

Background and Methodological Purpose

The integration of reflexivity in MMR remains underutilized and hidden from methodological discussions about MMR. The absence of reflexivity obscures knowledge about important decisions researchers make while conducting a study. Some scholars have suggested ways to attend reflexivity. This may include repositioning paradigmatic approaches to consider positionality, bringing reflexivity to the “foreground” of MMR endeavors and understanding that reflexivity facilitates self-awareness about mixing methods along various dimensions of integration, and showing when and how reflexive decisions take place (Biddle & Schafft, 2015; Cain et al., 2019; Cheeks et al., 2015; Hesse-Biber, 2010; Popa et al., 2015; Popa & Guillermin, 2017). The approach advanced in this paper encourages researchers to focus on the elements of research, as well as the process of reflexivity in employing these elements when conducting MMR.

Reflexivity

Reflexivity involves a researcher engaging in critical thinking about how their location, values, opinions, and worldview may influence decision-making and interpretation during the research process. Reflexivity acknowledges how individual location and biography intersects with the interpretation of research field experiences; it is an ongoing process of explicitly revealing “hidden agendas” in research (Finlay, 2002; Guillemin & Gillam, 2004; Pillow, 2003). Reflexivity enables researchers to display their methodological decisions. Reflexivity is a practice and tool that provides insight into how the “how” and “why” of knowledge production (Finlay, 2002; Lumsden & Winter, 2014; Pillow, 2003).

Reflexivity can transform ad hoc decision-making into a critically informed selection of research elements and their integration into some particular phase of a research project. I call this research activity the “reflexive integration of research elements” (RIRE). MMR researchers can engage reflexivity throughout the research process and along the various dimensions of integration (Fetters & Molina-Azorin, 2017). The pertinent task in conducting MMR research is how can researchers achieve reflexivity (Dean, 2017; Finlay, 2002; Morse, 2015).

Reflexive Integration of Research Elements (RIRE)

Reflexive integration of research elements (RIRE) is a methodological tool for bringing elements of qualitative and quantitative research together in a MMR project. The elements are the methods or techniques used in qualitative and quantitative research (Johnson et al., 2010; Sanscartier, 2018). Consider methodology as a toolbox that contains all the available and epistemologically appropriate tools for each research tradition to examine some reality to generate knowledge. The research elements are the tools within the toolbox, the methods and specific procedures. In MMR, a researcher can draw inspiration from the elements from one toolbox to shape the elements inside the toolbox of the other tradition (Hall & Howard, 2008, p. 253).

RIRE helps operationalize subjective thoughts (reflexive moments) into decision-making. RIRE guides the selection of qualitative or quantitative elements during integration in a MMR project. The selection of a certain element to reflexively integrate requires the reflexive moment as a first step. Next, the researcher considers the issue, goal, or problem that needs to be addressed at the moment and phase of a project. RIRE is about drawing inspiration from the broader circle of research, particularly opposing research approaches to integrate an element,

and thus innovate and harmonize the overall MMR project (Fetters and Molina-Azorin, 2017). The convergence of reflexivity in the background with element selection in the foreground produces RIRE. Researchers must take care to balance epistemological assumptions within the context of progressing the study.

Current Aim

I highlight RIRE of quantitative research elements in a QUAL-quant MMR study. This example study was an exploratory sequential design that involved the reflexive integration of quantitative elements during data collection and analysis, separate and distinct from the quantitative phase that followed the qualitative arm of the study. I first begin with a review of literature on reflexive practices within quantitative, qualitative, and MMR. The example study is then reviewed to provide an illustrative example of how RIRE was accomplished. In this study, integration occurred along the following dimensions of MMR integration (Fetters & Molina-Azorin, 2017): sampling, data collection, data analysis, and interpretation. I focus on the data collection and data analysis phases to provide optimal clarity about how RIRE was achieved. I also use joint circular displays adapted from Bustamente et al. (2019) to illustrate RIRE across all dimensions of integration in the example study. I conclude with a discussion about the potential contribution RIRE can yield for MMR.

Literature Review

Qualitative Practices

A variety of reflexive practices within qualitative research exist. The key is in how reflexive practices are operationalized. These practices aid in the facilitation of reflexivity and include repeated interviews with the same participants, prolonged engagement, member

checking, triangulation, peer review, forming of a peer support network, keeping a diary or a research journal, or creating an audit trail of a researcher's reasoning, judgment, and emotional reactions (Berger, 2015). Reflexive practices are also methodological tools. Reflexivity can be used as a tool for ethical research practice (Cain et al., 2019; Guillemin & Gillam; 2004) or to position oneself in general and in relation to prior scholarship (Dean, 2017). Reflexivity is also a transformative tool to invert subjectivity as a strong standing point for examining and presenting research (Dean, 2017; Harding, 1991; Pillow, 2003).

There are at least four validated reflexive strategies: self-reflexivity, reflexivity to recognize the "other," reflexivity as truth, and reflexivity as transcendence (Pillow, 2003). Self-reflexivity informs the basis for reflexive integration of research elements as a tool in MMR:

Self-reflexivity acknowledges the researcher's role(s) in the construction of the research problem, the research setting, and research findings, and highlights the importance of researcher becoming consciously aware of these factors and thinking through the implications of these factors for his/her research. In this way, the problematics of doing fieldwork and representation are no longer viewed as incidental but can become an object of study themselves (p. 179).

RIRE operationalizes the "conscious awareness" of research factors so that they become integrated into the research project and not "incidental." This facilitates "strong objectivity" (Harding, 1991). Finlay (2002) also offers a similar typology of reflexivity as tool for a variety of means: From introspection and positionality, to revealing motivations, and examining research processes.

Reflexivity has been advanced as methodological tool and practice to do something in response to “reflexive moments” experienced during research. This has included but is not limited to constructing arguments or making notations in an interview transcript to interpret silence (Morison & Macleod, 2014; Subramani, 2019). Swaminathan and Mulvihill (2019) frame reflexivity as a methodological tool complete with an explicit acronym, VISION, to facilitate what they term “place-reflexivity.” Place-reflexivity concerns how researchers can “reflect on the location and context and the wider environment” during fieldwork (p. 990). Similar to Subramani (2019), reflexive integration of research elements relies on reflexive moments to activate a deliberate decision-making process to draw inspiration from elements of qualitative or quantitative research into a MMR project.

Quantitative Practices

Few quantitative studies address reflexivity. Yet some scholars recognize reflexivity as important for quantitative research. Quantitative researchers make decisions that inform the research process and work with data generated from specific contexts (Babones, 2015; Gorard, 2006). Ryan and Golden (2006) and Babones (2015) suggest quantitative research can benefit from embracing reflexivity. Babones advocates for an “interpretive quantitative methods” with reflexivity as an embedded principle. Ryan and Golden (2006) discuss engaging reflexivity during data collection to understand boundaries constructed between them and their study participants. They also reflect on time constraints and other demands. They note the necessity of reflecting on emotional costs of research and that “some research techniques may translate from qualitative to quantitative methods” (p. 1193). Ultimately, they advocate quantitative methods may need to establish protocols that allows for reflexive approaches.

Gorard (2006) calls for quantitative researchers to “take more notice” of judgments often mistaken for statistical significance and precision. The decisions, the judgments, and the models produced require transparency. Transparency encourages revealing subjective approaches; and “the use of open, plain but ultimately subjective judgment ... [would] have the effect of making it easier...to adopt mixed methods approaches as routine...” (p. 78). Similarly, Lakew (2017) acknowledges statistical models represent the operationalization of choices. Lakew notes the research context shifted expectations about generalizability as her project progressed. Lakew ultimately highlights the role of reflection in deepening the understanding of context and research realities. Reflexive integration of research elements aligns philosophically with prior quantitative scholarship on the topic of reflexivity. A key nuance from Ryan and Golden’s (2006) insight is that reflexive integration is about translating qualitative and quantitative research elements into either type of research design.

MMR Practices

Hall and Howard (2008) detail a synergistic approach to conducting MMR based a set of core principles. The first principle suggests two or more options can interact so that the combined outcome is greater than the individual contribution of each option. Second, qualitative and quantitative research have equal value despite necessary fluctuations in the emphasis of each throughout the research process. Third, an approach is chosen in consideration of the other to appreciate differences. Fourth, a researcher should consider the skill involved in the particular research design. The process is iterative, nonlinear, and each dimension of quantitative and qualitative research “communicates” with each other through the core principles. Reflexivity also aids in the process. Reflexive integration of research

elements builds on the synergistic approach in that it can operationalize the “communication” between the research dimensions, at the junction between consideration and deciding.

Morse (2015) notes the complexity of conducting research leads to adding design components. The additions are not reflective of the original research design, but reflexivity. As a MMR project unfolds, problems emerge shaping the need for components, thus (re)shaping the design. According to Morse, “This is what reflexivity is about: letting the program lead the design” (p. 14). Engaging in reflexivity facilitates the addition of more design components: “If the researcher identifies an interesting part of the data for which a supplemental measure would assist with clarifying, the researcher can add a supplemental component, a quan or qual at that time...” (p. 216). Morse’s work is probably the closest parallel to reflexive integration of research elements in MMR. Her work is based on a QUAL-quan MMR design, like the example study discussed below. Reflexive integration of research elements was used in the example study in same way that Morse discusses adding design components to address problems that emerge during the research process.

Similarly, Sanscartier (2018) acknowledges MMR is not a linear process , nor “neat” and is inherently a reflexive practice. The messiness of research requires awareness and adaptability. Sanscartier presents the “craft attitude” as a practice to facilitate this. Three practices guide researchers in using the craft attitude to navigate messiness. The first practice concerns knowledge created from criteria that specifies when, why, and how to collect data and integrate, and analyze data. Sanscartier refers to this as “context-independent knowledge (episteme).” The second practice concerns the application of technical knowledge to execute research; it is the “know-how.” Sanscartier refers to this as “context-dependent craft/art

(techne). The third practice is about the ethics that guide research practice (phronesis).

Phronesis involves “reflexivity inquiry regarding how we should act in certain contexts, and whether these actions are good in relation to (inter)personal and social contexts.” Dealing with mess requires prudence and “active, conscious reflection on situated behavior” and learning through experience (p. 6). Reflexive integration of research elements builds from Sanscartier’s “craft attitude” in that it is another tool to “do something” about the awareness that arises during research. Reflexive integration distinguishes itself in its operationalization. Reflexive integration focuses on the integration of research elements.

Reflexive integration also extends Knappertsbusch’s (2020) “fractal heuristics” conceptual metaphor for MMR and notion of “MMR...as the domain of integrative self-reflection of existing research approaches” (p. 469). “Integrative self-reflection” aligns closely with reflexivity, particularly Pillow’s (2003) strategy of self-reflexivity. Knappertsbusch’s fractal heuristics involves “a deliberate search for complementarity” and “an awareness” among research approaches (p. 469). This conceptual framing draws fractal heuristics in line with reflexivity, if not squarely placing it on the same conceptual plane. Reflexive integration goes beyond fractal heuristics in that it translates deliberation and awareness into an explicit tool to harness qualitative and quantitative elements to shape the integration process in a MMR project. Reflexive integration is about revealing your motivations, etc. as a researcher draws inspiration from to integrate elements or “research approaches” to “[provide] an integrated understanding of the whole...” (Fetters & Molina-Azorin, 2019, p. 17).

The Example Study and RIRE Method

Overview

The reflexive integration of research elements (RIRE) was used in a study with an exploratory sequential design that involved grounded theory and ethnographic techniques. The study examined the crime commission process of street-level drug crimes in a mid-sized city. The study involved systematic social observation (SSO) of archived Closed-Circuit Television (CCTV) footage of 100 adjudicated crime events. The research questions were: what types of behavior routines lead to crimes occurring at high-crime places? And second, what does the process of crime occurring look like at these places and are there any distinctive features? The study generated a classification of behaviors routinely observed in illicit drug transactions on the street. The goal was to enter the field to understand why some places have more crime than others using SSO. Another goal was to extend this understanding to discern whether observed patterns between behavior and environment were statistically significant.

Qualitative and quantitative data was generated using a SSO protocol with closed-ended and open-ended answer options. The SSO protocol was created using pre-existing protocols from similar studies, criminological theories about how crime unfolds as a process, and from insights gathered from a pre-study observation of city blocks and intersections. The SSO protocol was piloted twice with a sample CCTV video not included in the study sample. Protocol revisions involved including fields to track administrative information related to the CCTV footage. The final protocol consisted of 23 pages, nine different sections, and a total of 307 fields.

“SSO can be easily supplemented with open-ended items and general descriptions of events that are entered as qualitative data – narrative accounts” (Mastrofski et al., 2010, p. 232). Including open-ended fields within the SSO protocol served as the basis for creating

narrative accounts and to incorporate the ethnographic feature of “thick description.”

Additional ethnographic techniques used in the study included prolonged engagement and constant comparison to examine street-level drug transactions unfolding. Encoding proceeded over the course of six-and-half months, which accounted for a total of 2,340 hours of observation, averaging 58.5 hours of observations per a five-day workweek. The qualitative data was analyzed across two cycles of encoding involving provisional encoding and process encoding. Categories were created using the network builder in Atlas.ti, starting with grouping similar codes, linking them to subcodes, and then aggregating the subcodes into categories. Axial coding was completed using a coding paradigm (Strauss & Corbin, 1990). Analytic memos were written to expand upon the meaning and significance of observed behaviors, actions, routines, and relationships based on observed behavior routines leading to drug transactions.

Philosophical Approach

While pragmatism was the basis for activating reflexivity, dialectical pluralism is the more appropriate paradigm in which to contextualize the example study. Johnson (2017) articulates dialectical pluralism (DP) as metaparadigm that “[enables] people to continually interact with different ontologies, epistemologies, ethical principles/systems, disciplines, methodologies, and methods in order to produce useful wholes” (p. 158). And as Greene and Hall (2010) suggest, “even pragmatism needs to interact with other paradigms” (p. 170). Furthermore, DP counts critical reflexivity as a principle. I emphasize the DP approach instead of pragmatism alone because a major goal was to work within theoretical frameworks guiding the study. These frameworks noted linear modeling would not suffice in understanding crime as a process. This presented a problem as positivist empiricism largely informed the evidence-base

prior to the study. Using ethnographic techniques was a necessary and informed departure. As a result, the study, while a QUAL-quan design, included a constructivist philosophy (Johnson et al., 2007; Johnson et al., 2010).

Method of Integration

I use Fetters and Molina-Azorin's (2017) mixed method research integration trilogy to explain how integration occurred in the example study. There are 15 integration dimensions in the integration trilogy and I used four to integrate the qualitative and quantitative approaches in the example study. These dimensions are illustrated in Table 1 and included sampling and data collection, data analysis, and interpretation. While sampling is a separate dimension of integration, it is embedded under the data collection dimension. I developed the SSO protocol and encoding book, the data collection tools, prior to drawing a sample of crime events.

[Insert Table 1 here]

I identified interesting qualitative and quantitative inferences, namely that micro routines undergird drug transactions (see Figure 1). These micro routines are behavioral routines that occur before the commission of a drug transaction. I computed Fisher's exact tests to assess the magnitude of the overlap between the most prevalent micro routines identified in drug selling activity.

[Insert Figure 1 here]

RIRE Method

The reflexive integration of research elements (RIRE) like reflexivity itself is an ongoing process. It is a tool to operationalize critical thinking or make implicit thoughts explicit. Three steps can aid in the use of RIRE. First, a researcher can activate reflexivity through a variety of maintenance strategies (e.g., member checking, audit trails, journaling, peer debriefing, etc.). Second, a research then can focus on insights established in step one. These insights may be questions, dilemmas, problems, or reflections. Collectively, these are reflexive moments. Third, do something about the reflexive moment(s). RIRE is one method for MMR projects. Below I focus on the data collection and data analysis phases of the example project to show how RIRE occurred in the example project. These phases are also the only two dimensions of integration where RIRE occurred. Three joint circular displays illustrate the occurrence of reflexive moments and RIRE during data collection and analysis. The joint displays are constructed in a circular display to reflect what Johnson et al. (2010) noted can be the circular influence of methods on paradigmatic thinking and knowledge generation.

RIRE During Data Collection

While designing the SSO protocol and discussing it during peer debriefing, there were two competing insights (RIRE step 1). First, if the SSO protocol was mostly comprised of close-ended questions with limited answer options, I would run the risk of encoding videos reductively. I would translate complex phenomena into reductive categories and limit descriptive information. Second, I also needed to remain grounded and observe organically without any structure, as close-ended questions would not capture the complexity of behaviors observed; context would be missing. The reflexive moment was the concern about building an

insufficient dataset (RIRE step 2). This inspired me to do something and engage in problem-solving. I drew inspiration from the quantitative technique of power analysis but adapted to the epistemological context of qualitative methods (RIRE step 3). The “parallels” in qualitative methods already existed: saturation and thick description. This ensured the completion of text fields would involve rich descriptions about what I was observing.

The issue of cognitive drift during encoding also came up during peer debriefing (RIRE step 1). The reflexive moment was the concern about meeting multiple benchmarks: the end of data collection, eventually establishing reliability, and building on prior research. To this latter point, I wanted to align the study with prior quantitative research, so the predominantly quantitative discipline would receive the eventual product well (RIRE step 2). These issues informed the decision to draw inspiration from the quantitative technique of interrater reliability as a quantitative element to address the issue of encoder drift over time (RIRE step 3). I was thinking ahead to plan for calculating reliability. However, this quantitative technique is typically used between multiple encoders. In the example study, there was a single encoder. This created a new issue (RIRE step 2). I re-engaged in problem solving, critically thinking about how to adapt. Still drawing inspiration from interrater reliability, I computed *intracoder* reliability (RIRE step 3) for the fixed item responses (Lipsey & Wilson, 2001). I also created an encoding book to guide the careful selection of answer options. The encoding book also included prompts to stimulate detailed written responses.

Figure 2 below illustrates the RIRE method during data collection. The joint circular display is a depiction of a research circle or cycle, moving in a clockwise direction, from deductive inquiry to inductive inquiry, and then coming full circle. The interior of the joint

circular display shows the different qualitative and quantitative elements (i.e., thick description, interrater reliability, etc.). The perimeter consists of black arrows pointing clockwise. These black arrows represent two temporal aspects. First, the moment in which reflexive moments occurred (RIRE step 2) and where along the research circle the moment occurred. The arrows inside represent RIRE step 3 or drawing inspiration from a particular research approach. The arrows show direction, which indicates from where in the research circle, the inspiration to pull and adapt quantitative or quantitative elements, comes, and the destination of its application. The matching shaded triangular areas also indicates RIRE step 3.

[Insert Figure 2 here]

RIRE During Data Analysis

I converted findings from the qualitative data analysis into quantitative data. The qualitative findings consisted of a typology of drug selling activity. I knew the study would contribute to a largely quantitative knowledge base (RIRE step 2). The reflexive moment here involved considering whether any attributes that comprised the typology overlapped or were associated with each other (RIRE step 2). I decided to assess for statistical significance, too. I drew from the purpose of inferential statistics to find statistical support for the qualitative data conversion. I decided to assess whether the typology was statistically representative of a broader universe of drug selling activity (RIRE step 3). I computed descriptive statistics to evaluate associations between select micro routines. Then I computed Fischer's exact tests and Cramer's V to examine statistical significance.

Figure 3 below illustrates the RIRE method during data analysis. The joint circular display is a depiction of the same research circle or cycle noted above, also moving in a clockwise direction, from deductive inquiry to inductive inquiry. The interior shows the different qualitative and quantitative elements (i.e., descriptive statistics, axial coding, etc.). These elements correspond to different techniques associated with quantitative and qualitative research traditions. The elements are also ordered temporally to indicate when certain elements are engaged during the research process. For example, power analysis would occur before any statistical analyses in a quantitative project. Likewise, thick description would occur during data collection and prior to analytical coding in a qualitative project. The perimeter consists of black arrows pointing clockwise. These black arrows represent two temporal aspects. First, the moment in which reflexive moments occurred (RIRE step 2) and where along the research circle the moment occurred. The arrows inside represent RIRE step 3 or drawing inspiration from a particular research approach. The arrows show direction, which indicates from where in the research circle, the inspiration to pull and adapt quantitative or qualitative elements, comes, and the destination of its application. The matching shaded triangular areas also indicates RIRE step 3. The unshaded triangular areas indicate techniques also relevant to the overall example study, but not for RIRE (also see Figure 4 below).

[Insert Figure 3 here]

The joint circular displays of how RIRE was used in the example study attempts to show how specific techniques from quantitative research can be reflexively integrated in a piecemeal

fashion into a qualitatively-driven study. Figure 4 illustrates the RIRE process from both phases. Figure 4 is a combination of Figures 2 and 3. The larger joint circular display illustrates the reflexive moments and the corresponding integration of quantitative elements throughout the entire example project. This display only includes the elements that were inspired during step three of the RIRE method and their corresponding influence in the qualitative approach. Directional arrows indicate the direction an element was drawn from to inspire action during qualitative data collection and analysis. The matched shading of the rectangular boxes also indicates this. The shaded grey areas inside the circle indicate the two dimensions of integration and phase of the research project in which RIRE occurred (data collection and data analysis).

[Insert Figure 4 here]

Overall, the creativity of integration can be augmented with reflexivity, which not only helps reveal “unconscious motivations and implicit biases in the researcher’s approach” (Finlay, 2002, p. 225). This also encourages ongoing researcher awareness “during the research process which aids in making visible the practice and construction of knowledge within research in order produce more accurate analyses of our research” (Pillow, 2003, p. 178). Accordingly, the adoption of RIRE and reflexivity in MMR generally, presents an opportunity to enable a deeper understanding of phenomena and explicitly addressing the limitations of subjective and objective pursuits in the construction of knowledge (Gough, 2003; Jootun et al., 2009; Primeau, 2003).

Discussion

The reflexive integration of research elements (RIRE), and primarily the integration of quantitative elements, was performed on the basis of responding to reflexive moments. At these moments, critical thinking was engaged to acknowledge and do something about reflexive moments. The need to justify, which can be the initial step in integrating elements (Greene, 2007), informed these reflexive moments. The justification to integrate quantitative elements into the qualitative phase of an exploratory sequential design required reflexivity. Reflexivity was required to recognize the concerns for the research and its viable advancement in a positivist evidence-base. In this regard, RIRE was a useful methodological tool for the example study. RIRE relies on the many practices for maintaining reflexivity as outlined by Berger (2015), Breuer and Roth (2003), and many others. RIRE continues the tradition of scholars who have identified reflexivity as a tool or strategy, but also called for the clarification of its process (Dean, 2017; Guillemin & Gillam, 2004; Pillow, 2003; Swaminathan & Mulvihill, 2019). RIRE also builds from the work of qualitative, quantitative, and MMR scholars alike: Subramani (2019), Ryan and Golden (2006), Hall and Howard (2008), Morse (2015), Sanscartier (2018), and Knappertsbusch (2020). Across these studies, reflexive moments, communicating with and translating research approaches, deliberation, and awareness were instrumental in a few ways. First, reinforcing the utility of reflexivity for MMR. Second, using reflexivity as a methodological tool. Third, reflexivity and RIRE can facilitate an “epistemic window” into research approaches where “qualitative features nonetheless appear within quantitative approaches and vice versa...” (Knappertsbusch, 2020, p. 458).

RIRE can also begin with selecting a research methodology from which to work primarily and then using a variety of practices to active reflexivity (e.g., journaling, peer debriefing, etc.). Activating and maintaining reflexivity in this way can stir reflexive moments. These reflexive moments can the benefit from RIRE to draw inspiration from the other methodology to enhance or complement the work undertaken within the primary research methodology selected (see Johnson & Onwuegbuzie, 2004; Palinkas et al., 2011). In effect, researchers will locate themselves within the research process epistemologically, focusing on following the process of the research tradition, and engage in reflexivity and draw inspiration from elements to adapt procedures accordingly.

The reflexive integration of research elements (RIRE) can also be an important methodological tool as researchers attempt to account for the influence of researcher bias, external influence, or prevailing disciplinary conventions on the production of information and knowledge. Lumsden and Winter (2014) note that in the era of evidence-based research and thus practice, research must be conducted in a reflexive manner, particularly to recognize the role of power and the researcher need to engage in some form of information and knowledge creation (Pillow, 2003; Harding, 1991). Under this current paradigm of knowledge and information generation, researchers co-produce knowledge in collaboration with users and practitioners, some of whom are in positions of power who grant access to data, individuals, and fund research, and thus have a “vested interest in the results and application of the research” (Lumsden & Winter, 2014, p. 3; Popa & Guillermin, 2017). In light of this type of research environment, reflexivity is crucial to provide a layer of “critical distance and engagement,” which Lumsden and Winter (2014) note, “ironically promotes subjectivity as a

way of interrogating the un-interrogated hidden biases, conflicts of interest and assumptions of so-called objective scientific research..." that dominates some social science fields (p. 3).

Contribution to the Field of Mixed Methods Research Methodology

Reflexive integration of research elements (RIRE) can be a useful methodological tool and research practice in mixed method research for a variety of reasons. First, RIRE reinforces the development of creative research approaches that feed into the discovery process of scientific research. Second, RIRE can help illuminate the step-by-step decision-making process of data integration in MMR, an issue that is a well-documented challenge (Alexander et al., 2020; Bryman, 2006; Bustamante, 2019; Gutterman et al., 2019; Johnson et al., 2019). Similarly, this article highlights an example study with "procedural detail" (see Gutterman et al., 2019) that attempted to illustrate RIRE as inherent to the MMR process.

RIRE may also be a bridge that connects reflexivity operating unconsciously, the unconscious predilection for making decisions in research, and activating reflexivity to operate in the foreground as a central tool of MMR (see Biddle & Schaff, 2015; Cain et al., 2019; Hesse-Biber, 2010). This requires the conscious acknowledgement of reflexivity operating in the first place. RIRE provides a new approach for being intentional and critically aware while conducting mixed method research, especially as we consider Sanscartier's (2018) craft attitude and navigating the messiness of mixed method research (also see Cheek et al., 2015; Morse, 2008; Morse, 2015). RIRE may also help facilitate replication of quantitative aspects of mixed method studies, explanatory sequential designs, quantitatively driven mixed method studies, or illuminate "midcourse diversions" from the planned process where the need for additional design components emerges in MMR (see Cheek et al., 2015, p. 756-757; Morse, 2015).

Potential Application

Seeking to complement, expand, or converge in MRR, is the very moment when, where, and what to do, and how to do something methodologically become paramount decisions. These are reflexive moments that should be engaged and where RIRE may be most useful. RIRE can be useful in helping researchers (1) become aware of subjective and external influences that need to be addressed during the research process, (2) deepen their contemplation of this awareness, and (3) transform their awareness into a methodological tool by honing critical thinking skills on how to integrate said awareness and its influence into a productive, explicit tool of research. If practiced regularly, the application of RIRE can become a staple of engaging in scientific inquiry but illustrating the process as well.

Limitations

The RIRE method discussed here and highlighted in the joint displays are not exhaustive, but a starting point. The RIRE method also does not address how researchers need to position themselves. Instead, I focus on the value of what RIRE can provide in advancing a research project, which may end up re-creating polarized notions of MMR instead of wholesomeness (Fetters & Molina-Azorin, 2019; Knappertsbusch, 2020). Similarly, RIRE may produce what Pillow (2003) cautioned as “linear tellings” that center the researcher as knowing better and reflexivity as just a tool to get better data. Similarly, RIRE does not delve deeply into what Pierre Bourdieu referred to as “constant epistemological vigilance” as a researcher engages with technical instruments. The latter should not be a “scientific alibi for blind submission” to the former (Bourdieu, et al., 1991, as cited in Lakew, 2017, p. 234). RIRE also does not address

important humanistic and ethical sensitivities during research and which reflexivity can help facilitate (Guillemin & Gillam, 2004).

Furthermore, I identified dialectical pluralism (DP) as the most relevant philosophical framework for the example study. Achieving an equal status mixed study is an important feature under DP. While the example study strove for this, given the nature of the reflexive moments, the study was QUAL-quant. RIRE may also require extensive knowledge of different qualitative and quantitative methods. This may be burdensome, reveal knowledge gaps in methods, or require cross-training and/or collaborative research teams (Johnson, 2017; Knappertsbusch, 2020). Finally, RIRE is a tool for MMR, however a researcher's practice within MMR may unfold. RIRE is not prescriptive but requires a willingness to reveal reasons and motivations for integrative practices. This paper attempted to outline some basic steps in using RIRE as a tool to reach some objective of a research project. Whatever those objectives may be, RIRE can play a role as long as reflexivity is involved and informs the thoughtful integration of qualitative and/or quantitative elements.

Recommendations for Future Mixed Methods Inquiry

Future work in this area should attempt, discuss, and illustrate reflexive integration of qualitative elements into quantitative studies (i.e., RIRE-quant). This will help with highlighting the full utility of RIRE, as reflexive integration should not be limited to qualitative research (see Cain et al., 2019). The key objective to implement RIRE is reflexivity or reflexive moments during the research process, coupled with a consideration of research elements. The goal to work toward is the production of deeper, nuanced knowledge about phenomena. Future

studies should also explore illustrating RIRE as it concerns reflexive decision-making under different paradigms, and among group research teams, particularly research teams with different skillsets and expertise. Additional inquiries should also reveal and discuss reflexive moments and subsequent decision-making as it concerns external influences in the research process, namely epistemological conventions within a field and publishing standards across a variety of disciplines.

Conclusion

RIRE was discussed and illustrated as a proposed methodological tool to incorporate reflexivity in MMR. RIRE challenges the notion of scientific discovery germinating from a logic of discovery or proof, but instead from intentional practices to achieve a variety of research goals. Quantitative and qualitative research traditions are more complementary and connected than diametrically opposed and disconnected. The limitations of one serve as the building block of the other (Fetters & Molina-Azorin, 2019; Foss & Ellefsen, 2002; Johnson & Onwuegbuzie, 2004; Onwuegbuzie, 2003). Integrating these two traditions naturally engender opportunities for reflexivity through the various stages of the research process from the beginning to the end. RIRE illuminates and leverages subjective decision-making inherent in all research as a methodological tool. RIRE facilitates the use of reflexivity as a mechanism to integrate research elements in the spirit of dialectical pluralism. RIRE can translate the benefit of dynamic reflexivity into intentional practice:

It avoids versions of methods and techniques being held on to and applied at all costs, even if it is clear that a new or different pathway might exist to answer the questions

and address data that have arisen during the course of the unfolding of the research. *It allows the research question(s) and the researchers to drive the research and enables the researchers to respond to emerging findings and new paths to follow arising from the research* [emphasis added] (Cheek et al., 2015, p. 760).

Table 1*Illustration of Integration in Example Study*

Integration Dimension	Procedure	Reflexive Moment (RM) for RIRE?	Product	Research Dimension
Data collection				
SSO protocol	Curation of pre-existing protocols and development of new questions and answer options	RM: Risk of reductive observations RIRE: draw from qual technique of “thick description”	23-page SSO protocol consisting of text fields for every close-ended question, text-fields, and an overall text field question any additional information not captured in other fields	QUAL + QUANT
Encoding book	SSO protocol piloted; answer options explained in detail to guide interpretation	No	Encoding book for completion of SSO protocol; provides guidance for answering questions consistently	QUAL
Sampling	Establishing and using three criteria to build a purposive sample of footage.	No	A sample of 100 archived footage that the met criteria for selection (criterion sampling)	QUAL
Completion of SSO protocol	Detailed narrative text written and numeric data stored in electronic database	RM: Enough cases with thick description RIRE: draw from quant practice of using power analysis	Numeric and text data stored in a .csv file for 100 crime events	QUAL + QUANT

Integration Dimension	Procedure	Reflexive Moment (RM) for RIRE?	Product	Research Dimension
Data analysis (qualitative)				
Encoding	<i>a priori</i> codes and in vivo encoding	No	100 codes organized into distinct families (e.g., process codes, crime type code, role in event code, etc.)	QUAL
Axial encoding	Relating codes using encoding paradigm by Strauss & Corbin	No	Multiple figures of a network display of encodings related to each other	QUAL
Aggregation	Memoing to relate network of codes to research questions	RM: Building on quant studies; are qual findings enough? Need to convert data. RIRE: draw from inferential tests to inform qual data conversion	Inductive insights written; new figures of a network display of categories and attributes; typology of drug transactions	QUAL
Data analysis (quantitative)				
Calculating reliability	Re-encode a subset of observations after the completion of all encoding. Only a single encoder.	RM: Need to establishing reliability; typically involves two people, not one. RIRE: Adapt <i>intercoder</i> reliability	Intra-coder reliability using Kappa	QUANT
Descriptive statistics	Numeric data from the .csv file imported into Stata for analysis	No	A statistical output of means and standard deviations, proportions and percentages, frequencies	QUANT
Measures of association	Quantified categories and used Fischer's exact test and	No	Fischer's exact test and Cramer's <i>V</i> values; statistical significance	QUANT

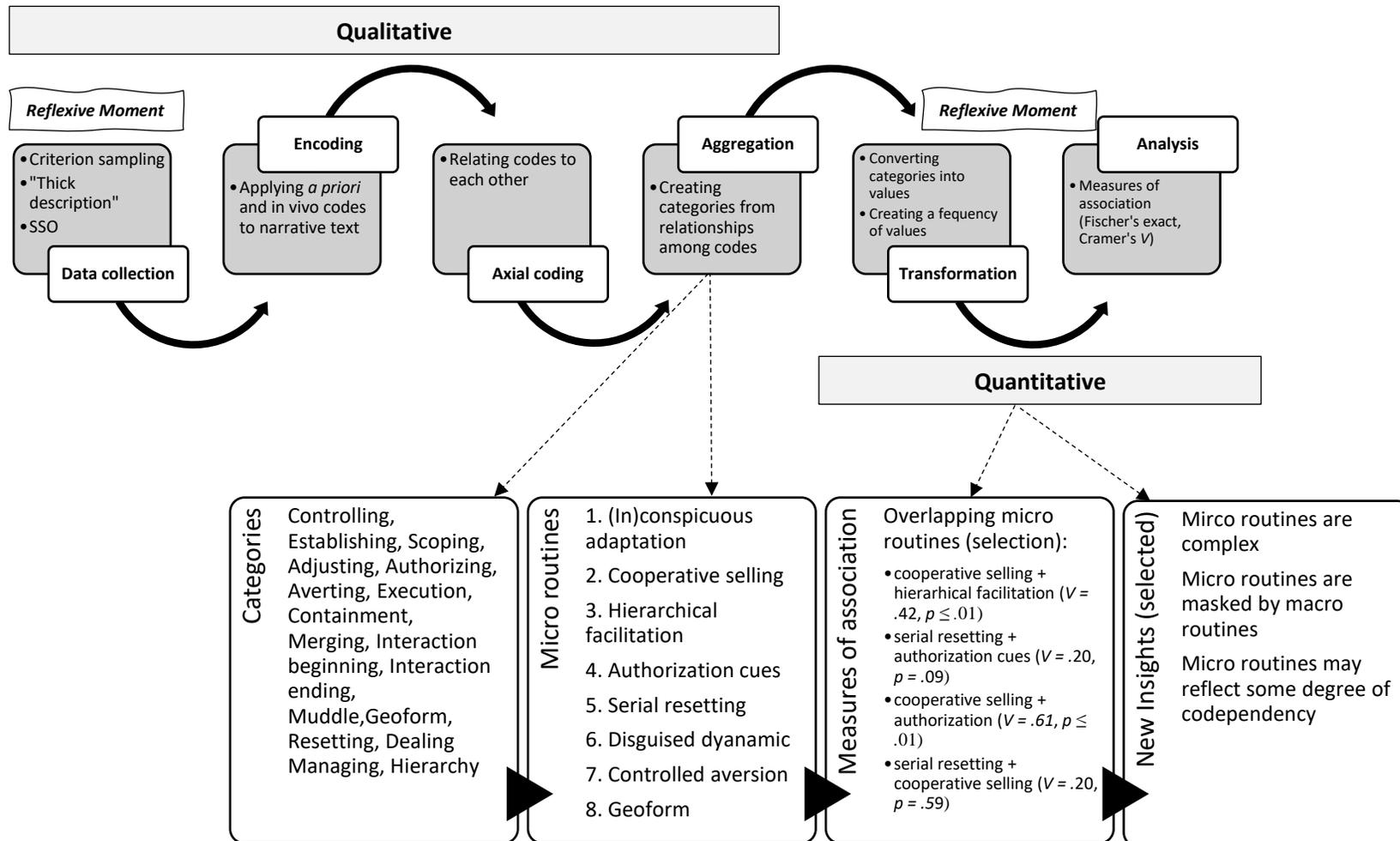
Integration Dimension	Procedure	Reflexive Moment (RM) for RIRE?	Product	Research Dimension
	Cramer's <i>V</i> to measure association between variables			
Interpretation				
Interpretation of results	Narrative text was excerpted to present qualitative results. Quantitative findings from the measures of association informed and adjusted the interpretation of qualitative results	No	A juxtaposition of qualitative and quantitative interpretation of results, starting with the qualitative results and then transitioning to the quantitative results	QUAL → QUANT
Summation of findings	Qualitative findings were presented alongside quantitative findings	No	Each finding was presented in multiple paragraphs, which started with qualitative findings and then was followed by the reporting of associated quantitative findings in the same paragraph or section dedicated to a particular finding	QUAL + QUANT

Note. Adapted from Table 4 in Alexander, E., Eppler, M.J., & Comi, A. (2020). Data integration: A real-time, participant-driven, and visually supported method. *Journal of Mixed Method Research*, 1-27.

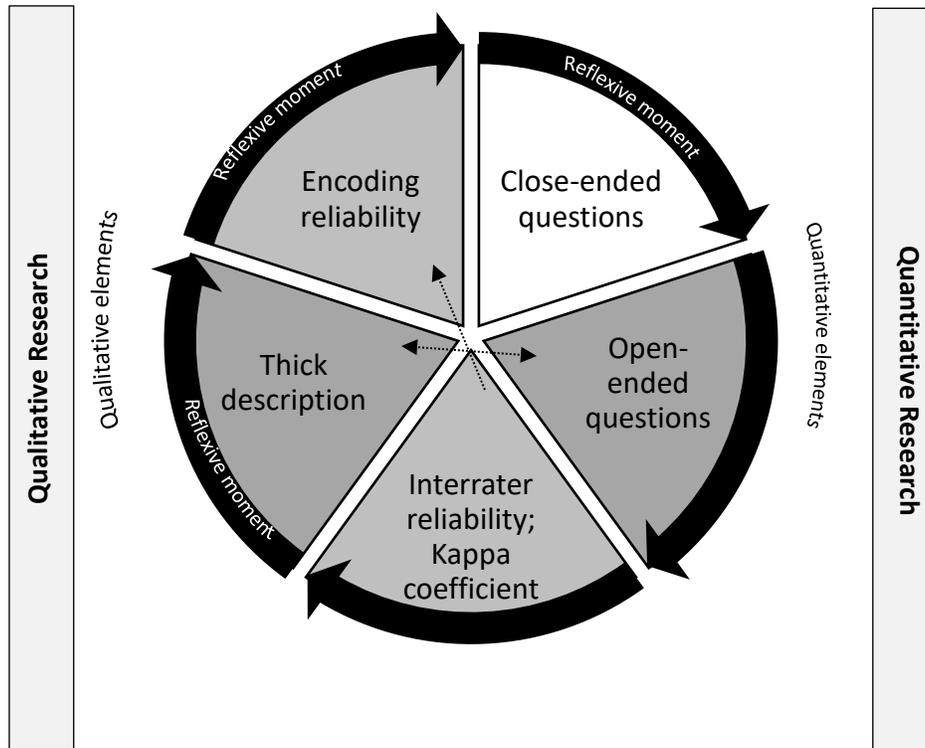
Note. RIRE = Reflexive Integration of Research Elements

Figure 1.

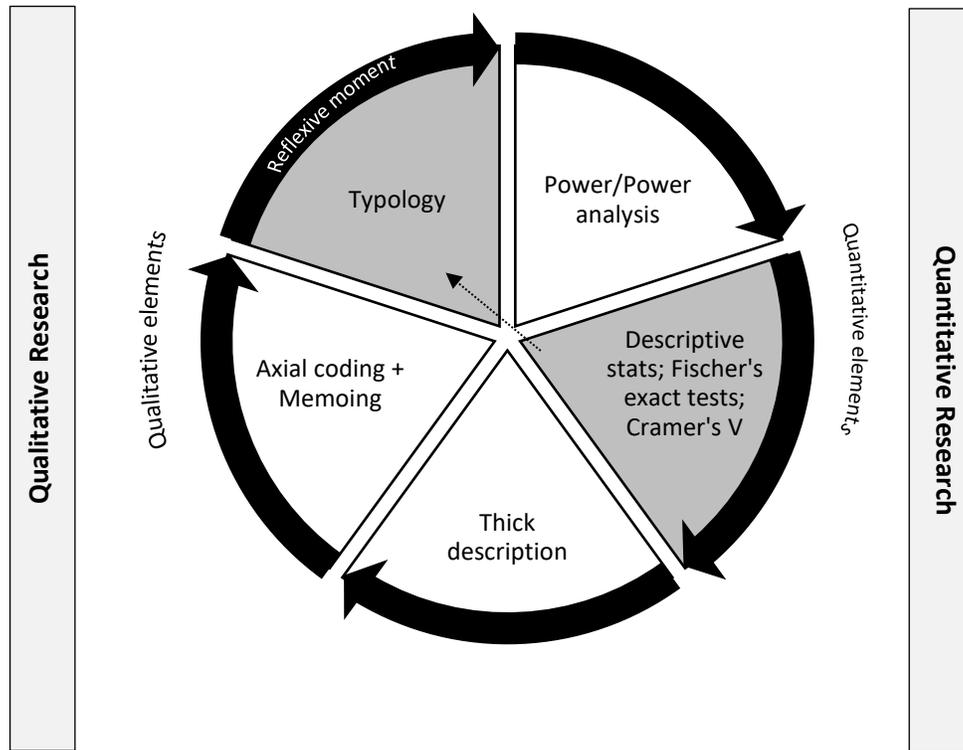
Joint Display of Integration in Example Study



Note. This figure illustrates the sequence of the MM-GT study, where the mixed method design was an exploratory sequential design, involving grounded theory, and then expanded into quantitative testing of typologies developed during the qualitative phase of the study. The specific typologies are in the lower half of the figure and pointed to from the data aggregation stage of qualitative analysis, the phase in which the typologies were developed. The specific activities of the quantitative portion of the study is further illustrated by the arrows from the QUANT box pointing to the right side of the lower half of the figure.

Figure 2.*Reflective Moments and Reflexive Integration During Data Collection*

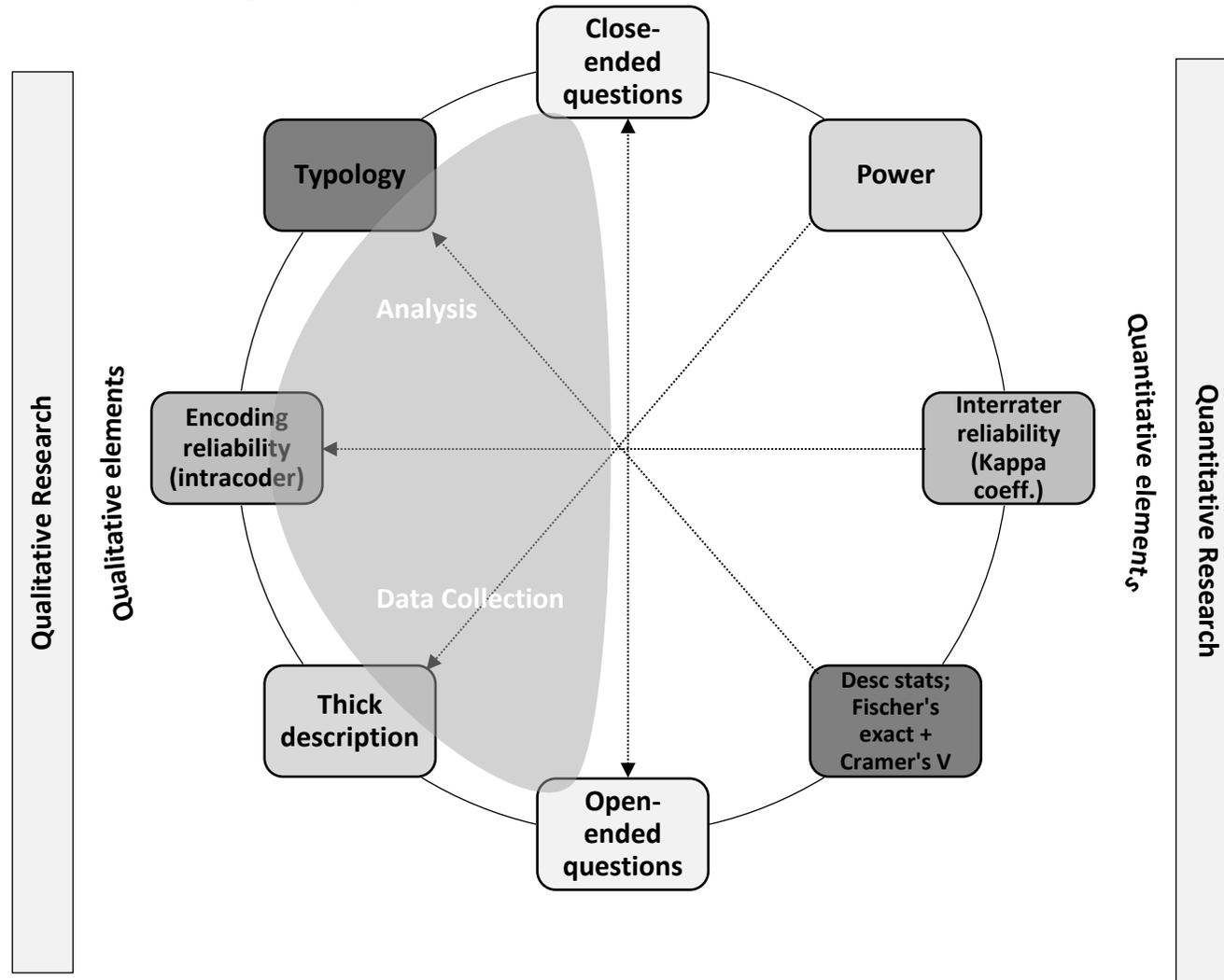
Note. The matching shaded shapes with the directional arrows indicate where and what elements were integrated.

Figure 3.*Reflective Moments and Reflexive Integration During Data Analysis*

Note. The matching shaded shapes with the directional arrows indicate where and what quantitative elements were integrated.

Figure 4.

Reflective Moments and Reflexive Integration of Research Elements



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