). The bottom-up approach, on the other hand, is inductive and is predominantly driven by the data. That is, researchers will just use the data to develop coding categories and themes. Relevant theoretical frameworks will only be used once the themes are developed and to discuss the emerged themes.

The next approach to qualitative data coding and analysis is grounded theory (GT). Three names stand out in the discussion of GT. These are: Glaser, Strauss, and Corbin. Although Glaser and Strauss (1967) initially collaborated to develop GT, they departed later by advocating their GT version. Different version of GT are drawn on paradigmatic bases and in particular the role theory plays in research and data analysis. Glaser's (1992, 2007, 2011, 2012) version of GT is named as classical grounded theory (CGT) in the literature. CGT is cautious about using prior theory and warns about the imposition of theory on findings. From a CGT perspective, findings should "emerge" from the data. "All is data" is a well-known Glaserian dictum. The CGT position is that once a theoretical explanation is derived from the data, it can be compared with other theories to enlighten aspects and issues related to the developed theory.

Coding in CGT is done at two levels, substantive or open coding, and theoretical or selective coding. The constant comparative analysis (CCA) concept is used in CGT to show the back-and-forth movement between data and emerging theoretical explanation of the phenomenon. The CCA allows the tentative themes to emerge then become a focus for further data collection to complete the theoretical explanation (Glaser, 2011). In a fully-fledged and well-designed CGT study, hypothetical explanations or a grounded theory about the phenomenon is generated and can be later tested using qualitative or quantitative methods.

Two key concepts in the CGT are 'theoretical sampling' and 'data saturation'. All through the process especially once the initial or substantive coding is done and preliminary themes are developed, the data gaps are used to collect further data from new samples to refit the theoretical explanation. The constant comparative analysis process (comparing new data with older data and to the emerging categories and themes) continues until the researcher reaches data saturation. CGT follows a bottom-up and inductive approach to coding and qualitative data analysis. This approach starts with concrete codes in the data and gradually develops more abstract and theoretical themes to explain the phenomenon.

Straussian GT "argues that an empirically grounded theory is both generated and verified in the data" (Hallberg, 2006, p. 143). As such, theory (previous research) is applicable throughout the research process, including developing coding categories and developing hypothetical explanations. Previous literature and theory are used to validate the coding categories and themes as they are developed in the analysis process. As such, the Straussian approach to GT emphasizes deduction and verification. This approach to GT uses the literature in the early stages of research to develop theoretical sensitivity in forming categories and the generation of hypothetical explanations (Heath & Cowley, 2004). Unlike Glaser (2011) who argues that the obsession with preconceptions is a misunderstanding of the importance of the inductive process in GT, advocates of Straussian GT contend that researchers can hardly be unaffected by former empirical research and theories related to the new research interest (Charmaz, 2011; Kelle, 2005; Thornberg, 2012).

Methodologically, Strauss and Corbin (1990, 1994, 1998) developed a more structured coding procedure, including three levels. These three coding levels are initial or open coding, axial or categorical coding, and selective or theoretical coding. Axial coding is unique to Strauss and Corbin. It is defined as "a set of procedures whereby data are put back together in new ways after open coding, by making connections between initial codes" (p. 96). The variations of GT in theory and practice can give rise to challenges and confusion in qualitative research especially for early career researchers in adopting a particular approach and striving to meet the theoretical demands and practical concerns.

The third approach to qualitative data coding and analysis is content analysis. According to Berelson (1952), content analysis was initially used in both qualitative and quantitative research. The

quantitative content analysis approach is sometimes referred to as quantitative analysis of qualitative data (Morgan, 1993) and is excluded from our analysis in this article.

The qualitative content analysis, according to Cavanagh (1997), is a flexible qualitative data analysis method. Weber (1990) also contends that a researcher's specific content analysis approach varies with their theoretical and substantive interests and the problem being studied.

Regarding the data type, Hsieh and Shannon (2005) consider verbal, print, or electronic forms of data that lend themselves to content analysis. Researchers might obtain the data from narrative responses, open-ended survey questions, interviews, focus groups, texts produced by students, observations, or print media such as articles, books, or manuals. Hsieh and Shannon present and discuss three approaches to qualitative content analysis, conventional, directed, and summative.

The significant differences among the three approaches to content analysis are coding schemes and origins of the codes. In conventional content analysis, coding categories are derived directly from the text data. Conventional content analysis corresponds to the classical inductive GT approach to coding and data analysis. Researchers immerse themselves in the data to allow new insights to emerge from the data in the form of categories and theme development (Mayring, 2000). In the conventional approach to content analysis, relevant theories or other research findings are addressed in the study's discussion section and only after the categories and themes have emerged from the data. This process allows researchers not to impose preconceived categories or theoretical perspectives on their data.

A directed approach to content analysis, on the other hand, rely on relevant theoretical backgrounds as guidance for the coding of the qualitative data. As Kibiswa (2019) pointed out, a directed approach is specifically used to test or confirm the relevance or application of a theoretical framework in contexts other than the one in which the theoretical framework was developed. A directed approach to content analysis corresponds to the deductive approach to coding, which was discussed in the thematic analysis section.

A summative content analysis is closer to quantitative content analysis since it involves counting and comparing, usually of keywords or code categories, followed by interpreting the underlying contexts for those counts. This approach to coding is also referred to as manifest content analysis (Potter & Levine-Donnerstein, 1999), which focuses on analyzing tangible information or what can be seen in the data. If the qualitative data analysis stops at this point, the analysis would be mainly quantitative, focusing on the frequency of specific words or categories. However, sometimes researchers use the summative approach to qualitative content analysis to go beyond mere word and category counts to include latent content analysis. Latent content analysis refers to the process of interpretation of content (Holsti, 1969). That is, how the developed categories could be interpreted for potential meanings. As delineated in the thematic analysis section, Braun and Clarke (2006) have also referred to semantic (manifest) and latent coding and thematic analysis levels. Quantifying coding categories corresponds to a manifest approach to coding, while interpretation of categories will correspond to a latent approach to coding.

As regards content analysis, the variation in the procedures used and available in qualitative research, likewise, present challenges for researchers.

Based on the above review, we seek answers to the following two research questions in the context of the published qualitative research articles in the *JSLW* over its lifespan.

1)   What is the overall pattern of qualitative methods and coding approaches used in the published articles in the *JSLW*?

2)   What are some of the observed methodological issues (i.e., inadequate explanation of the methods and data coding and analysis procedures) that endanger dependability and replicability criteria in qualitative research?

In the next section, we will explain the methods and procedures including the corpus of the study and our coding scheme.

Methods and Procedures

We used research synthesis (Chong & Plonsky, 2021) as our method. Research synthesis is done through a systematic review of the primary studies to reach some general conclusions that could be used for future research on the topic. Chong and Plonsky juxtapose research synthesis with traditional literature review by highlighting systematicity as the main difference between the two approaches. They operationalize the systematicity of the research synthesis through the following three steps.

   a)   The exhaustive search for primary studies

   b)   The application of a principled set of eligibility criteria

   c)   The coding scheme applied to the final sample as a means to extract data relevant to the question (p. 1025)

We followed the above three steps in our systematic review of the qualitative data and analysis as presented in the published articles in the *JSLW*.

The Exhaustive Search for Primary Studies

To select articles and develop our corpus, we looked for a leading journal in applied linguistics in which qualitative research is predominant. As stated in the Introduction section, the *JSLW* stands out in terms of publishing articles with a qualitative research orientation. To ensure our corpus will be exhaustive and we do not miss any important article, we considered the lifecycle of the *JSLW* (up to the beginning of 2020). In search of primary (empirical studies with first-hand data and analysis), we included all the published articles with a qualitative approach using a principled set of eligibility criteria as explained in the next section.

The Application of a Principled Set of Eligibility Criteria

We decided on a set of eligibility criteria to help us with the inclusion and exclusion of articles and forming our corpus. As such, we searched all the *JSLW* volumes from the beginning up to the beginning of 2020. We used the key terms like "qualitative", "code", "coded", "coding", "theme", "thematic" terms while searching the *JSLW*. We then read through the titles of the articles and checked the abstracts to ensure that the research follows a qualitative approach to data coding and analysis. Overall, we were able to find and include 168 articles in our corpus. We reviewed and analyzed these articles regarding their methodologies, that is, the specific qualitative methods they used and their qualitative data coding and analysis procedures.

The Coding Scheme Applied to the Final Sample

To code the specific qualitative methods used in these articles, we relied on the researchers' explicit account of their methodology. That is, if the authors explicitly said they used "case study", we coded the method as case study. If they stated they used "ethnography", we coded the article as ethnography. However, where the authors did not say anything about the specific qualitative method they used, we coded them as "Unspecified".

To code the coding and analysis procedures, we developed a coding scheme that included the main data coding and analysis approaches. In addition to main coding categories, our coding scheme included two other coding categories, namely, "hybrid" and "unspecified". We used hybrid category to code those articles that used two coding categories (e.g., inductive, and deductive) to code different data sources. On the other hand, the coding of the data in some articles could not be aligned with a specific coding category because of lack of adequate description. We thus coded these articles as unspecified. Thus, Table 1 presents our coding scheme.

Table 1
The Coding Scheme for Coding the Researchers' Approach to Aata Coding and Analysis

Thematic analysis (TA)	Inductive
	Deductive
	Hybrid
	Unspecified
Grounded theory (GT)	Inductive
	Abductive
	Hybrid
	Unspecified
Content analysis (CA)	Conventional
	Directed
	Summative
	Hybrid
	Unspecified

We tried to limit our interpretations of the coding procedure to the researchers' relevant accounts, and only for cases of uncertainty about the coding procedure, we further referred to the results and discussion sections of the papers for cross-checking. However, not all the researchers (e.g.,Min, 2006 as an implicit CA or Mangelsdorf & Schlumberger, 1992 as an implicit GA or Marshall & Marr, 2018 as an implicit TA) explicitly stated their coding approach. We thus classified the articles into "explicit" (if the authors explicitly stated which coding approach they used), and "implicit" (where they did not explicitly name the coding procedure but there were key terms and descriptions alluding to a coding category). We had several Skype meetings during the coding period to discuss coding issues to enhance the coding reliability. During this process, defying cases were shared through email and were ratified in the meetings. When a consensus was reached on a coding category, we reanalyzed and recoded all relevant and similar articles.

We used our coding scheme to code all the 168 articles included in our corpus. While reading other sections of the articles to get some insights about the data coding and analysis, our focus was on the coding procedures of the articles. In our coding of the articles in terms of the specific qualitative methods and coding procedures, we noticed that some articles did not explicitly and clearly state their methods and coding procedures. We, therefore, coded these articles as "Unspecified" regarding the specific qualitative method they used and/or data coding and analysis procedure. In the showcase section of the paper, we will demonstrate how some articles with little account leave the readership with insufficient description of the data coding and analysis procedure.

Results

Overall results

This section will first present the overall findings related to the specific methods used by L2 writing researchers and the data coding and analysis procedures (RQ1). We will then present four showcase articles we think fall short of providing adequate explanation of their coding approach (RQ2). A full account of the data coding and analysis procedure will help future researchers adopt and adapt the procedures. By discussing these four articles we intend to bring this important step in the qualitative methods to the foreground and raise consciousness of different stakeholders.

Figure 1 presents the breakdown of the specific qualitative methods reported by the authors of the 168 articles.
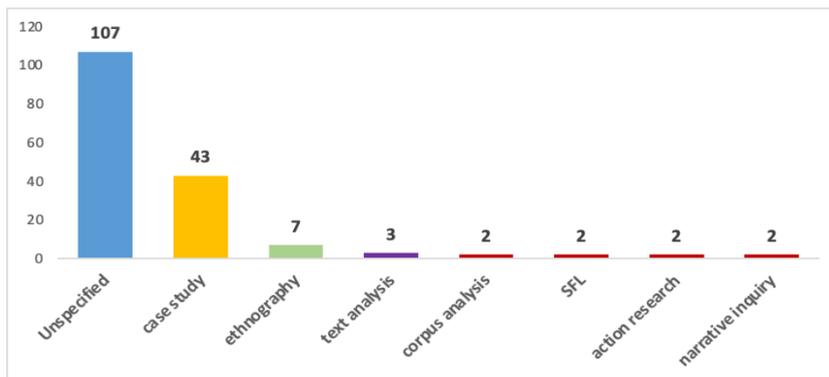

Figure 1. A Breakdown of the Specific Research Methods Reported by the Authors of the Articles

As seen in Figure 1, most of the articles, that is, 63.7% (n= 107), did not mention a specific research method for their study. Of the 168 articles, only 25.6% (n= 43) articles mentioned the use of case study as their specific research method followed by ethnography with 4.17% (n= 7), text analysis with 1.78% (n= 3), and corpus analysis, systemic functional linguistics (SFL), action research, and narrative inquiry each with 1.19% (n= 2) articles.

On the other hand and considering data coding and analysis of the 168 articles, 6% (n= 10) articles used a combination of thematic analysis (TA) and content analysis (CA) or GT and CA. Five articles were coded as both TA and CA (see, for example, Wette, 2017, which was coded as implicit inductive TA and implicit directed CA; Sengupta, 1999, which was coded as implicit inductive TA and implicit conventional CA). The other five articles used GT and CA (see, for example, De Oliveira & Lan, 2014, which was coded as implicit inductive GT and implicit conventional CA; Han & Hyland, 2015, which was coded as implicit abductive GT and implicit directed CA).

From among the 158 articles that involved only one of the three coding approaches, 27% (n= 42) were coded as TA, 17% (n= 27) as GT, and 56% (n= 89) as CA. Figure 2 presents the breakdown of these three coding categories.
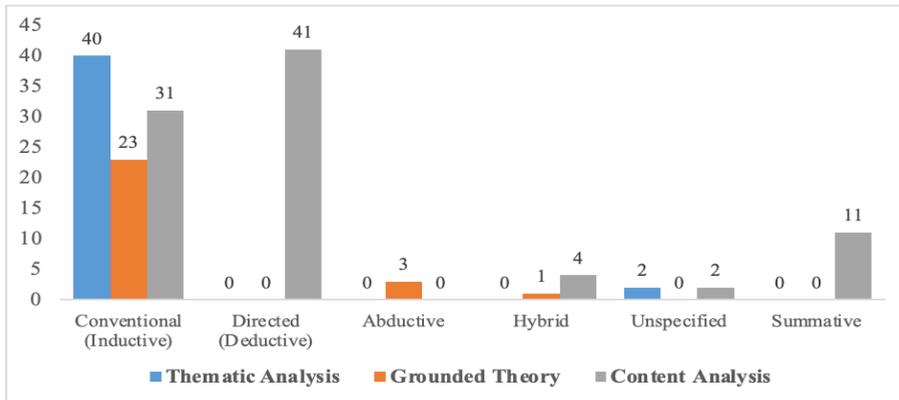
Figure 2. The Frequency of Articles in each of the Three Coding Categories

As Figure 1 shows, of the 42 articles coded TA, 95 % (n= 40) were coded as inductive and 5% (n= 2) as unspecified. The overall picture of the specific coding procedures in GT somewhat mirrored that of the thematic analysis in that 85% (n= 23) articles followed an inductive GT, 11% (n= 3) used abductive GT procedure. Also, only 4% (n= 1) article utilized a hybrid coding (a combination of inductive and deductive procedures).

Considering CA coding procedure, directed or deductive CA was the most frequently used procedure used in 46% (n= 41) articles, followed by conventional or inductive CA with 35% (n= 31) articles, and summative with 12% (n= 11). Four articles (5%) used a combination of conventional and directed, while two articles (2%) were coded as unspecified since there was not enough information about their specific coding procedure.

In the next section, we will present showcase articles with different coding approaches (RQ2).

Showcase articles

There were many articles that adequately explained their methodology especially their data coding and analysis procedures. Some examples of these studies are Li, Link, and Hegelheimer (2015) and Mao and Crosthwaite (2019) as TA research, Weigle and Nelson (2004) and Lee and Coniam (2013) as GT studies, and Wang (2003) and Worden (2019) as exemplars of CA approach.

In this section, however, we will present four showcase articles we found problematic regarding the replicability criterion. The first article is by Enright and Gilliland (2011) who examined how accountability mandates interact with classroom writing experiences of multilingual writers. The study was conducted in 12 linguistically diverse classes from a high school in California. The study involved various qualitative data sources including the principal investigator and four research assistants' extensive field notes and the researchers' collection of data from students, teachers and administrators. The school and policy documents were also collected to examine their influence on the students' writing norms.

The analysis of the data was stated to be descriptive and interpretive. The data analysis was initiated by examining and comparing the documents and policy language and the actual classroom practices as recorded in the researchers' fieldnotes. This initial analysis led to the development of categories of curricular writing practices within and across the curricular areas. The emergent categories were

then applied deductively to the class sessions to see how the policies interacted with multilingual writers' experiences.

The paper presents a short account of the extensive data collection undertaken by the two researchers and four research assistants. The description of the demanding data analysis is also as short and neat taking only two short paragraphs. The amount and variety of data indicate that data analysis required a lot of efforts to develop categories and then to use them in the further analysis. However, little is detailed as to how the researchers managed to develop, define, and refine the categories in the backstage. What the reader gets from the description is the development of the categories without explicating who carried out the analysis given the involvement of the two researchers and some research assistants. Hence, not surprisingly, no coder radiality measure was provided in the paper. This is also the case with the measures and steps to ensure trustworthiness of the analysis, instrumental in readers' appreciation and the credibility of the findings. The researchers could at the very least have pointed out what qualitative data coding and analysis procedure they followed. They could have done this by pointing to certain classical and typical methods illustrated by some actual examples showing how they formulated the interpretations and inferences. Interestingly, they referred the reader to another paper not published then, "Enright (in review)" for more fully described how the categories were developed.

The second showcase study is that of Morton, Storch and Thompson (2015). The study focused on how multilingual undergraduate first year students negotiate the contexts in which they learn how to write for EAP courses and the demands of the written assignments. Through purposive sampling three students were selected to represent the three disciplines of Economics and Business, Science, and Arts in three credit subject EAP courses. To study the students' perception of academic writing three qualitative data including written assignments, interviews and writing tasks were collected and analyzed.

The paper exceeds the word limit of the journal by more than 1000 words, however, there is only a very short paragraph under no distinct heading describing the data coding and analysis. It is only indicated that written assignments and interviews were analyzed for key and salient themes, but nothing is said about the analysis of the writing tasks stated as one of the data sources. It is of note that little account of the coding and analysis procedure was provided. Nor did the researchers point to any standard qualitative analytic methods, rather, they referred the reader to another study "for a similar approach" (Morton, Storch, & Thompson, 2015, p. 4) in data analysis, while it was not clear what approach was taken in this study.

Finally, since this study was carried out by three researchers, there ought to be a report of who analyzed the data and how discrepancies were resolved. This study, however, reported no discussion of how differences in data interpretations--typical of qualitative data analysis--were dealt with. No data analysis consistency check like multiple-coder reliability was presented.

The third study we discuss is Gebhard, Chen, Graham, and Gunawan (2013). The researchers did a case study to examine how ten linguistically and culturally diverse candidates in a TESOL master's degree program exploited systemic functional linguistics and genre-based pedagogy to design curriculum and instruction. While this study made explicit its qualitative case study method, there are several pitfalls pertaining to its data coding and analysis.

Several data sources were used in this study. The data sources included observational fieldnotes, transcribed classroom discussions, formal and informal interviews, and formal and informal email exchanges. The data sources were quite extensive as it is said in the article that data set consisted of approximately 50 hours of fieldwork that resulted in approximately 400 pages of fieldnotes, transcriptions of classroom discussions and interviews, participants' assignments, and emails.

However, the authors provided a superficial description of the data analysis. More specifically, it is just mentioned in the article that the researchers reviewed and coded the data in an inductive and iterative fashion. The data analysis account is not helpful and informative for readers especially if they intend to replicate the study. and prospective studies (it said, for example,).

Although the authors presented a compact set of technical terms related to coding (e.g., open coding, focused category system, closed codes), they presented a modicum of elaboration of the data analysis. In fact, it is not clear how the researchers coded the data sources using those coding techniques and how they arrived at results. Interestingly, although this study used many data sources, it did not report using any software programs to organize the data. It seems that qualitative data analysis software programs are very helpful in organizing and handling data especially when there is such amount of data (e.g., 400 pages of fieldnotes). The software programs can also help with coding reliability, which nothing was mentioned in this study. Without a clear and an adequate reporting of the data coding and analysis procedures, the methodological rigor and credibility of the results would be under question.

Another issue is triangulation. The reader expects the authors to triangulate results from different data sources. In fact, using this amount of data and in a way triangulation (authors did not mention triangulation but it can be inferred from the text),

The fourth study we discuss is Thurlow, Morton, and Choi (2019). These researchers investigated creativity and creative practices of multilingual doctoral writers. This study targeted how four L2/multilingual Ph.D. candidates studying in the Faculty of Arts in an Australian university perceived creativity in their academic works. It also elucidated how and when Ph.D. candidates feel they can be creative in their writing practices.

The main data collection instrument in this study was individual and focus group interviews. No information was provided relating to the framing of the qualitative method. Also, pertaining to data coding and analysis, this study just mentioned the term "iterative", which is very broad and vague. Also, authors reported that based on this iterative procedure they identified key themes. Nevertheless, no information was provided in this regard and how the themes were developed. The authors just reported the conceptual framework upon which they selected the themes. It is evident that they started directly from finding some ideas based on their model without implementing any coding and categorizing prior to this stage of theme development. They also pointed out that the themes were further refined to reflect a growing realization of creativity in doctoral writing as embedded in and between the four dimensions identified in the conceptual framework of the study., The authors did not report using any software program for managing data either. Apart from this, the authors did not provide any information regarding coding agreement and validation of coding categories and the extracted themes.

Discussion

We discuss our findings in light of the two research questions we addressed and copied below.

1) What is the overall pattern of qualitative methods and coding approaches used in the published articles in the *JSLW*?

2) What are some of the observed methodological issues (i.e., inadequate explanation of the methods and data coding and analysis procedures) that endanger dependability and replicability criteria in qualitative research?

As presented in the results section, L2 writing researchers were generally reluctant to frame their studies within a specific qualitative method. Almost 64% (n= 107) of the studies did not specify their research method. They only used some general terms like narrative or contrastive rhetoric (Kang, 2005), a qualitative approach (Lee, 2013), qualitative methods (Myskow & Ono, 2018), and even nothing has been mentioned regarding the specific qualitative method utilized (Russell-Pinsona & Harris, 2019) to characterize their study to characterize their study. This finding is in line with previous review papers (e.g., Benson et al., 2009; Benson, 2013; Lew et al., 2018). Benson et al., for example, found that only 154 articles out of 477 articles they designated as qualitative identified the study with a particular qualitative research tradition. The remaining two thirds did not specify their approach or method and simply used qualitative and terms such as longitudinal, classroom interaction, or interview studies. This is an alarming issue for different L2 writing researchers and other stakeholders like journal editors and article reviewers that needs to be accounted for.

Of the remaining 36% (n= 61) articles that specified their research method, 70.5% (n= 43) followed a case study method. This finding corroborates Benson et al.'s finding that case study was the predominant method used in the 477 studies they reviewed. In Benson et al.'s review that included 10 applied linguistics journals over ten years, 47% (n= 225) were designated as case study followed by discourse analysis, which was 11% (n= 53), and ethnography and classroom interaction, which were 10% (n= 49). Also, our findings are in line with those reported by Riazi et al. (2020) as they reported over half of the qualitatively-oriented studies in EAP, 53% (n= 78) did not specify the particular method they used. For those articles where researchers did identify a method, case study was found to be the preferred method in almost one fifth of the articles, that is, 19% (n= 28), followed by ethnography with 9% (n= 13), genre analysis with 5% (n= 7), grounded theory with 3% (n= 5), and systemic functional linguistic (SFL) with 3% (n= 5). The use of case study in L2 writing research is sensible given that researchers focus on cases (students, teachers, administrators, and programs). However, and overall, it seems that case study is the preferred qualitative research method in applied linguistics, more broadly.

Regarding the coding approach, our results show a propensity toward content analysis since 56% (n= 89) of the 158 articles could be coded in this category. Thematic analysis was the second most frequent coding category with 27% (n= 42) of articles. Grounded theory stands in the third rank with only 17% (n= 27) articles coded into this category.

We do not have solid evidence for why the L2 writing researchers used CA as the predominant coding approach. However, we can draw on some assumptions. One possibility might be the nature of content analysis which looks for key terms and concepts in the data. If we assume that L2 writing studies are concerned with issues related to second language writing process, product, and instruction, CA is most appealing and applicable in such studies. Its asset lies in its versatility and applicability in the analysis of data from various sources listed above.

Both primary and secondary data can be input to CA to render manifest and rich latent interpretations of key concepts. It can also be used alone or in conjunction with other approaches. The procedure may also be more streamlined compared to more complicated procedures of TA and GT. Even large piles of textual data, once cumbersome to analyze, can be easily studied using computer-aided text analysis tools. As the data sources in the *JSLW* were found to be mostly text samples (Riazi et al., 2018), CA seems to be a versatile approach in analyzing textual artifacts (Bell, Bryman, & Harley, 2018) used by *JSLW* researchers. CA is also handy when the goal is to investigate meanings within the texts (Hsieh & Shannon, 2005).

The other point to discuss is inadequate description of the data coding and analysis procedure in the published articles. Surprisingly, 86% (n= 136) of articles out of the 158 articles did not explicitly

explain their coding procedure. For example, although Russell-Pinsona and Harris (2019) explicitly referred to Braun and Clarke's (2006) thematic analysis as their coding and analysis framework, they did not adequately describe how they coded the data into categories and how the themes and patterns were developed. A lucid and detailed report on qualitative data coding and analysis will add to the credibility of findings and sincerity (see Tracy, 2010 for more information on means and strategies to achieve these featured qualities in a qualitative study). The minimal statement of mentioning the use of a thematic analysis or a content analysis without providing adequate details might threaten both trustworthiness of the findings and the sincerity of the analysis. We understand that sometimes the journal's word limit might prevent researchers to fully describe their methodology. Only 14% (n= 22) of the articles clearly and explicitly stated they used TA or GT or CA. This finding corroborates previous results by Benson et al. (2009), Benson (2013) and Lew et al. (2018). Some of the complaints these researchers raised were "in contrast to data collection, data analysis procedures are often described rather vaguely (if at all) in most of the articles surveyed" (Benson et al., 2009, p. 86), "(D)ata analysis is perhaps the most problematic aspect of qualitative research in applied linguistics" (Benson, 2013, p. 4), and "only a handful of studies we reviewed gave full accounts of the analysis process" (Lew et al., 2018, p. 92).

Concerning the tendency not to provide adequate account of the data coding and analysis, as we tend to argue, might lie in the fact that few Applied Linguistics journals, including the *JSLW*, require writers to name or state the research method and data analysis procedures as it is common in some journals in other disciplines. We, therefore, tend to suggest that clear or explicit description of methodological procedures are helpful. This can be done under clear headings, along with reference to relevant guiding resources. This practice adds to the research transparency and credibility. It would also be rewarding for prospective researchers, readers, and even useful for reviewers and editors to make quicker and more informed decisions.

Concluding remarks

In view of the crucial role of qualitative research in L2 writing research, we were motivated to investigate how L2 writing researchers approach and report their methodology in their studies. To echo what Tracy (2010) mentioned regarding criteria for evaluating the quality of qualitative research, we reiterate that the credibility of the qualitative studies largely depends on how well the researchers explicate data coding and analysis. Given the issues we raised in this review paper regarding lack of information about the specific methods used and inadequacy of the description of the data coding and analysis procedures, we urge future L2 writing researchers to clearly explain their methodology. Based on the literature review, our results, and the showcased studies, the following may be recommended for future L2 writing researchers, and applied linguistics qualitative researchers more broadly.

1. Qualitative researchers are urged to appeal to qualitative methods and data coding and analysis literature to ensure systematicity and dependability of their studies. The prospective researchers are encouraged to state clearly and explicitly which qualitative method they use and which of the approaches discussed in this article they exploited to code and analyze their data. They can even be "shamelessly eclectic" (Miles et al., 2014), integrating multiple approaches, methods, and techniques in dealing with the same or multiple research problems and data sources.

2. The process of qualitative data coding and analysis must be explained as thoroughly and clearly as possible. This requirement is because replicability is one of the indices of dependability and confirmability in qualitative studies (Holliday, 2013; Richards, 2009). The various approaches to qualitative data analysis, while acceptable, may confuse novice

researchers. Apart from the benefits for the readership/audience, producing an adequate and accessible account of the procedures will also help researchers reflect on and re-examine what they did. Lacking adequate pieces of information in qualitative reports would result in what Lather (1991) called the "black hole of qualitative research" (p. 149) which was emphasized and echoed by St. Pierre and Jackson (2014) as well.

3. Similarly, if the researchers intend to use deductive qualitative data analysis, they should clearly explain the theoretical framework(s) or the taxonomy(ies) they used for the coding categories (see Worden, 2019 for a perfect set of details in this regard and as an exemplary model). It will also help readers if the researchers provide a coding sample regarding data segmentation and coding into different categories.

4. Some researchers find the data coding a time-consuming, tedious, and cumbersome procedure. Data analysis software programs can facilitate some aspects of the coding task and leaving more space for researchers to be reflective and creative. L2 researchers are encouraged to familiarize themselves with standard software programs like NVivo (https://www.qsrinternational.com/), MAXQDA (https://www.maxqda.com/), Atlas (https://atlasti.com/), Dedoose (https://www.dedoose.com/), and Quirkos (https://www.quirkos.com/) to enhance their professional research expertise. Although the bulk of qualitative coding and analysis is to be done by the researcher, any of these software programs can be instrumental in handling and organizing the demanding coding tasks. There are reviews of these software programs (see, e.g., Davidson, Paulus, & Jackson, 2016; Evers, 2018; Freitas et al., 2019; Kalpokaite & Radivojevic, 2020). So, L2 writing researchers may want to consult these reviews and choose an appropriate software program they feel comfortable with.

5. Finally, journal editors and reviewers should require prospective researchers to include a distinct section and an explicit account of how they have undertaken the study. This can include the specific methods they used and rationale for choosing that method and a full account of the data coding and analysis procedures. Such an account will make the studies replicable and add to the confirmability and dependability of the studies.

In sum, this paper attempted to shed some light on how qualitative L2 writing researchers present their study regarding methodology. We reviewed the papers concerning the specific methods they used and their qualitative data coding and analysis procedures. In addition, we demonstrated methodological problems through showcasing four articles that used a form of qualitative data coding and analysis. We hope that the literature, the analysis, and the illustrative examples will help future L2 writing researchers and qualitative researchers, more broadly, decide about how best to discuss their methodology.

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A. Mehdi Riazi is a professor of Applied Linguistics, who worked at Shiraz University, Iran, and Macquarie University, Australia. He is currently at Hamad Bin Khalifa University, Qatar, where he is acting as associate dean for research and coordinates the Ph.D. program in the College of Humanities and Social Sciences. He is the author of *The Routledge Encyclopedia of Research in Applied Linguistics*, and *Mixed Methods Research in Language Teaching and Learning* (Equinox).

Hessameddin Ghanbar is an Assistant Professor of Applied Linguistics at Islamic Azad University, Fereshtegaan International Branch. His areas of interests include meta-analysis and L2 research synthesis. His research syntheses appeared in *Modern Language Journal*, *Journal of English for Academic Purposes*, *Language Learning* and *Studies in Second Language Learning and Teaching*.

Reza Rezvani is an associate professor of Applied Linguistics at Yasouj University, Iran. His areas of interest include language assessment, curriculum evaluation, ESP and computer assisted language learning. He has published several articles in international refereed journals.