Paradigms in Play: Using Case Studies to Explore the Value-Added of Divergent Findings in Mixed Methods Research

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ABSTRACT

The aim of this research study is to make a methodological contribution to the mixed methods research literature by investigating the value-added of empirical studies that are explicitly framed with the purpose of interrogating divergent findings. Case exemplars introduce the role that philosophical paradigm plays in the reconciliation process. They also suggest that the principal value-added of research with an initiation purpose is the potential to advance theoretical understanding and/or to challenge accepted practices about measuring complex phenomenon. The research makes an additional contribution by proposing that there is a variant of the initiation design that is theoretically framed in ways that anticipate divergence and resist reconciliation.

KEYWORDS

Dissonance; inconsistent or incongruent data; mixed methods research; paradigms; reconciliation strategies; triangulation

Bryman (2006) is among a chorus of the founding voices who have pointed to the likelihood of unanticipated findings in multi- and mixed methods research. This is most likely to be the experience in research that is undertaken not simply to use multiple sources of data to corroborate results, but to enhance inferential validity by developing a more nuanced explanation for the type of complexity typically encountered in research involving social phenomenon. The frequency of encounters with unexpected findings can be credited to the sheer amount and variety of data often collected in mixed and multi-method research (Bryman, 2006). It can also be attributed to an intentionality about engaging diverse perspectives that are deeply embedded in what Greene (2007) refers to as a “mixed method way of thinking” (p. 20) and to a paradigmatic grounding in dialectical pluralism (Johnson, 2012; Johnson & Schoonenboom, 2016; Onwuegbuzie & Freis, 2013). The intellectual challenge of integrating incongruent findings from qualitative and quantitative sources is probably one reason why it is not uncommon for a multi-method project to evolve to a mixed methods one during the reconciliation process.

The commitment to engage difference and to pursue paradox and contradiction is central enough to the methodology that undergirds mixed methods to warrant a separate designation in a widely used framework that identifies the principal rationales for its use. The originators of a classification system for the rationales for using mixed methods that continues to be widely applied, Greene, Caracelli, and Graham (1989), single out what they referred to as the initiation rationale, which is one of the five main reasons that they identified for using mixed methods. They define this rationale with these words: “Seeks the discovery of paradox and contradiction, new perspectives and frameworks, the recasting of questions or results from one method with questions or results from another method” (p. 259). This rationale is also applied to researchers seeking to make meaning from gaps and silences in findings. Greene et al. observe that qualitative and quantitative data tend to be given equal weight in this type of study.

The position of the initiation rationale in the typology that summarizes the primary rationales for using mixed methods arguably has more to do with it as a methodological commitment than from evidence that it is prevalent in practice. Authors of three separate content analyses indicate that the initiation rationale only represents a very small percentage of all mixed methods research publications. Greene et al. (1989), for example, concluded that only approximately 3% of the evaluation reports that they analyzed fell under this category, whereas Bry-
man (2006) calculated that it accounted for less than 2% of the 232 mixed methods research articles they cataloged. Reviewing grant proposals, instead of published articles, O’Cathain, Murphy, and Nichol (2007) reached the conclusion that none of them were framed in ways that met the expectations of the initiation rationale.

There are several possible explanations for why it is difficult to locate mixed methods publications that are explicitly framed with the purpose of pursuing an explanation for paradoxical or counter-intuitive findings. This might well be an artifact of a bias in publications toward presenting significant positive findings and a disinclination to publish non-significant results. It could also reflect the gap between the messiness of most research involving complex phenomenon and the sanitized and inherently linear way that results are presented in a publication. It is very likely that inconsistencies between results from different data sources are less likely to emerge in mixed methods designs where the qualitative and quantitative phases are distinctly compartmentalized. An equally plausible explanation is that many researchers approach the task of reconciling inconsistencies between their data sources with the assumption that there is one correct answer and that the reconciliation process involves making a choice about which method yields that most credible source of data. This explanation is supported by Giddings and Grant’s (2007) charge that mixed methods research has had a positivist tendency because findings from the qualitative strand are so often downplayed in the pursuit of a singular truth.

This aim of this article is to make a methodological contribution to the mixed methods research literature by using a qualitative research approach to investigate publications reporting on empirical studies using both qualitative and quantitative research methods that are explicitly framed with the purpose of interrogating divergent findings. Case studies illustrate the value-added of different approaches to the reconciliation process and to demonstrate a link to a paradigmatic stance. Value-added refers to statements made by authors in the discussion section of an article about the insight gained from a mixed methods approach.

The research was guided by three research questions:

1) What strategies are used by authors of articles explicitly framed with a purpose that fits the traditional definition of the initiation rationale to reconcile divergent findings?
2) What value-added component do authors of this kind of study report, and does it vary by the reconciliation strategy?
3) What evidence is there that philosophical and paradigmatic grounding influences the approach that is taken to the reconciliation process?

This research has the practical purpose of helping researchers to envision strategies that can be useful for reconciling inconsistent data. It links to an earlier article that I wrote about how collaborators deal with differences of opinion (Creamer, 2004). It contributes to the literature about the characteristics of mixed methods research undertaken with the purpose of understanding paradox and contradiction and links it to the literature about reconciliation strategies. It adds to the literature about the initiation rationale by demonstrating a link between the approach to the reconciliation process and paradigmatic grounding. The role knowledge of the literature and theoretical frameworks emerged as instrumental to the reconciliation process in this research. That finding links to earlier work that involved an investigation of the way references to the literature can be deployed to enhance inferential validity (Creamer, Musaeus, & Edwards, 2017).

Relevant Literature and Theoretical Frameworks

Although there is no lack of literature debating the merits of different philosophical and paradigmatic issues in mixed methods research, there is scant literature about strategies that can be used to weigh inconsistencies between results of research that combines qualitative and quantitative approaches. The analysis reported here builds on the previous research conducted about the divergence in mixed methods research executed by Moffatt, White, Mackintosh, and Howel (2006), Pluye, Grad, Levine, and Nicolau (2009), and Slonim-Nevo and Nevo (2009). Pluye et al. (2009) provided the clearest contribution to the literature by identifying and defining four different approaches to the reconciliation process. Moffatt et al. used examples from their own research to illustrate that reconciliation is a process that involves a series of interlinked steps. Slonim-Nevo and Nevo (2009) highlighted the initial question that frames the pursuit of explanations for inconsistencies—that is whether results from different data sources address different aspects of a phenomenon, and are consequently complementary, or if the results are indeed irreconcilable because they are contradictory.

Building on ideas from Moffat et al. (2006), Pluye et al. (2009) identified and defined four reconciliation strategies that they then applied to categorize nine examples that they uncovered in the literature. They referred to
the principal reconciliation strategies as bracketing, exclusion, reconciliation, and initiation. Pluye et al. (2009) did not frame these as a hierarchy or suggest that there is any priority or sequence to their application. Table 1 summarizes the reconciliation strategies identified by Pluye et al. (2009) with some minor modifications.

Table 1. Reconciliation Strategies with Minor Modifications from Pluye et al. (2009)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Bracketing</td>
<td>Inconsistencies are explained by recognizing constructs are measuring different things.</td>
</tr>
<tr>
<td>Exclusion or weighting</td>
<td>The conclusion is reached that limitations to the validity of one source of data warrant its devaluing.</td>
</tr>
<tr>
<td>Reconciliation</td>
<td>Additional analysis of existing data or re-engagements in the literature provides an explanation for the inconsistencies.</td>
</tr>
<tr>
<td>Initiation</td>
<td>Additional data collection and analysis is conducted, often with re-engagement in the literature, to generate a plausible explanation for differences between data sources.</td>
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</table>

Although Pluye et al. (2009) did not describe the strategies in this way, both bracketing and exclusion downplay the dissonance that might appear between data sources by concluding that they measure different aspects of a complex phenomenon or by determining that methodological issues, like weaknesses in a quantitative measure, justify awarding priority to the results from a single source. The third strategy, reconciliation, could be said to situate inconsistencies as being important enough to pursue and to seek out ways to explain them. The final reconciliation strategy, initiation, not only involves acknowledging the inconsistency as being meaningful conceptually but also pursues it through additional data collection and analysis.

Touching on what could be considered a matter indicative of philosophical paradigm, Slonim-Nevo and Nevo (2009) propose that researchers approach the reconciliation process from two theoretical perspectives. They distinguish these perspectives as the complementary and non-complementary approaches. The two approaches vary by whether divergent data from multiple sources is judged to be inconsistent or in conflict, rather than contradictory. According to these authors, contradictory data are logically impossible and, therefore, irreconcilable. This might be the case, for example, in evaluation research or research involving an intervention, when it is necessary to reach a conclusion about its effectiveness and whether it is worthy of replication. Researchers taking a complementary stance, on the other hand, position data from different sources as reconcilable because although they may be inconsistent or in conflict, they are not inherently contradictory. This theoretical position is more likely to invite creative thinking in order to explore the implications of these inconsistencies.

In the context of reporting on results of a random control trial, Moffatt et al. (2006) describe a series of questions they considered to make sense of the quantitative result that the intervention had no measurable impact with the qualitative study finding wide-ranging impacts. Labeling their work as deriving from a complementary position that “approached the divergent findings as indicative of different aspects of the phenomenon” (p. 7), Moffatt et al. began the process by first considering the commensurability of methods. This is the task of bracketing. The second step, to consider methodological rigor of the different strands, is a way to determine whether the results from one strand should be awarded more weight (i.e., the strategy called exclusion). These authors then moved on to collect additional data to corroborate initial findings to seek explanations for the inconsistencies. The process led them to recognize limitations in the quantitative instrument and to prioritize the more positive qualitative data.

Paradigms are not idiosyncratic constructions or worldviews, but a set of inherently coherent philosophical assumptions about the nature of reality and the role of the researcher in constructing it shared among members of a community (Creamer, 2018). Two groups of feminist researchers have linked approaches to triangulation, but not reconciliation, to paradigmatic views (i.e. Nightingale, 2009; Perlesz & Lindsay, 2003). Nightingale (2009), a feminist cultural geographer, maintains that different approaches to triangulation reflect different paradigmatic views about the nature of reality as singular or multiple. The most traditional form of triangulation (i.e., mixing) is undertaken for the purpose of seeking confirmation through convergence. It is only applicable when different methods are used to measure the identical construct or to answer the same research question. Researchers with this perspective are likely to be troubled by a situation where qualitative and quantitative data do not coincide to support the same conclusion.

A postmodern view of reality and a feminist stance is reflected in a divergence approach to triangulation that is not driven by an expectation for corroboration or convergence (Nightingale, 2009). There might, in fact, be resistance to the idea of reconciliation (Burnham, Ma, & Zhang, 2016; Hesse-Biber, 2012). Divergent results are interpreted to reflect complexity, not contradiction, and to communicate respect for diverse voices. Parallelising the rationales for mixing described by Greene et al. (1989), complementarity triangulation (a type of mixing) is
undertaken with the paradigmatic assumption that “the results are not expected to be the same, but rather to make sense in relation to each other and to help create a fuller picture of the research problem” (Nightingale, 2009, p. 490). Nightingale describes divergence triangulation as undertaken with a postmodern mindset that is intrigued by gaps, silences, and uncertainty.

**Method**

**Systematic Search of the Literature**

The following search strategy was used to identify an initial sample of articles: [mixed method* OR multiple method* OR (qualitative AND quantitative)] AND [conflict* OR contrad* OR diverg* OR disson* OR discrep* OR inconsist* OR initiation OR discord*] in the abstract or title. The initial search produced a list of 80 articles.

The abstract for each article produced by the electronic search was reviewed. Only articles that were explicitly framed with a purpose to foreground the process used to reconcile divergent qualitative and quantitative findings were retained in the final sample. For example, a fit to the initiation rationale as defined by Greene et al. (1989) is evident in the purpose declared by Moffatt et al. (2006) in a study of the elderly and welfare benefits. The purpose is stated in these words: “In this methodological paper, we document the interpretation of a mixed methods study and outline an approach to dealing with apparent discrepancies between qualitative and quantitative research data” (p. 1).

Articles whose authors acknowledged divergence between qualitative and quantitative results but did not pursue them as a central purpose were excluded. Most of the articles that were eliminated reflected a content area interest in conflict or did not meet a minimum threshold for the designation as mixed methods (i.e., an explicit reference to a qualitative and quantitative component). The digital search netted a list of articles from a very broad range of disciplines. Articles by Burnham et al. (2016) and Davis and Baulch (2011) turned out to be the most helpful regarding making a contribution to the literature about reconciliation strategies.

The final sample used for the analysis consisted of nine articles and 11 cases that are explicitly framed in a way that reflects the initiation rationale as defined by Greene et al. (1989). In all cases, the authors reported that the divergence in results from the different data sources was unexpected. One article (i.e., Wagner et al., 2012) discussed the process of reconciliation with three examples. Only one article (i.e., Moffatt et al., 2006) overlaps with the articles analyzed by Pluye et al. (2009).

Table 2 gives an overview of the nine articles analyzed for this publication. It lists the author, topic, and publication source for each of the articles.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Topic</th>
<th>Journal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burnham et al. (2016)</td>
<td>Climate change in China</td>
<td>Area</td>
</tr>
<tr>
<td>Davis and Baulch (2011)</td>
<td>Poverty dynamics in Bangladesh</td>
<td>Educational &amp; Child Psychology</td>
</tr>
<tr>
<td>Johnstone (2007)</td>
<td>Technology and hospital operating room practices</td>
<td>-</td>
</tr>
<tr>
<td>Moffatt et al. (2006)</td>
<td>RCT involving welfare benefits</td>
<td>BMC Health Services Research</td>
</tr>
</tbody>
</table>

Note: * Presented information on three different studies.

The final set of articles appeared in an interesting array of journals in a wide range of disciplines. These articles shared an applied focus. Three of the nine articles appeared in methodologically oriented journals, whereas six were in content-focused journals. Three articles involve the assessment of the outcomes of interventions (i.e., Moffatt et al., 2006; Slonim-Nev & Nevo, 2009; Wagner et al., 2012). Only one article originated from the health sciences (i.e., Johnstone, 2007).
Analytical Approach

Each of the articles was initially coded for four variables: (a) reconciliation strategy as defined by Pluye et al. (2009), (b) priority, (c) timing, and (d) value-added. The traditional design features of timing and priority, however, did not yield any fruitful insights, in part, because many of the studies were multiphase and highly iterative. We moved away from a largely deductive mindset in the second round of analysis to conduct a form of cross-case analysis to pursue the question of the role of paradigms in research. This was not something that framed the purpose that we initially established for the study but emerged in a forceful way after reading the unconventional framing of the reconciliation process put forward by Burnham et al. (2016).

Results

The findings section is organized by research question. It uses Pluye et al.’s (2009) framework as a starting point to discuss the findings from the analysis of nine articles and 11 cases that are all explicitly framed for the purpose of describing the strategies employed to reconcile inconsistencies between qualitative and quantitative data. All of the authors approached their data from what Slonim-Nevo and Nevo (2009) refer to as a complementary theoretical perspective. Only one author (i.e., Johnstone, 2007) approached the reconciliation process primarily for purposes of corroboration.

The articles classified as using either a reconciliation or initiation approach are those that pursued the inconsistencies between the qualitative and quantitative data the most thoroughly. These authors suggest that although an important initial step in the reconciliation process is to make methodological judgments about the usefulness of instruments and the validity of the data, content area expertise and theoretical frameworks make an important contribution to the process of developing a substantive explanatory framework.

Reconciliation Strategies

The first research question addresses the strategies that authors of articles explicitly framed with an initiation rationale used to reconcile divergent or inconsistent qualitative and quantitative findings. Table 3 uses a similar strategy as Pluye et al. (2009) and aligns each article with a single reconciliation strategy. The table also provides information about which authors collected additional data and those who conducted additional analysis in pursuit of an explanation for the discrepancies between the qualitative and quantitative findings.

Table 3. Reconciliation Strategy by Publication (N = 11)

<table>
<thead>
<tr>
<th>Reconciliation strategy from Pluye et al. (2009)</th>
<th>Authors of articles framed by the initiation rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracketing (n = 1)</td>
<td>Slonim-Nevo and Nevo (2009)</td>
</tr>
<tr>
<td>Exclusion (n = 2)</td>
<td>Johnstone (2007)</td>
</tr>
<tr>
<td>Reconciliation (n = 4)</td>
<td>Wagner et al. (2012) – Case 3</td>
</tr>
<tr>
<td></td>
<td>Burnham et al. (2016)</td>
</tr>
<tr>
<td></td>
<td>Davis and Baulch (2011)</td>
</tr>
<tr>
<td></td>
<td>Wagner et al. (2012) – Case 1</td>
</tr>
<tr>
<td></td>
<td>Wesely (2010)</td>
</tr>
<tr>
<td>Initiation (n = 4)</td>
<td>Durksen and Klassen (2012)</td>
</tr>
<tr>
<td></td>
<td>Wasson and Waters (2013)</td>
</tr>
<tr>
<td></td>
<td>Moffatt et al. (2006)</td>
</tr>
<tr>
<td></td>
<td>Wagner et al. (2012) – Case 2</td>
</tr>
</tbody>
</table>

The research classified in the reconciliation strategy reached an explanation by re-examining the data already collected. Durksen and Klassen (2012), for example, found that variability in the resources available in different school settings explained differences that emerged from their cross-case comparison. The articles (n = 5) classified within the initiation reconciliation strategies involved the use of additional data collection and analysis to pursue inconsistencies. The advantage of this is that many achieved additional insight and garnered the potential for transferability to other strategies.

Authors using a reconciliation or initiation approach (i.e., collected additional data and/or conducted additional analysis) used a variety of creative approaches to reconcile inconsistencies between their qualitative and quantitative findings that apply to other research studies. Many of these are a familiar part of the tool box of strategies that researchers use to establish the reliability, validity, or trustworthiness of their data. Table 4 identifies these strategies.
The strategies listed in Table 4 include Gasson and Water’s (2013) in-depth exploration of the implications of negative cases; Wagner et al.’s (2012) use of member checks and focus groups to ask participants to explore the meaning of discrepancies; and Davis and Baulch’s (2011) analysis of five alternative explanations to systematically reduce discrepancies that appeared in a matrix that consolidated qualitative and quantitative data about indicators of poverty.

**Table 4. Additional Reconciliation Strategies**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Author</th>
<th>Value-added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member check.</td>
<td>Wagner et al. (2012)</td>
<td>Provide an explanation for the inconsistency.</td>
</tr>
<tr>
<td>Examine exceptions to the overall pattern.</td>
<td>Durksen and Klassen (2012)</td>
<td>Identify contextual conditions that explain the inconsistency.</td>
</tr>
<tr>
<td>Generate multiple alternative explanations.</td>
<td>Davis and Baulch (2011)</td>
<td>Challenge the validity of traditional measures of poverty dynamics.</td>
</tr>
<tr>
<td>Re-engage the literature and widen the search for theoretical explanations.</td>
<td>Wesely (2010)</td>
<td>Challenge theoretical understanding about the role of motivation and positive attitudes in persistence in language programs.</td>
</tr>
<tr>
<td></td>
<td>Burnham et al. (2016)</td>
<td>Point to gap between traditional measures of climate change and farmer’s experiences of it.</td>
</tr>
<tr>
<td>Identify intervening or contextual conditions that influence the phenomenon.</td>
<td>Wagner et al. (2012)</td>
<td>Provide an explanation for the inconsistency.</td>
</tr>
<tr>
<td></td>
<td>Moffatt et al. (2006)</td>
<td></td>
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</tbody>
</table>

Several authors underscored the role of revisiting the literature and seeking out new theoretical frameworks as part of the process they used to reconcile inconsistent results that involved a significant substantive engagement between the qualitative and quantitative strands. Wesely (2010), for example, described her attempts to understand the unexpected finding that positive attitudes and motivation did not necessarily explain why students left a language immersion program in Canada. She had to turn to theoretical frameworks outside of the motivation literature to make sense of the finding that on the quantitative measure, students who left the language program had more positive attitudes than did those remaining. Through an analysis of a group of students who did not appear to be actively engaged in on-line class discussions (i.e., the “lurkers”), Gasson and Waters (2013) reached a conclusion that challenges the conventional wisdom that active engagement is necessary for learning.

**Value-Added of Using Mixed Methods to Reconcile Inconsistent Findings**

The second research question required an exploration of the types of statements that authors of articles explicitly framed with an initiation rationale provided about the gains achieved by using a mixed methods approach during the reconciliation process. Although many of the authors commented on a benefit commonly attributed to a mixed methods approach, which is increasing awareness of the complexity of the phenomenon being studied, many also addressed insights that might be unique to the specialized focus of research publications that are shaped by initiation purpose. These included recognition of methodological limitations that extend beyond the formulaic language about sampling. The contribution to the literature of generating new theoretical perspectives was an additional important value-added articulated by several authors.

An indication that the qualitative strand played an important role in generating interpretative power is evident in the number of authors using either the initiation or reconciliation strategy who pointed to methodological limitations in the quantitative instrument or index used. For example, in her study of students leaving and persisting in a language immersion program, Wesely (2010) observed that students had much more complex views of language learning than was captured in the instrument she used. Both Burnham et al. (2016) and Davis and Baulch (2011) challenged prevailing wisdom by concluding that the conventional quantitative measures they used—one of climate change and the second of changes in poverty status among rural poor in Bangladesh—gave a misleading impression of the phenomenon they studied. Davis and Baulch (2011) made the point about the inadequacy of quantitative indexes when they observed: “We also learned that while expenditure-based measures of economic well-being have become the ‘gold standard’ for poverty studies in developing countries, the shortcomings of expenditure-based measures are magnified in studies of poverty dynamics” (p. 136).
Theoretical output was a value-added articulated in nine of the 11 cases reviewed. All of these authors employed either the reconciliation or initiation strategy (see Table 2; i.e., Burnham et al., 2016; Davis & Baulch, 2011; Gasson & Waters, 2013; Wesely, 2010). Each of these authors used language that explicitly framed the contribution of their research as challenging conventional wisdom in their fields. Wesely (2010) situated her work as questioning the assumption that motivation is related to positive attitudes and persistence. Burnham et al. (2016) similarly questioned conventional measures of climate change by observing “The data mismatches in our study suggest that smallholders [rural farmers] conceptualize climate in a more holistic way than does climate science” (p. 25). Davis and Baulch (2011) came to the conclusion that any measure of poverty dynamics must contain both a qualitative and quantitative component. Gasson and Waters (2013) disturbed the conventional assumption that learning only occurs through active social engagement with others. Finding that other types of passive engagement are associated with learning, Gasson and Waters (2013) challenged the theoretical underpinnings of the relationship between engagement and learning by noting: “The notions of involvement vs. social engagement are complicated by our theory, as we must define social engagement as interaction with the ideas of others, rather than direct interactions with peers in active debate” (p. 116).

**Substantiating a Link Between Reconciliation Strategies and Paradigmatic Position**

The third research question about the role of paradigm in the approach taken to the reconciliation process emerged over the course of the analysis from the dramatically different way that several of the authors positioned their paradigmatic orientation and view about reality as singular or multiple. The approaches seemed bookended on one side with the oldest article in the group by Johnstone (2007) that carried a decidedly postpositivist tone and, at the other side, with Burnham et al.’s (2016) avowedly feminist and interdisciplinary perspective. In between the two bookends, was the constructivist language used by Gasson and Waters (2013). Although it is not something ever addressed at length, a few other authors in the group of articles analyzed also made references to a paradigmatic position. These included Moffatt et al. (2006) who aligned their perspective with scientific realism and Wesely (2010) who described her work as deriving from a dialectical perspective.

The three articles that reflect a continuum of views about the reconciliation process and the meaning of divergence are presented as brief case studies in the next section. The first reconciled divergence through exclusion, the second through initiation, and the third through reconciliation. The case studies are organized, firstly, to highlight the language used by the author(s) to describe their paradigmatic position and, secondly, to explore how this is manifested in the approach taken to the reconciliation process. The second and third case both highlight the contribution of theory to reconciling divergent results. They also suggest that generating inferences that challenge conventional theoretical perspectives can be a value-added of a thoughtful engagement in the reconciliation process.

**Case 1: Illustrating a postpositivist paradigm and reconciliation through exclusion with Johnstone (2007).** Lynne Johnstone produced a series of articles from her 2001 dissertation where she investigated the hypothesis that since the late 1980s technological change has made surgical procedures in hospital operating rooms more labor intensive. There is an inherent contradiction in the language that Johnstone (2007) used to describe her paradigmatic position. She positioned her work as drawing from both the naturalistic paradigm and the positivist paradigm at the inference stage, but the way the purpose of the research was framed suggests an over-riding postpositivist inclination. She described her work as addressing the question: “How might a researcher decide which evidence to accept and which evidence to regard as insignificant” (p. 27). The legal analogy that she offered between the job of a jury to reach a verdict of guilty or not guilty and the job of the researcher during the reconciliation process clearly communicates a postpositivist mindset.

The framing of the purpose of the study as to make a judgment about which data to prioritize is mirrored in the process Johnstone (2007) described that she used to explain divergence emerging from her qualitative data that ran counter to her original hypothesis that technology increased the workload of operating room nurses. The choice to resolve the *contradiction* that arose from the qualitative findings by counting the occurrence of coded lines of text and settling on an interpretation that reflected the preponderance of data without pursuing them further mirrors an implicit assumption that there can only be a single, correct answer.

**Case 2: Illustrating a constructivist paradigm and an initiation approach with Gasson and Waters (2013).** Gasson and Waters (2013) report that they used a mixed methods approach with a qualitative approach to grounded theory methodology to challenge conventional wisdom about the link between active engagement and learning in an on-line class. Their approach was unusual in that what they chose to pursue was what they referred to as the "lacunae" or gaps or silences the data (p. 97). This was a group of students who they called “lurkers” (p. 96) because they rarely weighed in with their viewpoints during the assigned discussions occurring
online. The unexpected component of their data was that this group of students defied the authors’ expectations in that they seemed to be learning as much as students who were more visibly engaged in online conversations. Gasson and Waters (2013) explicitly referred to their paradigmatic framework when they indicated a commitment to the constructivist-interpretivist ontological position that “there are no objective patterns to be discovered, but there are generalizable useful patterns that are of interest to researchers” (p. 115). They aligned themselves with a constructivists-interpretivist approach to theory building.

There are noteworthy differences in the approach to the reconciliation process taken by Gasson and Waters (2013) than by Johnstone (2007). The differences involve both the assumption made about inconsistencies or gaps in the data, as well in the steps taken to pursue them. One difference is in the collection of additional data to pursue the inconsistencies. Gasson and Waters explained their rationale for collecting additional data using the following words:

By explicitly looking for negative occurrences (absences) of relationships that previous samples had suggested, we realized the need for new sources and ways of collecting and analyzing data in order to follow the vapor trails left by student learning strategies. (p. 116) [emphasis in original]

The value-added of their approach is evident in their claim that the attempt to reconcile their findings made it possible for them to challenge traditional orthodoxy about student engagement and to propose an innovative, substantive theory of action in online learning communities.

Case 3: Illustrating an interdisciplinary feminist perspective and the reconciliation strategy with Burnham et al. (2016). The exploration of contradiction is central to the purposes of this article by feminist ecologists that reported on research that provided evidence of markedly different perceptions by region between how small farmers in China perceived climate change. The authors challenge the nature of the way reconciliation has been conceptualized. They stated,

Our goal is not to ‘reconcile the divergent accounts’ of climate change produced by each method, but instead we use them to investigate the processes through which smallholder perceptions of climate change are produced and allow for new forms of interpretation of climate knowledge. (p. 20)

These authors link their approach to the value-added strategy of challenging traditional ways that climate change has been measured. As with the Gasson and Water’s (2013) study summarized in the previous case, Burnham et al. (2016) turned to the literature and relied heavily on a theoretical perspective to explain the differences reported in the way people experienced climate change. These authors concluded that people working close to the land experience climate change, as through shifts in harvest schedules, in a very immediate way that represents a very different epistemological perspective than that taken by climate scientists. Their conclusion has the value-added of challenging conventional, decontextualized ways of understanding climate change.

Discussion

The types of reconciliation strategies that Pluye et al. (2009) derived from the Moffatt et al. (2006) turned out to be a useful starting place for a discussion about how mixed method researchers can extract meaning when the findings from their qualitative and quantitative data sources unexpectedly diverge. The four strategies these authors identify provide a useful initial way to categorize and compare articles framed by the initiation rationale.

A disadvantage of categorizing articles by the reconciliation strategy employed is that it suggests that it is a one-step process. Another way to conceptualize the reconciliation process is as a series of inter-linked steps that address critical issues. Figure 1 depicts the act of reconciling unexpected findings as a process that can involve a series of inter-linked steps that resemble a decision tree.

Not all authors of the articles reviewed were in a position to pursue the inconsistencies through to steps in the process that had the greatest potential to yield new theoretical insight (i.e., reconciliation and initiation). For example, Slonim-Nevo and Nevo (2009) stopped at the first step shown in Figure 1. They concluded that the qualitative and quantitative data were addressing different elements of the phenomenon and chose not to pursue it further. Almost all the authors of the articles examined engaged in activities related to the second step depicted in Figure 1 and referred to as exclusion. They devoted time and energy examining their data to determine whether all sources were equally credible or whether one should be given priority. Two authors stopped at this stage as they attributed the inconsistencies to methodological limitations. Four of the authors (see Table 3) reached an explanation by further analysis or by consulting the literature (i.e., reconciliation). An additional four authors pushed the process of reconciliation through to the initiation stage. After judging both sources of
data as being credible, this group of authors moved on to collect additional data either to pursue or confirm the inconsistencies. This is the group where the qualitative data played the strongest role in interpretation.

Figure 1. Steps in the Reconciliation Process.

Myriad factors can influence the ability of a researcher to pursue inconsistencies beyond a judgment that rests on an acknowledgment of methodological limitations. The first of these is likely to be purpose and paradigm. Inconsistencies are problematic in research driven by practical and policy questions (Slonim-Nevio & Nevo, 2009), such as about the effectiveness of an intervention, program, or activity. A paradigmatic view of research as the search for a correct answer is not one that is likely to foster substantive engagement with paradox and contradiction. The depth of knowledge of the literature and relevant theoretical frameworks is an additional factor that is likely to influence the rigor with which inconsistencies are pursued. Several authors demonstrated (e.g., Burnham et al., 2016; Gasson & Waters, 2013; Wesely, 2010) that it requires deep knowledge of the literature to identify a situation where the exceptions and paradoxes carry the potential for new theoretical insight.

Contribution to the Literature

Possibly because so few people publish articles that center it as a purpose, little attention has been devoted to the methodological literature about mixed methods to strategies that can be used to interrogate inconsistent or counter-intuitive findings. This research adds to that literature in several important ways. Firstly, it introduces evidence that theoretical frameworks can be instrumental to reconciling incongruent findings. Secondly, it suggests that challenging prevailing wisdom can be a principal value-added component of mixed methods research undertaken with an initiation rationale. Thirdly, it proposes that paradigmatic assumptions about the nature of knowledge and the researcher’s role in constructing it can influence the steps taken to investigate paradox. Finally, it makes an additional contribution by supporting the argument that there is a variant of the initiation design that is theoretically framed from the onset in ways that resist the idea of reconciliation.

Conclusion

The language used to refer to the process of considering inconsistent findings communicates information about the paradigmatic position and in mixed methods views about the commensurability of qualitative and quantitative data. Calling data contradictory implies that it cannot be reconciled. Accountants, for example, reconcile data for purposes of removing the inconsistency and correcting errors. As compared to the reconciliation, the
word negotiation may be more amenable to different paradigmatic stances. Freshwater (2007) equates the idea of using reconciliation to deal with difference as a modernist drive for certainty that includes a view that “differences are something to overcome” (p. 136). Postmodernists accept difference and uncertainty as inevitable (Freshwater, 2007). Freshwater (2007) raises the important point that not all inconsistencies between data sources are reconcilable.

The analysis of the articles reviewed in this article supports the argument that despite its rarity in practice, the pursuit of contradiction and paradox that defines the initiation rationale as proposed by Greene et al. (1989) has some design features that distinguish it from other rationales. These articles differ in some important ways from what has reported via numerous content analyses about the wider body of mixed methods literature. Greene et al. maintained that this design would be characterized by equal priority. This analysis supports that description and adds the implication that unlike Giddings and Grant’s (2007) characterization of the wider body of literature, the qualitative strand in most of these studies did not play a secondary role. The significant iterative interaction between the qualitative and quantitative data during the reconciliation process also counters the conventional way that mixed methods designs have been conceived (Creamer, 2018). A final distinction from the wider body of mixed methods literature is that as a group, mixing was not left entirely to the inference stage, but engaged during the process of analysis through strategies like negative case analysis.

The experience of encountering inconsistencies between data sources is one with salience for researchers using mixed approaches that maintain a paradigmatic mindset that seeks to highlight diversity and divergence in their data. Many researchers conducting this kind of research, no doubt, have a pantry full of examples of data with discordances that cannot be fully explained. Reconciling these kinds of differences is not simply a matter of prioritizing one data source over the other. Findings from this research illustrate not only the potential gains when unexpected results are creatively and vigorously explored, but also that this type of investigation can provide opportunities for writing and presenting about methodologically oriented topics.

References


