



RETHINKING MIXED METHODS: NEW DIRECTIONS IN THE INTEGRATION OF QUANTITATIVE AND QUALITATIVE APPROACHES

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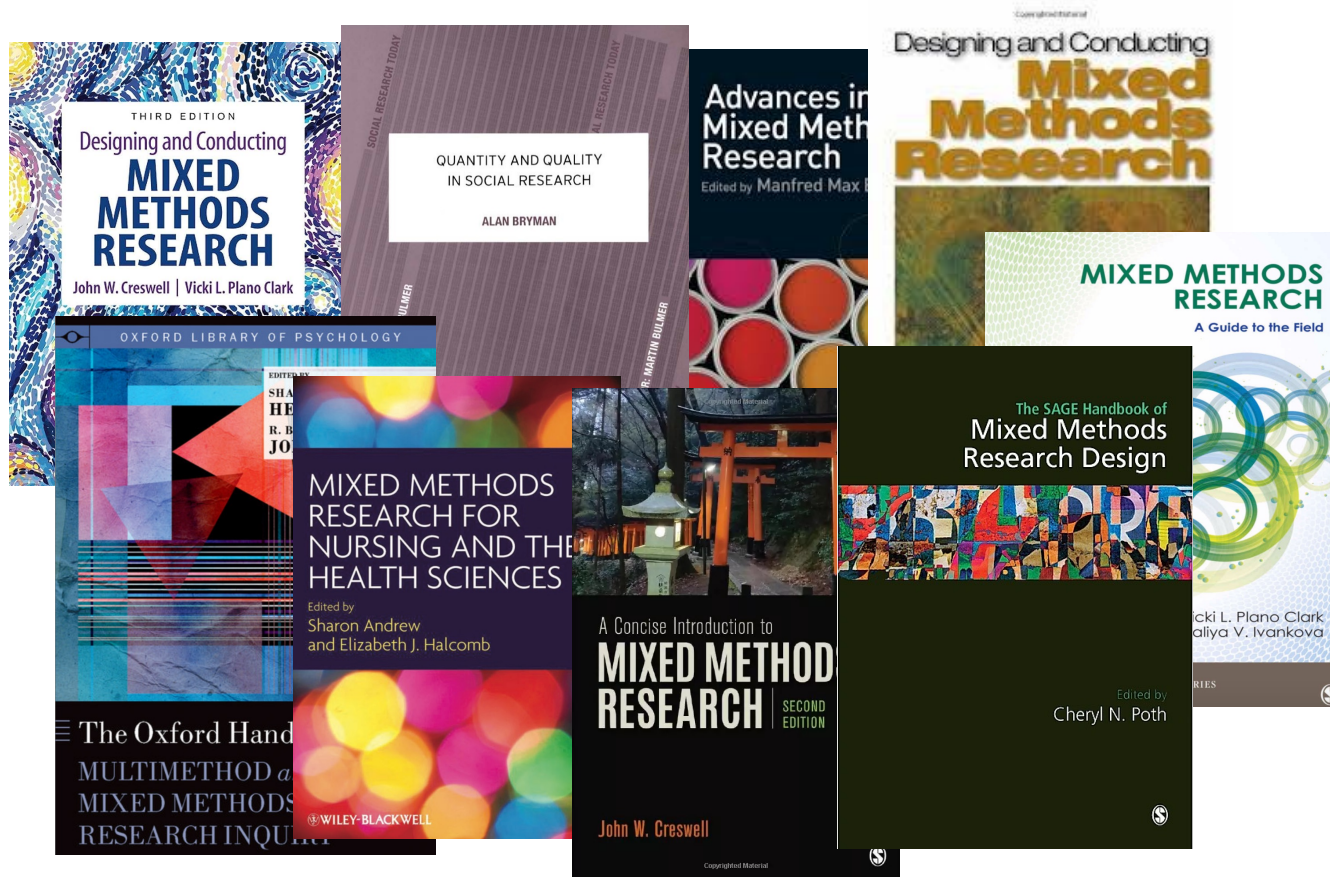
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 - d. Advance 4: Opening the black box of meta-inferences
4. One final word of advice: Publishing your MMR study

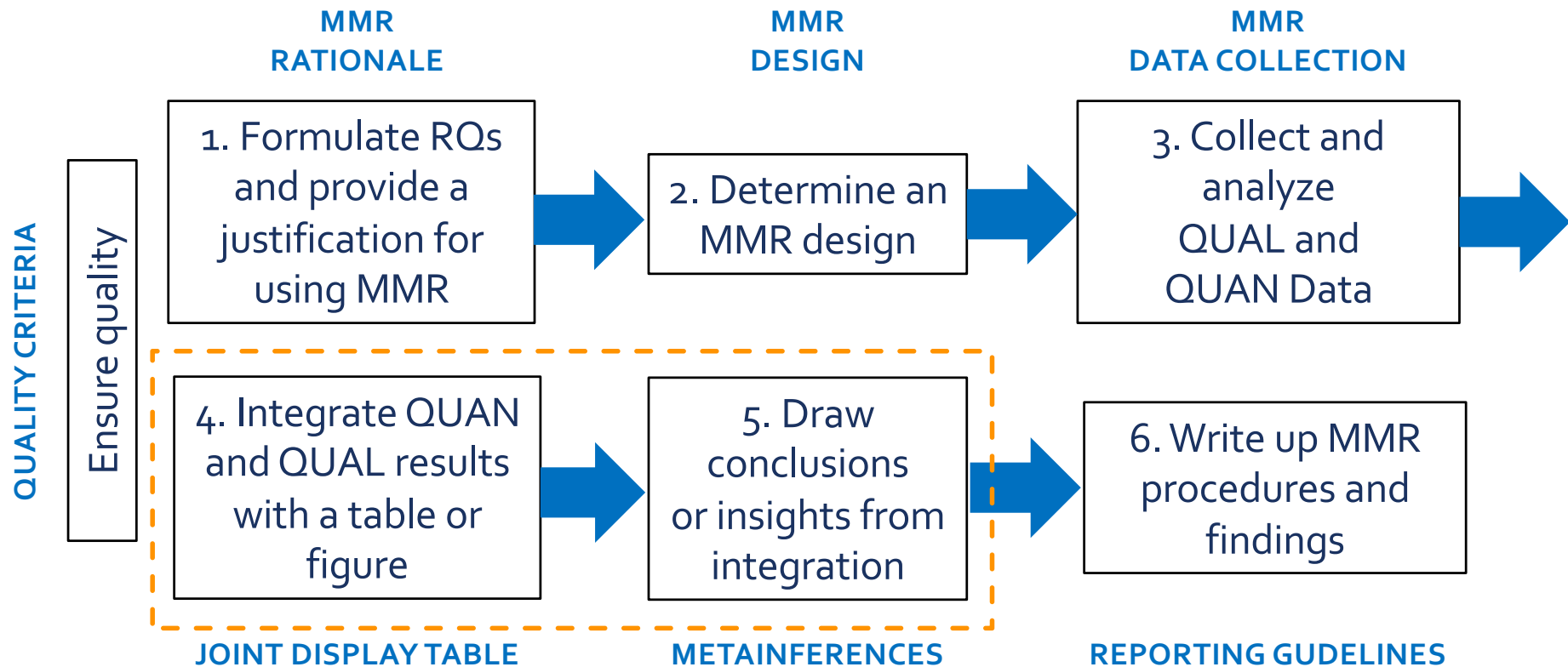


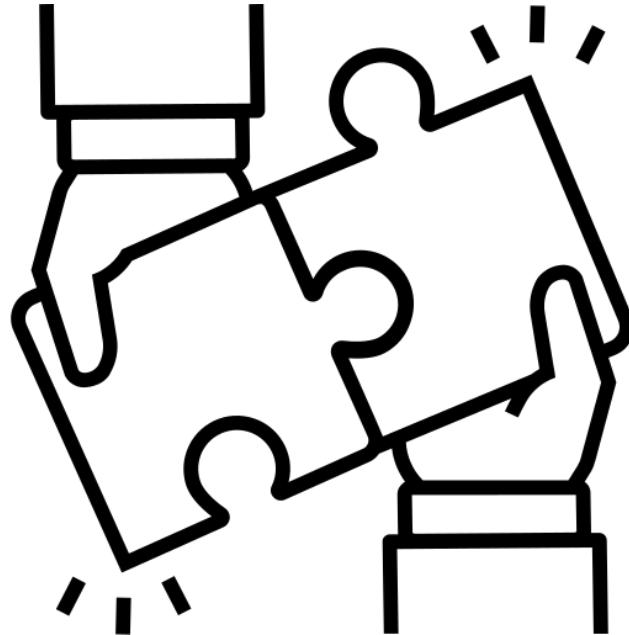
1. WHAT IS MIXED METHODS RESEARCH?

What is Mixed Methods Research?

- **Mixed methods research (MMR)** is a type of research in which a researcher or a team of researchers:
 - ✓ **Collect and analyze quantitative (QUAN) and qualitative (QUAL) data** to answer QUAN and QUAL research questions
 - ✓ It employs a type of **MMR design** that determines the **internal logic** of each component, as well as their interrelationship: purpose, priority, and point of integration of the quantitative and qualitative components
 - ✓ **Integrates**, in one or several phases of the study, these two types of data or the inferences resulting from the analysis and interpretation of each, to obtain **added value** compared to single-method designs

Phases of an MMR Study





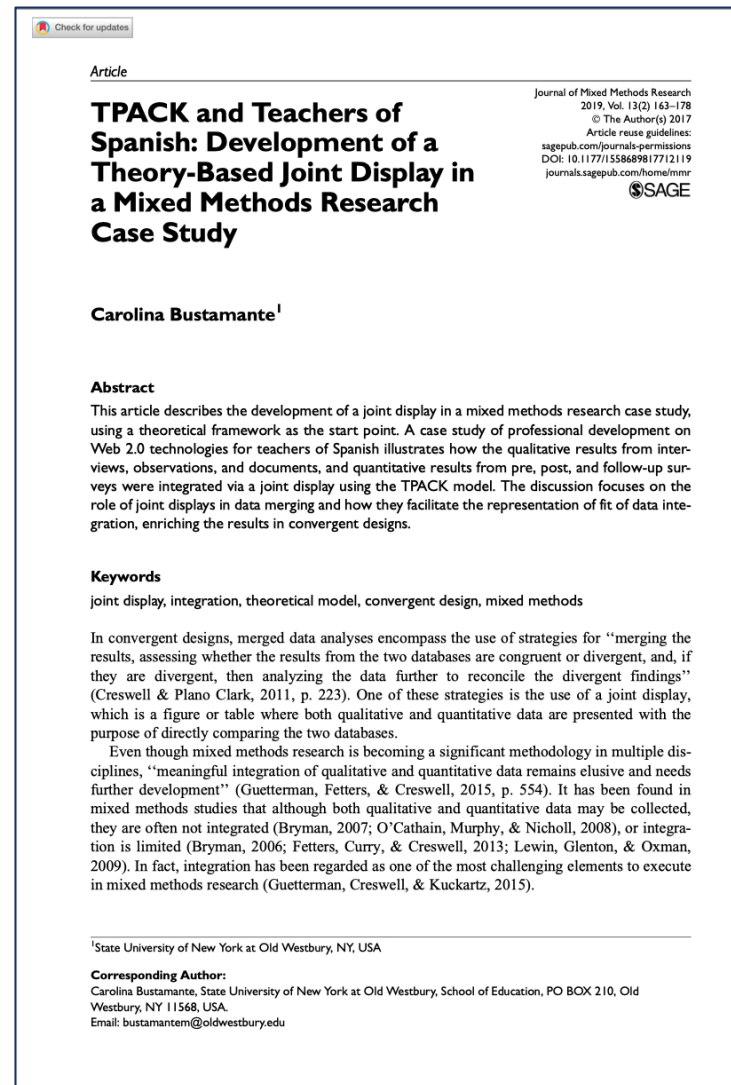
2. WHAT IS INTEGRATION AND WHY IS IT SO IMPORTANT TO THE MMR PROCESS?

Centrality of Integration

- Integration is a **fundamental methodological principle** that distinguishes MMR from QUAN and QUAL research
- To be qualified as MMR, a study **must incorporate integration** in at least some of its phases or dimensions
- If a study **fails to do so**, it should be considered multiple separate studies and be called multimethod
- In early texts on MMR, the process of integration was not always explicitly described. **Several key works** have since been published that provide clear guidance on how to achieve integration in MMR:
 - ✓ Fetters et al. (2013). *Achieving integration in mixed methods research.*
 - ✓ Fetters & Freshwater (2015). *The 1 + 1 = 3 integration challenge.*
 - ✓ Guetterman et al. (2015). *Integrating quantitative and qualitative results in health science mixed methods research through joint displays.*
 - ✓ Bazeley (2018). *Integrating analyses in mixed methods research.*

Why is Integration Important?

- Example from Bustamante (2019)
- Convergent mixed methods case study of professional development on Web 2.0 technologies for teachers of Spanish
- Excellent example of integration



Why is Integration Important?

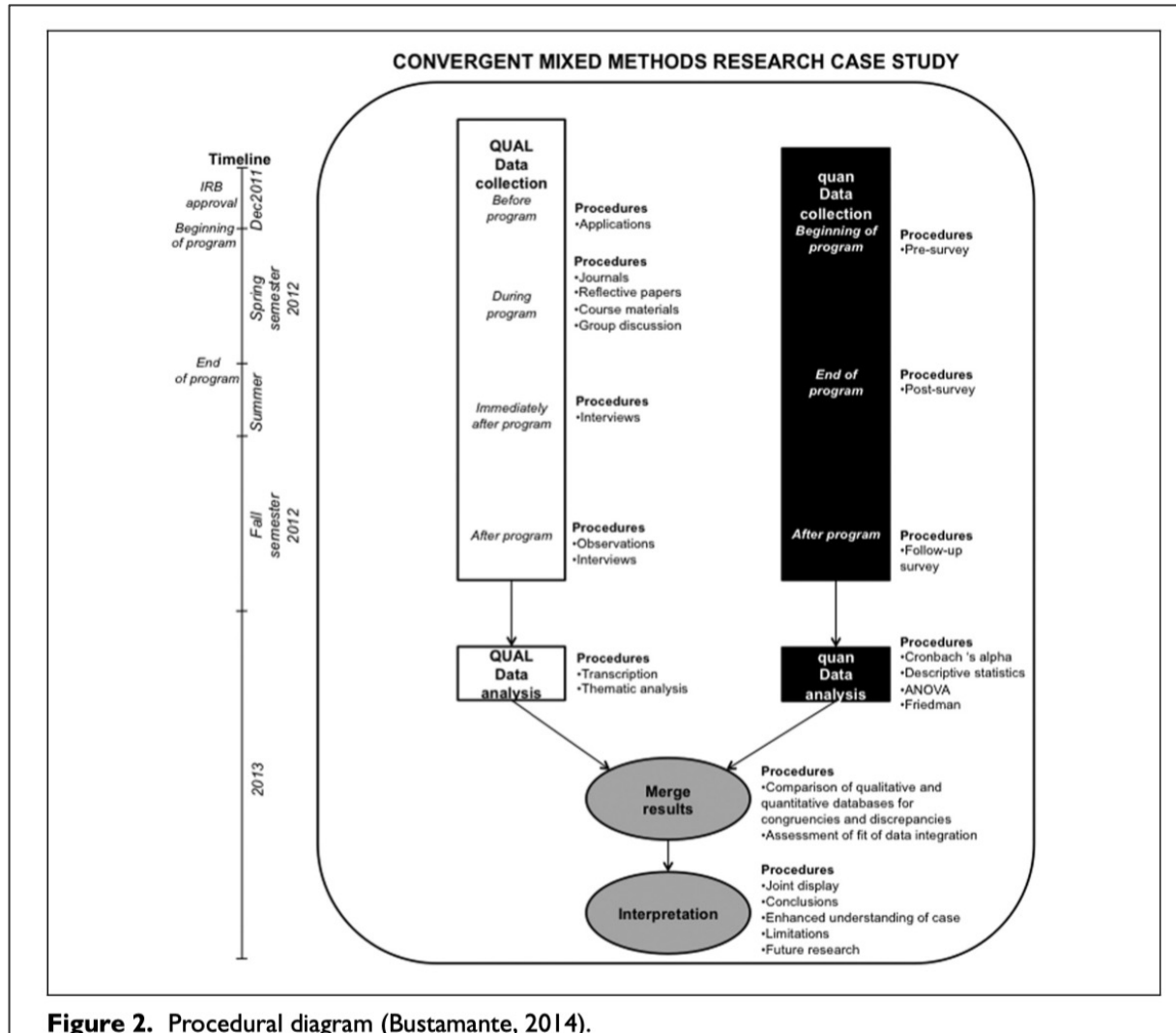


Figure 2. Procedural diagram (Bustamante, 2014).

- Procedural diagram of Bustamante's MMR convergent design

Why is Integration Important?

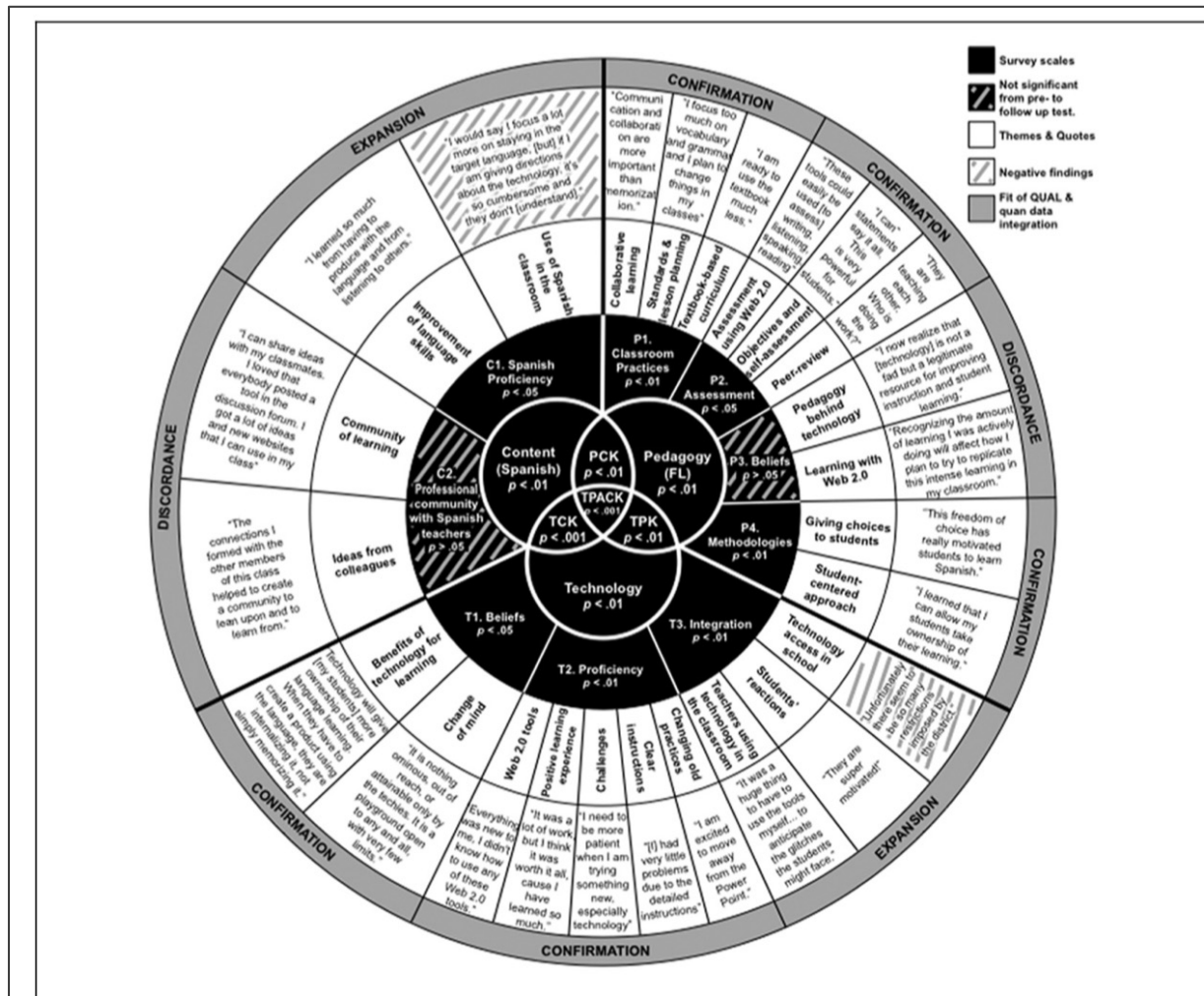


Figure 3. Joint display: TPACK-based integration of qualitative and quantitative data.

- Theoretically based visual joint display

Definition of Integration

- Integration refers to the **intentional** and **coherent** mixing of QUAL and QUAN approaches **throughout** the research process with the goal of producing a **new outcome** related to the research design or interpretation of findings that would not be possible using either approach alone

Definition of Integration

- **Improve descriptions and interpretations** of phenomena under study
- Provide **more detailed answers** to research questions
- Contribute to the **development of more accurate instruments**
- Define **samples that are more consistent** with the object of study

Generate an outcome that could not be obtained with a purely QUAN or QUAL approach

Recent Advances in Integration

1. Advance 1: Conceptualization of integration as intentional, holistic, and synergistic
2. Advance 2: Development of integration strategies
3. Advance 3: Joint displays to facilitate integration in planning/data collection, analysis, and reporting
4. Advance 4: Opening the black box of meta-inferences in MMR



3. ADVANCE 1: NEW WAYS OF CONCEPTUALIZING INTEGRATION

Integration is Intentional

- Integration is an intentional activity that **should be anticipated** during the design of the study and the preparation of the fieldwork and analysis
- Plano Clark (2019) notes that integration in MMR studies should be based on **four methodological decisions** that should be made at the beginning of the study to ensure rigorous and coherent integration:
 1. **WHY:** Determining the purpose of integration
 2. **WHAT:** Deciding what to integrate (raw data, results, inferences, philosophical or theoretical perspectives, etc.)
 3. **WHEN:** Deciding at which stages of the study to integrate
 4. **HOW:** Identifying which tools to use for integration

Integration is Holistic

- Integration can occur in **one or more phases or dimensions**. For example, both components may be integrated during **data collection** or during the **interpretation** phase
- Morse and Niehaus (2009) and Guest (2013) use the term "**point of interface**"
- Fetters and Molina-Azorin (2017) point out that integration should not be limited to the combination of data sources, but that, for example, the integration of QUAN and QUAL perspectives at the levels of **literature review, philosophy,** and **conceptual or theoretical framework** is also possible and relevant

Integration is Holistic

Editorial

The Journal of Mixed Methods Research Starts a New Decade: The Mixed Methods Research Integration Trilogy and Its Dimensions

Michael D. Fetters¹ and José F. Molina-Azorin²

As in the previous two issues of 2017, we continue a year-long celebration of a decade of mixed methods research scholarship in the *Journal of Mixed Methods Research*. Here, we introduce the contributions of this issue, and then for a timely substantive focus of this editorial, we introduce the concept of the “mixed methods research integration trilogy” (below, “MMR integration trilogy”).

In This Issue

This issue of *Journal of Mixed Methods Research* contains three methodological/theoretical discussions, three empirical papers, and two media reviews. Regarding methodological/theoretical discussions, Schoonenboom (2017) introduces the realist survey. The realist survey is designed to expand the reach of the realistic interview to revise and refine generally accepted theories and at the same time enhance the generalizability of its outcomes through the use of quantitative survey data. Collins and Evans (2017) illustrate and discuss methodological implications of circumstances (e.g., uniformity of the population) in which the representative quality of large surveys can be obtained using certain small qualitative studies that are naturally as representative of populations as large random surveys. They refer to these small, convenience samples as “probes.” Van Ness, Murphy, and Ali (2017) suggest that randomized controlled trials fail to yield knowledge applicable to specific individuals. These authors present a methodological rationale for a mixed methods approach to *n*-of-1 clinical studies that attends to the preferences and concerns of individuals while attaining high standards of qualitative and quantitative rigor.

With regard to the group of empirical papers, Jones (2017) offers an example of empirical research that characterizes changing seed systems in West Africa using the theory of practice to guide mixed methods research and analysis, and illustrates the foundations of the theory of practice as a unifying framework for mixed methods research that incorporates spatiality. Specter and Pinto (2017) conducted a mixed methods study showing associations between practitioner

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Table 1. Dimensions of the Mixed Methods Research Integration Trilogy.

Integration dimensions	Mixed methods researchers integrate by . . .
Philosophical dimension	Orienting the research based on philosophical assumptions (e.g., pragmatism, participatory/transformational, dialectical pluralism, critical realism, postmodernism).
Theoretical dimension	Incorporating theory from broad frameworks (e.g., feminist theory, theory of justice) and/or middle-range theories (e.g., health beliefs model, social cognitive theory, ecological theory, etc.).
Researcher dimension	Leveraging personal and professional experiences that lend one to consider and hold valuable qualitative, quantitative, and mixed methods procedures for making sense of the world.
Team dimension	Creating and orchestrating mixed methods teams (e.g., content experts including individuals of different disciplinary backgrounds, qualitative, quantitative, and mixed methods researchers) and optimizing team contributions to produce best quality mixed methods research.
Literature review dimension	Reviewing thoroughly existing literature and illustrating the need to conduct both qualitative research (e.g., need for in-depth description, or to understand the “how” or “why” about a phenomenon) and quantitative research (e.g., trends in a population, associations, causality, etc., relative to a phenomenon of interest) to produce new knowledge about the substantive topic.
Rationale dimension	Citing a rationale for conducting an integrated mixed methods research study (e.g., offsetting strengths and weaknesses, comparing, complementing or expanding, developing or building, and promoting social justice).
Study purpose, aims, and research questions dimension	Composing an overarching mixed methods research purpose and stating qualitative, quantitative, and mixed methods aims or multiple mixed methods aims with quantitative aims and qualitative questions.
Research design dimension	Scaffolding the work in core (e.g., convergent, exploratory sequential, explanatory sequential), advanced (e.g., intervention, case study, or emergent designs), or through the relationship of the sources of qualitative data (e.g., identical sample, nested samples, multilevel samples) and through timing (e.g., staggered collection of the qualitative and quantitative data with an <i>intent</i> relative to the mixed methods procedures (e.g., comparing, matching, diffracting, connecting, building, generating and embedding).

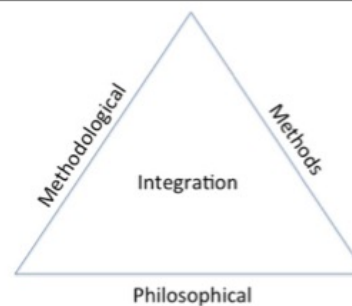


Figure 1. Mixed Methods Research Integration Trilogy.

Integration is Synergistic

Editorial

The 1 + 1 = 3 Integration Challenge

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SAGE

Michael D. Fetters¹ and Dawn Freshwater²

As the season changes from winter and turns to spring, change also is in the air for the *Journal of Mixed Methods Research (JMMR)*. Effective January 2015, Professor Donna Mertens completed her tenure of 5 years as coeditor. We want to take this opportunity to thank Professor Mertens for her leadership and service during this tenure as coeditor. We would also like to acknowledge the incredible service and leadership of those editors who preceded her as well, the founding coeditors, Professor John W. Creswell and Professor Abbas Tashakkori, and subsequently, Professor Manfred Max Bergman as well. As for continuity at the helm, one of us, Professor Dawn Freshwater will continue as a coeditor and will be joined anew by the other of us, Professor Michael D. Fetters. Together, we look forward to maintaining the tradition of rigorous scholarship in the now emerged, but still actively developing, field of mixed methods research.

With the current change of the guard, we want to take this opportunity to take stock, to reflect about the trajectory of the field of mixed methods work and how the journal has been a central part of that movement, and to paint a vision forward. While there was only a couple of handfuls of books addressing mixed methods at the launch of the journal in 2007, 5 years later in 2012, Onwuegbuzie reported that there were more than 30, (Onwuegbuzie, 2012) and the number has continued to show dramatic growth since. One pivotal moment in the field was the release by the Office of Behavioral and Social Sciences Research in the United States in 2011 of a best practices guide from the National Institutes of Health that provided reviewers and authors of mixed methods studies criteria for developing high quality mixed methods research proposals in the health sciences (Creswell, Klassen, Plano Clark, & Smith, 2011). Another landmark was the launching of the Mixed Methods International Research Association (MMIRA) in March 2013 (Mixed Methods International Research Association). Leveraging the successful series of international mixed methods meetings led by Professor Tessa Muncey and others in the United Kingdom, the inaugural meeting of the MMIRA was held in Boston, USA, in June 2014. Since the launch of JMMR in January, 2007, JMMR has published 186 original articles, more than 2,261 individuals have reviewed for JMMR at least once, and many have reviewed multiple manuscripts. In a very short time span, JMMR climbed to be one of the top journals in the category of Interdisciplinary Social Science, and according to Thomson Reuters, in 2014 had an impact factor of 1.676.

Moving forward, we are posing to the mixed methods community to focus even greater attention to the “integration challenge.” We describe the integration challenge qualitatively as the

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- “Formula” of integration (1 + 1 = 3): When considered together, the QUAN and QUAL components **generate a new outcome that is greater than the sum of their individual contributions**
- Authors of empirical MMR studies should consider the question:

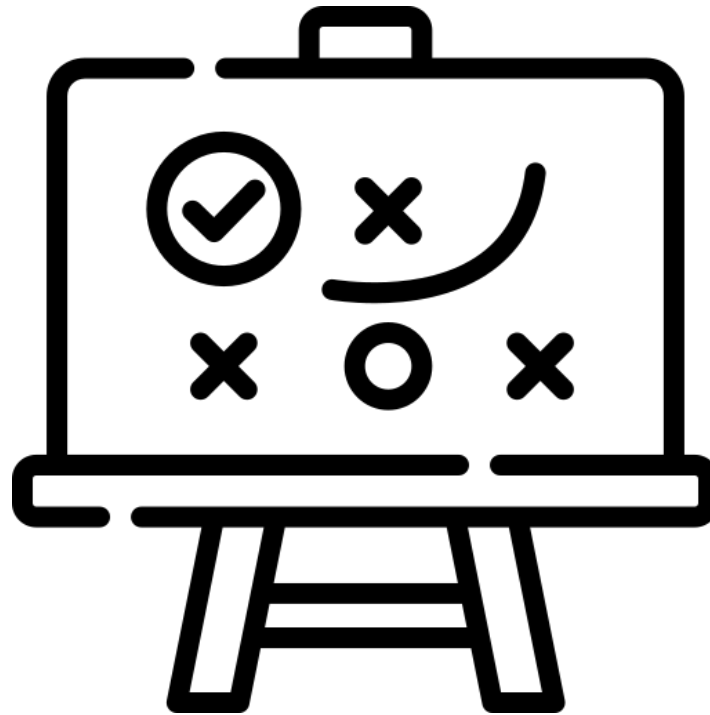
“What synergy was gained by the additional work of using both qualitative and quantitative data methods?”

Integration is Synergistic



Integration is Intentional, Holistic, and Synergistic

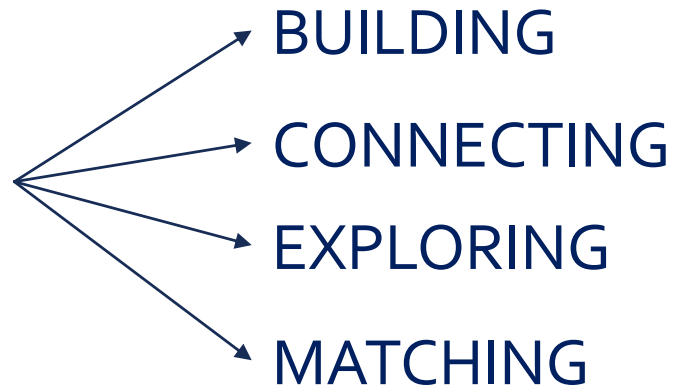




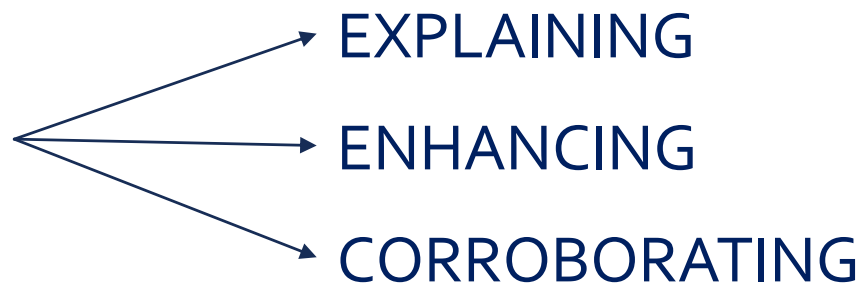
4. ADVANCE 2: DEVELOPMENT OF INTEGRATION STRATEGIES

Types of Integration Strategies

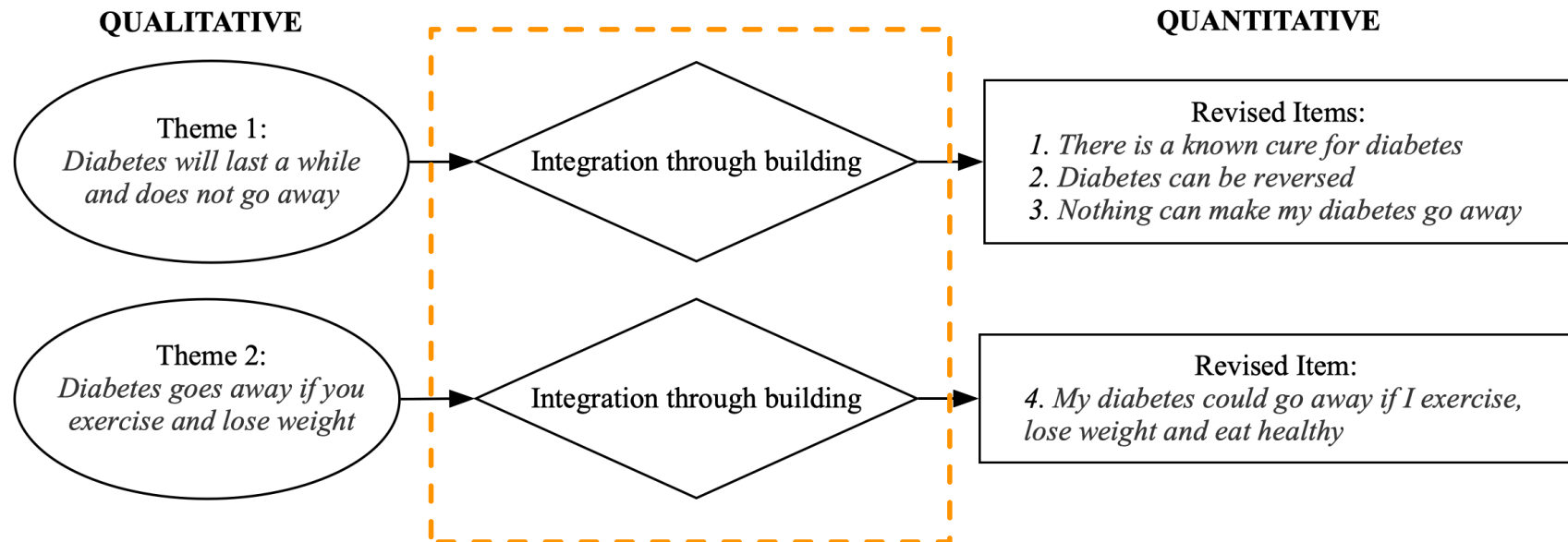
Integration in
**planning and
data collection**



Integration in
**analysis and
interpretation**



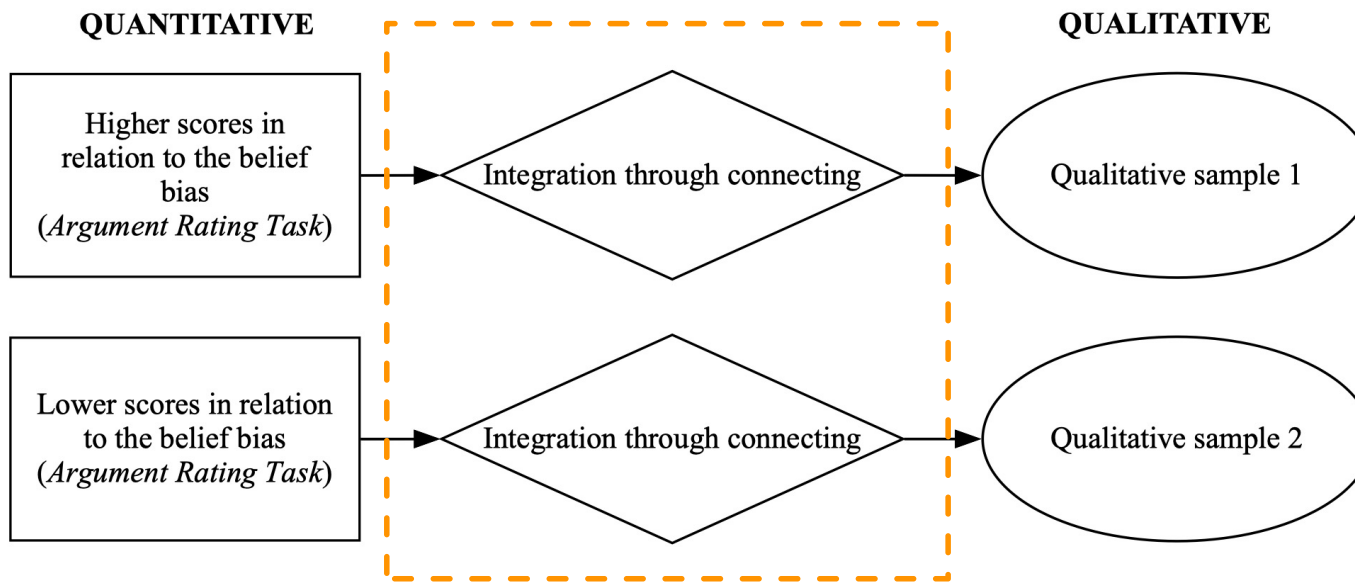
Data Collection: Building



Example by Shiyanbola et al. (2021)

The findings of one component are **used to define the data collection or analysis strategy** of the other component

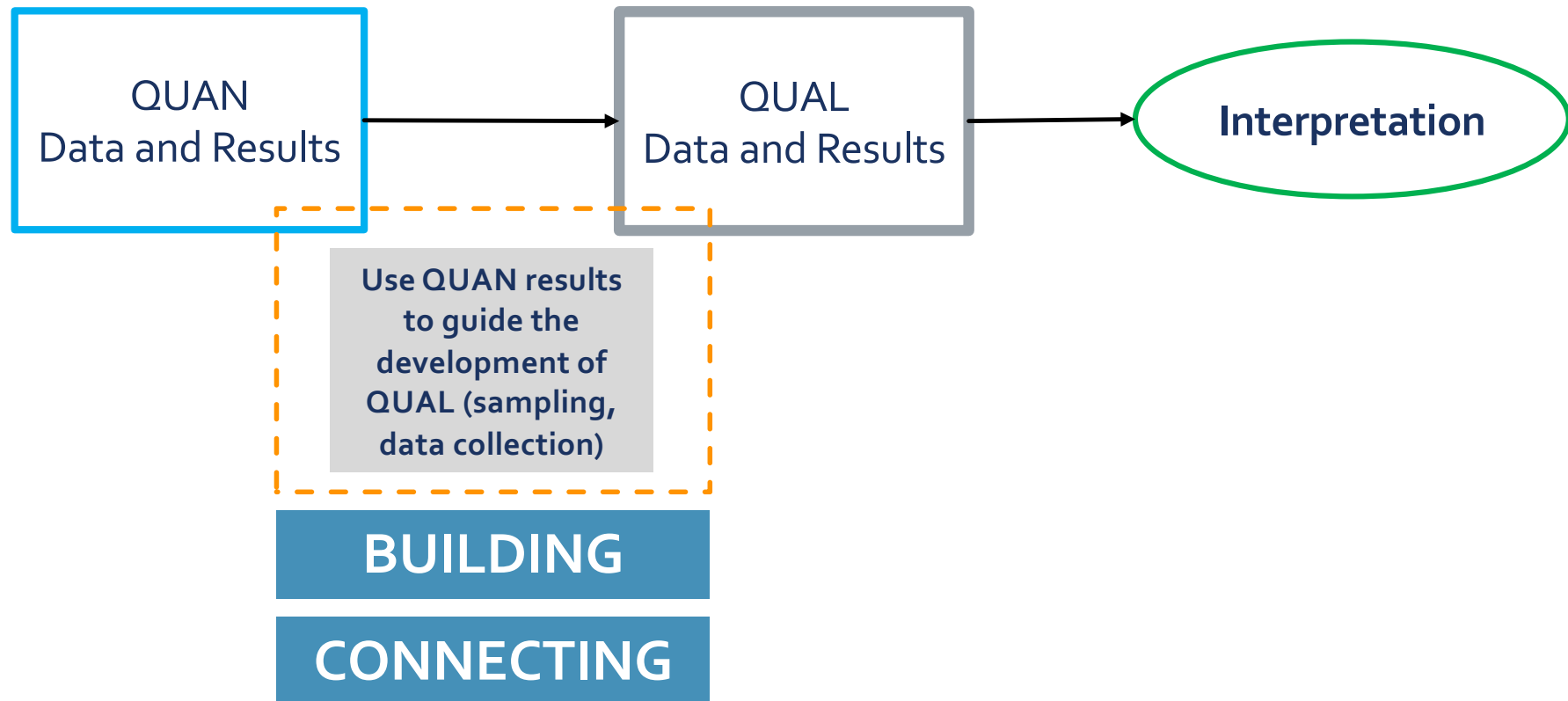
Data Collection: Connecting



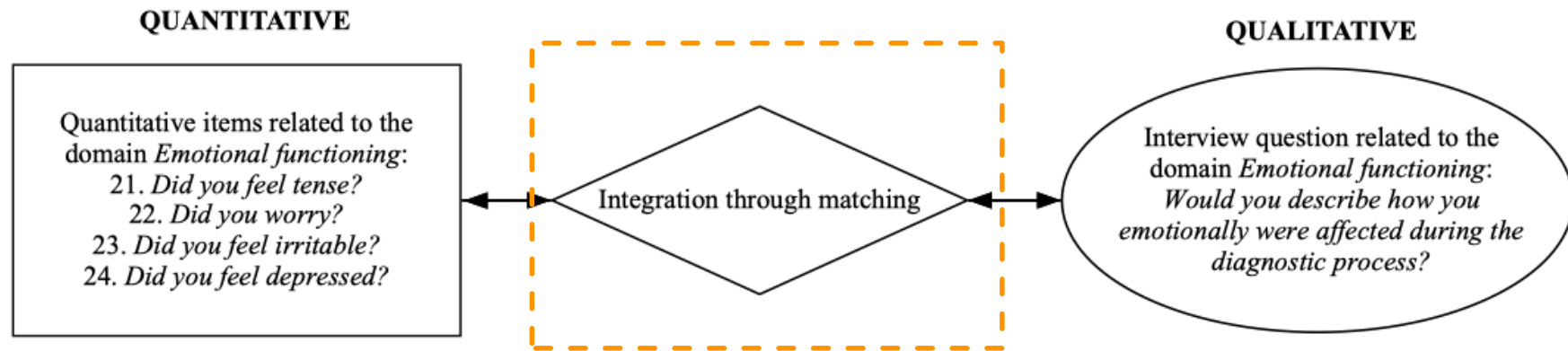
Example by McCrudden & McTigue (2019)

The findings of one component are **used to define the sampling strategy** of the other component

Building and Connecting in Sequential Designs



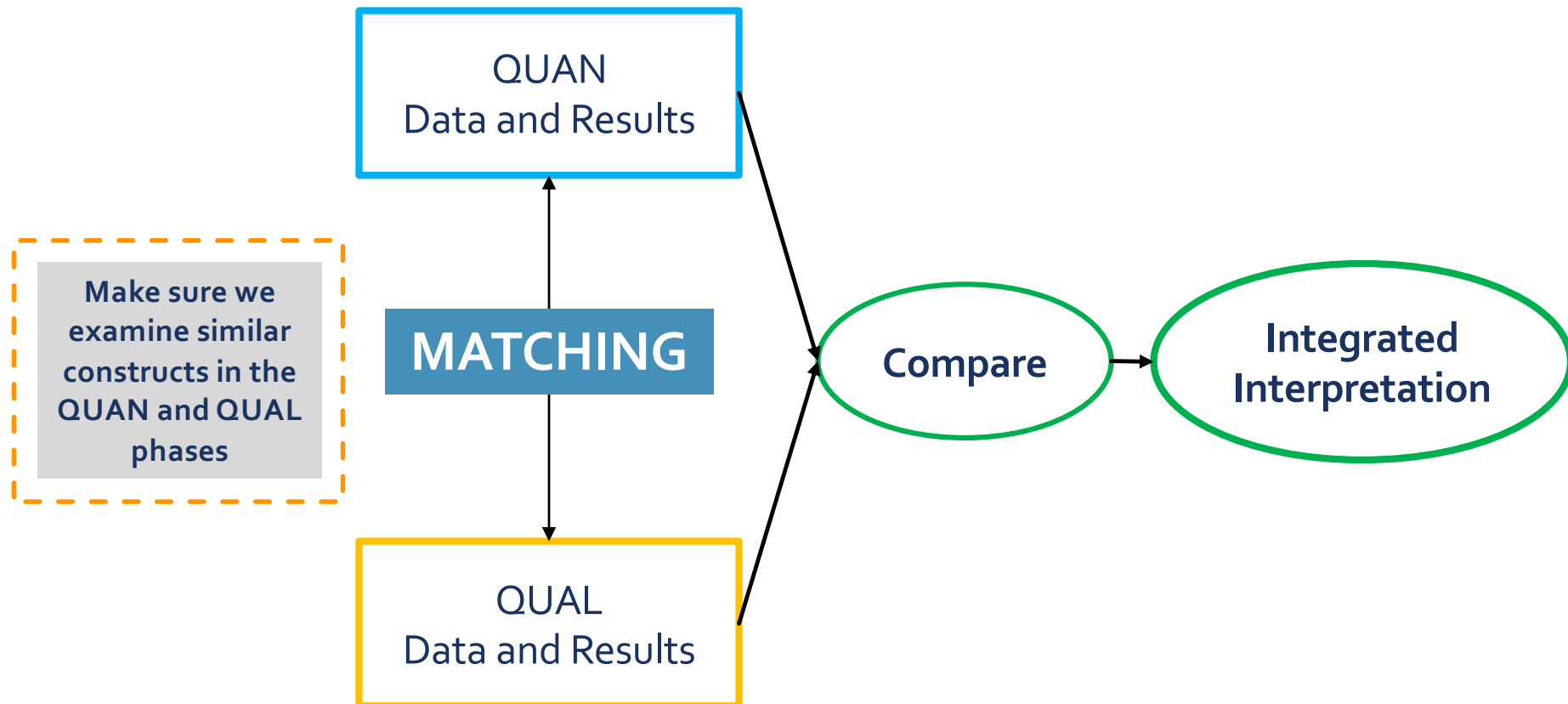
Data Collection: Matching



Example by Moseholm et al. (2017)

Researchers define QUAL and QUAN data collection instruments that are **equivalent in terms of the constructs, domains, or ideas** addressed

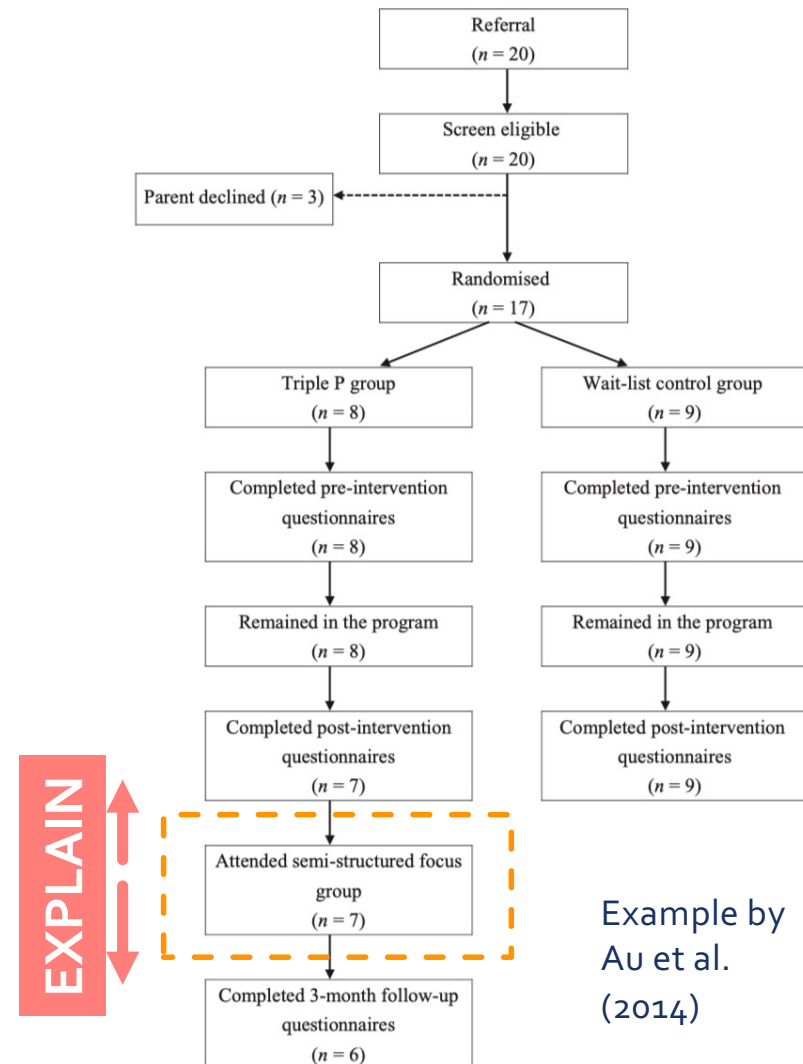
Matching in Convergent Designs



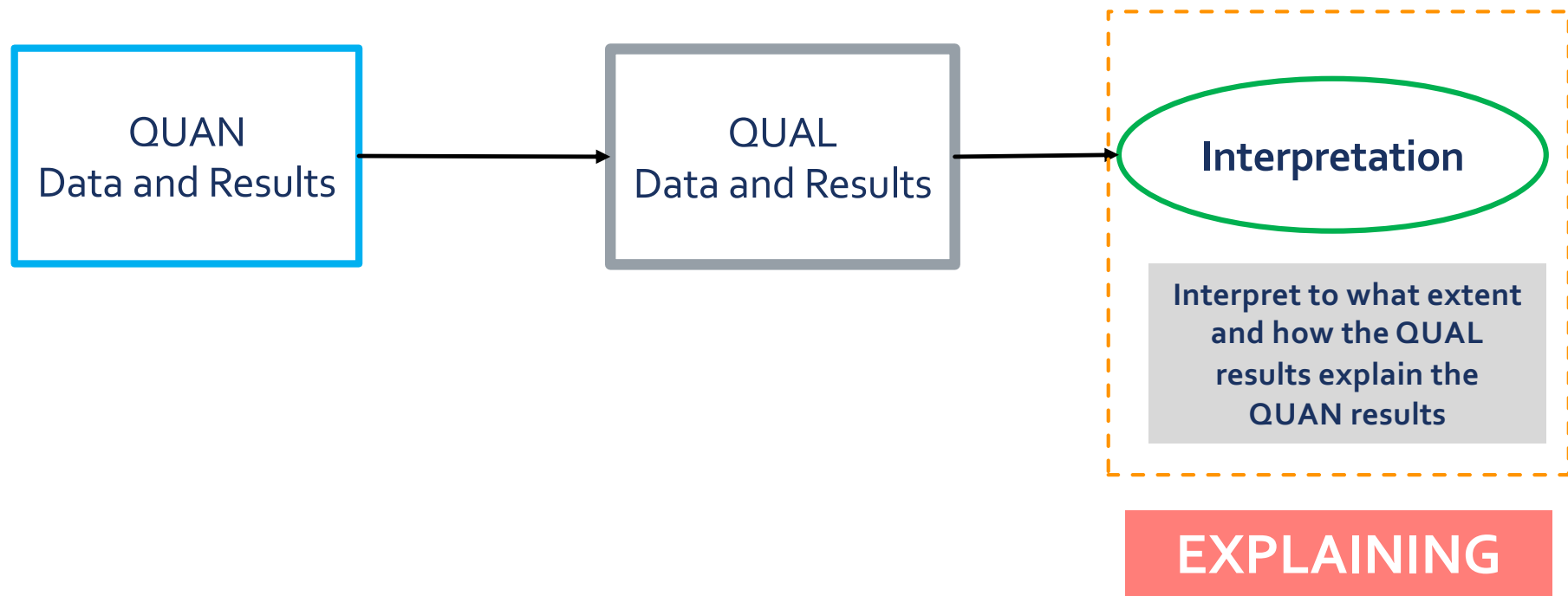
Data Interpretation: Explaining

The findings of the first QUAN component are **explained by** the findings of the second QUAL component.

Particularly interesting in the presence of **inconsistencies** or **unexpected** elements of the results of the first QUAN component



Explaining in Explanatory Sequential Designs



Data Interpretation: Enhancing

Table 3
Joint display of individual- and community-level determinants of timely series completion.

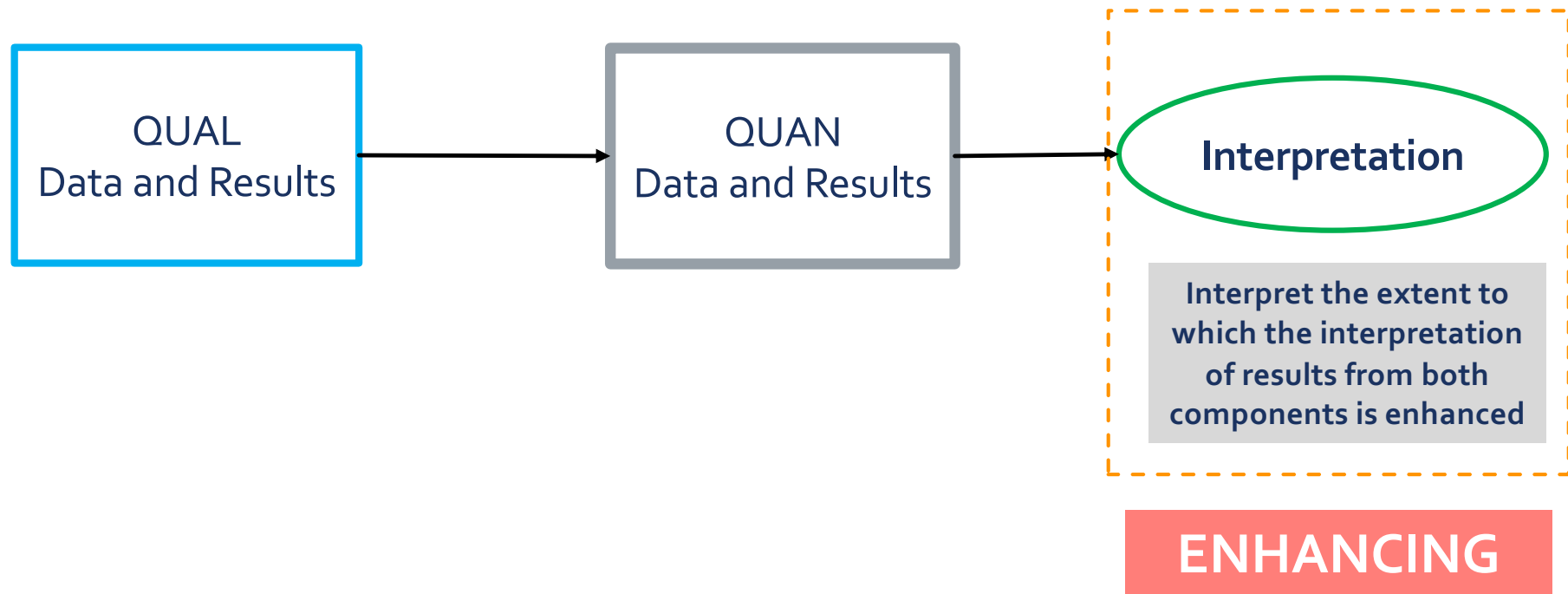
Socioecological Domain	Explanatory Variables	aOR (95% CI)	Qualitative Subthemes & Quotes	Mixed-Methods Interpretation
Individual	Age at First Dose 11 vs. 14	1.82 (1.07, 3.11)*	<i>Sexual activity on the horizon.</i> They start their puberty and that's the age that they probably start to have sex relations. Some 13 years old are very active ... sexually now.— <i>Hispanic mother, 12-year-old female completer</i>	<i>Convergence</i> Parents were motivated to complete the series on-time as a protection measure at the onset of sexual activity.
	Race/Ethnicity Hispanic vs. NH-White	0.54 (0.30, 0.95)*	<i>Family/peer influences.</i> My momma feels like it's harmful. So she's against it, [she says], 'you don't know what's in it, you don't know what it's gonna cause, you don't know what it is, but you injecting it into your child.'— <i>NH-Black mother, 13 year-old female non-completer</i>	<i>Convergence</i> Family cultural attitudes and social norms influenced the decision-making for series completion. Among NH-Black families, medical and pharmaceutical mistrust shaped views about vaccines, while language barriers affected Hispanic parents understanding of the vaccine regimen.
	NH-Black vs. NH-White	0.57 (0.37, 0.89)**	We are Hispanic, [and] don't speak or read really good English. And even though they give us the information, whenever they get the vaccines, we never read those brochures that they give us. Because of the language. So I didn't know there was a second one.— <i>Hispanic mother, 13 year-old female non-completer</i>	
	NH-Black vs. NH-Other	0.58 (0.34, 1.00)*		
	Sex Female vs. Male	1.11 (0.81, 1.51)	<i>Protect our girls.</i> In getting my son vaccinated, I can help reduce the spread. I thought less about direct risk to him as opposed to the implications of HPV in general to females.— <i>NH-White mother, 13 year-old male completer</i> Girls have more problems with cancer than guys.— <i>NH-Black 12-year old female completer</i>	<i>Convergence</i> Girls are perceived to have greater consequences of HPV. Parents and adolescents perceive less benefit to vaccinating boys other than to reduce the spread of HPV and protect future partners.
Insurance No Private vs. Private	0.56 (0.37, 0.85)**	<i>Availability of resources.</i> By her having insurance, it was good for me to give it to her. If didn't have it, I probably couldn't afford it and she wouldn't have been able to get it.— <i>NH-Black mother, 12 year-old female completer with Medicaid</i>	<i>Divergence</i> Having health insurance influenced parents' decision to complete the series on-time, regardless of insurance type.	

← **ENHANCE** →

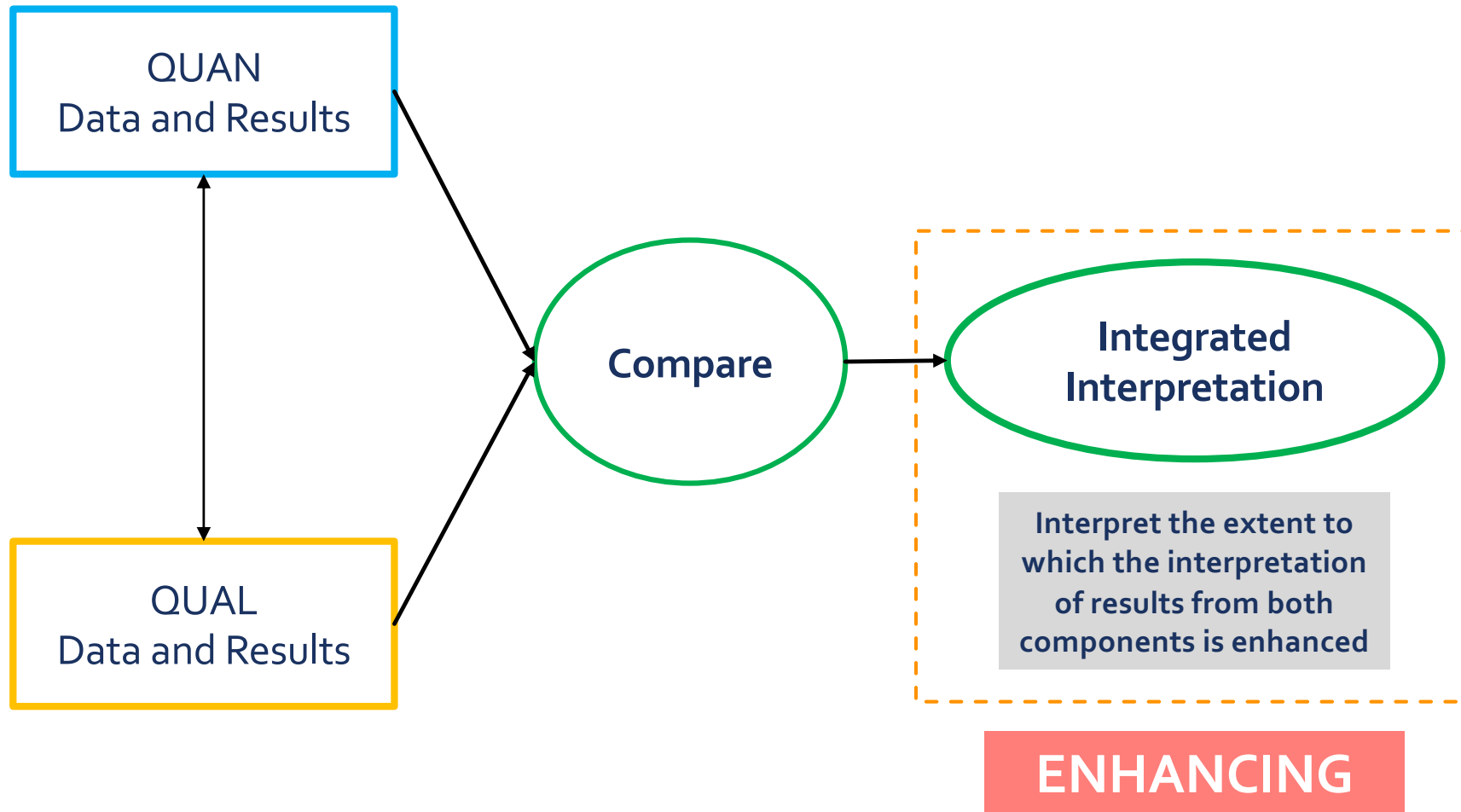
Integration allows researchers to **improve the interpretation and significance** of study findings holistically, and in turn, to gain a **more complete understanding** of the studied phenomenon

Example by Mansfield et al. (2022)

Enhancing in Exploratory Sequential Designs



Enhancing in Convergent Designs



Data Interpretation: Corroborating

← CORROBORATE →

Table 1 Objective factors associated with poor prognosis in cancer

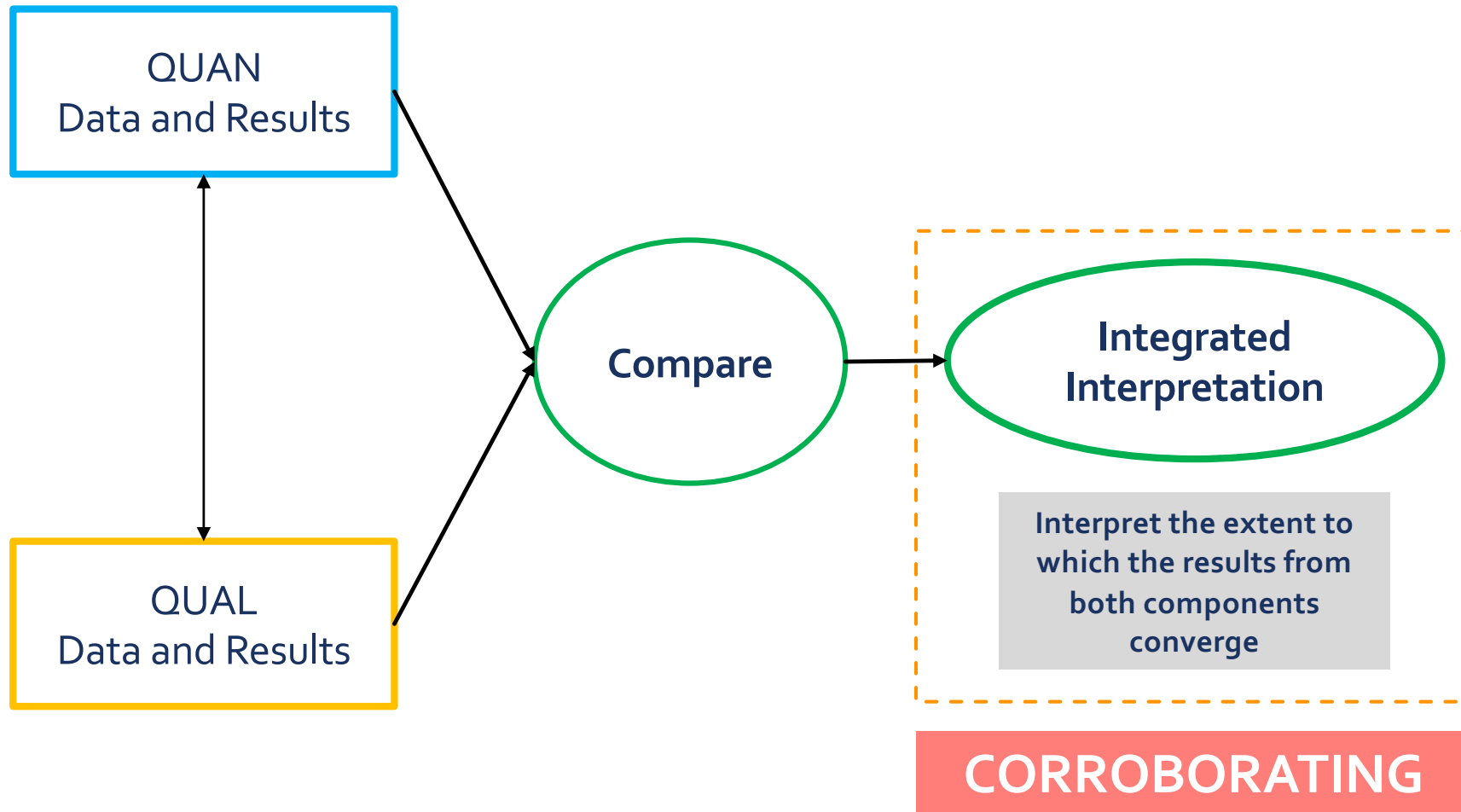
Nature of significance in the cohort study	Parameters in the cohort study	Description in the interview study, under the theme 'Sought information'
Statistically and clinically significant association with poor prognosis in the final 2 weeks of life.	Increased respiratory rate. Reduced oxygen saturation. Increased urea and creatinine. Raised white cell count.	Increased respiratory rate. Breathlessness. Increased urea and creatinine. Renal function. Raised white cell count.
Demonstrated association with poor prognosis over longer timescales.	Falling haemoglobin. Falling albumin.	Haemoglobin. Albumin.
Statistically but not clinically significant association with poor prognosis. Others.	Raised heart rate. Increased sodium. Not sought or obtained in this population.	Not described in this population. Temperature. Early warning score. Chest drain output. Imaging. C reactive protein. Blood cultures. ECG.
No evidence of association.	Blood pressure. Falling heart rate.	Performance status ↓. Weight ↓. Confusion. Nausea/vomiting ↓. Urine output. Analgesic use ↑. Blood pressure. Bradycardia.

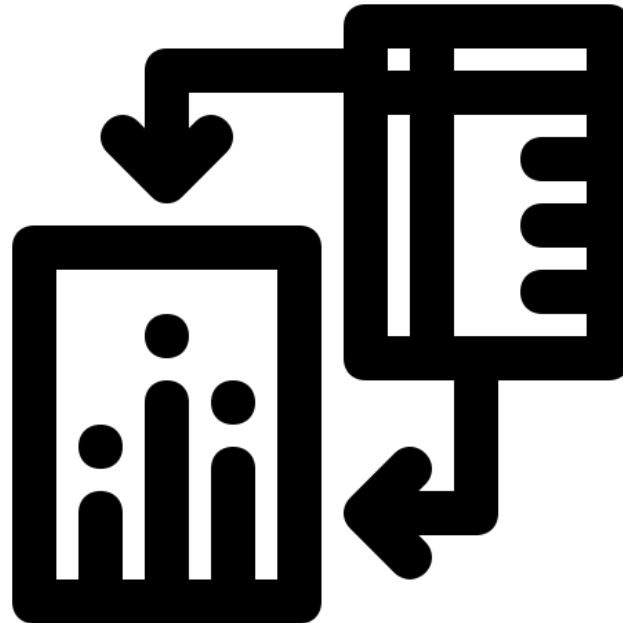
Green, full agreement; yellow, partial agreement; blue, silence (where a finding is identified in only one study); red, dissonance (where study findings contradict one another).

Example by Taylor et al. (2018)

The findings of one of the two components **verify**, or **support**, the findings of the other component

Corroborating in Convergent Designs



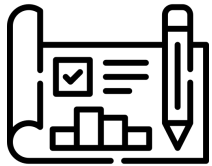


5. ADVANCE 3: JOINT DISPLAYS TO FACILITATE INTEGRATION

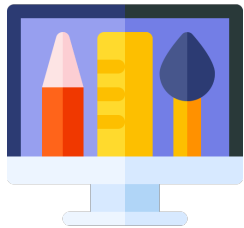
What are Joint Displays?

- Joint displays are **visual tools** in the form of tables, figures, or graphs that facilitate the integration of QUAN and QUAL components throughout all phases of an MMR study
- When used in the **planning** and/or **data collection** phase, they help to align the QUAN and QUAL procedures to be used in the study in a more systematic way
- When used in the **interpretation** phase, they aid in the cognitive process of merging and comparing QUAN and QUAL data or findings prior to drawing meta-inferences

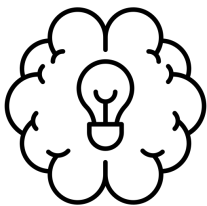
Benefits of Joint Displays



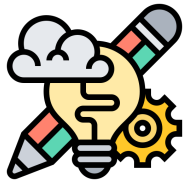
- Provide a framework for systematically planning, executing, and reporting integration



- Leverage visual resources to unlock the full potential of integration



- Draw mixed methods insights more intuitively and transparently



- Room for creativity

Benefits of Joint Displays

Table 3. Integrated Results

		QUAN findings presented as raw data and summaries			QUAL findings presented as quotes data and summaries		Meta-inferences
Domains		Quantitative results			Qualitative results		Meta-inference
Group	Evidence type	Belief-consistent arguments, <i>M (SD)</i>	Belief-inconsistent arguments, <i>M (SD)</i>	Summary	Exemplar quote	Summary	
More-objective	Temperature	4.70 (1.06)	4.60 (0.97)	Strength ratings for belief-consistent and belief-inconsistent arguments did not differ.	P1: "They are both pretty much the same argument; they are just saying opposite things. [The argument for climate change] is saying that they are changing and [the argument against climate change is saying that it] isn't, but it's over the same period of time, and it's just a different glacier doing a different thing. So each of them is only showing one example of a glacier; it doesn't count for the whole world."	Evaluated arguments based on the quantity of evidence independently of whether the arguments were belief-consistent	Holding a belief did not necessarily lead to biased reasoning; rather, biased reasoning occurred when individuals applied a more critical standard of evaluation to belief-inconsistent arguments.
	Sea level	5.10 (1.10)	5.10 (1.37)				
	Glacier	4.50 (1.35)	4.50 (1.35)				
Less-objective	Temperature	6.00 (1.94)	4.20 (2.86)	Belief-consistent arguments rated higher than belief-inconsistent arguments.	P32: "Because [the argument against climate change] is not really proof that humans are not contributing to climate change; one glacier doesn't really count for all the glaciers around the world. But [the argument for climate change] is stronger proof that something is being done to the places around the world . . . I think there must have been something happening to make the glacier shrink; it's kind of unlikely for the glacier to shrink by itself."	Evaluated arguments based on whether they were consistent with their beliefs (more critical of belief-inconsistent arguments)	
	Sea level	5.20 (1.81)	3.80 (1.75)				
	Glacier	5.30 (1.77)	3.00 (1.76)				

Data Collection / Interview Prompt Joint Display

How can QUAN and QUAL data collection be planned to facilitate future integration during analysis?

Table 3 Examples of matching the EORTC-QLQ-C30 domains to questions in the qualitative interview guide

Domains	QLQ-C30 questions	Qualitative questions
	<p><i>Emotional functioning</i></p> <p>21. Did you feel tense?</p> <p>22. Did you worry?</p> <p>23. Did you feel irritable?</p> <p>24. Did you feel depressed?</p> <p><i>Social functioning</i></p> <p>26. Has your physical condition or medical treatment interfered with your family life?</p> <p>27. Has your physical condition or medical treatment interfered with your social activities?</p> <p><i>Quality of life</i></p> <p>29. How would you rate your overall health during the past week?</p> <p>30. How would you rate your overall quality of life during the past week?</p>	<p>Would you describe how you emotionally were affected during the diagnostic process?</p> <p>How has undergoing diagnostic evaluations affected your family life?</p> <p>How has undergoing diagnostic evaluations affected your social life, e.g., your interactions with others?</p> <p>How would you assess your own health during the diagnostic phase?</p> <p>How would you assess your quality of life during the diagnostic phase?</p>

QUAN items

QUAL questions

CONVERGENT

Instrument Development Joint Display

How should survey item language be written for target participants as informed by their own words?

Table 2

Joint display mapping qualitative themes and categories to the developed questionnaire (integration of phase I & II).

Qualitative theme and categories	Quantitative items
Theme I: personal challenges (8 items) Workload and time management (4 items)	The educator does not have enough time to discuss students' issues, the educator is overburdened with workload, the educator finds it difficult to grade group assignments, and educators are required to perform clerical tasks.
Educator- student relationship (1 item) Personal motivation and learning (2 Items)	The overfriendliness of educator with students prevents effective teaching The educator lacks personal motivation to effectively teach students & Nurse educators do not engage in their own continuous professional development and education
Teaching-culture-conflict (1 item)	The educator faces cultural challenges while teaching content and skills related to human sexuality
Theme II: institutional challenges (14 items) Lack of autonomous decision making (3 items)	The educator has no authority to change institutional teaching and learning practices, the educator has no role in making policies for nursing education, & the educator lacks independent decision making about student teaching.
Roles and responsibilities conflicts (3 items)	The roles and responsibilities of educator are poorly defined, there is a difference between an educator's personal teaching philosophy and the expectations of the management, & educators are required to teach subject matter that does not match their personal interest.
Non-supportive and authoritarian management (3 items)	The management is not supportive of implementation of new pedagogies, the management is not supportive of nursing educational research & the management is authoritarian.
Intra-Inter educators' support & collaboration (2 items)	There is a lack of collaboration between educators in the institution & experienced educators do not support novice educators.
Institutional Constraints (3 items)	The student to educator ratio is too great, the institution does not upgrade the nursing curriculum on a regular basis, & the institution provides no guidance on students' assessment and evaluation.
Theme III: challenges in clinical teaching (9 items) Inadequate clinical learning environments (2 items) Theory-practice gap (2 items)	There is a shortage of clinical teaching settings & there is a shortage of equipment in clinical settings. There is a gap between what is taught and what is practiced in clinical settings & there is a mismatch between educators' and hospital staff expectations from nursing students during their clinicals.
Mentorship & preceptorship issues (3 items)	There is a lack of preceptors and mentors in clinical settings, the clinical mentors and preceptors are not qualified to facilitate students, & the experienced nurses in the clinical settings are not supportive of nursing students.
Non-supportive hospital management (2 items)	The hospital management of clinical settings is not supportive of student learning & the nursing management are not supportive of students' involvement in nursing care.

QUAL themes

QUAN items

EXPLORATORY SEQUENTIAL

Participant Selection Joint Display

Transformative and community-based considerations

Table 1. Participant Selection Joint display Integrating Transformative Sampling Considerations and Quantitative Findings.

Characteristics	Researcher-Defined Transformative Sampling Considerations	Community Advisory Group Transformative Sampling Considerations	QUAN findings	Qualitative Sampling Priorities
Construct			Quantitative Findings	
DHH patient: Predisposing—demographic and cultural considerations	<ul style="list-style-type: none"> •LGBT+. •Black, Indigenous, POC. 	<ul style="list-style-type: none"> •Historically marginalized groups (e.g., Black people). •Rural. •Migrant workers due to culture, language, employment status, and discrimination. •People who are un or underemployed 	<ul style="list-style-type: none"> •In sub-group analyses of DHH English-speakers, Black patients had higher adjusted odds (aOR = 3.636) of using the ED in the past 36 months than white patients 	<ul style="list-style-type: none"> •Ensure adequate sampling of Black participants. •Sample some participants from rural areas/counties
DHH patient: Predisposing—DHH-specific demographics and cultural characteristics	N/A	<ul style="list-style-type: none"> •Late-deafened and DeafBlind individuals 	N/A	<ul style="list-style-type: none"> •Sample participants from a variety of DHH identities
DHH patient: Enabling—financial considerations	<ul style="list-style-type: none"> •Food insecure 	<ul style="list-style-type: none"> •Food insecure. •Lack of insurance 	<ul style="list-style-type: none"> •In sub-group analyses of DHH English-speakers, Medicaid/ uninsured patients had higher adjusted odds (aOR = 1.752) of using the ED in the past 36 months than patients who were privately insured 	<ul style="list-style-type: none"> •Sample participants who are Medicaid insured or uninsured, which may also be a marker of low-income status and food insecurity
Context: Enabling—community environment	N/A	<ul style="list-style-type: none"> •Poor housing •Community mental health/ substance use issues 	N/A	<ul style="list-style-type: none"> •Sample participants who believe substance use is an issue in their community

QUAL sampling decisions

(continued)

EXPLANATORY SEQUENTIAL

Side-by-Side Joint Display

How do QUAN and QUAL results confirm, disconfirm, or expand understanding of the phenomenon?

Table 2. Joint display of final inferences and metainferences.

Overarching themes	Quantitative results	Qualitative results	Metainferences
Meaning of Compassion and Compassionate Care	In total, 64.1%–88% of students responded “Yes” to meanings of compassion and compassionate care found in nursing literature, while 12%–35.9% responded “No.”	Students considered compassionate care as the eagerness to learn about and meet patient needs, provide ethical and safe care, intentional efforts to relieve patient distress, caring for the whole being, be sympathetic toward patients, and recognize patient suffering. Supporting Quote: “Compassionate care means providing care to your patients with sincerity, rather than just completing your nursing responsibility.” (M, 24 years).	Discordant: Students’ understandings of compassion and compassionate care are inconsistent with the meanings outlined in nursing literature.
Ways of Developing and fostering compassion	No quantitative data	The majority of the students believed that compassion is a natural trait and cannot be fostered. However, several identified two ways to foster compassion in nurses and nursing students: a) providing knowledge about the importance of compassionate care and b) observing others and seeking others’ opinions. Supporting Quote: “When I have seen nurses providing compassionate care, I felt encouraged to care for patients in a better way” (F, 22 years old).	Expanded: Students did not have a clear conceptual understating of compassion, but they identified the ways it can be fostered. The ways indicated by students could be used to teach the care which students described as compassionate care.
Antecedents of Compassion and Compassionate Care	No quantitative data	The students perceived antecedents of compassionate care included clinical experience, application of nursing theory, and being sincere to oneself. Supporting Quote: “Be sincere to yourself, know what you want to do for your patients. If you know this, you are compassionate” (F, 23 years).	Expanded: Students’ perceived antecedents are consistent with their described definitions of compassion.
Benefits of Compassion for Patients	In total, 90.6% (n = 106) of students indicated that compassion could help improve patients’ well-being and satisfaction with care.	Students noted that compassion could help improve patients’ confidence, trust in nurses, satisfaction from care, self-esteem, and building therapeutic relationships. Supporting Quote: “Compassionate care is important as it improves patients’ self-esteem and they can manage their physical, physiological or psychological distress” (M, 24 years).	Confirmed. Students perceived benefits of compassion were consistent with the benefits identified in nursing literature.
Benefits for nurses	In total, 76.9% (n = 90) of students indicated that providing compassionate care helps nurses in gaining a sense of personal satisfaction.	Students noted that providing compassionate care could lead to feelings of contentment and happiness for nurses. Supporting Quote: “I should always be compassionate. It is not a difficult thing to be compassionate. Being compassionate to patients helps them. If the nurse is not compassionate, it could lead patients into emotional and psychological discomfort” (F, 23 years old).	Expanded. Students noted the benefits of compassion for nurses and indicated that compassion could be beneficial for the hospital and the unit.
Compassionate Moments	In total, 57.3%–84.7% of students responded “Yes” to different compassionate moments.	The students shared several examples of practicing compassion in practice. Supporting Quote: “Comforted the patient, showed kindness practiced softness provided hygiene care, soothing their suffering, advocated for my patient, talked to the patient, listened to his concerns” (All students)	Confirmed. Although students were unaware of compassion, they identified different ways to practice it.

Domain / Construct

Meta-inferences

QUAN findings

QUAL findings

CONVERGENT

Statistics-by-Themes Joint Display

What are the statistical results for individuals who fit into a certain theme?

QUAN findings

Table 1. A joint display of qualitative themes by quantitative performance level on an objective structured clinical examination.

Themes	Objective structured clinical examination advanced communication assessment		
Domain / Construct	Low (<0.55)	Medium (0.54-0.98)	High (>0.98)
Useful communication skills	N/A ^a	“Effective communication both verbal and nonverbal will be essential in getting the best care for patients.”	“I thought that I was given helpful strategies for interacting with patients such as asking open-ended questions, validating feelings, and types of nonverbal cues to use.”
Remembering nonverbal skills	“Smiling and nodding is also important”	“Non-verbal cues can be very helpful. There are good times to nod and also times when it is not appropriate.” and “In emotionally charged situations, I realize that using non-verbal communication is very important.”	“Helped teach how to read facial expressions from people such as when the nurse was upset.”
Motivated to learn more	N/A	“I would definitely benefit from more training such as this. I found myself hoping that there would be another simulation or two.”	“It would be interesting to go through other scenarios, and to see if this actually has a positive effect on my future interactions with patients.”
Prefer humans	“Hard to engage in non-verbal communication when you know you are just talking at a computer.”	“I think that training for communication with patients is better done with live patients.”	“Your true response can only come from human to human interaction...program is much stronger at allowing a person to think about their verbal responses.”

QUAL findings

QUAL findings

QUAL findings

CONVERGENT

Visual Joint Displays

- Visual joint displays constitute **innovative** and **evolved** integration tools
- They use **bar charts, boxplots, dendrograms, and other graphs** to represent the QUAN findings, and figures of themes or theoretical models to represent the QUAL findings
- They can reduce the cognitive burden and **make integration clearer** for the reader
- They might facilitate to **represent complexity**

Visual Joint Displays

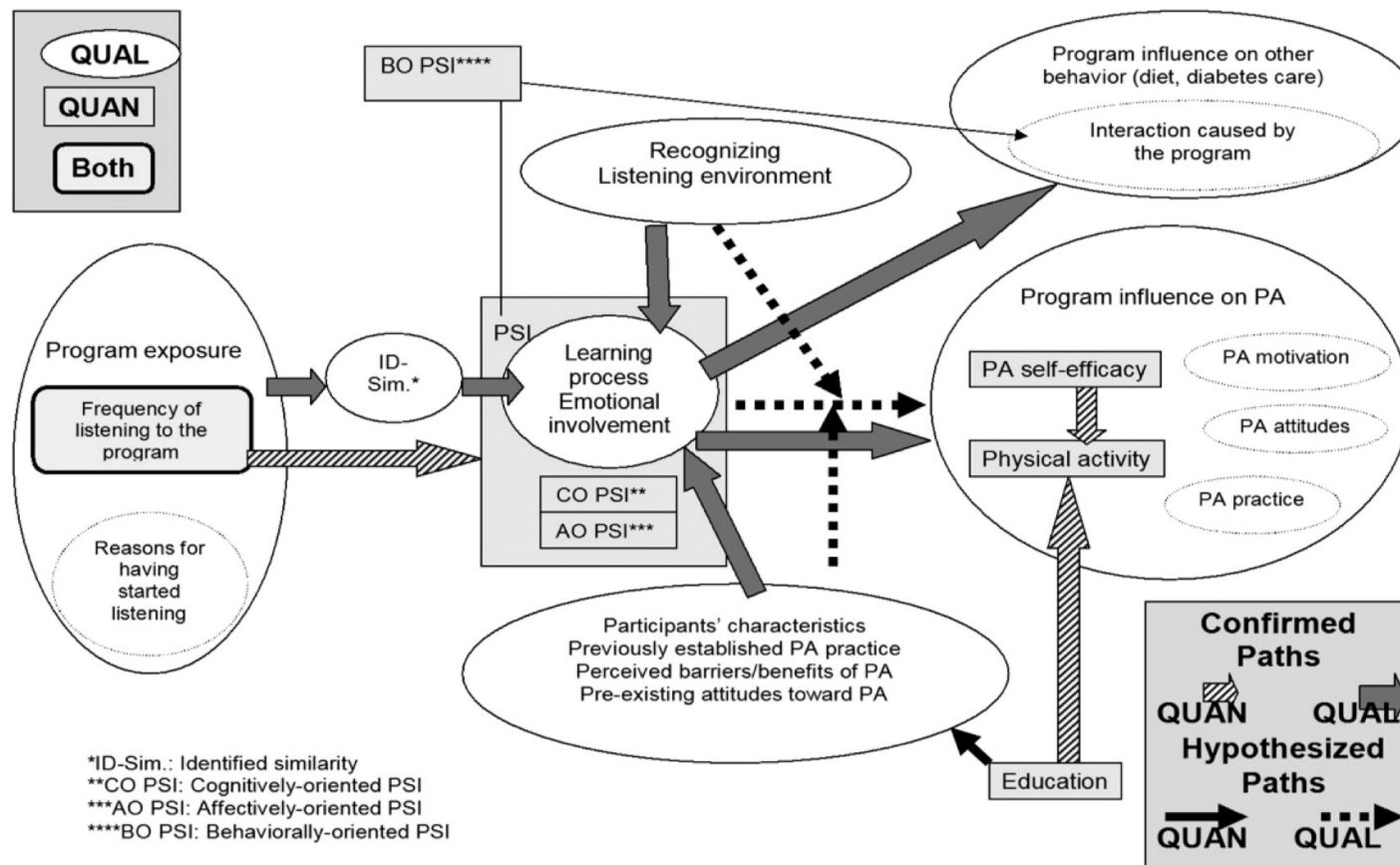


FIGURE 4: WORKING INTEGRATION MODEL

Note: QUAL = Qualitative; QUAN = Quantitative; PA = physical activity; PSI = parasocial interaction

EXPLANATORY SEQUENTIAL

Visual Joint Displays

Table 3. Joint display of adolescents' assessments and experiences of support from nurses.

Quantitative results	Qualitative results	Mixed methods metainferences																																				
<p>Extent to which adolescents experienced nurses as autonomy-supportive (HCCQ)</p> <table border="1"> <caption>HCCQ Scores by Time Point</caption> <thead> <tr> <th>Time Point</th> <th>Number of Adolescents</th> <th>Score 1</th> <th>Score 2</th> <th>Score 3</th> <th>Score 4</th> <th>Score 5</th> <th>Score 6</th> <th>Score 7</th> </tr> </thead> <tbody> <tr> <td>Baseline</td> <td>10</td> <td>0</td> <td>0</td> <td>0</td> <td>3</td> <td>3</td> <td>4</td> <td>0</td> </tr> <tr> <td>Three months</td> <td>9</td> <td>0</td> <td>0</td> <td>1</td> <td>3</td> <td>2</td> <td>2</td> <td>1</td> </tr> <tr> <td>Six months</td> <td>7</td> <td>0</td> <td>2</td> <td>0</td> <td>3</td> <td>0</td> <td>1</td> <td>1</td> </tr> </tbody> </table>	Time Point	Number of Adolescents	Score 1	Score 2	Score 3	Score 4	Score 5	Score 6	Score 7	Baseline	10	0	0	0	3	3	4	0	Three months	9	0	0	1	3	2	2	1	Six months	7	0	2	0	3	0	1	1	<p>Feeling recognized and supported</p> <ul style="list-style-type: none"> ▲ Visits changed from a focus on ADHD or MD to talking about everyday life with co-existing disorders. The use of reflection sheets created opportunities for adolescents and nurses to exchange viewpoints. Being understood was essential to feeling recognized and supported in respect of individual difficulties. ▼ A few adolescents did not feel comfortable talking to their parents or other adults about themselves and their challenges. <p>Developing confidence in self-management through support and involvement</p> <ul style="list-style-type: none"> ▲ Being involved in developing strategies to manage everyday life had a positive effect on adolescents' confidence. Positive and constructive feedback was important for maintaining confidence in self-management initiatives. ▼ A few adolescents disapproved and expected nurses to identify solutions without participating in the decisions themselves. 	<p>▲ <i>Expansion</i> The qualitative results <i>expand</i> on the higher HCCQ levels over time by highlighting the importance of content change and involvement.</p> <p>▼ <i>Discordance</i> The lower HCCQ levels at 6 months are <i>discordant</i> with the qualitative finding that a few adolescents disapproved of involvement and change of content.</p>
Time Point	Number of Adolescents	Score 1	Score 2	Score 3	Score 4	Score 5	Score 6	Score 7																														
Baseline	10	0	0	0	3	3	4	0																														
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CONVERGENT

Visual Joint Displays

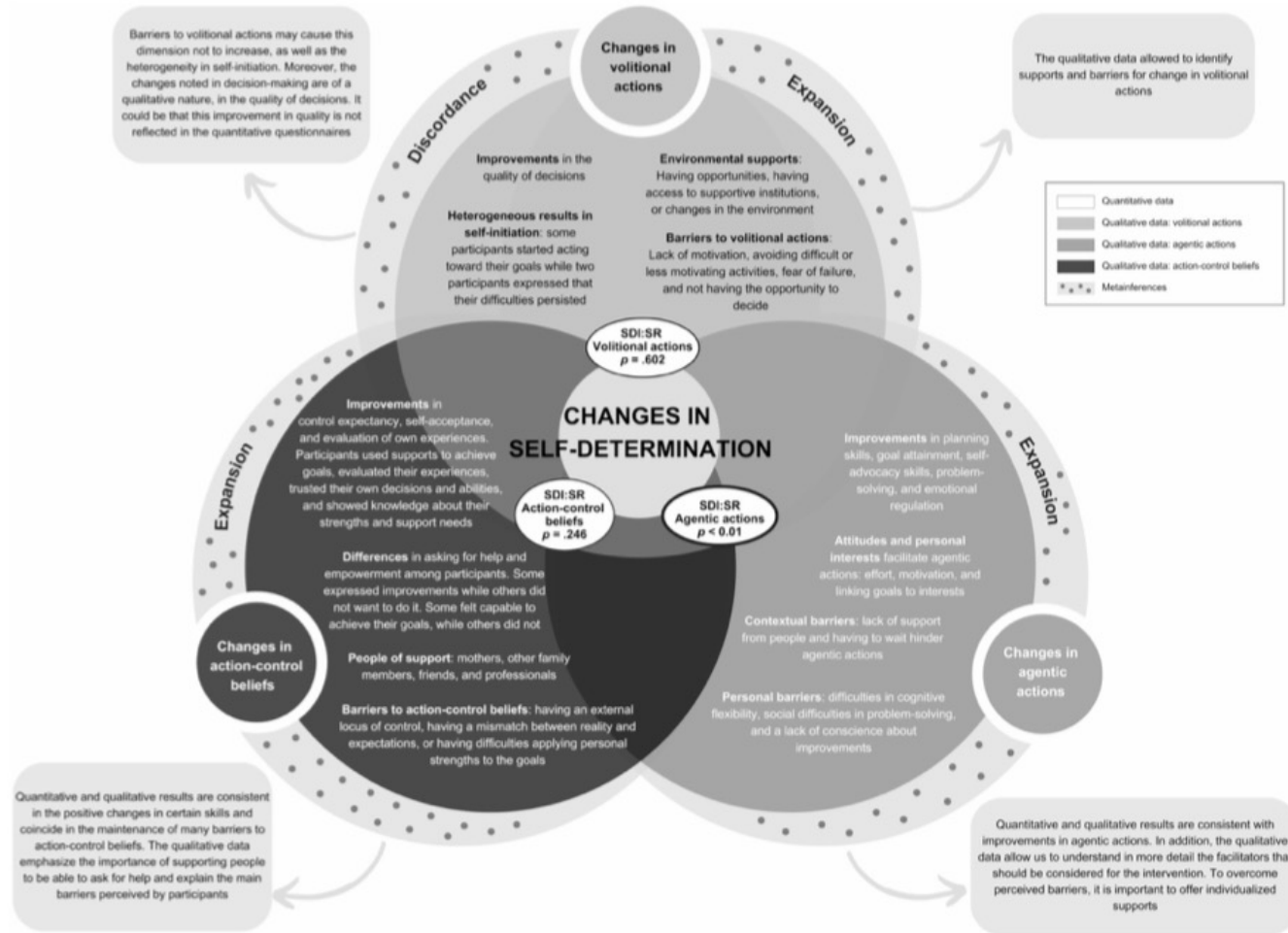
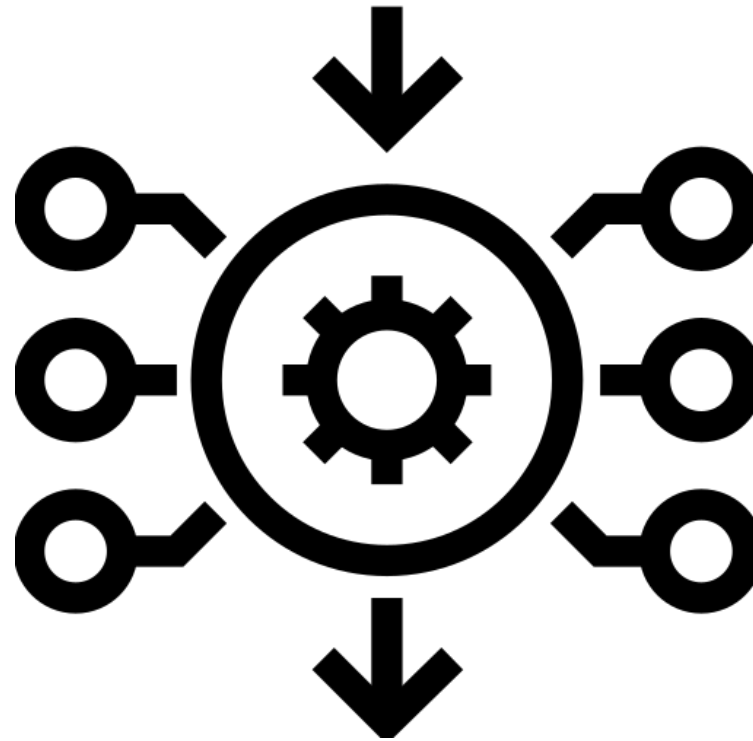


Fig. 3 Joint display of the effectiveness of the intervention

CONVERGENT

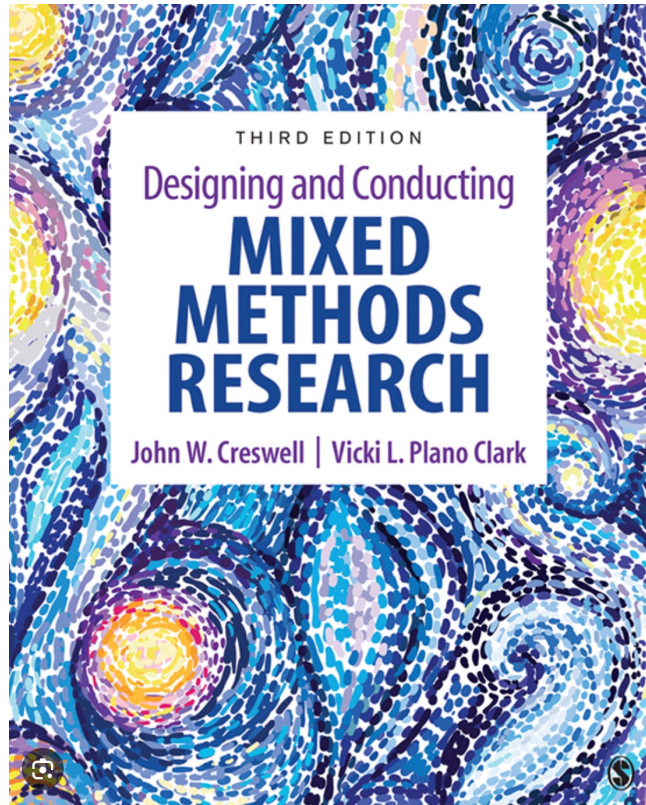


5. ADVANCE 4: META INFERENCES IN MMR

What are Meta-Inferences in MMR?

- Meta-inferences are conclusions, in the form of narrative or theoretical statements, derived from the **comparison of the individual findings or inferences** of the QUAN and QUAL components
- They allow us to achieve the types of **integration strategies** possible during the analysis and interpretation phase: explaining, enhancing, corroborating
- Meta-inferences represent **a new product** that we could not have obtained if we had implemented only one of the components or if we had not designed the study with integration in mind from the outset

Meta-Inference Generation Process



Original Article



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Generating meta-inferences in mixed methods research: A worked example in convergent mixed methods designs

Ahtisham Younas¹, Sergi Fàbregues², and John W. Creswell³

Abstract

Meta-inferences, or the insights derived from integrating quantitative and qualitative inferences at the end of a study, are crucial for achieving added value and synergy in mixed methods research. There is an ongoing need to understand how researchers generate meta-inferences, especially considering their pivotal role in helping researchers achieve full quantitative and qualitative integration. While some examples of meta-inferences generation are available in the mixed methods literature, more explicit guidance is required. Approaches to developing meta-inferences must also be contextual, as inferences of this type are contingent on the nature and purpose of the mixed methods study, the type of mixed methods design, and the quality of the research data. This paper describes a seven-step process for generating meta-inferences using a convergent mixed methods study as an exemplar. These steps consist of identifying knowledge, experience, and data-driven inferences from the quantitative and qualitative data; developing inference association maps to draw meta-inferences; and assessing the validity of meta-inferences using backward working heuristics. This paper contributes to mixed methods researchers by shedding light on the development of meta-inferences in convergent designs and by providing practical and tangible tools for making sense of the complexity of the analysis and interpretation tasks involved in the process of generating meta-inferences.

Keywords

Mixed methods, meta-inferences, mixed methods research, data analysis, inferences

Integrating qualitative and quantitative methods, data, and findings is of utmost importance in mixed methods research (MMR) and distinguishes MMR from mono-method research (Bazley, 2018; Creswell and Plano Clark, 2018; Fetters and Molina-Azorin, 2017). Data integration can occur at multiple levels, including the design (i.e. core and advanced designs), the methods (i.e. connecting, building, merging, embedding), and the interpretation and reporting levels (i.e. joint display, data transformation, and contiguous, staged, and weaving narrative approaches) (Bazley, 2018; Creswell and Plano Clark, 2018; Fetters et al., 2013; Younas et al., 2020). In the interpretation and reporting levels, data integration involves generating meta-inferences, which are defined as explanations or conclusions in the form of a narrative, story, or theoretical statement generated at the end of the study from the individual quantitative and qualitative inferences (Creamer, 2018; Hitchcock and Onwuegbuzie,

2022; Tashakkori and Teddlie, 2008). In generating meta-inferences, researchers compare the qualitative and quantitative findings, look for additional value, and finally draw conclusions. In this process, both findings are compared by assessing confirmation, complementarity, expansion, and discordance (Fetters, 2020). Meta-inferences require researchers to engage in higher-level reasoning and analysis as they provide knowledge that surpasses the sum of each type of finding (Bazley, 2018; Creswell and Plano Clark, 2018).

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INVITED ARTICLE

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A process for conducting mixed methods data analysis

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Abstract

The process of mixed methods data analysis has long been understudied and needs clear guidance for researchers. This review article honors Michael D. Fetters' pioneering work on mixed methods data analysis, building on his concepts of integration, joint displays, and meta-inferences. This review summarizes existing mixed methods data analysis discussions and proposes advanced steps for the analysis process. Our approach involves identifying a research problem, collecting diverse data, selecting a mixed methods design, integrating the data within the design, using a joint display for analysis, and drawing meta-inferences. We illustrate our methods with a Japanese empirical research study from family medicine. This article contributes to the field of mixed methods research by detailing a practical process approach to mixed methods analysis combining recent procedures in the field of mixed methods research.

KEYWORDS

data analysis, joint display, meta-inferences, mixed methods design, mixed methods research

1 | INTRODUCTION

Mixed-methods research involves collecting and analyzing both quantitative and qualitative data, placing these two databases in a set of procedures or designs, analyzing results from both forms of data, and then engaging in further analysis by drawing insight from the connection between the two databases.¹ It represents much more than simply collecting and analyzing quantitative and qualitative data—it contains the innovative feature of integration in data analysis by connecting the databases to derive additional information beyond the results learned from each database.

To conduct mixed methods data analysis requires understanding the process of analysis, a topic only recently addressed in the literature. For example, Michael D. Fetters creatively launched a specific discussion about mixed methods data analysis in his 2020 publication, "The Mixed Methods Research Workbook: Activities for Designing, Implementing and Publishing Projects." He viewed data analysis as consisting of six general steps: planning for data

analysis, data collection, data preparation, data analysis, interpreting data, and reporting results. While useful as an initial point of discussion, we discuss these steps at a more applied level with the aid of recent procedural developments of integration, joint displays, and meta-inferences.

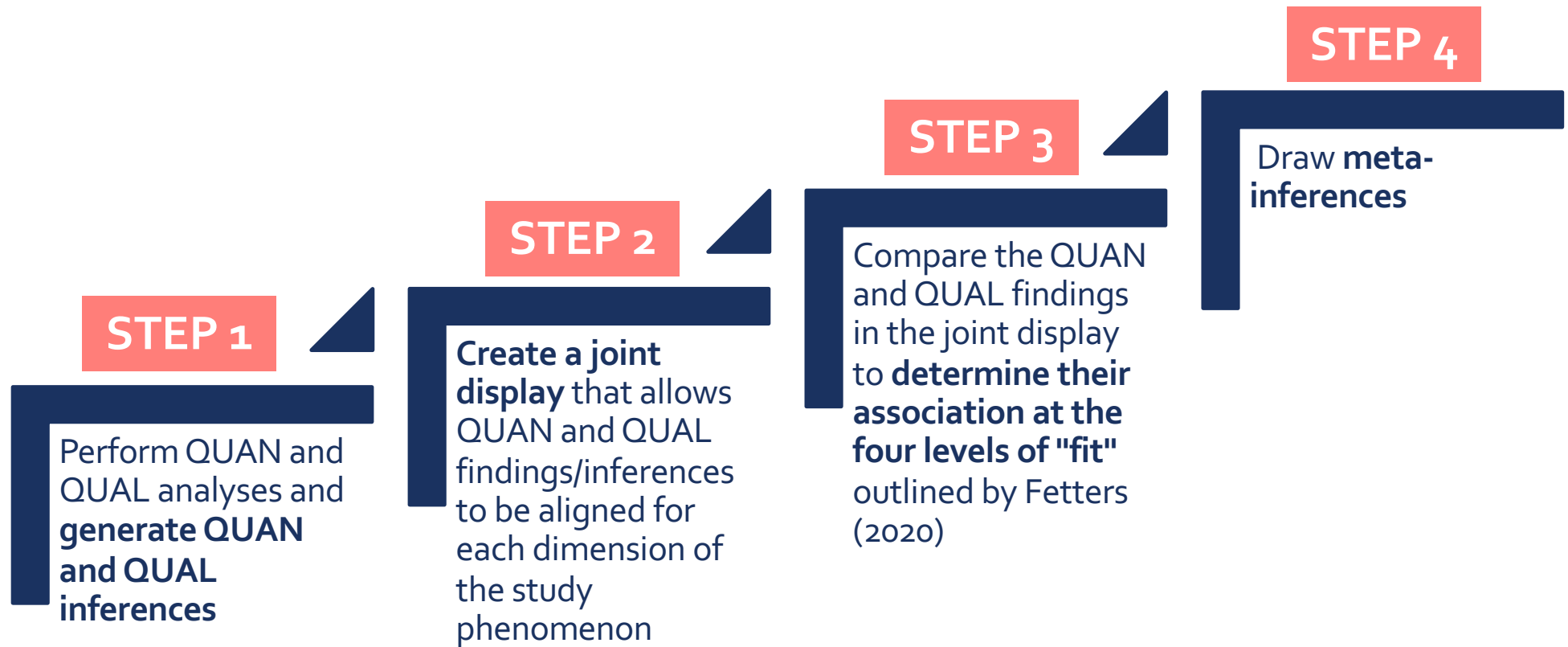
This article advances a series of practical steps for mixed methods analysis. Our steps include decisions prior to analysis, such as specifying a research problem, collecting and analyzing quantitative and qualitative data, choosing a mixed methods design, and diagramming its procedures. Following the design phase, mixed methods data analysis begins. It involves analyzing the quantitative and qualitative data separately, identifying the integration or points of intersection for the quantitative and qualitative data in the design, creating a diagram of the design, developing a joint display to facilitate the analysis of integration, and adding meta-inferences (or drawing insight) from the integration in the joint display. After discussing these steps, we will illustrate the mixed methods procedures by discussing an empirical mixed methods study from

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Steps in Meta-Inference Generation



Step 1: Generate QUAN and QUAL inferences

Quantitative Inferences

1. In total, 64.1%–88% of students responded “Yes” to meanings of compassion and compassionate care found in nursing literature, while 12%–35.9% responded “No.” The highest percentage of YES responses were for the items compassionate care means “consciously trying to understand patients, their needs, and their suffering,” compassion is “understanding and sharing patient suffering” and “consciously helping patients to achieve a sense of well-being” (***Students knew the meaning of compassion***).
2. In total, 90.6% ($n = 106$) of students indicated that compassion could help improve patients’ well-being and satisfaction with care (***Students knew that compassion can improve well-being***).
3. In total, 76.9% ($n = 90$) of students indicated that providing compassionate care helps nurses in gaining a sense of personal satisfaction (***Student reported compassion can instil sense of satisfaction in health care providers***).
4. In total, 57.3%–84.7% of students responded “Yes” to different compassionate moments, such as active listening, advocating for patients, genuinely trying to help, treating patients as persons, and consistently asking for patients’ concerns (***Students provided examples of compassionate care***).

Qualitative Inferences

1. Compassionate care was considered as the eagerness to learn about and meet patient needs, provide ethical and safe care, an intentional effort to relieve patient distress, caring for the whole being, being sympathetic toward patients, and recognizing and feeling for patient suffering (***Varied Meanings of Compassion such as compassion is ethical, compassion is sympathy, compassion is safe care, compassion is intentional***).
2. The students noted that compassion can help improve patients’ confidence, trust in nurses, satisfaction from care, self-esteem, and building therapeutic relationships (***Compassion can improve relationships and health care providers sense of satisfaction***).
3. The students indicated that the provision of compassionate care could lead to feelings of contentment, happiness, and satisfaction for nurses (***Compassion can lead to contentment, happiness, and satisfaction for nurses***).
4. The students shared several examples of practicing compassion in practice which included “comforting patient, showing kindness, hygiene care, dealing with patients with a comforting attitude, soothing their suffering, advocating for my patient, requesting the nurse to provide pain killer, talking to the patient, and offering emotional and spiritual support” (***Varied examples of compassion***).

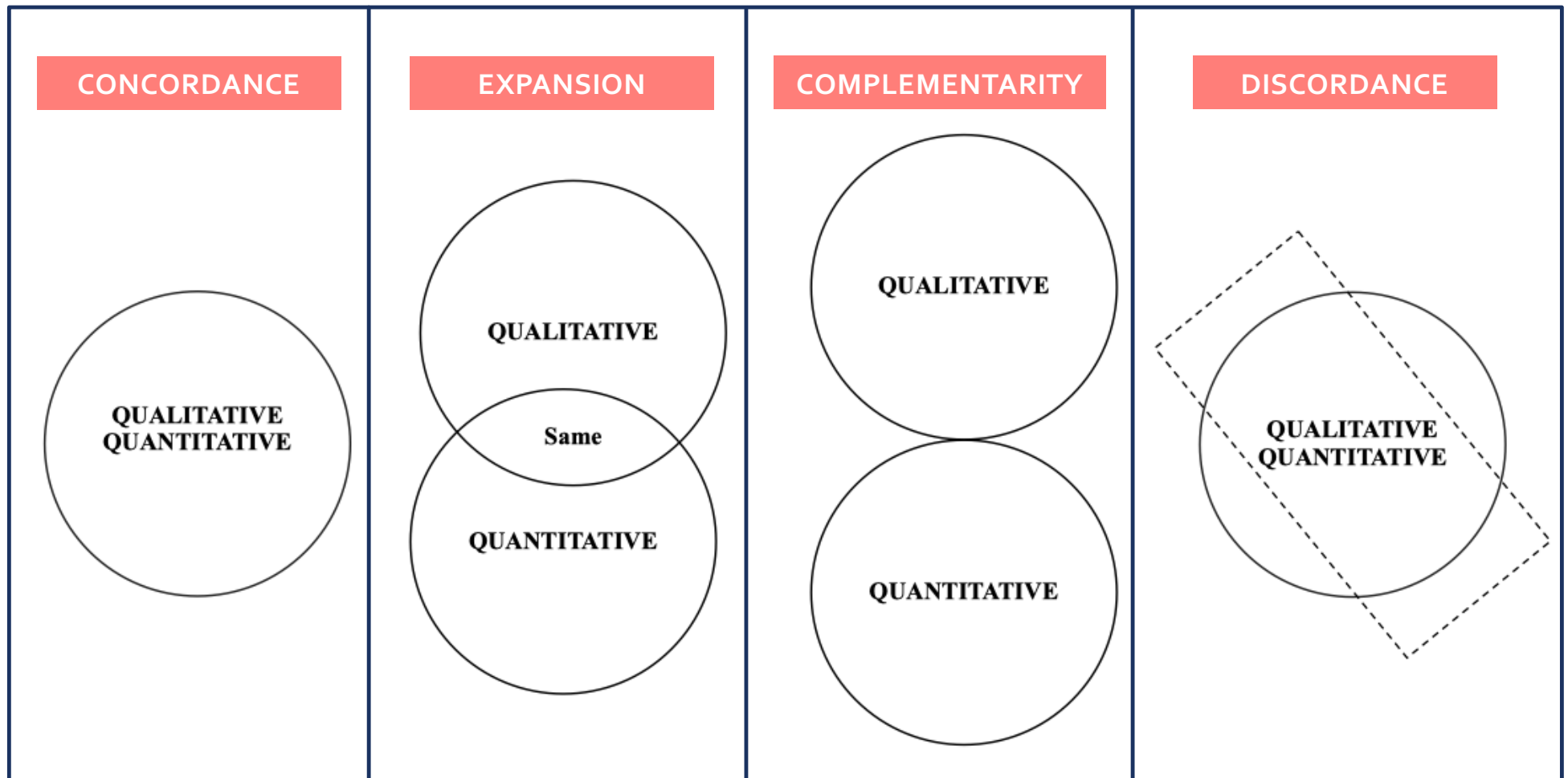
Step 2: Create Joint-Display

Overarching themes	Quantitative results	Qualitative results	Metainferences
Meaning of Compassion and Compassionate Care	In total, 64.1%–88% of students responded “Yes” to meanings of compassion and compassionate care found in nursing literature, while 12%–35.9% responded “No.”	Students considered compassionate care as the eagerness to learn about and meet patient needs, provide ethical and safe care, intentional efforts to relieve patient distress, caring for the whole being, be sympathetic toward patients, and recognize patient suffering. Supporting Quote: “Compassionate care means providing care to your patients with sincerity, rather than just completing your nursing responsibility.” (M, 24 years).	
Benefits of Compassion for Patients	In total, 90.6% (<i>n</i> = 106) of students indicated that compassion could help improve patients’ well-being and satisfaction with care.	Students noted that compassion could help improve patients’ confidence, trust in nurses, satisfaction from care, self-esteem, and building therapeutic relationships. Supporting Quote: “Compassionate care is important as it improves patients’ self-esteem and they can manage their physical, physiological or psychological distress” (M, 24 years).	
Benefits for nurses	In total, 76.9% (<i>n</i> = 90) of students indicated that providing compassionate care helps nurses in gaining a sense of personal satisfaction.	Students noted that providing compassionate care could lead to feelings of contentment and happiness for nurses. Supporting Quote: “I should always be compassionate. It is not a difficult thing to be compassionate. Being compassionate to patients helps them. If the nurse is not compassionate, it could lead patients into emotional and psychological discomfort” (F, 23 years old).	
Compassionate Moments	In total, 57.3%–84.7% of students responded “Yes” to different compassionate moments.	The students shared several examples of practicing compassion in practice. Supporting Quote: “Comforted the patient, showed kindness practiced softness provided hygiene care, soothing their suffering, advocated for my patient, talked to the patient, listened to his concerns” (All students)	

Step 3: Compare findings and Check for “Fit”

Overarching themes	Quantitative results	Qualitative results	Metainferences
Meaning of Compassion and Compassionate Care	In total, 64.1%–88% of students responded “Yes” to meanings of compassion and compassionate care found in nursing literature, while 12%–35.9% responded “No.”	Students considered compassionate care as the eagerness to learn about and meet patient needs, provide ethical and safe care, intentional efforts to relieve patient distress, caring for the whole being, be sympathetic toward patients, and recognize patient suffering. Supporting Quote: “Compassionate care means providing care to your patients with sincerity, rather than just completing your nursing responsibility.” (M, 24 years).	Concordance / Expansion / Complementarity / Discordance
Benefits of Compassion for Patients	In total, 90.6% (<i>n</i> = 106) of students indicated that compassion could help improve patients’ well-being and satisfaction with care.	Students noted that compassion could help improve patients’ confidence, trust in nurses, satisfaction from care, self-esteem, and building therapeutic relationships. Supporting Quote: “Compassionate care is important as it improves patients’ self-esteem and they can manage their physical, physiological or psychological distress” (M, 24 years).	Concordance / Expansion / Complementarity / Discordance
Benefits for nurses	In total, 76.9% (<i>n</i> = 90) of students indicated that providing compassionate care helps nurses in gaining a sense of personal satisfaction.	Students noted that providing compassionate care could lead to feelings of contentment and happiness for nurses. Supporting Quote: “I should always be compassionate. It is not a difficult thing to be compassionate. Being compassionate to patients helps them. If the nurse is not compassionate, it could lead patients into emotional and psychological discomfort” (F, 23 years old).	Concordance / Expansion / Complementarity / Discordance
Compassionate Moments	In total, 57.3%–84.7% of students responded “Yes” to different compassionate moments.	The students shared several examples of practicing compassion in practice. Supporting Quote: “Comforted the patient, showed kindness practiced softness provided hygiene care, soothing their suffering, advocated for my patient, talked to the patient, listened to his concerns” (All students)	Concordance / Expansion / Complementarity / Discordance

Step 3: Compare findings and Check for "Fit"



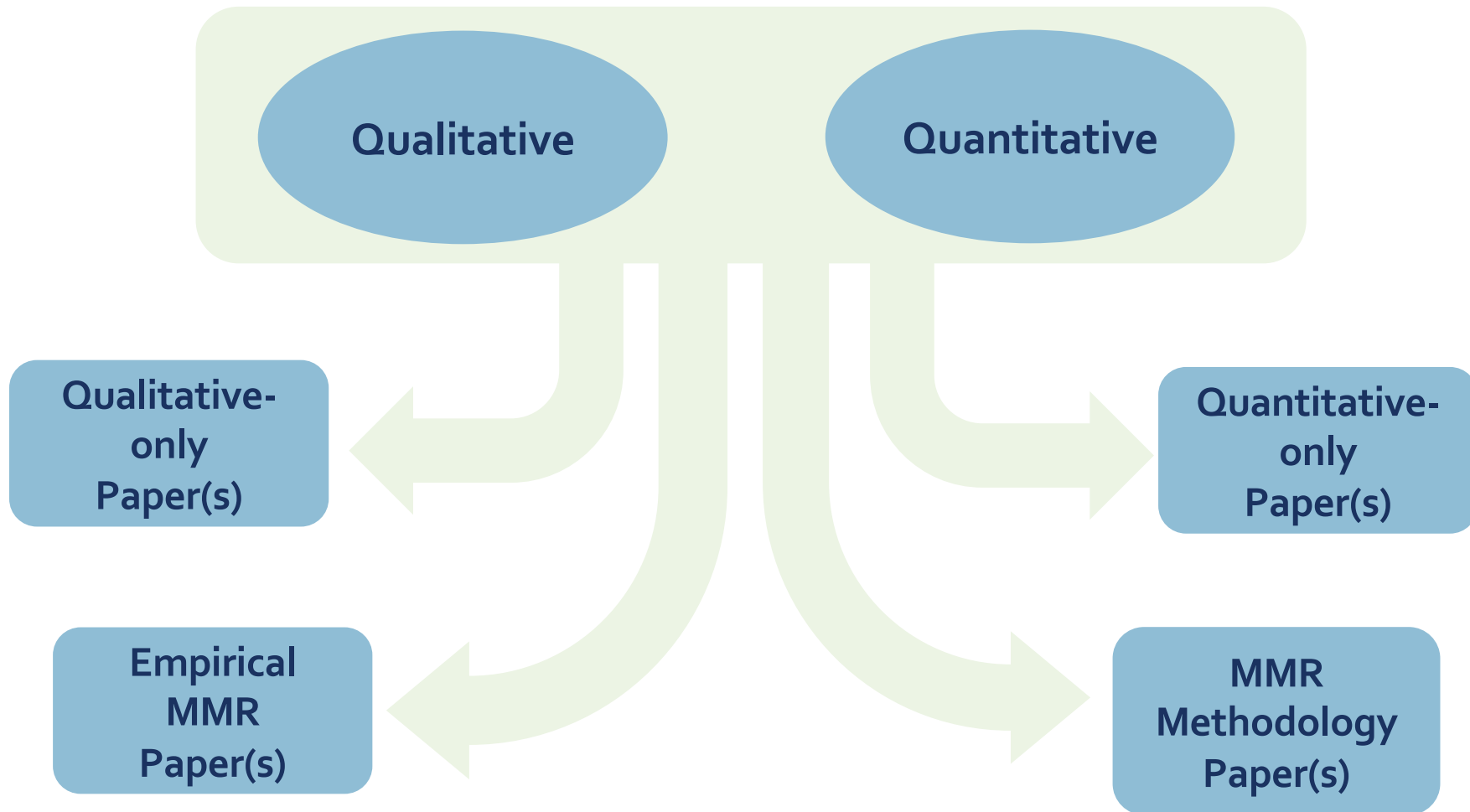
Step 4: Draw Meta-Inferences

Overarching themes	Quantitative results	Qualitative results	Meta-inferences
Meaning of Compassion and Compassionate Care	In total, 64.1%–88% of students responded “Yes” to meanings of compassion and compassionate care found in nursing literature, while 12%–35.9% responded “No.”	Students considered compassionate care as the eagerness to learn about and meet patient needs, provide ethical and safe care, intentional efforts to relieve patient distress, caring for the whole being, be sympathetic toward patients, and recognize patient suffering. Supporting Quote: “Compassionate care means providing care to your patients with sincerity, rather than just completing your nursing responsibility.” (M, 24 years).	Discordant: Students’ understandings of compassion and compassionate care are inconsistent with the meanings outlined in nursing literature.
Benefits of Compassion for Patients	In total, 90.6% (<i>n</i> = 106) of students indicated that compassion could help improve patients’ well-being and satisfaction with care.	Students noted that compassion could help improve patients’ confidence, trust in nurses, satisfaction from care, self-esteem, and building therapeutic relationships. Supporting Quote: “Compassionate care is important as it improves patients’ self-esteem and they can manage their physical, physiological or psychological distress” (M, 24 years).	Confirmed. Students perceived benefits of compassion were consistent with the benefits identified in nursing literature.
Benefits for nurses	In total, 76.9% (<i>n</i> = 90) of students indicated that providing compassionate care helps nurses in gaining a sense of personal satisfaction.	Students noted that providing compassionate care could lead to feelings of contentment and happiness for nurses. Supporting Quote: “I should always be compassionate. It is not a difficult thing to be compassionate. Being compassionate to patients helps them. If the nurse is not compassionate, it could lead patients into emotional and psychological discomfort” (F, 23 years old).	Expanded. Students noted the benefits of compassion for nurses and indicated that compassion could be beneficial for the hospital and the unit.
Compassionate Moments	In total, 57.3%–84.7% of students responded “Yes” to different compassionate moments.	The students shared several examples of practicing compassion in practice. Supporting Quote: “Comforted the patient, showed kindness practiced softness provided hygiene care, soothing their suffering, advocated for my patient, talked to the patient, listened to his concerns” (All students)	Confirmed. Although students were unaware of compassion, they identified different ways to practice it.



5. ONE FINAL WORD OF ADVICE: PUBLISHING YOUR MMR STUDY

Publishing your MMR Study



Publishing your MMR Study



RESEARCH ARTICLE

Undergoing Diagnostic Evaluation for Possible Cancer Affects the Quality of Life in Patients With Non-Specific Symptoms

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Data Availability Statement: A minimal dataset underlying the findings from our study has been uploaded as a supplementary file. The dataset is fully anonymized. For any further information, readers may contact: Ellen Moseholm (corresponding author) ela0073@regionh.dk.

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Health and Quality of Life Outcomes

RESEARCH

Health-related quality of life, anxiety and depression in the diagnostic phase of suspected cancer, and the influence of diagnosis

Ellen Moseholm^{1*}, Susan Rydahl-Hansen², Dorthe Overgaard³, Hanne S. Wengel¹, Rikke Frederiksen⁴, Malene Brandt⁵ and Bjarne O. Lindhardt⁶

Abstract

Background: Undergoing diagnostic evaluation for cancer has been associated with a high pre- and depression and affected health-related quality of life (HRQoL). The aims of this study were to: anxiety, and depression pre- and post-diagnosis in patients undergoing diagnostic evaluations for non-specific symptoms; to examine changes over time in relation to final diagnosis (cancer yes/no); and the predictive value of pre-diagnostic psychological, socio-demographic and clinical factors.

Methods: A prospective, multicenter survey study of patients suspected to have cancer based on symptoms was performed. Participants completed the EORTC-QLQ-C30 quality of life scale, HAD self-rated health before and after completing diagnostic evaluations. Intra- and inter-group differences in patients diagnosed with cancer versus patients with non-cancer diagnoses were calculated. The psychological, socio-demographic, and medical factors on HRQoL, anxiety and depression at follow-up were explored by bootstrapped multivariate linear regression analyses and logistic regression analyses.

Results: A total of 838 patients participated in the study; 679 (81%) completed the follow-up. T of the patients received a cancer diagnosis at the end of the follow-up. Patients presented initial burden of symptoms and affected role and emotional functioning and global health/QoL, irrespective of the prevalence of clinical anxiety prior to knowledge of the diagnosis was 32% in patients with in patients who received a non-cancer diagnosis. HRQoL and anxiety improved after diagnosis, and improvement was seen in patients who received a non-cancer diagnosis. There were no intra- or inter-group differences in the depression scores. The strongest predictors of global QoL, anxiety, and depression after a know baseline scores, comorbidity and poor self-rated health.

Conclusions: Patients undergoing diagnostic evaluations for cancer based on non-specific symptom prevalence of anxiety and affected quality of life prior to knowledge of the diagnosis. The predictive baseline scores is important when assessing the psychological impact of undergoing diagnostic evaluation.

Keywords: Cancer, Oncology, Pre-diagnosis, Health-related quality of life, Anxiety, Depression

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The experiences of health-related quality of life in patients with nonspecific symptoms who undergo a diagnostic evaluation for cancer: a qualitative interview study

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Scand J Caring Sci; 2016

The experiences of health-related quality of life in patients with nonspecific symptoms who undergo a diagnostic evaluation for cancer: a qualitative interview study

The diagnostic phase of cancer can affect health-related quality of life (HRQoL). The aim of this study was to investigate how patients with nonspecific symptoms experience HRQoL while undergoing diagnostic evaluations for cancer. Twenty-one participants who had completed a fast-track evaluation for possible cancer at one of three hospitals in the Capital Region, Denmark were interviewed 2–4 weeks after completing diagnostic evaluations. The interviews were semi-structured and were supported by an interview guide based on the same themes as in The European Organization for Research and Treatment of Cancer Quality of Life questionnaire (EORTC-QLQ-C30). Data analysis was based on

qualitative content analysis by Krippelberg and Krabbe. The purpose of this research was to measure changes in HRQoL during the diagnostic evaluation of patients presenting with non-specific symptoms possibly attributable to cancer, to describe their experiences of HRQoL, and to merge these findings with intent to obtain a more comprehensive understanding of their HRQoL experience during this stressful life event.

Keywords: quality of life, cancer, patient experience, diagnostic phase, anxiety

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Introduction

Many cancer patients experience emotional distress and their health-related quality of life (HRQoL) is affected over the course of their disease [1]. The diagnostic phase can be conceptually differentiated from other cancer stages in that it forms an interface between the suspicion of cancer and the medical confirmations of health/illness status [2]. Previous studies investigating patient experience in the diagnostic phase of cancer has primarily focused on patients diagnosed with cancer [3–7]. The few studies that have examined the diagnostic experience in patients with an unknown or a benign result are neither

abundant nor uniform and mostly of breast cancer. However, they do confront with the possibility of experience a high level of anxiety [8–10]. A high level of anxiety is able to perform daily activities, information and health care [2, 11, 12] and impact of the diagnostic phase is heightened by breast cancer screening programs with a benign outcome still psychological consequences afterwards [13]. There is some evidence that patients in fast-track programs experience diagnostic program, indicating that diagnostic evaluations may be improved [14]. A diagnostic fast-track procedure in Denmark in 2012 for patients with nonspecific or vague symptoms of to minimize patients' passive wait

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QUANTITATIVE paper



QUANTITATIVE paper

QUALITATIVE paper

MMR paper



■ Dissertation by Dr. Ellen Moseholm (2016)

Barriers to Publishing MMR Studies

- Multiple publishing options with MMR
- Recent advances in integration have made a vital contribution to the MMR field by making the integration process more systematic and transparent

BUT...

Authors still face significant barriers when attempting to publish their integrated MMR studies

Barriers to Publishing MMR Studies

Editorial

Barriers to Publishing Mixed Methods Studies in Disciplinary Journals

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Sergi Fàbregues¹ and Timothy C. Guetterman²

Introduction

Publishing a mixed methods study is no easy task. Restricted by a limited word count, researchers need to condense a greater amount of complex data, results, and interpretations than is the case with monomethod studies. At the same time, they must transparently, precisely, and effectively communicate any unique mixed methods insights and describe the process that generated those insights. Despite these difficulties, we have seen an exponential increase in the publication of mixed methods studies in many disciplines since the late 2000s, particularly in health and social sciences. For example, from 2009 to 2024, the number of journal articles indexed in Scopus with the term “mixed method*” in the title increased from 152 to 4739, and this increase was particularly concentrated in the subject categories of medicine, social sciences, nursing, and psychology. Some of these articles have reported methodological discussions and have been published in methodological journals such as *Journal of Mixed Methods Research*, *Quality and Quantity*, and *Methodological Innovations*. However, most of them have been empirical studies published in disciplinary journals, which publish quantitative, qualitative, and mixed methods studies in a particular field, discipline, or subdiscipline (Creamer, 2022).

The increasing prevalence of mixed methods studies in disciplinary journals is indicative of a rapid adoption of this research approach among scholars, a tendency that clearly shows that journal editors understand that mixed methods approaches can help researchers investigate complex problems in their disciplines and to address research questions that could not be adequately answered using quantitative or qualitative methods alone. However, scholars who endeavor to publish mixed methods studies in disciplinary journals may still encounter significant barriers. Mixed methods methodologists have studied the barriers to integrating quantitative and qualitative methods in a single study (Bryman, 2007), as well as the issues and constraints that affect the conduct of mixed methods studies in the health sciences (O’Cathain et al., 2009), and the methodological issues reported in empirical studies published in methodological journals (Zhou & Wu, 2022). Although some of these studies have discussed the barriers to publishing mixed methods research in general and to publishing this research in disciplinary journals in particular,

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- Authors’ ability to represent the **complexity of integration** in a clear and transparent manner
- Lack of awareness of **MMR reporting guidelines** among journal editors
- Disagreement or unfamiliarity with the **distinct nature and intrinsic value** of mixed methods results

Barriers to Publishing MMR Studies

“I regret to inform you that we find that that the novel scientific importance of the study is insufficient to meet our standards. The study is **based on a secondary analysis of two prior data sets**, one quantitative and one qualitative”

“The Associate Editor assigned to your manuscript flagged the concern that you have published both the qualitative and quantitative components of your study elsewhere (...) and are **now using the data again** for mixed-methods purposes with findings from both data sets already published. In her thinking, it was an ethical concern and so she flagged rejection for ethical reasons”

“Another serious issue is about sample sizes. One phase of the work involves a **fairly large sample**, whereas the second uses a **tiny sample size**: this is not acceptable”

Recommendations

- Before submission, **analyze the scope, audience, and methodological expertise** of the EIC and AEs
- Review **instructions for authors**: if MMR studies are published and if there is a requirement for using reporting guidelines (STROBE, COREQ, GRAMMS)
- Be **concise** when writing up your manuscript in order to report all the elements of the MMR study while still respecting the word limit
- Find a **way to communicate** the MMR procedures and results in a way that represents complexity while also making the text easily understood by non-MMR

Conclusions

- Integration is the **central feature** of an MMR study and what distinguishes it from monomethod research
- Several **advances in MMR** have been developed recently
- Integration is **intentional, holistic, and synergistic**
- **Integration strategies** can be implemented during planning and data collection, as well as during analysis and reporting
- **Joint displays** facilitate the systematic and transparent integration of the QUAN and QUAL components
- **Meta-inferences** are the end result of the integration process
- Authors face several **barriers to publishing MMR studies**



THANK YOU

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