

ADVANCES IN MIXED METHODS RESEARCH

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MEDICAL SCHOOL
MIXED METHODS
RESEARCH & SCHOLARSHIP
UNIVERSITY OF MICHIGAN

Take home points:

By the end of this presentation,
you will have:

- ✓ A basic understanding of mixed methods research
- ✓ An understanding of 10 recent advances of this methodology
- ✓ Specific examples of these advances
- ✓ A checklist of advances to review for your project



Five Essential Characteristics of Mixed Methods Research

- In response to questions/hypotheses, the collection and analysis of BOTH **quantitative and qualitative data**
- The use of **rigorous procedures** in conducting quantitative and qualitative research
- The **integration** (or combination) of the findings from the quantitative results and the qualitative findings
- The development of procedures in which this data collection, analysis, and integration occurs: mixed methods **designs**
- The use of **theory** (and philosophy) as it relates to these procedures

Integration as a Centerpiece for Mixed Methods Research

- Integration separates mixed methods from other research approaches
- Integration suggests “mining” the data further than simply conducting quantitative and qualitative analysis
- Integration can be
 - Described
 - Visualized
 - Scripted for writing
- Mixed methods research can be said to be a methodology framed around the idea of a) gathering both quan and qual data and their analyses and b) integrating or combining the two datasets

My Epistemology Assumptions (How Researchers Gain Knowledge) for using Mixed Methods

- Multiple ways of viewing the world
- Dichotomy exists between quantitative and qualitative data (separate, distinct ways of gathering data)
- Equality of quantitative and qualitative research (privilege both forms)
- Practical approach to research

Problem: Separating the Datasets and Thinking Across the Datasets

- Thinking this way requires identifying your databases as either quan (closed-ended) or qual (open-ended)
- Listing out the two databases separately
- Thinking in terms of “mining” the data deeper through combining the datasets
- Thinking in terms of how the two datasets together provide added insight

Synergy

$$1 + 1 = 3 \text{ (M. Feters)}$$

Problem: As Mixed Methods Evolves and Is Used, Fields Differ in their Adaptations and Familiarity with It

Social work

Marketing

Family Science

Veterans Health Services

Research

Family Medicine

Health disparities

Global health

Occupational Therapy

Music Therapy

Counseling Psychology

Second Language Acquisition

Sociology

Psychology

Family Studies

Problem: Many People are Not Reading the Literature about Mixed Methods to Identify the Latest Thinking



Here are 10 Advances in Mixed Methods (last 5 years) for You to Incorporate into Your Project

- Include information about your quantitative, qualitative, and mixed methods **skills**
- Create **study aims** for the quantitative, qualitative, and mixed methods components
- Write a **justification** for using mixed methods
- Advance a mixed methods **design** for your procedures
- Portray this design with a **diagram** and/or **implementation matrix**
- Be specific about your point of **integration** in your design
- Create **joint display** tables to show integration and draw inferences
- Select a **conceptual framework** for your project that links into the design
- Advance mixed methods **validity (research integrity)** in your design
- Create **multiple publications** from your mixed methods project

Where we have been

Recent cutting-edge advances

Where Do We Find These Advances?
New Recommendations from NIH (2011)

Best Practices for Mixed Methods Research in the Health Sciences

Commissioned by the

Office of Behavioral and Social Sciences Research (OBSSR)
Helen I. Meissner, Ph.D., Office of Behavioral and Social Sciences Research

By

John W. Creswell, Ph.D., University of Nebraska-Lincoln
Ann Carroll Klassen, Ph.D., Drexel University
Vicki L. Plano Clark, Ph.D., University of Nebraska-Lincoln
Katherine Clegg Smith, Ph.D., Johns Hopkins University

With the Assistance of a Specially Appointed Working Group

Where Do We Find These Advances?

NIH R25 Mixed Methods Research
Training Program (MMRTP)

Johns Hopkins, Harvard, University of Michigan



The first 14 of the 46 scholars to be trained in the
next three years

American
Psychological
Association apa.org

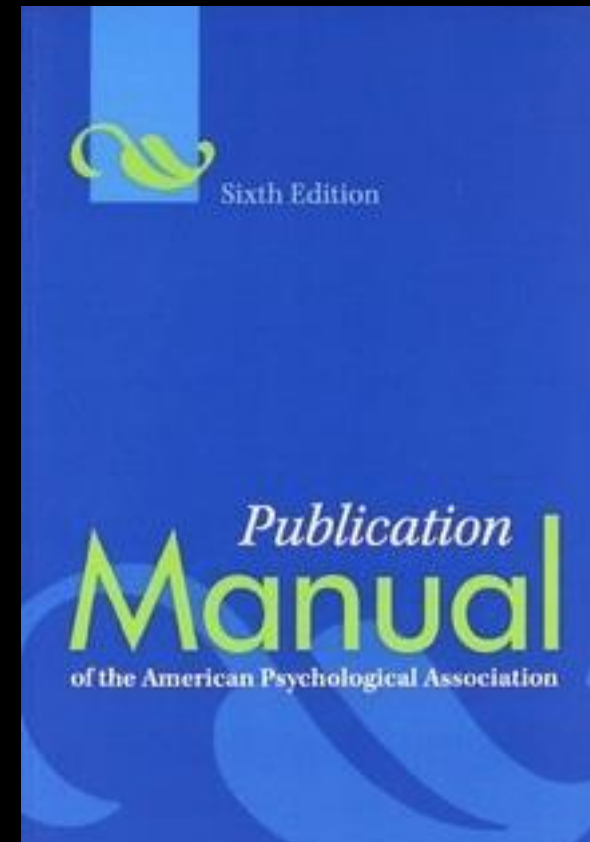


The American Psychological Association is the largest scientific and professional organization of psychologists in the United States. [Wikipedia](#)

Where Do We Find These
Advances?
APA Qualitative Article Reporting
Standards (QARS)

Current Task Force Developing Standards:

- ✓ Qualitative Research
- ✓ Qualitative Meta-Synthesis Research
- ✓ Mixed Methods Research



Will report at
APA Conference (2016)
and possibly in
American Psychologist

Where Do We Find These Advances?
Recent books



Based on my Harvard master
class lectures, 2013

Source: Creswell, J. W. (2014). *A concise introduction to mixed methods research*. Los Angeles, CA: Sage.

Include Information About Your Skills

- 1) Your personal skills in quantitative, qualitative, and mixed methods research
- 2) Skills possessed by members of your “mixed methods team”

What We Know About Skills

- Include investigator skills in proposals
- Possess three categories of skills: quantitative, qualitative, and mixed methods research skills

Advances

- Have multiple ways to learn mixed methods research
- Have an instrument to assess your readiness and skill components
- Have a good understanding of mixed methods team dynamics

Learning Mixed Methods

- Courses – residence and on-line
- Books – about 30 available now
- Workshops – such as this one
- Apprentice with a mixed methods scholar – NIH R 25 mentor-scholar
- Training programs (NIH, Michigan)

You Can Assess Your Readiness for Mixed Methods (Guetterman instrument)

Topics:

- ✓ Professional Experiences
- ✓ Personal Characteristics
- ✓ Mixed Methods Knowledge
- ✓ Mixed Methods Skills

Section IV: Mixed Methods Skills
 Instructions: For the next section, think about yourself as a mixed methods researcher. Please indicate the extent to which you are skilled in each of the following concepts of mixed methods research. Choose from the following response options by considering what you "can do". When responding to each item, please consider the skills relative to one another.

	None	Converse about the skill in general ways	Give explanations about the skill	Apply skill to challenging research problems	Give expert advice
Assessing the quality of mixed methods studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Planning a mixed methods study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaborating with others to conduct a study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conducting rigorous qualitative research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conducting rigorous quantitative research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identifying the purpose for using mixed methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapting a mixed methods design to a particular research purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing mixed methods research questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identifying the rationale for methodological decisions (e.g., design, collection, and analysis) in a mixed methods study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deciding what to mix in a study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrating between paradigms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrating qualitative and quantitative data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing a joint display to represent the integration of quantitative and qualitative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

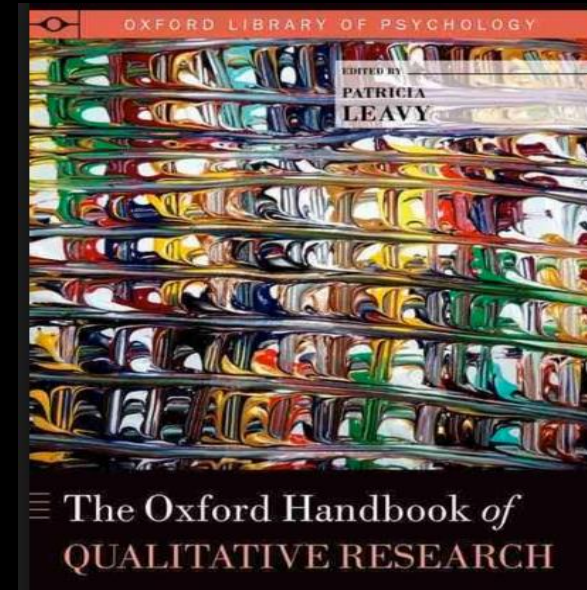
strands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing a narrative to represent the integration of quantitative and qualitative strands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making inferences linking qualitative and quantitative data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disseminating a mixed methods study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing about mixed methods conceptually	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapting mixed methods to a sociocultural context	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapting mixed methods to a discipline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Source: Guetterman, T. C. (2015). *The development, design, and test of a self-assessment instrument of mixed methods research proficiency*. (Doctoral dissertation). University of Nebraska-Lincoln.

Mixed Methods Team Dynamics

- Build a **capacity of team members** to articulate their philosophy, visions, values, and research goals
- **Facilitate group interactions** to create conditions for values-sharing dialogue, setting goals, and developing trust
- Systematically optimize values that support dialectical pluralism conditions and **communities of practice**

Source: Johnson, R. B., Onwuegbuzie, A. J., Tucker, S., & Icenogle, M. L. (2014). Conducting mixed methods research using dialectical pluralism and social psychological strategies. In P. Leavy (Ed.), *The Oxford handbook of qualitative research* (pp. 557-578). New York, NY: Oxford University Press.



Create Quantitative, Qualitative, and Mixed Methods Study Aims

Study aims = purpose, objectives, intent, goals

What We Know about Study Aims

- Include 3 aims in a MM study: quan, qual, mixed
- MM aim conveys what we want to accomplish with integrating the databases
- Can also go beyond the three: implementation, dissemination aims

Advances

- Linking mixed methods aim into design
- Writing the mixed methods aim following content then methods

Linking the Mixed Methods Aim to the Design

- To **compare** the qualitative interviews about the elderly's self-esteem with their perceptions on a survey about their self-esteem. (Convergent Design)
- To **explain** the results from the survey about self-esteem with the elderly with qualitative focus groups. (Explanatory Sequential Design)
- To **explore** the meaning of self-esteem for the elderly, to develop a survey based on their qualitative interviews, and then to administer the contextually-specific survey. (Exploratory Sequential Design)

Writing the Aims Based on Content-Methods Order

- Template =
Content followed by methods (Best Practices, 2011)

Example (Explanatory Sequential Design Example):

1. Relate personal isolation to depression among older adults based on survey data. (QUAN aim)
2. Explain how personal isolation affects depression among older adults by obtaining personal experiences. (MIXED METHODS aim)
3. Explore personal isolation among older adults using semi-structured interviews. (QUAL aim)
4. Develop an intervention (experiment) to compare different groups of isolated older adults (FUTURE RESEARCH aim)

Write a Justification for Using Mixed Methods

“Justify” (or rationale or reason): (a) our use of the importance of collecting both quantitative and qualitative data and (b) why integration in our design is important.

What We Know about Justification

- Essential to justify use of mixed methods today
- Is called “reason” or “rationale” in mixed methods literature
- Many justifications available in the literature (Bryman, 2006)
- Need to justify a) why you are collecting quantitative and qualitative data b) why integration is important

Advances

- Create a justification that matches your design
- Be aware of special words (and scripts) to describe justifications

Writing Justification Statements

- “The qualitative (focus group) data enriched the survey results and provided a **deeper understanding** of the social context of Internet use... (Quan-Hasse, 2007, p. 673). (Convergent Design)
- “Such use of the results from a qualitative study to inform a survey is said to **enhance the sensitivity** and accuracy of the survey questions. (Jones-Harris, 2010, p.3). (Exploratory Seq. Design)
- “Quantitative and qualitative methods can be used together to give a more **powerful voice** to women’s experiences. (Hodgkin, 2008, p. 299) (Mixed Methods Feminist Design)

Source: Plano Clark, V. L., & Ivankova, N. V. (2016). *Mixed methods research: A guide to the field*. Los Angeles, CA: Sage.

Justification Scripts

Type of Design

- Convergent Design
- Explanatory Sequential Design
- Exploratory Sequential Design

Words to Use

- “compare” “merge” “contrast”
“validate”
- “explain” “follow-up” “understand
mechanisms”
- “develop,” “design,” “build”

Advance a Mixed Methods Design for Your Procedures

Mixed methods designs are **procedures** for conducting a study (mixed methods equivalent to RCTs in quantitative research or ethnographies in qualitative research).

What We Know about Designs

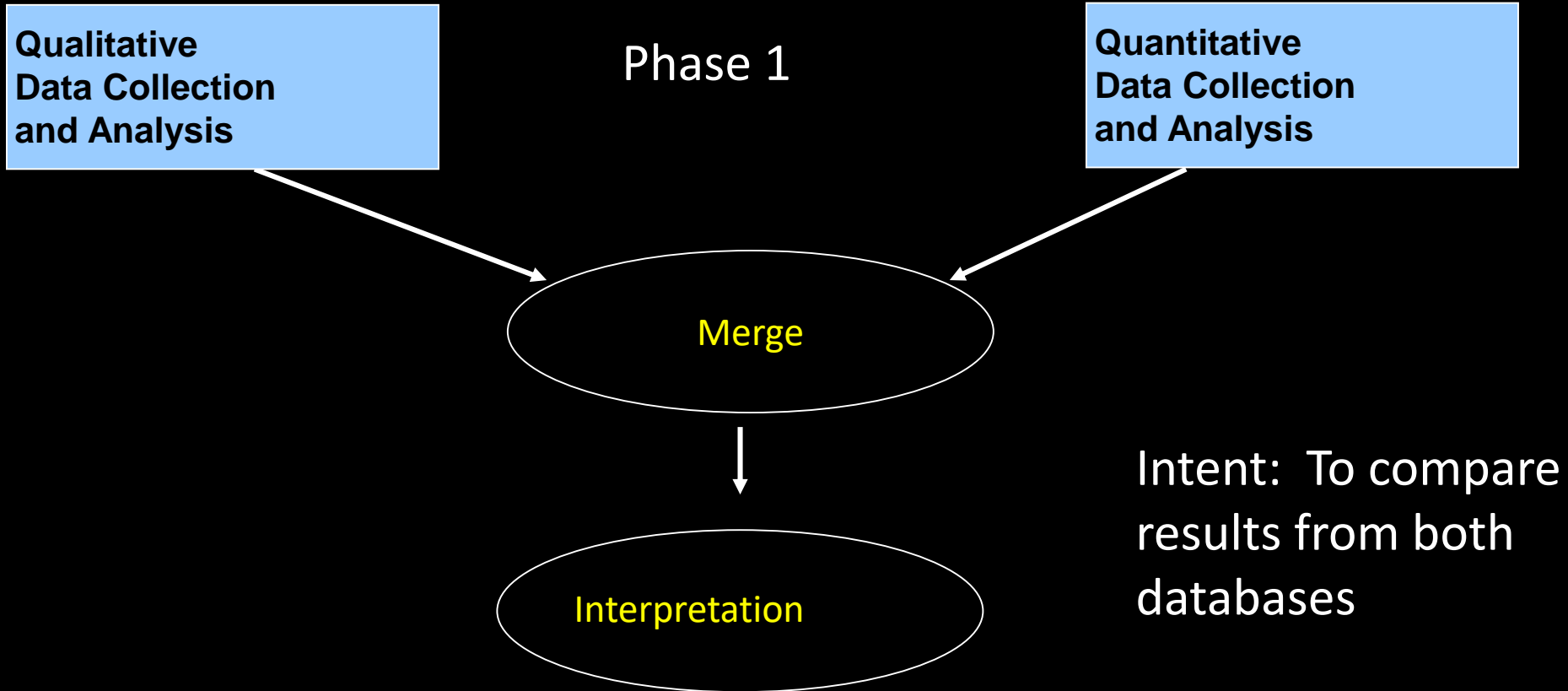
- Widely discussed in MM literature
- Many typologies (Creswell & Plano Clark, 2011)
- Confusing array of possibilities
- Emerging discussions about designs in literature

Advances

- Have conceptualized designs into 3 core designs and many applications (RCT, use of theory, methods)
- See design as lynchpin to link to many aspects of research process (e.g. no longer talk about “validity” generally, but within a particular design)

Core Design

A Convergent Design



Explanatory Sequential Design

Phase 1

Phase 2

Quantitative
Data Collection
and Analysis

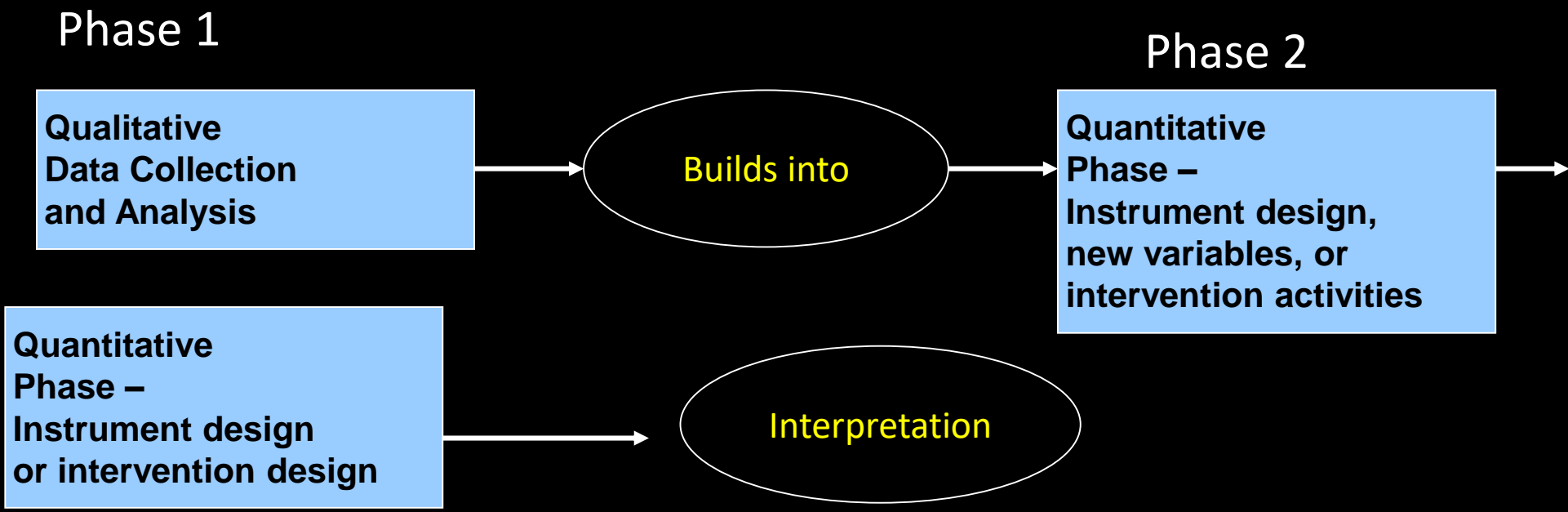
Explained
by

Qualitative
Data Collection
and Analysis

Interpretation

Intent: Use the qualitative data to help explain the quantitative results

An Exploratory Sequential Design



Phase 3

Intent: To explore first before building to a quantitative phase

Intersection of Core Designs with Complex Applications

What type of applications? (Plano Clark & Ivankova, 2016)

- Embedding within a **design**: e.g., experiment or intervention trial
- Included with another **methodology**: e.g., evaluations, network analysis
- Included with a **theoretical perspective**: e.g., feminist theory, CBPR

What are some characteristics of these (**complex**) applications? (Nastasi & Hitchcock, 2016)

Typically:

- Multiple research phases
- Multiyear research projects
- Large funded projects
- Multiple researchers
- Inclusion of mixed methods basic designs within different phases of research

Source: Plano Clark, V. L., & Ivankova, N. V. (2016). *Mixed methods research: A guide to the field*. Los Angeles, CA: Sage.

Source: Nastasi, B. K., & Hitchcock, J. H. (2016). *Mixed methods research and culture-specific interventions*. Los Angeles, CA: Sage.

Multiple Case Study

App, Survey

Program Evaluation

Community-Based Participatory Research/Social Justice

Intervention Trial

CONVERGENT DESIGN

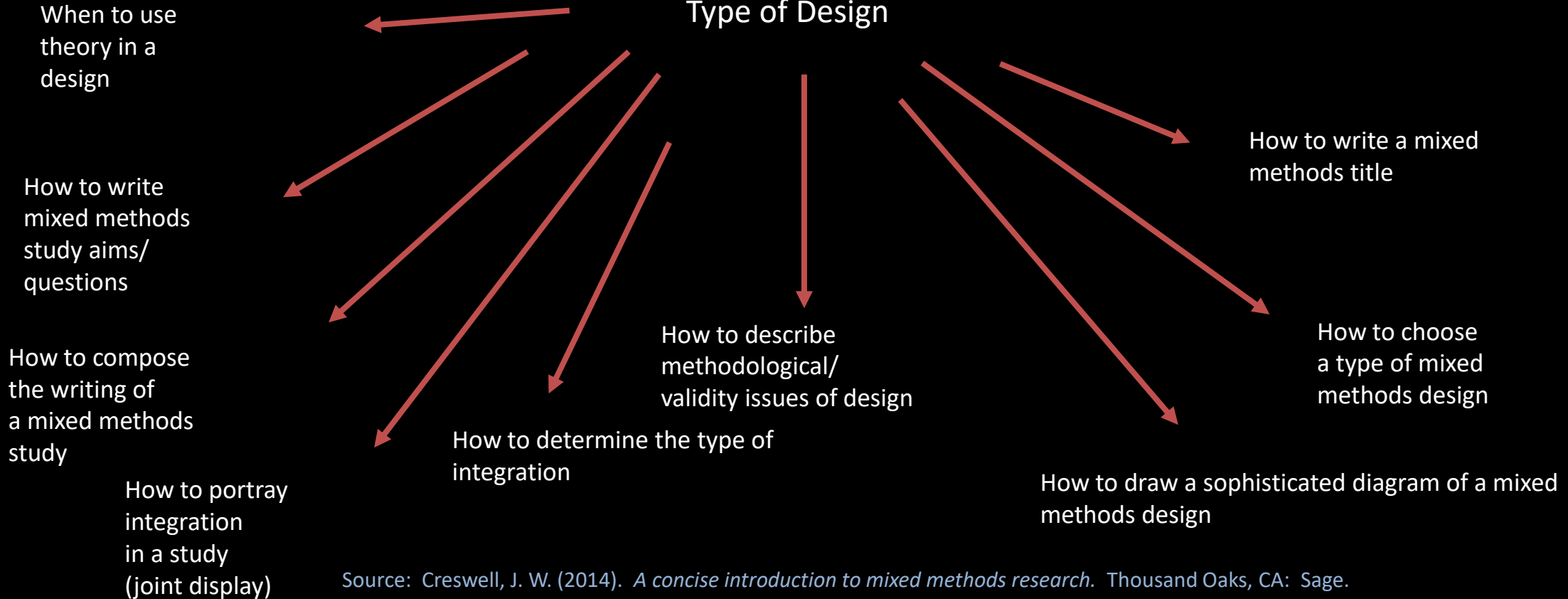
EXPLANATORY SEQUENTIAL DESIGN

EXPLORATORY SEQUENTIAL DESIGN

Mixed Methods Designs Have Opened Up Discussions about the Entire Research Process

Rationale/Problem/Questions

Type of Design



Source: Creswell, J. W. (2014). *A concise introduction to mixed methods research*. Thousand Oaks, CA: Sage.

Portray Your Design with a Diagram
and/or an Implementation Matrix

Visual pictures of the procedures in our mixed methods projects

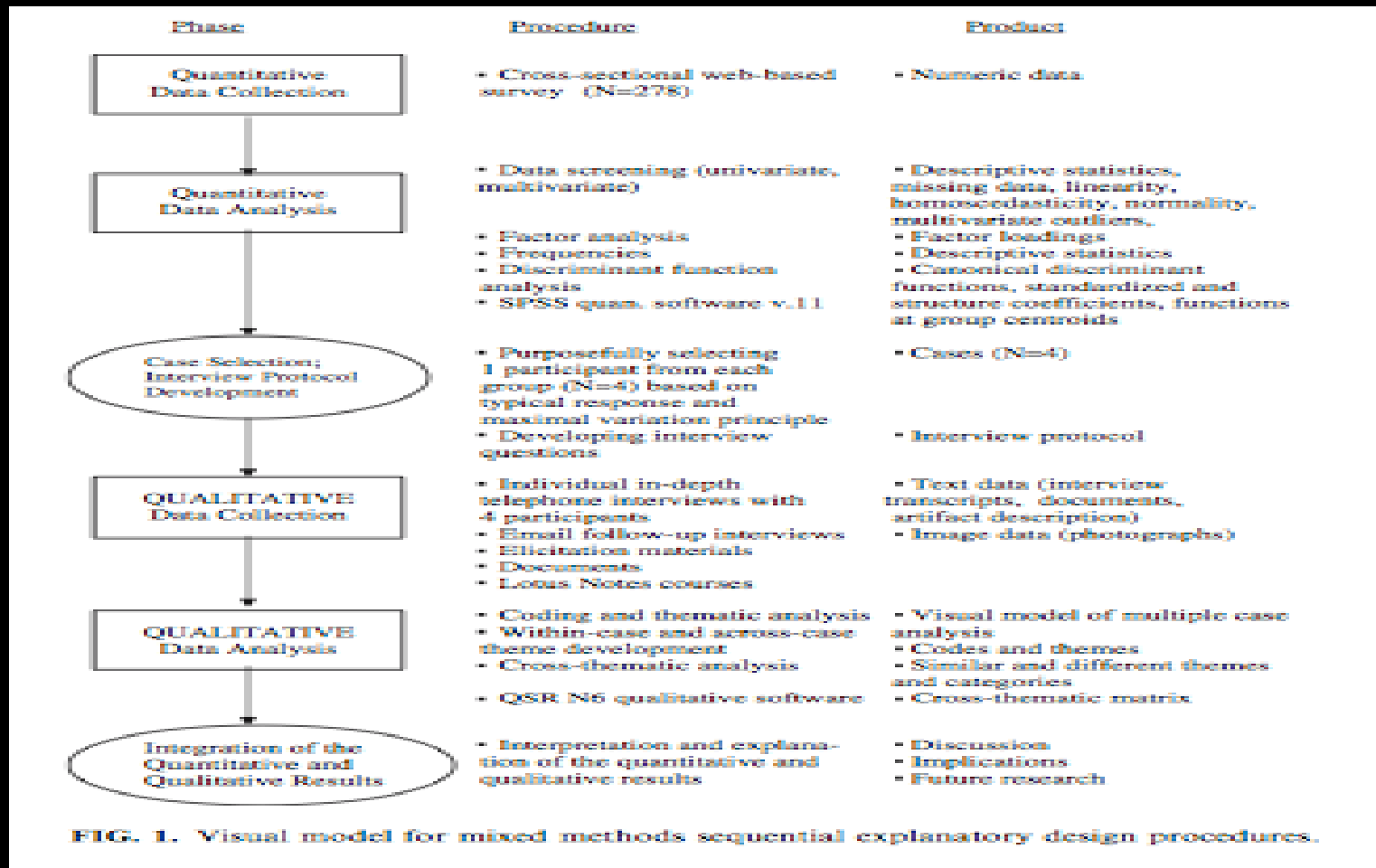
What We Know About Diagrams

- Useful for project presentations to teams, stakeholders, proposal reviewers, graduate committees
- Have examples in the literature from early 1990s
- Suggested by funding agencies to best understand projects

Advances

- Have added to “methods” diagrams “content” features
- Have added elements into diagrams (e.g., time, colors, etc.)
- Have added implementation matrix to portray project process and outcomes

A “Methods” Diagram with Phases, Procedures, Products



Source: Ivankova, N. V., & Stick, S. L. (2007). Students' persistence in a distributed doctoral program in educational leadership in higher education: A mixed methods study. *Research in Higher Education*, 48, 93-135. doi: 10.1007/s11162-006-9025-4

PRELIMINARY EVIDENCE

The Longitudinal study of war-affected youth in Sierra Leone (LSWAY) examines trajectories of psychosocial adjustment among N=529 male and female survivors of Sierra Leone's civil war.

QUANT

Male and female war-affected youth interviewed in 2002, 2004, and 2008. Linear growth models used to investigate trends related to war and post-conflict experiences.

QUAL

In-depth interviews/narratives of youth (N = 30) conducted in 2008 to illuminate processes shaping risky and resilient trajectories.

MERGE THE RESULTS

Findings inform next phase of qualitative data collection for intervention development.

Conduct qualitative key informant (KI) interviews in 2010 with experts from youth serving organizations, war-affected youth and caregivers, about current problems of war-affected youth

Identify key themes emerging from qualitative data around symptoms and functional impairments and sources of resilience characterizing war-affected youth. **QUAL findings used to design group-based mental health intervention**

Implement culturally relevant intervention; evaluate using a single group, **pre- and post-test experimental design** to assess mental health and functional impairments

Conduct **qualitative** follow-up assessments of feasibility and acceptability and post intervention assessments of satisfaction

INTERPRETATION

Intervention was feasible and acceptable

A "Content" and Methods Diagram

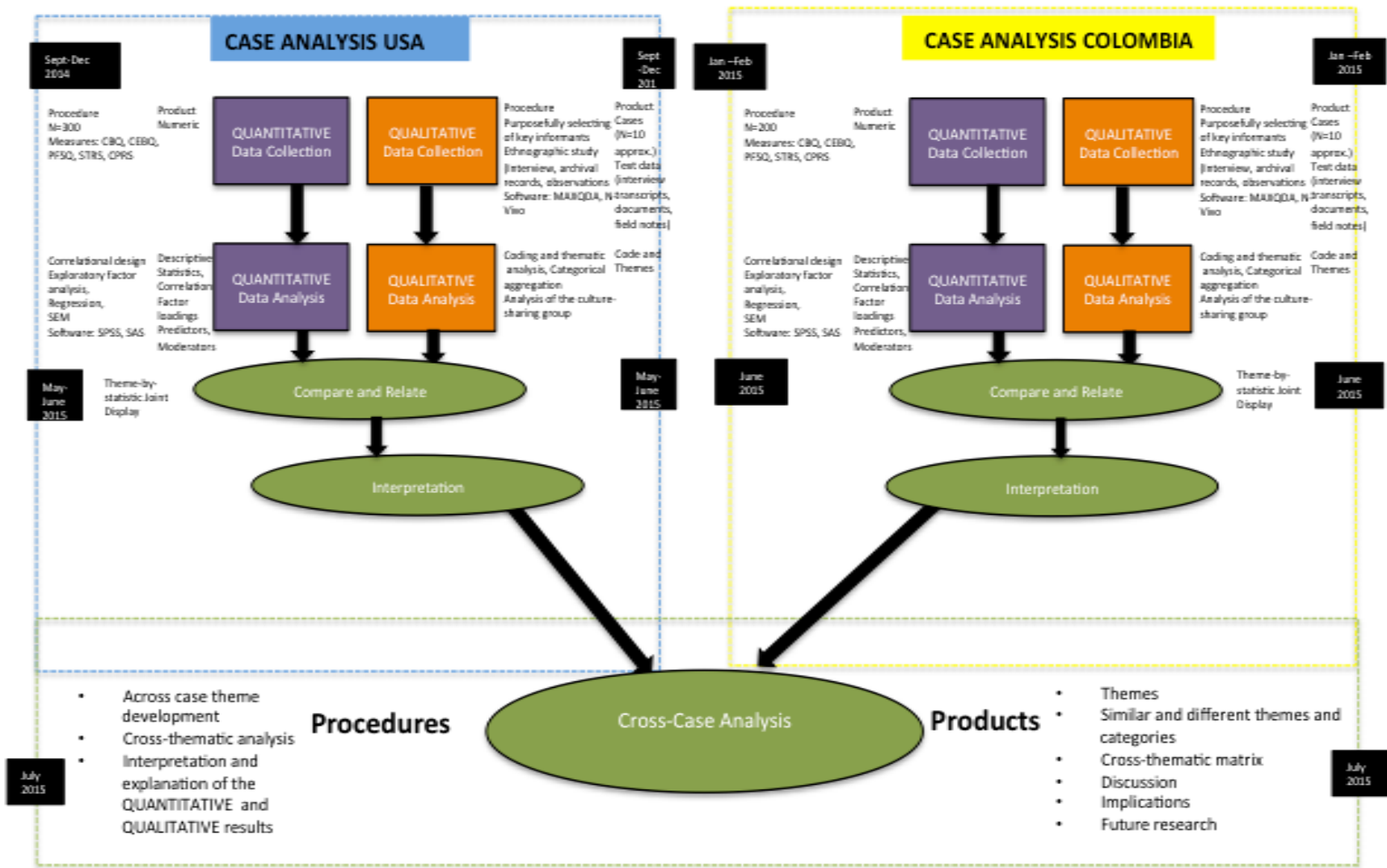


Figure 1. Feeding Practices of Families and Teachers with Preschoolers in Colombia and U.S.: A Cross-cultural Multiple Case Study

Source: Escalante, E. (2014). Feeding practices with preschoolers In Colombia and the US: A cross-cultural multiple case study. Dissertation Proposal, University of Nebraska-Lincoln

Added Features:
 ✓ Color
 ✓ Timeline
 ✓ RQs

A Sample Implementation Matrix (Table)

Box 2. Table of Strategy, Sample, Goals, and Analysis

Strategy	Sample	Goal	Analysis
Structured, standardized interviews	Stratified random sample (based on depressive symptoms) of older adult patients from non-academic primary care settings	Assess depressive symptom patterns and correlates	Multivariate regression models
Semi-structured interviews	Purposive: 50 African American and 50 white adults from Spectrum sample (who may or may not be depressed)	Identify an explanatory model for depression	Grounded theory
Free listing and pile sorts	First 25 African American and 25 white adults selected above for semi-structured interviews for free listing. Second 25 African American and 25 white adults selected above for pile sorts	Identify the domain of depression and its characteristics	Cultural consensus analysis
Ethnographic discourse-centered analysis	Purposive: Another 15 African American and 15 white adults who are depressed based on survey responses from the Spectrum sample	Identify social meaning of depression	Discourse analysis

Gallo, J.J. (2003-2007). The sociocultural context of depression in late life. Research grants funded by the National Institute of Mental Health (R01MH67077, R01MH62210, and R01MH62210-01S1).

Source: Creswell, J. W., Klassen, A. C., Plano Clark, V. L., & Smith, K. C. (2011). *Best practices for mixed methods research in the health sciences*. Washington, DC: National Institutes of Health.

Be Specific about Your Integration

Integration = INTERSECTION of qualitative and quantitative data (Plano Clark & Ivankova, 2016)

What We Know about Integration

- Represents a defining, unique methodological feature of MM
- Not clearly understood (Bryman, 2006) (e.g., how do you mix numbers with text?)

Advances

- Know about integration types: connecting, building, merging, embedding (Fetters, Curry, & Creswell, 2013)
- Can locate integration (point of interface) in our designs (Morse & Niehaus, 2009)
Where does the quantitative data bump up against the qualitative data?
- Have scripts to write it into your proposal/application

Source: Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, 6, 97-113. doi: 10.1177/1468794106058877

Source: Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs – principles and practices. *Health Services Research*. DOI 10.1111.1475-6773.1217

Source: Morse, J. M., & Niehaus, L. (2009). *Mixed methods design: Principles and procedures*. Walnut Creek, CA: Left Coast Press.

An Analogy

When we mix up the batter for the cake...



The **flour** blends (merges) in the batter and disappears in its original form. This is **integration**.



The **raisins** are mixed into the cake. We are “connecting” or “embedding” the raisins in the batter. The raisins stay intact. This is **integration**.

Point of Interface for Integration in the Design

Explanatory Sequential Design

Phase 1

Quantitative
Data Collection
and Analysis



Explained
by



Phase 2

Qualitative
Data Collection
and Analysis



Interpretation

Point of
Integration



Quantitative results lead to qualitative data collection

Scripts for Mixed Methods Integration Statements

- “Integration involved **merging** the results from the quantitative and qualitative data so that a **comparison** could be made and a more complete understanding emerge than what was provided by the quantitative or the qualitative results alone.” (Convergent Design)
- “Integration involved **connecting** the results from the initial quantitative phase to help plan the follow up qualitative data collection phase. This plan would include what questions need to be further probed and what individuals can help best explain the quantitative results.” (Explanatory Sequential Design)
- “Integration involved gathering initial qualitative data, analyzing it, and then using the qualitative results to **build** a new intervention (or measure or instrument) that will be tested quantitatively.” (Exploratory Sequential Design)

Create Joint Displays to Represent Integration

- Joint displays are ways to represent integration in a results or discussion
 - Shows the intersection of quantitative and qualitative data
 - Presented as a table or a graph

What We Know about Joint Displays

- Recommended by US federal government (“Best Practices”)
- Examples appearing more frequently in mixed methods studies
- Joint displays illustrate integration of the quantitative and qualitative data

Advances

- Have useful, published models of joint displays
- Relate joint displays to the type of design

Example of a Joint Display

		QUAL results	QUAN results
<i>Comparison of Information from Interview and Survey Data: Examples of Four of the Eight Themes</i>			
Major Topics	Theme	Face-to-face Interviews	Telephone Survey
	1. How and why child was placed in program	<p>Two aspects of decision:</p> <p>(1) Community-based “inclusive” option</p> <p>(2) Specific child care center</p> <p>Factors affecting choice:</p> <ul style="list-style-type: none"> • Visited and liked classroom & teacher • Convenience of location • Flexibility in hours • Good reputation of center • Concern if center would accept child because of behavior 	<p>Parents’ most important reasons for using program:</p> <ul style="list-style-type: none"> • Offers special education services or therapies • Provides opportunities for child to learn • Provides opportunities to play with other children
	2. Program’s appropriateness for child	<p>In successful placement, there is a “match or fit” between child’s and family’s needs & program. Factors affecting match or fit:</p> <ul style="list-style-type: none"> • Acceptance by staff & children • Likes activities and routines for child • Child likes program • Sees benefits or specific improvements 	<ul style="list-style-type: none"> • 90% said very important for child to be in inclusive program • 80% indicated child usually or always receives special services needed • 86% were satisfied with way in which child’s educational goals were made
	3. Helpful and unhelpful players	<p>Characteristics of helpful players:</p> <ul style="list-style-type: none"> • Consistent presence over time & settings • Personal investment in child • Provides different types of support • Dependable source of information about child <p>Characteristics of unhelpful players:</p> <ul style="list-style-type: none"> • Minimize or disregard family concerns • Inadequate communication 	<p>The most helpful supports were:</p> <ul style="list-style-type: none"> • Other family members at home • Child’s teachers • Other professionals in community and at child’s program
	4. Child’s participation in family and community activities	<p>Factors that affect participation:</p> <ul style="list-style-type: none"> • Parent’s safety concerns about child • Parent’s perception of what is expected of child’s behavior • Lack of other young children in immediate neighborhood • Family’s own style, schedule, and how it participates in the community <ul style="list-style-type: none"> • An extended family system was so strong a part of family’s culture that family did not need or choose to participate much in the community • Young age of children 	<p>Limitations on participation:</p> <ul style="list-style-type: none"> • Child’s language skills • Family’s schedule and time constraints • Attitudes of others towards child’s disability • Child’s behavior • Lack of other children to play with in neighborhood

SOURCE: Li et al., 2000, Table 2, pp. 124–125. Reprinted with permission of SAGE Publications, Inc.

Source: Li, S., Marquart, J. M., & Zercher, C. (2000). Conceptual issues and analytic strategies in mixed-Methods studies of preschool inclusion. *Journal of Early Intervention, 23*(20), 116-132.

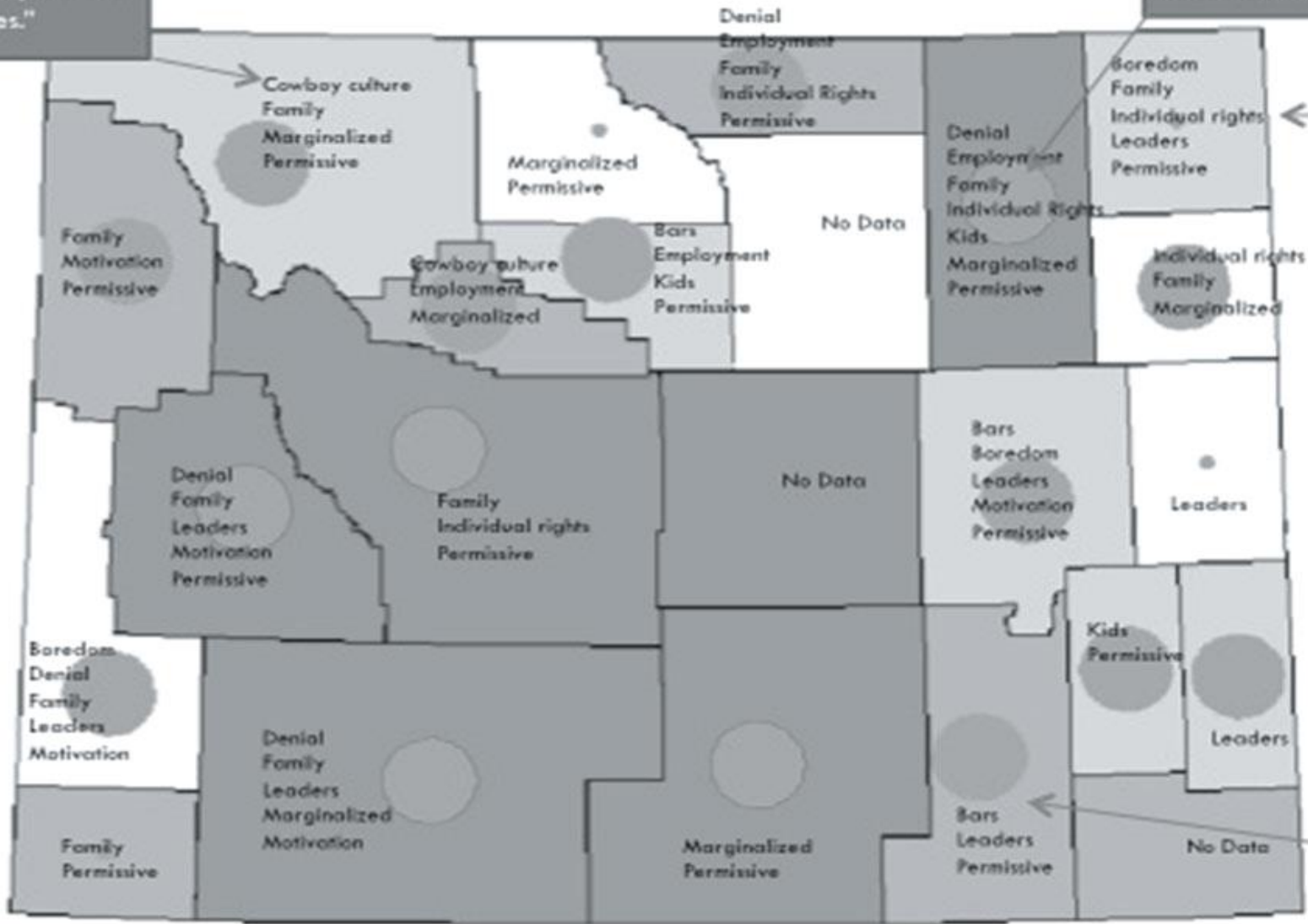
2003-2005 Alcohol Problem Severity Index

"Alcohol is an acceptable part of society and all activities."

"Parents allow their children to go into environments where they know drinking will be going on – they are the key to making things change."

"It's not my problem, and I don't want to get involved in your problems."

Example of Joint Display (Graph)



"The bars don't understand how to serve alcohol responsibly."

Reprinted from "State Level Assessments, Graphic Displays, and Mixed Method" by P.A. Minugh, 2012, Invited presentation at the Eighth International Congress of Qualitative Inquiry: Mixed Methods Day, University of Illinois at Urbana-Champaign.

Select a Conceptual Framework for Your Study

- A conceptual framework in a mixed methods study is a framework that provides a general explanation as to what the investigator will find from the results. It can be presented as a conceptual framework, a model, a theory (of varying levels of abstraction), or even a broad philosophy.

What We Know About Conceptual Frameworks

- Important to identify one
- May be composite framework
- Often presented as diagram

Advances

- Have the conceptual framework inform the design
- Use the conceptual framework across quan and qual phases of design

Theory Informing an Explanatory Sequential Design

Explanatory Sequential Mixed Methods Design

Theory of Behavioral Change

Collect/analyze Quantitative Data

- Collect N=250 **surveys**
- Measure behaviors leading to lowered cholesterol
- Analyze data descriptively and multivariately

Phase 1

Integration

Collect/analyze Qualitative Data

- Collect N=30 interviews with patients based on surprising quantitative results
- Code data and identify themes

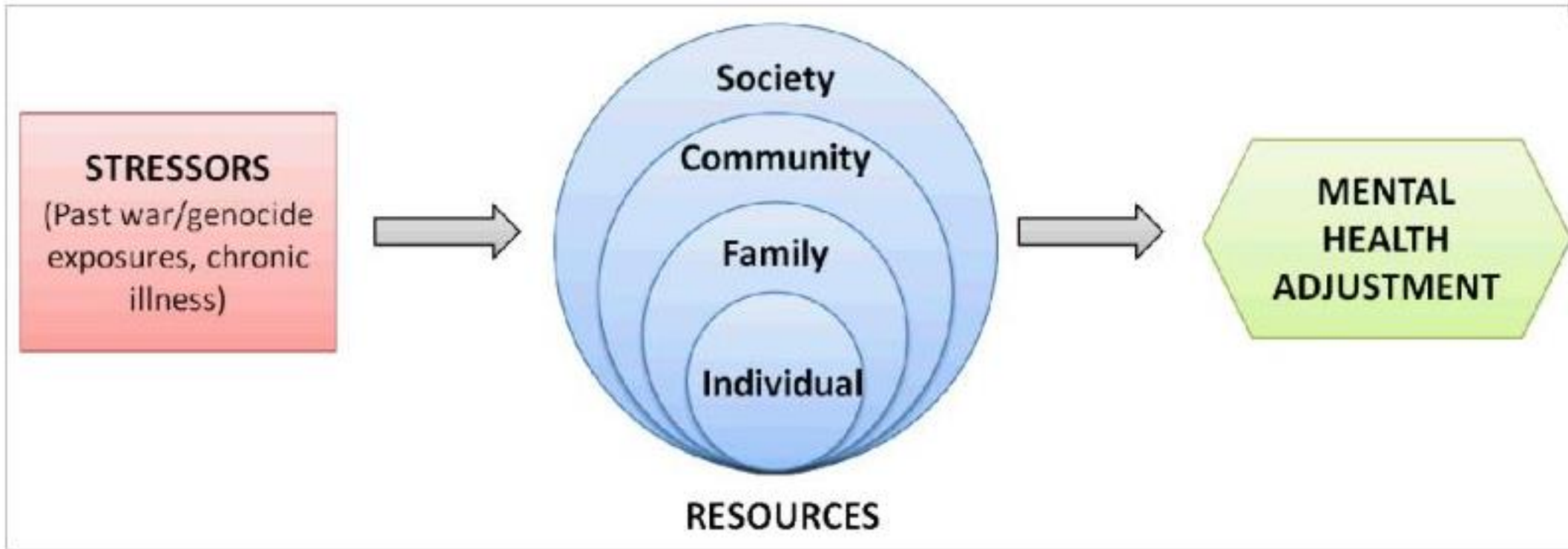
Phase 2

Interpret how qualitative results help explain quantitative results



Theory Informing Quan. and Qual. Phases of a Mixed Methods Design

Figure 2



Ecological model of stress-adjustment

Source: Betancourt, T. S., Meyers-Ohki, S. E., Stevenson, A., et al. (2011). Using mixed-methods research to adapt and evaluate a family strengthening intervention in Rwanda. *African Journal of Traumatic Stress*, 2(1), p. 38.

Advance Mixed Methods Validity (Research Integrity)

- Validity in mixed methods research: trust, draw accurate inferences in our interpretation of the MM design

What We Know About Validity

- Report three types of validity in a MM study: a) quantitative b) qualitative and c) mixed methods.

Advances

- Mixed methods – has its own validity, called “legitimation” ” (Onwuegbuzie & Johnson, 2006) or methodological issues (Creswell & Plano Clark, 2011)
- Form of MM validity relates to the design (Campbell & Stanley, 1963)

Source: Campbell, D., & Stanley, J. (1963). Experimental and quasi-experimental designs for research. In N. L. Gage (Ed.), *Handbook of research on teaching* (pp. 1-76). Chicago: Rand McNally.

Source: Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.

Source: Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed research. *Research in the Schools*, 13(1), 48-63.

Methodological or Validity Issues in Mixed Methods Designs

Type of Design	Potential Challenging Points in the Design
Convergent Design	<ul style="list-style-type: none"> • Designing parallel questions • Sample size • How to merge data • Conflicting results
Exploratory Sequential Design	<ul style="list-style-type: none"> • Qual to quan • Rigorous instrument/intervention design
Explanatory Sequential Design	<ul style="list-style-type: none"> • Quan to qual • Qualitative sampling • Qualitative follow-up questions
Experimental, Intervention Framework	<ul style="list-style-type: none"> • How to use qual data In experiment • Bias introduced by qual data collection in experiment
Participatory/Social Justice Framework	<ul style="list-style-type: none"> • Identify social justice lens • Involve participants in study • Bring about change
Program Evaluation Framework	<ul style="list-style-type: none"> • Link one stage to another • Keep focus on objectives
Case Study Framework	<ul style="list-style-type: none"> • Identify the cases • Determine how to integrate data when building cases
Survey Development Framework	<ul style="list-style-type: none"> • Create new survey or modify one • Qual to quan

Match Validity Issues to Design: Case of Explanatory Sequential Design

Table 1. Eight Issues to Consider when Ensuring Quality of Meta-Inferences in Mixed Methods Sequential QUAN → QUAL Designs.

1. Use rigorous and systematic procedures for data collection and analysis in quantitative and qualitative study phases to address weakness minimization.
2. Apply validation strategies recommended for quantitative and qualitative research approaches in quantitative and qualitative study phases.
3. Select participants for qualitative follow-up phase consistent with the overall purpose of the study.
4. Use systematic statistically grounded process for selecting participants for qualitative follow-up phase.
5. Qualitatively follow up on important results from initial quantitative phase.
6. Elaborate on unexpected quantitative results in the qualitative follow-up phase.
7. Allow for interaction between qualitative and quantitative study phases.
8. Create meta-inferences grounded in both quantitative and qualitative results.

Source: Papadimitriou, A., Ivankova, N., & Hurtado, S. (2013). Addressing challenges of conducting quality mixed methods studies in higher education. In J. Huisman & M. Tight (Eds.), *Theory and method in higher education research: International perspectives on higher education research* (Vol. 9, pp. 133-153). London, UK: Emerald Group Publishing Limited.

Create Multiple Publications from Your Mixed Methods Project

- Focus on scholarly publications (e.g., journals, reports)

What We Know about Writing and Publishing

- Increased publication rates of mixed methods studies
- Studies can be empirical articles or methodological articles
- More journals opening up to mixed methods
- Word counts of journal may limit mixed methods publications

Advances

- Can create multiple publications (quan,qual,overview,methodological)
- Use templates for structuring the methods
- Use published standards for publication (APA)

Create Multiple Publications from a Project

Family Practice 2010; 27:95-102
doi:10.1093/fampra/kyp0060
Advance Access published on 6 November 2009

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'If I feel something wrong, then I will get a mammogram': understanding barriers and facilitators for mammography screening among Chilean women

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Background. Breast cancer is the leading cause of cancer among women in Chile and in many Latin American countries. Breast cancer screening is an effective strategy to reduce mortality, but it has a very low compliance among Chilean women.

Objective. To understand barriers and facilitators for breast cancer screening in a group of Chilean women aged 50–70.

Methods. Following the Predisposing, Enabling and Reinforcing (PRECEDE) framework, seven focus groups ($N = 48$ women) were conducted with women that have had diverse experiences with breast cancer and screening practices. Information was collected using field notes and audio and video recording. Following the grounded theory model, a sequential process of open, axial and selective coding was used for the inductive analysis. Atlas.ti 5.5 software was used for coding and segmenting the data obtained from the interviews.

Results. The presence of symptoms and/or the finding of lumps through breast self-examination (BSE) were the main predisposing factors for getting a mammogram. Secrecy, embarrassment and fatalism about breast cancer were significant cultural factors that influenced the decision to seek mammogram screening. Confidence in medical staff and dignity in the treatment at the clinic were important enabling factors. The main reinforcing factors for getting the test were a sense of fulfillment by doing something good for themselves and getting timely information about the results.

Conclusions. Primary health care providers should use culturally appropriate strategies to better inform women about the importance of mammography screening and the limitations of BSE to preventing advanced breast cancer.

Keywords. Breast cancer, Chile, qualitative evaluation, screening.

Qualitative Article

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Mammogram screening in Chile: Using mixed methods to implement health policy planning at the primary care level

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Summary

Breast cancer has the highest incidence of all cancers among women in Chile. In 2005, a national health program progressively introduced free mammography screening for women aged 50 and older; however, three years later the rates of compliance with mammographic screening was only 12% in Santiago, the capital city of Chile. This implementation article combines the findings of two previous studies that applied qualitative and quantitative methods to improve mammography screening in an area of Santiago. Socio-cultural and accessibility factors were identified as barriers and facilitators during the qualitative phase of the study and then applied to the design of a quantitative randomized clinical trial. After six months of intervention, 6% of women in the standard care group, 51.8% in the low intensity intervention group, and 70.1% in the high intensity intervention group had undergone a screening mammogram. This review discusses how the utilization of mixed methods research can contribute to the improvement of the implementation of health policies in local communities.

Quantitative Article

Cancer
Epidemiology,
Biomarkers
& Prevention

Research Article

Strategies for Increasing Mammography Screening in Primary Care in Chile: Results of a Randomized Clinical Trial

Klaus Püschel¹, Gloria Coronado², Gabriela Soto³, Karla Gonzalez¹, Javiera Martinez¹, Sarah Holte², and Beti Thompson²

Abstract

Background: Breast cancer is the cancer with the highest incidence among women in Chile and in many Latin American countries. Breast cancer screening has very low compliance among Chilean women.

Methods: We compared the effects on mammography screening rates of standard care, of a low-intensity intervention based on mail contact, and of a high-intensity intervention based on mail plus telephone or personal contact. A random sample of 500 women with the age of 50 to 70 years registered at a community clinic in Santiago who had not had a mammogram in the past 2 years were randomly assigned to one of the three intervention groups. Six months after randomization, participants were re-evaluated for their compliance with mammography screening. The outcome was measured by self-report and by electronic clinical records. An intention to treat model was used to analyze the results.

Results: Between 92% and 93% of participants completed the study. Based on electronic records, mammography screening rates increased significantly from 6% in the control group to 51.8% in the low-intensity group and 70.1% in the high-intensity group. About 14% of participants in each group received opportunistic advice, 100% of participants in the low- and high-intensity groups received the mail contact, and 50% in the high-intensity group received a telephone or personal contact.

Conclusion: A primary care intervention based on mail or brief personal contact could significantly improve mammogram screening rates.

Impact: A relatively simple intervention could have a strong impact in breast cancer prevention in underserved communities. Cancer Epidemiol Biomarkers Prev. 2009; 22:56–61. ©2009 AACR.

Mixed Methods Integrative (Overview) Article

Use Templates for Your Type of Design

Type of Design

- Convergent Design
- Explanatory Sequential Design
- Exploratory Sequential Design

Template for Methods Section

- Methods - separate quan and qual
- Results – separate quan and qual
- Discussion – integration
- Methods – quan first, then qual
- Results and Discussion – quan, results to be explained, qual
- Methods – qual, use of qual, quan
- Results and Discussion – qual, use of qual, quan

Review Standards in 2017 APA Style Manual

Table 3
*Mixed Methods Article Reporting Standards (MMARS): Information Recommended for Inclusion in Manuscripts that Report both
 New Qualitative and Quantitative Data Collections*

Paper Section or Element	Information to be Reported in Mixed Methods Research	Reporting Notes for Reviewers & Recommendations for Authors to Consider
- Title	- See the QARS and JARS Standards	- Recommendation: Refrain from using words that are either qualitative (e.g., explore, understand) or quantitative (e.g., determinants, correlates) because mixed methods stands in the middle between qualitative and quantitative research. Recommendation: Reference the term, "mixed methods" or "qualitative and quantitative."
- Cover page	- See the QARS and JARS Standards	
- Abstract	- See the QARS and JARS Standards - Indicate the mixed methods design, including types of participants or data sources, and analytic strategy, main results/findings, and major implications/significance.	- Recommendation: Specify the type of mixed methods design used. See the note on types of designs in the methods section below. Recommendation: Consider using one keyword that describes the type of mixed methods design and one that describes the problem addressed.
Introduction Description of Research Problems/ Questions	- See the QARS and JARS Standards	- Recommendation: This section may convey barriers in the literature that suggest a need for both qualitative and quantitative data. Note: Theory or conceptual framework-use in mixed methods varies depending on the specific mixed methods

The Flow of a Added Mixed Methods Components in a Publication

Introduction

Justify the need for quantitative and qualitative data and their integration

Create Quantitative, Qualitative and Mixed Methods Study Aims



Methods

Identify type of mixed methods design

Provide diagram of design procedures

Present quantitative and qualitative data collection and analysis separately

Address research integrity of procedures



Results

Report quantitative and qualitative results

Report mixed methods results (e.g., joint display)



Discussion

Match interpretation to quantitative, qualitative, and mixed methods results



Appendices

Quantitative instruments/qualitative protocols

Summary Checklist for Incorporating Latest Advances into a Mixed Methods Study

Did you:

- _____ Discuss your quan, qual, and mixed methods **skills**?
- _____ Give consideration as to how to form a mixed methods **team**?
- _____ Write clear qualitative, quantitative, and **mixed methods aims**?
- _____ **Relate** your mixed methods aim to your type of design?
- _____ **Justify** the use of mixed methods? And the type of design?
- _____ Identify the **basic** mixed methods design in your project?
- _____ Know how the mixed methods basic design might be **applied** in your project (e.g., evaluation project)
- _____ Provide a **diagram** that incorporates the basic design and your application?
- _____ Contain advanced **features** of drawing the diagram? (e.g., timeline)
- _____ Specifically mention **integration** and how it relates to your type of design?
- _____ Represent integration with a **joint display** and relate it to your type of design?
- _____ Use a **conceptual framework** and link it into your mixed methods design?
- _____ Report **validity (research integrity)** considerations that relate to your type of design?
- _____ Craft **multiple publications** (quan, qual, overview, methodological) from your study?
- _____ Use recent **guidelines** for how to write a mixed methods study for publication? (e.g., APA)

ADVANCES IN MIXED METHODS RESEARCH

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Association, May 10, 2016*



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