

Mixed Methods Research: Combining  
Qualitative and Quantitative  
Approaches

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## Thank You

- Center for Research on Ethical, Legal & Social Implications of Psychiatric, Neurologic and Behavioral Genetics
- Irving Institute for Clinical and Translational Research

# Overview

- Introduction to mixed methods
- When and why to use mixed methods
- Benefits of using mixed methods
- Designing a mixed methods research investigation

## Introduction to Mixed Methods

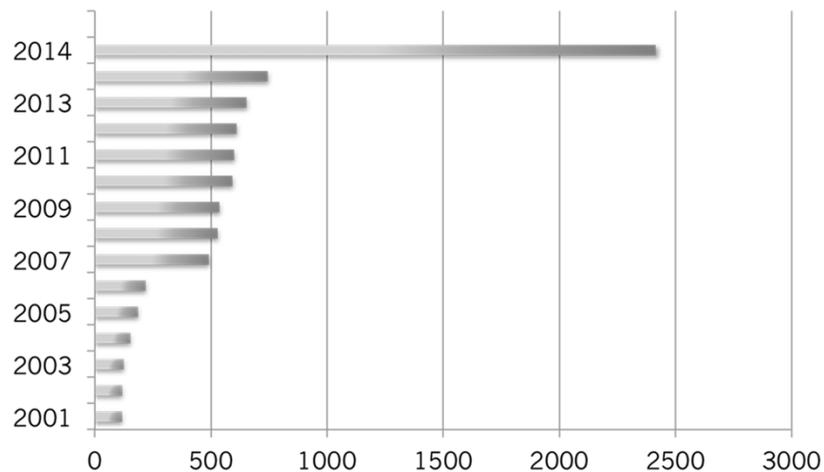
### Part One

## An Inconvenient Truth



## NIH eReporter for Mixed Methods Research

Number of Mixed Method Studies



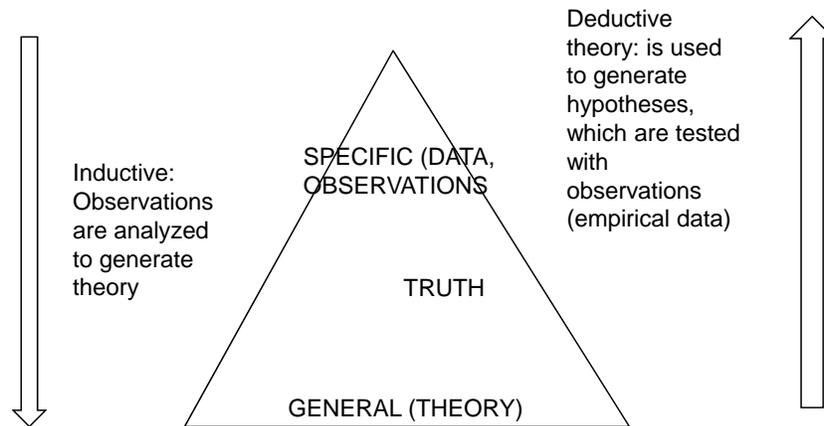
## What is Good Science?

- Regardless of methods, what is good science?
  - Rigorous
  - Systematic
  - State-of-the-art
  - Easy to understand and apply
  - Yields useful information

## What is Mixed Method Research?

- Mixed methods research is a research design with philosophical assumptions as well as methods of inquiry
- As a method, it focus on collecting, analyzing and mixing both quantitative and qualitative data in a single study.
- A central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems than either approach alone.

## Inductive and Deductive Reasoning



## Types of Results

	Quantitative	Qualitative
Goals	Test theory Describe what and how much	Create theory Describe who, how and why
Methods	Survey. Measurement	Interview. Observation
Analysis	Statistical analysis Probabilities	Themes, Descriptions, A lot of writing
Example findings	Only 30% of Asian Americans with a mental diagnosis received specialty mental health services.	A sample of Asian-Americans described refusing specialty MH services because of the beliefs about the causes of mental illness, a spiritual focus, and family-centered approaches to problem-solving

## Types of Results

Qualitative	Quantitative
Individual stories	Trends, graphs, statistics
Different perspectives	
Complexity of situation	Cause-and-effect (factors that influence)
Process understandings	
Context or settings	Group comparisons
Inductively-developed theory	Theory-driven
Persuasive, individual, realistic, contextual	Valid, reliable, generalizable

## Quant & Qual – Key Differences

- Numerical v. textual data; numbers v. words (and images)
- Quantitative: draws primarily from “hard sciences” and from positivist epistemology
  - Qualitative: draws from “social sciences” and history and from “grounded theory” epistemology

## Quant & Qual – Key Differences

- Analyzing data:
  - Quantitative: focus on descriptive and inferential statistics
- Qualitative data: focus on identification of themes and patterns in language
  - Can be very systematic and rigorous through use of formal coding of text as a basis for analysis
  - More “impressionistic” analysis is only appropriate when you have a small amount of data

## Characteristics of Mixed Methods Research

- Collects and analyzes persuasively and rigorously both qualitative and quantitative data (based on research questions)
- Mixes (or integrates or links) the two forms of data concurrently by combining them (or merging them, sequentially by having one build upon the other, or embedding one within the other)
- Gives priority to one or both forms of data (in terms of what the research emphasizes)

## Characteristics of Mixed Methods Research

- Uses these procedures in a single study or in multiple phases of a program of study
- Frames these procedures within philosophical worldviews and theoretical lenses
- Combines the procedures into specific research designs that direct the plan for conducting the study

## Mixed Method research should:

- Demonstrate the need to answer research questions that include clearly interconnected qualitative and quantitative components
- Present distinctly identifiable qualitative and quantitative data that are analyzed and presented separately
- Make inferences/conclusion on basis of appropriate qualitative and quantitative analyses
- Integrate results leading to conclusions or inferences that are more comprehensive and meaningful than those derived from qualitative or quantitative data alone

## Assumptions central to mixed methods research:

- Quantitative data is collected to answer certain types of questions (probable cause-effect, group comparisons) and qualitative data is collected to answer other types of questions (explore, discern the meaning of participants)
- Both types have strength and weaknesses
- Mixed methods combines the strength of both quantitative and qualitative research. Quantitative or qualitative research, each by itself, is insufficient to understand a specific research problem

## Options

- Wide choice of data collection options and can be combined in many ways
- These choices need to be driven by:
  - Your research question(s)
  - The variable/topics related to your research question
  - What is already known and what is not about your variables/topics
  - Your research subjects and their likely response to different data collection methods

## Data Collection Methods

Qualitative	Quantitative
<b>Primary</b>	Primary
▪ Key informant interviews	Surveys with only or almost all closed-ended questions
Cognitive interviews	Abstraction of discrete information from records
Focus groups	
Observation	
Gathering documents or images	

## Research Designs Associated with Quantitative and Qualitative Research

Qualitative	Quantitative
Case studies	Descriptive case/series
Grounded theory	Case-controlled
Phenomenology	Cross-sectional
Ethnographies	Retrospective cohort
Narrative studies	Meta-analyses
Participatory action studies	Systematic reviews
Conversational analysis studies	RCTs
	Crossover studies

## Examples of Mixed Method Data Collection

- Single Data Collection Method
  - Example: One questionnaire with both
    - Open-ended interview questions (qual)
    - Closed-ended survey questions (quant)
  - Two+ Data Collection Methods
    - Surveys + interview
    - Surveys + observation
  - Single data collection (qual +qual) or (quant +quant) is called pluralism
    - Interviews with open-ended questions and observations with qual data

## Examples of Mixed Method Data Collection

- Using qual approach to confirm or further explore existing quantitative data
- Using both qual and quan methods to explore the same variables
- Using qual methods to explore some variables (e.g. independent variables) and quan methods to explore others (e.g. dependent variables)
- Using qual methods to identify key variables for further study

## Types of Questions Best Answered by Mixed Methods

- Do interventions actually work and what explains them? (use qual to follow up quan)
- Does instrument data and interview data converge? (combine quan and qual)
- Will an instrument work with a sample of a population? (qual followed by quan instrument development and testing)
- Will what participants experience as outcomes in an intervention actually resonate with their experiences with the process?

## Why Use Mixed Methods?

- One question is about why one should add *qualitative* methods to quantitative methods
  - You have a question that has rarely been asked or has been asked with questionable results
  - You want the strength of multiple methods triangulation
  - Some, and only some, of your variables are quantifiable at this stage of inquiry
  - To “illuminate the black box” of relationships defined only in statistical terms
  - To hear from those who are rarely reached effectively by typical quantitative approaches

## Why Use Mixed Methods?

- One question is about why one should add *quantitative* methods to qualitative methods
    - You want to build on a base of existing quantitative data that is highly relevant to your research questions AND
      - You trust it and can relatively easily gain access to it
- OR
- You recognize that (for good reasons and bad) the credibility of your research will improve if you add numbers
  - Your goal is to build more valid and reliable quantitative measures and data collection instruments, such as surveys

## Benefits of Mixed Methods

- Allows you to use the most appropriate method for a specific research question, issue or study population
- Allows to confirm, or disconfirm the information you are getting from different methods and sources
- Generally leads to a much higher quality measurement: “Behind every quantity there must lie a quality”
- You can address not only “what” but “how” and even “why”

## Benefits of Mixed Methods

- Supports interdisciplinary work: by including multiple methods, it is easier to engage a range of clinicians and social scientists in your work
- Provides, for purposes of dissemination, a compelling mix of “the numbers” and “the stories that humanize the numbers”

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# Designing Mixed Methods Research Investigation: Part Two

## Research Poster Example Working Title

Study Purpose

Results

Results (cont)

Methods

Conclusion

Results

## Mixed Methods Research Poster

	Working Title	
Research Problem	Theory/Worldview Informing Study	Results for each question
Study Aims Purpose	Mixed Methods Procedures	
Research Questions	Quantitative Data Collection/Analysis	
Quantitative	Qualitative Data Collection/Analysis Rationale	
Qualitative	Mixed Methods Design	Conclusion
Mixed Integration		Acknowledgments

## Designing a Plan for a Mixed Methods Study (not order typically found in research process)

- Preliminary considerations
- Title
- General questions addressed
- List types of data to be collected and analyzed
- Choose mixed methods design
- Writing a mixed methods research question

## Designing a Plan for a Mixed Methods Study (not order typically found in research process)

- Specify your notation
- Draw a figure of the design
- State potential methodological/validity issues
- Writing a mixed methods purpose statement

## 1 - Preliminary Considerations

- Research Problems
  - Content – any topics
  - When the issue fits mixed methods
    - Insufficient argument
    - Multiple angles argument
    - Community-of-practice argument
    - Eager-to-learn argument
- Access to both quantitative and qualitative data
- Background and resources
- Receptive audience

## 2 - Create a Working Title

- Writing the title
  - Short
  - Topic
  - Participants
  - Include the word “mixed methods”
  - Neutral – neither quant or qual
- Examples of good titles
  - In Their Own Words and by the Numbers: A Mixed Methods Study of Latina Community College Presidents (Munoz, 2010)
  - Multimethod Measurement of High-Risk Drinking Locations: Extending the Portal Survey Method with Follow-Up Telephone Interviews (Kelley-Baker et al., 2007)

## Examples of Titles

**Alcohol Consumption Decisions  
Among Nonabusing Drinkers  
Diagnosed With Hepatitis C**

An Exploratory Sequential Mixed Methods Study

**Profiles of Urban, Low SES,  
African American Girls’  
Attitudes Toward Science**

A Sequential Explanatory Mixed Methods Study

**Motivation and Selection  
Processes in a Biographical  
Transition: A Psychological  
Mixed Methods Study on the  
Transition Into Fatherhood**

Holger von der Lippe<sup>1</sup>

**Symptom Management in  
HIV/AIDS: A Mixed Methods  
Approach to Describe  
Collaboration and Concordance  
Between Persons Living With  
HIV and Their Close Support  
Persons**

Dunja Nicca<sup>1,2</sup>, Katharina Fierz<sup>1,3</sup>,  
Mary Beth Happ<sup>4</sup>, Kimberly Moody<sup>5</sup>,  
and Rebecca Spirig<sup>1,6</sup>

### 3 – Pose the General Question to be Answered

- Write it as a question
- Look to see how it is phrased
- Make sure that it is specific enough and focused (an answerable question)
- Mixed method questions often have two parts
- Examples:
  - What are the trends and perceptions about.....?
  - How are the variables related and why do the relationships occur?
  - What are the dimensions of... and how do they generalize?
  - What aspects of the participants' culture should be considered in developing the interventions?
  - How do participants experience the process of the intervention?

### 4- Qualitative Research Questions

- Qualitative central question
  - Begin with “what” or “how”
  - Focus on single phenomenon
  - Use non-directional language
  - A general question (allowing participants' perspectives to emerge)
- Examples
  - What happened? (Central question)
  - Who was involved in response to the incident? (sub question)
  - What themes of responses emerged during the 8 month period that followed the incident?

## Quantitative Research Questions

- Can be hypotheses or questions
- State variables: independent, dependent, mediating co-variables
- Develop from theory
- Order variables from independent to dependent
- Examples
  - What is the relationship between instructional approach and spelling achievement for 1<sup>st</sup> grade students?
  - First grade children perform better on spelling tests when they receive verbal instructions rather than when they receive rewards or no reinforcement. (directional hypothesis)

## Buck et al,2009 Sample Research Questions

### Quantitative Research Questions

1. Did the students in the sample score differently on the scales of the attitudes toward science survey?
2. What attitudes-toward-science profiles emerge from the scores on the attitudes toward science survey?

### Qualitative Research Questions

1. What are the urban, low SES, African American girls' attitudes toward science and science learning?
2. What aspects of their experiences and understandings contribute to differences in attitudes?

### Mixed Methods Question

1. How can the understandings that emerge from the qualitative data be used to provide a deeper understanding of the attitude-toward-science profiles?

## 4 - List Types of Data to be Collected

- Quantitative Data
  - (Closed-ended)
    - Instruments
    - Behavioral checklist
    - Records
- Qualitative Data
  - Open-ended
    - Interviews
    - Focus Groups
    - Observations
    - Documents
    - Audio-visual materials

## 5 - List Approaches to Data Analysis

- Quantitative analysis
  - Use statistical analysis
    - For description
    - For comparing groups
    - For relating variables
  - Instruments
- Qualitative analysis
  - Use text and images
    - For coding
    - For theme development
    - For relating themes
  - Design-type

## 6 - Methodological Considerations

- Deciding which methodology to use should be based upon several considerations
- Purpose = for whom research is being conducted and where it will be disseminated
- Research type = exploratory, explanatory confirmatory, transformative, critical
- Available time
- Available resources

## Basic Research Type Categories

- Exploratory – grounded approach, no empirical evidence (reasons why?)
- Explanatory – ambiguous/contradictory findings in the research
- Confirmatory – multiple replication and cross case analysis
- Critical – research that addressed inequalities in social power structures
- Transformative – research designed to improve social conditions
- Action Research – iterative self reflective research
- PAR – participant oriented research

## Some Popular Methodologies in the Social Sciences

- Grounded Research – exploratory
- Case Studies – exploratory, explanatory, confirmatory
- Ethnography – exploratory, explanatory
- Auto-ethnography – explanatory, self reflective
- Action Research – self reflective, confirmatory, explanatory

## Grounded Theory

- Focus: develop theory/model directly grounded in the data
- Problems: Problem presented by the participants
- Parameters: Processes, actions, interaction of many participants
- Data Collection: Multiple interviews or observations
- Data Analysis: Initial, axial, thematic coding
- Dissemination: Generating a model/theory that represents how the emergent codes interact Visual representation reinforces conclusions