

Addressing Health Disparities by Combining Quantitative and Qualitative Research Methods

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Outline

- NIH Framework on the combination of qualitative and quantitative research methods (i.e. Mixed Methods)
 - Example (from my own RCMAR-CHIME pilot study)
 - Some practical discussion on how to get started (from my own experience)
- Lecture focused on RCMAR CHIME core competencies related to study design
- My story

RCMAR CHIME CORE THEMATIC AREAS	RCMAR CHIME CORE COMPETENCIES
I. LITERATURE CRITIQUE	1. Identify factors that affect validity of a study.
	2. Use evidence as the basis of the critique and interpretation of results of published studies.
II. STUDY DESIGN	→ 3. Formulate a valid and feasible research question.
	→ 4. Operationalize a research question in measurable terms and generate testable hypotheses.
	→ 5. Choose an appropriate clinical and translational research design.
	→ 6. Assess the strengths and weaknesses of possible study designs for a given clinical or translational research question.
	→ 7. Design a research data analysis plan.
III. SOURCES OF ERROR	8. Assess threats to internal validity in any planned or completed clinical or translational study, including selection bias, misclassification, and confounding.
	9. Differentiate between the analytic problems that can be addressed with standard methods and those requiring input from biostatisticians and other scientific experts.
IV. STATISTICAL & QUALITATIVE METHODOLOGICAL APPROACHES	10. Evaluate computer output containing the results of statistical procedures and graphics.
	→ 11. Evaluate and analyze qualitative interview and focus group data.
V. SCIENTIFIC COMMUNICATION	12. Communicate clinical and translation research findings to different groups of individuals, including colleagues, students, the lay public, and the media.
	13. Prepare a research report for peer-reviewed publication.
VI. CULTURAL DIVERSITY	14. Recognize the demographic, geographic, and ethnographic features within communities and populations when designing a clinical study.
VII. COMMUNITY ENGAGEMENT	15. Understand the strategies and tools of community-engaged research.

Introduction

- How do we distinguish qualitative and quantitative research methods?
- What is the audience experience on mixed methods approach?

→ NIH Framework to discuss today:

Best Practices for Mixed Methods Research in the Health Sciences (NIH Office of Behavioral and Social Sciences Research)

The nature of quantitative research according to the NIH

- Tests theories or hypotheses, gathers descriptive information, or examines relationships among variables
- Variables are measured and yield numeric data that can be analyzed statistically
- Quantitative data have the potential to:
 - ✓ provide measurable evidence
 - ✓ help to establish (probable) cause and effect
 - ✓ yield efficient data collection procedures
 - ✓ create the possibility of replication and generalization to a population
 - ✓ facilitate the comparison of groups

Quantitative Approaches in the Health Sciences (according to the NIH)

- Case-control studies
- Descriptive surveys
- Observational studies
- Pragmatic clinical trials
- Randomized controlled trials
- Time-series designs

Qualitative Data

1. It is person-centered – attempts at understanding the world of the individuals (holistic approach)
 2. Refers to behavior, thoughts, opinions, etc..
 3. Usually involves a small sample of people
 4. Involves a high level of interpretation and synthesis
- in my experience 3 and 4 makes it hard to publish qualitative research in some outlets

Source: Kegan, S. Qualitative Research: Good decision making through understanding people, cultures and markets

Qualitative Data Analysis

Data

Analysis	Qualitative (Texts)	Quantitative (Ordinal/Ratio Scale)
Qualitative	Interpretive text studies. Hermeneutics, Grounded Theory	Search for and presentation of meaning in results of quantitative processing
Quantitative	Turning words into numbers. Classic Content Analysis, Word Counts, Free Lists, Pile Sorts, etc.	Statistical & mathematical analysis of numeric data

Source: *Analyzing Qualitative Data Systematic Approaches*, by Bernard, Wutich, and Ryan, Second Edition (p.2)

The combination of quantitative and qualitative data in the NIH framework

- Mixed methods research begins with the assumption that investigators gather evidence based on the **nature of the health-related question** as well as the social, behavioral, and biomedical theoretical orientations associated with the project.
- Social inquiry considers an **individual's behavior** in relation to a group, a population, or social institutions including families and organizations (e.g., hospitals, schools).
- **Quantitative methods are mainly deductive** and ideal to measure pervasiveness of “known” phenomena and central patterns of association, including inferences of causality.
- **Qualitative methods are mainly inductive** and allow for identification of previously unknown processes, explanations of why and how phenomena occur, and the range of their effects

The integration of multiple forms of data

Old View

- Investigators collected both forms of data, but kept them separate or casually combined them rather than using systematic integrative procedures

New View

- In mixed methods studies, investigators intentionally integrate quantitative and qualitative data. The basic concept is that integration of quantitative and qualitative data maximizes the strengths and minimizes the weaknesses of each type of data – 4 approaches:

Connecting, building, merging and embedding

Connecting Data

- It involves analyzing one dataset (e.g., a quantitative survey), and then using the analytical results to inform subsequent data collection (e.g., interview questions, identification of participants to interview).
- Example: NIAAA-funded project with non-abusing drinkers diagnosed with hepatitis C had an **initial qualitative component** based on interviews and Internet postings to describe new decision factors related to curtailing alcohol consumption. Investigators **used these findings to develop new items for a quantitative instrument**, administered in the second phase to assess the prevalence of the new factors and their association with current drinking (cf. Stoller et al., 2009).

Building Data

- Occurs when the results from one dataset informs a subsequent approach to collect data.
- For example, a research team might create survey research questions based on the argot or cultural constructs of specific target populations. This subsequent survey instrument would collect data to answer hypotheses that emanated from the initial data collection (previous example also fall here)

Merging Data

- Combines qualitative data with quantitative data to compare and analyze. This integration can be achieved by reporting results together in a discussion section of a study, such as reporting first the quantitative statistical results followed by qualitative quotes or themes that support or refute the quantitative results.
- It also can be achieved by transforming one dataset (e.g., counting the occurrence of themes in a qualitative dataset) so that the transformed qualitative results can be compared with the quantitative dataset. One also can use tables or figures that display both quantitative and qualitative results.

Embedding data

- Involves systematically linking the collection of qualitative to quantitative data at multiple points. One secondary dataset can be embedded within a larger, primary design. Embedding is frequently used in intervention design.
- For example, supplemental qualitative data on participants' intervention experience can help researchers adapt an ongoing adaptive intervention. Alternatively, a qualitative data collection may precede an experimental trial to inform development of procedures or follow an experimental trial to help explain the results of the trial.

Qualities of mixed methods design

- The research methods in any investigation must fit the research problem or question
- Research issues most suitable for mixed methods are those in which:
 1. A quantitative approach or the qualitative approach alone is inadequate to develop multiple perspectives or to provide a comprehensive understanding about a research problem or question
 2. One database build on another (a qualitative phase may help investigators develop a survey instrument or an intervention)
 3. After analyzing follow-up quantitative data, a qualitative phase may help researchers determine additional qualities or mechanisms suggested by the quantitative results
 4. We want to understand participants' experience with intervention curricula and reasons for drop out or loss to follow-up

Methodological challenges in mixed methods investigations

- **Resources.** Because multiple forms of data are being collected and analyzed, mixed methods research requires extensive time and resources to carry out the multiple steps involved, including the time required for data collection and analysis.
- **Teamwork.** In multidisciplinary, interdisciplinary, and transdisciplinary teamwork, different approaches towards investigating and writing might emerge. Team leaders need to anticipate the challenges and benefits of a team approach to mixed methods research
- **Sampling issues.** Some challenges specific to concurrent designs (i.e., merging quantitative and qualitative research) include having adequate sample sizes for analyses, using comparable samples, and employing a consistent unit of analysis across the databases.
- **Analytic and interpretive issues.** When the investigator merges the data during a concurrent design, the findings may conflict or be contradictory. Strategies to resolve them include gathering more data and revisiting the databases.

Mixed Methods Approach Example

2012-2013 RCMAR-CHIME Pilot Project:

"Financial exclusion and the wellbeing of minority elders in the United States"

Applied qualitative and quantitative research methods to understand lower levels of participation in the formal financial sector among older minorities and the impact on of bank account ownership on health outcomes

Example—Why a mixed methods approach?

Table 3. Percentage of FRs 51 Years and Older Who Do Not Own a Bank Account at the Household Level by Race and Ethnicity

	2000	2002	2004	2006	2008	2010	2012	2000–2012
White (%)	10	7	7	8	7	9	11	9
Black (%)	39	34	32	30	30	37	38	35
Hispanic (%)	32	31	37	35	38	42	46	38
Observations	10,753	10,063	10,930	10,601	10,035	11,456	11,107	74,945

Notes: Ownership of a bank refers to whether the household owns a checking, saving, or money market account. Percentages are calculated using only the household FR. We use year-specific weights to compute percentages in each year. For the percentage during the period 2000–2012, we use a base weight, which is the weight of the individual when it entered the survey. Source: Data obtained from the HRS (2017) for the years 2000, 2002, 2004, 2006, 2008, 2010, and 2012.

Example – Quantitative Component

- We used data from HRS for the period 2000–2012

Some findings:

- Citizenship and “taste for privacy” play a limited role for both minority groups, while real asset ownership, health, cognitive ability, and cultural hurdles contribute substantially to the gap
- For Hispanics, language barriers explain most of the gap, while neighborhood-level socioeconomic characteristics are more salient for blacks

→ Understanding the Racial/Ethnic Gap in Bank Account Ownership among Older Adults (*Journal of Consumer Affairs*, 2018, with E. Aguila and M. Angrisani)

Example – Qualitative Component

- We conducted seven focus groups in the Los Angeles area with a total of 70 participants (42 Latinos and 28 African Americans)

Some Findings:

- In relation to barriers to participate in the financial sector, supply was not an issue, but demand and behavioral factors seem more important
- A Qualitative Analysis of the Use of Financial Services and Saving Behavior Among Older African Americans and Latinos in the Los Angeles Area (*Sage Open*, 2015, with Ponce, M., Gongora, A. Duru, O.K.)

Some practical discussion on how to get started

- Conducting qualitative research is time consuming but definitely worth the time and effort
- Community partnerships are extremely important
- Recruitment strategy is central to the success of your study
- There are some short cuts to conducting qualitative research:
 - Research team (Ex. focus group facilitator)
 - A quick technique (See Watkins 2017, Rapid and Rigorous Qualitative Data Analysis: The “RADaR” Technique for Applied Research)
- Publishing qualitative research takes time... and many tries...

Thank you!

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