

Qualitative Research and Quantitative Research:

Distinction and Combination

1. Introduction

For many years there have been a good fight among researchers for choosing between qualitative and quantitative research (Robson, 2016, p. 18), with the former typically as the specification of interpretivist/constructionist paradigm, and the latter as the positivist/objectivist paradigm, each camp claiming their approach to be more superior. In recent decades, some more neutral researchers (e.g., Maxwell and Mittapalli, 2010; Tashakkori and Teddlie, 2010) pointed out that either type of research can be conducted from a range of philosophical positions. They call themselves pragmatic or eclectic researchers who can see the values of both sides and may be willing to move between positions and back again (Coe *et al.* 2017. p.5). Some scholars in the neutral camp contend that qualitative research and quantitative research should not be regarded as rigid or distinct division or dichotomies. Instead, the two approaches represent different ends on a continuum – “a study tends to be more qualitative than quantitative or vice versa” (Creswell, 2015, 2018). Mixed methods research encompassing elements of both approaches stands in the middle of this continuum. Indeed, there is a growing recognition of the value of mix methods research.

In this essay, I attempt to defend the pragmatic view that it is unnecessary to privilege philosophical positions over many other practical research matters. Qualitative and quantitative research are both practical approaches with respective values for particular research questions at issue, and it is possible to incorporate them in a mixed methods research. This essay presents the distinction between qualitative and quantitative research, probes into their relationship, summarizes the strengths and weaknesses of them, and then discusses the possibility of combining the two approaches. Based on this, I will justify the choice of the mixed methods research for my research interest – a corpus-based study of interactions in academic writing by postgraduate students.

2. Qualitative research and quantitative research

There has been a basic choice to make when carrying out an empirical social science research – whether to take a qualitative or quantitative approach. Proponents for both tribes regard their way as more scientific and valuable. This section begins with the distinction between the two types of research, points out the controversy over their divide, indicates their respective strengths and weaknesses, and contends that there are possibilities to break down the divide and integrate the two approaches.

2.1 Distinction between qualitative research and quantitative research

A research approach involves the intersection of paradigm and praxis, the former answering the question “What do we believe?” and the latter “What do we do?” (Leavy, 2017, p. 11). Qualitative research and quantitative research, as different types of approach, are bound to manifest different typical features in terms of paradigm and praxis.

2.1.1 From the perspective of paradigm

Many researchers tend to agree that the philosophical positions we adopt is fundamental for our research in that the positions determine the design, questions and methodologies of the research (Coe *et al.* 2017, p. 5). Researchers often refer to the philosophical position as “paradigm” (Kuhn, 1970), which basically encompass a collection of coherent understandings of various perspectives regarding research. Though viewed as “problematic” and “should be treated somewhat more critically” by some scholars (e.g., Coe *et al.* 2017), the term “paradigm” is predominantly adopted in the realm of social science domain.

Quantitative research and qualitative research have traditionally been considered as different research paradigms. The paradigm war focuses on the contrasting epistemological and ontological positions that characterize the two types of research (Bryman, 2008, p.13). At the ontological level, namely the views about the nature of being and existence, there is a contrast between objectivist and constructionist accounts of the nature of society (Bryman, 2008, p.13). Qualitative research, typically associated with an objectivist belief, holds that there is a social realm that is continuously created and recreated by its participants. On the other hand, quantitative research with a constructionist view, regards the social domain as existing externally to actors and waiting to be explored by researchers. At the epistemological level, namely how

knowledge of the world is acquired, the contrast is frequently drawn up between qualitative research with interpretivist philosophical principles and quantitative research with positivist ones. Qualitative research emphasizes the understanding of phenomena through accounts and observations of individual and situational cases, whereas quantitative research focuses on discovering universal and generalizable laws through quantizable measurement.

The reason why philosophical positions became intertwined with research practice to this degree may be traced back to the dominance of quantitative research in the 1970s (Bryman, 2008, p.14). Qualitative research drew on philosophical views to obtain rationale and legitimacy when it appeared from the shadows of quantitative research. Indeed, in the account of quantitative research by qualitative researchers since that time, we find much discussion of its philosophical bases and biases (Brannen, 2005). Quantitative researchers tend to be less reflective than qualitative researchers on the fundamental nature of the adopted approach.

2.1.2 From the perspective of praxis

Praxis refers to the doing of research, or the practice of research (Leavy, 2017, p. 14). What distinguishes qualitative research and quantitative research at the level of praxis are two key elements: research design and research methods. In terms of research design, normally qualitative research studies subjects in natural settings, trying to understand their conditions and views. The process is typically achieved through narrative research, phenomenology, grounded theory, ethnography and case study (Creswell, 2018, p. 50). On the other hand, quantitative research aims to study the relationship of variables under controlled settings, for which the typical designs are survey and experiment (Creswell, 2018, p. 49).

Another important element in praxis is research methods, which consists of the forms of data collection, data analysis and interpretation. Researcher in the qualitative camp collects qualitative data through interview, participant observation, fieldnotes, and open-ended questions (Johnson and Christensen, 2017, p. 110). In the quantitative camp, researchers collect numerical data with meticulous measurement using structured and validated instrument. To analyze data, qualitative research depends on the reflexivity of researcher to discover themes and patterns whereas quantitative research tries to identify statistical relationships among variables. Given the nature of

different methods, results from qualitative research are normally considered subjective in that they are interpretation of phenomena or actions, which intimately involves researchers. Findings from quantitative research, on the other hand, provide representation of objective outsider's viewpoint and are regarded to be generalizable.

As we can see from the perspectives of paradigm and praxis, the two elements are closely interrelated in either qualitative or quantitative research. For one thing, though philosophical positions normally remain hidden in research (Slife and Williams, 1995), they greatly influence the praxis of research – the research design follows the position, and the specific methods translates the design into practice (Creswell, 2018, p.43). For another, the praxis is the paradigm in the outward form. In other words, research practice reflects the philosophical assumptions that researchers bring to the study.

2.1.3 Controversy over distinction

Though it is generally accepted that there is a distinction between qualitative research and quantitative research, the situation is much more complicated in real practice. The degree to which the qualitative and quantitative divide should be regarded as a fixed and definite one is under controversy. On the one hand, as the aim of research is to solve problems rather than merely represent the truth no matter whether the truth is viewed as “absolute or socially constructed” (Dunne and Johnston, 1992), debates on the two types of research should not centre on the paradigmatic level anymore. On the other hand, more and more researchers contend that qualitative and quantitative research do not form polar ends, but rather a continuum on which the two types of research are not simply positioned (Niglas, 1999).

2.1.3.1 Problems with paradigmatic view

During the past decades, the debates between qualitative and quantitative mainly focus on the paradigmatic level, especially after Kuhn's work (1970) concerning different paradigms in research. But for social science fields, the paradigmatic view displays some problems both in historical analysis and in real research practice.

To begin with, employing the term of paradigm in the realm of social science remains questionable. Historically, the assumption of paradigms was employed in the context of natural sciences, but some researchers in the social science domain very readily adopted it. However, as Kuhn (1970, p.15) said, “it remains an open question

what parts of social science have yet acquired . . . paradigms at all”. When Kuhn (1970) used the term of paradigm, he viewed it as the indicative of the normal science of a discipline. Social sciences, as disciplines where no paradigm has emerged prominently, are deemed pre-paradigmatic because they feature competing paradigms (Bryman, 2016). Similarly, quantitative research and qualitative research may be closer to being pre-paradigms as well (Bryman, 2008, p.14) because neither of them can be viewed – in Kuhn’s statement (1970) – as the indicative of the normal science of a discipline.

Meanwhile, real research practice is far more complex than what is presented by a traditional paradigmatic view. As stated by Howe (1988, p.33), the two exclusive paradigms of positivism and interpretivism which incompatibilists hold do not exhaust the possibilities. For example, over the years, some positivist notions have been subjective to criticism, critiques maintaining that what observers see is not simply determined by the characteristics of the objective thing, but also influenced by the characteristics and perspective of the observer (Robson, 2016, p. 23). Therefore, proponents for quantitative research in social research fall into two main camps – those who stick to the old positivist tradition, and post-positivists who believe that there is an external reality to be explored but “facts” and “values” cannot be distinctively separated. Both groups can be further divided into those who make their theoretical position clear and a substantial majority who keep it implicit, especially in published work. Relatively few now make an explicit statement of their association with positivist principles (Robson, 2016, p. 24). Hammersley (1992, p. 134) joined Howe’s position, contending that “even an expansion to six paradigms would still not satisfactorily cover the potential, or even actual, range of methodological views” in social sciences.

Besides, how close or consistent the relation between paradigm and practice is questioned by many researchers. They proposed that the design and methods is not as rigidly determined by the selection of paradigm as the “purists” suggest. In this sense, the perspectives held by followers of paradigmatic view should be taken as “normative rather than empirical in their nature” (Niglas, 1999).

Moreover, the incompatible perspective in paradigmatic view denies the creative and purposeful mixing of philosophical assumptions and methods. One important element in Kuhn’s argument (1970) is that paradigms within a field are incompatible, thus it is not appropriate to combine them in an investigation. This either-or position fails to recognize the practicality of mixing ideas and approaches in real contexts. As a

matter of fact, mixing or combining plays an important role throughout the history of research since they build upon what we already know and offer new approaches to view and explore our world.

2.1.3.2 Dichotomy versus continuum

The controversy is not only at the paradigmatic level, but also at a technical level. In real practice, though having typically different tenets and characteristics, qualitative and quantitative research can hardly be viewed as hard-and-fast categories, diametrically opposite ends or dichotomies (Creswell, 2018, p.41). When taken as all-encompassing markers, qualitative research and quantitative research may refer to different approaches that are “neither clearly bound nor mutually exclusive” (Small, 2011, p.59). In other words, there is no self-evident area to which qualitative and quantitative research refer. Classifying research is made more complicated given the various perspectives concerned. For example, it is probable that a small-sample research using mathematical models can be regarded as qualitative by some but quantitative by others. In reality, when we discuss typical features of qualitative and quantitative research, we refer to tendencies and practices that are present in varying degrees in different contexts.

In this sense, it is argued that the two types of research can be regarded as standing on a continuum with qualitative research on one end and quantitative research on the other. A research can be “fully qualitative or mixed with more emphasis on qualitative, fully quantitative or mixed with more emphasis on quantitative, or mixed with an equal emphasis on qualitative and quantitative” (Johnson and Christensen, 2017, p.107). A particular research may fall at any particular point on the continuous scale. When we compare the views and features of the two research approaches, we talk about them in their “pure” forms, which encompass the most common combinations of elements, but there are always exceptions. Enlightened by the idea of research continuum, we can see that there are possibilities for a study to transcend the distinction between qualitative and quantitative research.

Despite such complex situations, it would prove helpful to provide working definitions of the two researches for the sake of following discussions. In light of the contentions of Creswell (2018) and Robson (2016), the essay focuses on the philosophical stance, research procedure and the form of data in the realm of social

science research. Therefore, as far as the essay is concerned, qualitative research is an approach which aims to explore and understand phenomena in natural settings, following an inductive logic and procedure that collects non-numerical data to form themes, concepts or theoretical ideas; quantitative research is an approach which aims to test hypotheses, adopting a deductive logic and procedure that uses measurement and quantification to examine the relationship among variables (adapted from Creswell, 2018 and Robson, 2016).

2.3 Strengths and weaknesses of qualitative research and quantitative research

Given their respective tenets and features, both qualitative and quantitative research are endowed with strengths and weaknesses. What is proposed as a positive characteristic for one side of the divide would be a criticism for the other (Robson, 2016, p.19). There is no definite superiority of one research approach to the other.

For qualitative research, the primary strength is its ability to investigate underlying values and assumptions. Obviously, to gain a full understanding of groups and people, it is necessary to explore what is driving their actions. The other prominent value with qualitative research is its detailed and open-ended inquiry, which allows the subjects to put forward issues that concern them most. Qualitative researcher typically does not have a predetermined or finite set of issues to probe into (Yauch and Steudel, 2003, p. 472). They often devise on-the-spot techniques for one situation or one perspective of research (Neuman, 2014, p.195), which may bring unexpected yet interesting data.

Qualitative research is by no means perfect. The major drawback is associated with its reliance on subjective interpretation. Personal experience, knowledge and belief may influence the results to different extents. Besides, even a particularly crucial issue could slip unnoticed since all researchers' attention and analysis are limited. The fact that the results is not objectively verifiable makes it questionable in validity. Furthermore, to get in-depth data, the process of analysis may be labour-intensive and time-consuming.

For quantitative research, the advantages mainly lie in its control, accuracy, replicability and generalizability. Normally quantitative research adheres to precise measurement and quantification in controlled settings, attaching great importance to reliability and validity. Statistics obtained through this approach help to make comparisons among groups or people, which allows determination of the extent of

similarities and differences among them (Yauch and Steudel, 2003, p. 473). Detailed specification of procedures is provided so that the study can be replicated to check the findings. Besides, quantitative research typically features large samples representing some wider population (Robson, 2016, p. 19), providing basis for generalization.

The strengths of quantitative research, however, may bring limitations to research from a different perspective. In the interest of control and accuracy, research settings in qualitative approach are normally stripped from their contexts (Robson, 2016, p. 19). Such decontextualization may make many important characteristics of subjects reduced to numbers or even ignored. Quantitative data normally fails to provide an in-depth exploration of phenomena or subjects. As stated by Robson (2016, p. 18), the dead hand of statistics is no way to fully understand people and their problems. Furthermore, effective quantitative research in need of a large sample may bring problems such as time, resources and expenses.

2.3 Combination of qualitative research and quantitative research

Considering the strengths and weaknesses of quantitative and qualitative research, a natural response is to propose combining them. Over the years, the rise of pragmatic paradigm, the compatibility of the approaches in practice and their complementarity as well as triangulation offer support for integrating the two approaches, which is commonly called “mixed methods research” by researchers. In this essay, a mixed methods research refers to an approach that involves both quantitative and qualitative designs to collect both quantitative and qualitative data and integrates the two forms of data to explore the same research issue (adapted from Creswell, 2018).

2.3.1 Pragmatic paradigm

Tired of the either-or choice in the “paradigm wars” between qualitative and quantitative research, some scholars turn to another position of worldview, which is referred to as pragmatic paradigm. Pragmatism emerges from practical situations, needs, and actions rather than antecedent conditions (Creswell, 2018, p. 48). As far as pragmatism is concerned, the crucially important and justified is what functions in real practice and what tackles our problems. In other words, theories and actions prove to work for particular groups in particular situations are the ones most valid for our research. As Morgan (2007) and Tashakkori and Teddlie (2010) stated, the importance

of pragmatism lies in its attention on the research problem and its use of multiple approaches to probe into the problem. In a similar vein, Thomas (2017) asserts that “the research approach should be the servant of research question, not its master”.

Pragmatism is not committed to any one line of philosophy and reality (Creswell, 2018, p. 48). It offers a philosophical underpinning for mixed methods research, bringing much flexibility. In light of pragmatism, mixed methods research listens to assumptions and approaches from both qualitative and quantitative research, compares and evaluates the relative merits of them, and is willing to take dynamic back-and-forth philosophical stances for different purposes.

2.3.2 Compatibility

Pragmatic paradigm gives support for a technical version of treating qualitative research and quantitative research, which essentially views the two research approaches as compatible. From this perspective, it is recognized that qualitative research and quantitative research are each associated with distinctive philosophical views, but the associations are not fixed and definite. Thus, research methods are viewed as autonomous rather than pre-determined by philosophical assumptions. A research method following one research approach can be put at the service of another. In this sense, mixed methods research becomes desirable and feasible.

2.3.3 Complementarity

Considering the strengths and weaknesses of quantitative and qualitative research, a natural response is to propose combining them. Researchers can utilize the strengths of different approaches to better suit different research questions and compensate for the weaknesses of the approaches. In this way, the combination would “allow the various strengths to be capitalized upon and the weaknesses offset somewhat” (Bryman, 2016). What’s more intriguing might be the fact that sometimes one approach may generate surprising results that can be understood by employing the other (Bryman, 2016).

2.3.4 Triangulation

Triangulation refers to the idea that exploring something from diverse points of view improves accuracy (Neuman, 2014, p.166). When using mixed methods research,

both types of data can be collected to confirm or corroborate findings within the study. This approach allows the researcher to use one approach to help explain findings obtained from the other. In this way, greater validity may be achieved since two types of researches are combined to triangulate findings.

Overall, researchers are more likely to get a comprehensive account of the intended topic through mixed methods research. Admittedly, this approach has limitations or challenges as well. For example, mixed methods research requires that the researcher is proficient in both quantitative research and qualitative research. The complexity of the design typically needs clear models to demonstrate the details and the flow of steps (Creswell, 2018, p. 298), which is greatly skill-demanded. The extensive nature of collecting and analyzing both sets of data also cost expenses and energy.

3. My thesis research design

My research interest for thesis is to find out how interactions are achieved by EFL postgraduate students (ES for short) in linguistic academic writing as compared with native English-speaking postgraduate students (NS for short). Two main research questions are: (1) What are the similarities and differences between ESs and NSs in constructing interactions in linguistic academic writing? (2) What are ESs and NSs' perception of interactions in linguistic academic writing?

3.1 A mixed methods research

A mixed methods approach is adopted in the proposed study with a corpus-based textual analysis followed by semi-structured interviews. For the first main research question, the research constructs two corpora, the first one containing 50 ESs' dissertations accessed in the Chinese National Knowledge Infrastructure (CNKI for short) database and the second one containing 50 NSs' dissertations in the ProQuest database, with all dissertations in the realm of linguistics. Comparisons are made between the two corpora in terms of frequencies and distribution patterns. For the second research question, semi-structured interviews are conducted with five authors of dissertations in each corpus.

In terms of the priority and sequence of qualitative and quantitative approach, the study takes the explanatory sequential mixed methods design (Creswell, 2018, p. 304),

in which the researcher first carries out quantitative research, analyzes the results and then explain them in a more elaborate way with qualitative research. During the process, the quantitative results in the first phase helps to form topics and questions that will be asked of the subjects in the semi-structured interview, which helps to explain confusing, contradictory or unusual results in the quantitative findings. The subjects in the second phase are authors of dissertations in the corpora. The samples size is smaller, but since the intent of the quantitative design is to gather extensive information from this sample, the smaller sample size should not be a problem. Overall, considering that interaction metadiscourse analysis is a field with a strong quantitative orientation, the study begins with quantitative research. More emphasis is put on the quantitative part followed by an explanatory sequential qualitative part.

3.2 Rationale for choosing a mixed methods research

Studies of texts in academic settings is considered as a cake which can be cut in many ways (Swales, 1998). An integration of different perspectives is advocated in academic discourse analysis for more comprehensive understanding. In the first place, a corpus-based textual analysis of language use has been predominantly used. It is based on the collections of naturally occurring academic texts (the corpus) to describe frequencies and cluster patterns in language features (Conrad, 1996). However, corpus studies only deal with decontextualised corpus data (Flowerdew, 2005), providing descriptions of the existing writing with exclusion of participant's perception underlying such practice. Embracing qualitative methods is a solution. Ethnographic approach of semi-structured interviews has been proved to be a more situated and contextualised basis for getting insiders' view of why the texts are written as they are (Swales and Luebs, 1995).

In semi-structured interviews, the order in which the topics are dealt with and the wording of the questions are left to the interviewer's discretion (Corbetta, 2003, p. 270). Within each topic, the interviewers are free to establish their own style of conversation – to ask the questions they deem fit in the words they consider best, to conduct the conversation as they think appropriate, to explain if the interviewees find the questions to be unclear, to prompt the participants to elucidate further if necessary, and. As one of the most commonly used qualitative methods, semi-structured interviews is productive in that it allows for a more conversational and egalitarian style of interacting

with participants, to seek for their own perceptions. They help display the insiders' view of their academic literacy practices and their participation in their disciplines (Hyland, 2004). Therefore, as a qualitative methods of data collection, the use of semi-structured interviews is an appropriate supplementary to the corpus-based textual analysis.

In all, choosing a mixed methods research by combining a corpus-based textual analysis and semi-structured interviews helps to reveal the salient interpersonal language patterns as well as the insiders' perceptions. In the first place, the combined methodology can avoid biases intrinsic to corpus-based textual analysis, compensating for specific weaknesses associated with this particular quantitative method. Meanwhile, as each research method only offers a particular insight into how researchers seek to interact with their readers, the integration of both methods within a systematically constructed mixed methods design thus provides a fuller picture than just adopting a single approach. For results and discussion, the mixed methods approach can be a crucially useful tool for complementing and cross-validating findings from more than one strand of investigation, which may triangulate the research to a large extent.

4. Conclusion

There has been critics and debates between followers of qualitative research and quantitative research over time. Given the distinction of the two approaches in paradigm and praxis, researchers who use one approach alone do not always exchange ideas well with those using the other. But considering their respective values and limitations, neither qualitative research nor quantitative research can overwhelm or replace the other. Both of them stand out for their usefulness in different contexts. Therefore, the research design selected for any study should be chosen because they are the best method to answer the research questions (Nieswiadomy and Bailey, 2018).

Dissatisfaction breeds creativity. Empirical researchers who are unhappy with the natural limits of mono-designs having been seeking for approaches that integrates qualitative and quantitative components. In light of pragmatic paradigm, a researcher is responsible to select the research design that best suits the situation under investigation. This provides a highly compatible theoretical basis for combining the two types of research in the same study (Robson, 2016, p. 30). Mixed methods research provides both opportunities and challenge for researchers.

For my own research interest of interactions in linguistic academic writing, it

would be more advantageous to adopt the mixed methods approach for investigating language use as well as the authors' perception. The mixed methods design with complementary data from both quantitative and qualitative designs adds to the breadth and provides a richer picture of the investigation. More validity is expected to be achieved by triangulation in mixed methods research.

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