

Mixed Methods Research Designs



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Overview

- ☞ The basics of mixed methods research
 - Methodology
 - Paradigm
 - Benefits
 - When to use mixed methods research
- ☞ Overview of the primary mixed methods research designs
- ☞ Recommendations for forming groups and partnerships to carry out projects utilizing mixed methods designs

What is Mixed Methods Research?

∞ What is mixed methods research (MMR)?

- As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of quantitative and qualitative approaches in many phases of the research process.
- As a method, it focuses on collection, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies.
- Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone (Creswell & Plano-Clark, 2008; Creswell, 2012).

What is Mixed Methods Research?

- ✎ Involves collection and analyzing both qualitative and quantitative data
- ✎ Mixing of data
 - Merging
 - Connecting
 - Embedding
- ✎ Central premise of MMR:
 - Combination of quantitative and qualitative approaches provides a better understanding than either approach alone

What is the Value of Mixed Methods Research?

- ∞ What is the value that MMR adds that quantitative or qualitative, each by themselves, do not provide?
 - Strengths that offset weaknesses of quan/qual research
 - Quan (context, setting, voice, indirect)
 - Qual (bias, generalizability)
 - Comprehensiveness
 - Tools in the toolbox
 - Answers questions that cannot be answered by qual/quant approaches alone
 - “Do participant views from interviews and from standardized instruments surrounding end of life care converge or depart?”
 - “What explains extreme initial BSN nursing competence scores?” (uses qual to explain quan)
 - “Will a psychological skills training program be effective for Ph.D. nursing students experiencing statistics anxiety?” (exploring qualitatively before implementing an experiment)

What is the Value of Mixed Methods Research?

- ✎ What is the value that MMR adds that quantitative or qualitative, each by themselves, do not provide (cont.)?
 - Encourages collaboration across sometimes adversarial relationships between qualitative and quantitative researchers
 - Paradigm wars
 - Philosophical underpinnings
 - Postpositivism (objective reality) – top down, theory
 - Constructivism (subjective reality)
 - Orientations
 - Purists
 - Situationists
 - Pragmatists
 - Encourages the use of multiple worldviews or paradigms (pragmatism)
 - Comprehensive
 - Example: News stories – images and statistics are used to convey deeper meaning

When Should Mixed Methods be Utilized?

- ✎ When the combination of both quantitative and qualitative data provide a better understanding of a research problem than either type by itself
- ✎ When one type of research is not enough to address the research problem or answer the research questions.
 - Question driven (MM) vs. Method driven (quan or qual)
- ✎ Pragmatism
 - When a practical view is needed that considers multiple views that are both subjective and objective

When Should Mixed Methods be Utilized?

- ∞ To incorporate a qualitative component into an otherwise quantitative study
- ∞ To build from one phase of a study to another
 - Explore qualitatively then develop an instrument
 - Follow-up a quantitative study qualitatively to obtain more detailed information

Mixed Methods Research Methodology

- Utilizes both quantitative and qualitative data collection methodologies

Quantitative	Qualitative
Surveys (closed-ended)	Interviews
Performance Assessments	Observations
Personality Inventories	Focus Groups
Experimental (T and F tests)	Ethnographies
Frequency (descriptive, chi square)	Open-Ended Questionnaires
Relationships (regression and correlation)	Content Analysis, member checks, and triangulation

Mixed Method Terminology

Notation	Defined
QUAN	Quantitatively driven study
QUAL	Qualitatively driven study
quan	Quantitative data is secondary to qualitative data
qual	Qualitative data is secondary to quantitative data
+	Quantitative and qualitative data are collected concurrently
→	Quantitative and qualitative data are collected sequentially
QUAL(quan)	Quantitative methods are embedded within a qualitative design
QUAN(qual)	Qualitative methods are embedded within a quantitative design

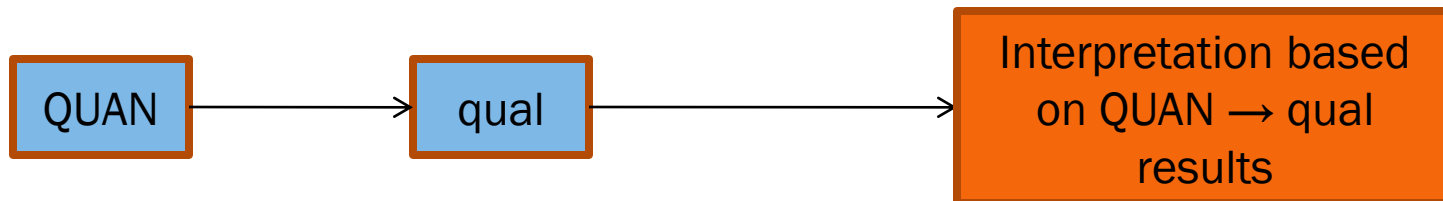
∞ Examples

- QUAN + QUAL
- QUAL → quan
- QUAN(qual)

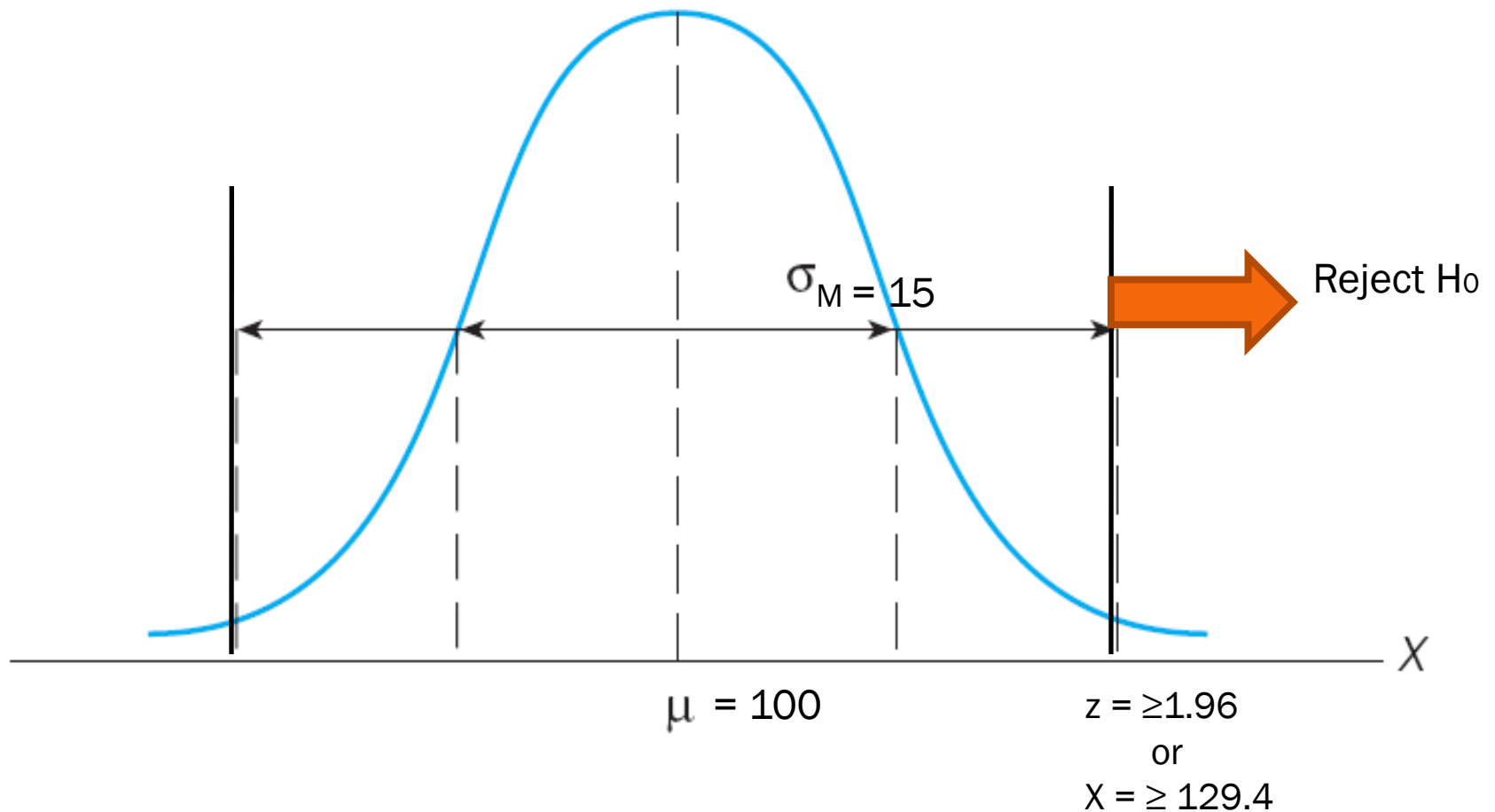
Mixed Methods Designs: Connecting Data

∞ The Explanatory Design

- Two phased MMRD
- Purpose: Qualitative data is used to explain or build upon initial quantitative results
- Used to explain significant (or non-significant) results, outliers, or surprising results
- Mixing Decisions:
 - **Timing:** Sequential (Quan followed by Qual)
 - **Weighting:** Usually Quantitative
 - **Mixing:** Connect the data between the two phases



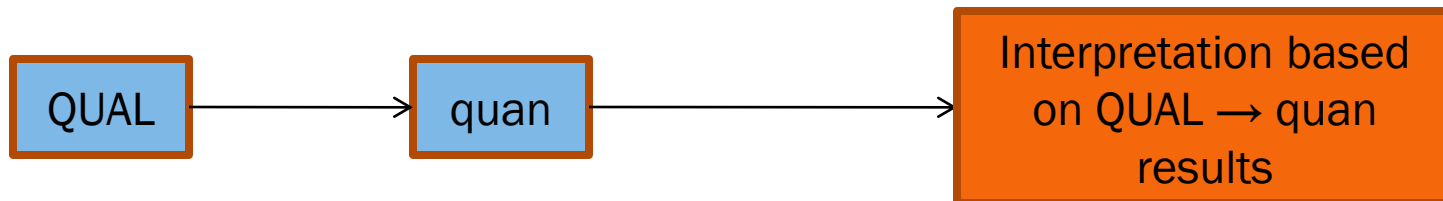
Example Explanatory Design MM Research Question: What Explains Extremely High Nursing Competence Scores?



Mixed Methods Designs: Connecting Data

∞ The Exploratory Design

- Two phased MMRD
- Purpose: The results of first method (qual) can help develop or inform the second (quan) methods
- Used for instrument development, when variables are unknown, or when there is no guiding framework or theory
- Mixing Decisions:
 - **Timing:** Sequential (Qual followed by Quan)
 - **Weighting:** Usually Qualitative
 - **Mixing:** Connect the data between the two phases



Mixed Methods Designs: Connecting Data

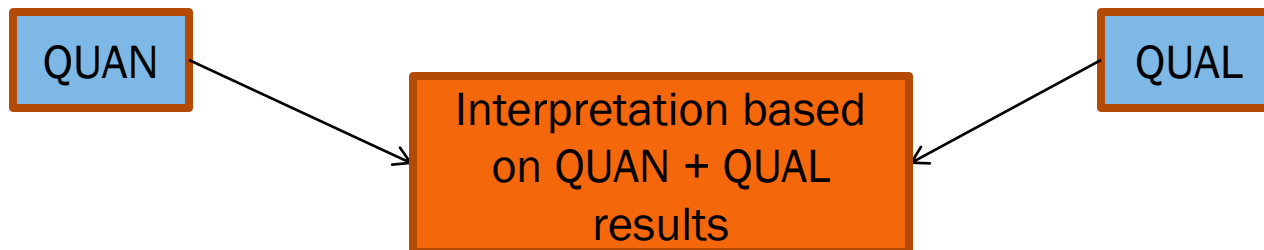
∞ Exploratory Design Example:

- “Will a psychological skills training program be effective for Ph.D. nursing students experiencing statistics anxiety?”
 - To answer this question, the researcher would first collect and analyze qualitative data to understand the dimensions of statistics anxiety and student perspectives. (focus groups)
 - These data would be used to develop a psychological skills training program with to reduce stats anxiety.
 - Next, repeated measures designs could be implemented to assess the effectiveness in reducing anxiety. (RM-ANOVA)

Mixed Methods Designs: Merging Data

∞ The Convergent Parallel Design

- Most common MM approach
- Purpose: Obtain different but complimentary data on the same topic to best understand the research problem
- Directly contrasts quan/qual results
- Expand quantitative findings with qualitative data
- Mixing Decisions:
 - **Timing:** Concurrent
 - **Weighting:** Usually Equal
 - **Mixing:** Merge data during the interpretation or analysis



Mixed Methods Designs: Merging Data

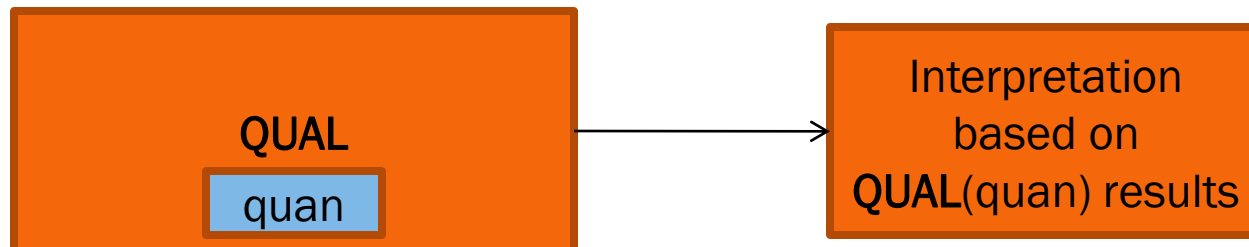
∞ Convergent Design Example:

- “Do participant views from interviews and from standardized instruments surrounding end of life care converge or depart?”
- In this case, two forms of data would be collected and analyzed:
 - Descriptive data from a quantitative instrument to assess end of life caregiving self-efficacy
 - Content analysis from caregiver interviews
- Data would then directly be compared for interpretation

Mixed Methods Designs: Embedding Data

∞ The Embedded Design

- One data set provides a secondary, supportive role in a study based primarily on the other data type
- Premise: Different types of questions require different types of data
- Mixing Decisions:
 - **Timing:** Concurrent or Sequential
 - **Weighting:** Unequal
 - **Mixing:** Embed one type of data within a larger design using the other type of data
- Example: *Come Together* by The Beatles
 - What is the meaning of *Come Together*?
 - What are the musical properties of *Come Together*?



Come Together: Descriptive Statistics

Written by: John Lennon

Musicians and Instruments: John Lennon: lead vocals, rhythm guitar (1965 Epiphone E230TD(V) Casino)
Paul McCartney: backing vocals, bass guitar (1964 Rickenbacker 400IS), electric piano (Fender Rhodes)
George Harrison: lead guitar (1966 Gibson Les Paul Standard SG)
Ringo Starr: drums (1968 Ludwig Hollywood Maple), maracas

Recorded: July 21-23, 1969 (Studio 3, Abbey Road Studios, London, England); July 25, 29-30, 1969 (Studio 2, Abbey Road Studios, London, England)

Mixed: August 7, 1969

Takes: 9

Melodic Organization:

Key: D minor

Rhythmic Properties: Short, staccato, notes; equal note length, metrically recurring pattern of "AAAA"

Structure: A, B, A, B, C, A, B, C, A, B, C (intro, verse, bridge, verse, chorus, bridge, verse, chorus)

Tempo: 82 beats per minute

Texture: Monophonic and polyphonic melodic line in verses; heterophonic chorus

Tone: Driving, underlying drone feel

Length: 4:16

First released: October 6, 1969, double a-side with "Something"

Covered by: Aerosmith, Count Basie, Bob Belden, The Brothers Johnson, Spencer Brewer, The Butthole Surfers, Chairmen of the Board, Joe Cocker, Craig David, Defunkt, Desmond Dekker, Eurythmics, Firefall, Richard "Groove" Holmes, Israelites, Michael Jackson, Elton John, Syl Johnson, Tom Jones, Ben E. King, Gladys Knight and the Pips, Herbie Mann, Delbert McClinton, The Meters, Buddy Miles, The Neville Brothers, Oasis, The Persuasions, Dianne Reeves, Rockin' Dopsie, Diana Ross, Shalamar, Soundgarden, Sugababes, The Supremes, Ike and Tina Turner, Junior Vasquez, Rick Wakeman, Paul Weller, Robin Williams, Cassandra Wilson, Zakk Wylde ($n = 41$)

Come Together: Descriptive Statistics

COME TOGETHER

Words and Music by JOHN LENNON
and PAUL McCARTNEY

Moderately slow, with a double-time feeling

The image shows a musical score for the song "Come Together" by The Beatles. It includes a piano introduction with a Dm7 chord diagram and a dynamic marking of *mf*. The score is in 4/4 time and features a double-time feel. The lyrics are: "Here come old flat-top, he come grooving up slowly, he got Joo Joo eye-ball, he one ho-ly roll-er, he got hair down to his knee... Got to be a jok-er, he just do what he please...". The score includes chord diagrams for Dm7, A, and G7 N.C.

- Perfect fourth interval on verses
- Rhythmic variation (“AAAA”)
- Analysis of chord structure and statistics to explain musical complexity
 - Beethoven’s 9th (high entropy) and Pachelbel’s Canon in D (low entropy)

$$H(X) := \sum_{i=1}^{|E|} P(E_i) \cdot \log_2\left(\frac{1}{P(E_i)}\right)$$

$$= - \sum_{i=1}^{|E|} P(E_i) \cdot \log_2(P(E_i))$$

Come Together: Musical Ethnological Analysis

Here come old flattop he come grooving up slowly
He got joo-joo eyeball he one holy roller
He got hair down to his knee
Got to be a joker he just do what he please



Ringo Starr

He wear no shoeshine he got toe-jam football
He got monkey finger he shoot coca-cola
He say "I know you, you know me"
One thing I can tell you is you got to be free
Come together right now over me



George Harrison

He bad production he got walrus gumbboot
He got Ono sideboard he one spinal cracker
He got feet down below his knee
Hold you in his arms yeah you can feel his disease
Come together right now over me



John Lennon

He roller-coaster he got early warning
He got muddy water he one mojo filter
He say "One and one and one is three"
Got to be good-looking 'cause he's so hard to see
Come together right now over me



Paul McCartney

Interpretation

∞ Results:

- The key of d minor may have been selected to reflect the ominous theme that permeates the lyrics
- The chorus changes to a major modality to reflect catharsis and coming together as a group
- The monophonic structure of verses and heterophonic structure of choruses converges upon the idea of unity
- John Lennon's Life at the time
 - Accident
 - Drug use
- Harrison's influence
 - Maharishi Mahesh Yogi, Indian Mysticism, Hinduism
 - Themes of unity
 - Covered by many other groups with tumultuous relationships among members

Forming Mixed Methods Research/Project Teams

- ✎ Must consider the following elements:
 - The nature of the research questions that need to be assessed
 - Depth and breadth of expertise
 - Openness to integration of methodological applications
 - Leadership that is capable of integrating disciplinary boundaries of a diverse research team
 - Resources
 - Software
 - Experts
 - Training workshops
 - Communication

Questions?
