# USING MIXED METHODS FOR COMMUNITY BASED RESEARCH

Rebekka Lee, ScD

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# Acknowledgements

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HARVARD CATALYST | THE HARVARD CLINICAL AND TRANSLATIONAL SCIENCE CENTER

Harvard School of Public Health
Prevention Research Center
on Nutrition and Physical Activity

# Agenda

| | |
|---|---|
| **Ice Breaker/CBPR Follow up from Day 1** | 9:00-9:15 |
| **Intro to Mixed Methods**<br>• CBPR and mixed methods<br>• Types of designs<br>• Uses for quantitative vs. qualitative data and how to combine | 9:15-10:15 |
| **Step-by-Step Approach to Mixed Methods** | 10:15-11:15 |
| AM Break 11:15-11:30 | |
| **CBPR application**<br>• Add to change tool<br>• Share next steps | 11:30-12:00 |

# Introduction

- Do you have any lingering questions or topics you'd like us to address from yesterday's session?
- How would you describe your research orientation?
  - More quantitative or qualitative?

# Recent surge in mixed methods research

- Journal articles on mixed methods (empirical, methodological, mixed methodological/empirical)
- Expanding fields using mixed methods
- Growing list of researchers in health sciences trained in mixed methods
- Initiatives to support mixed methods at federal level
- Capacity-building in mixed methods at leading institutions

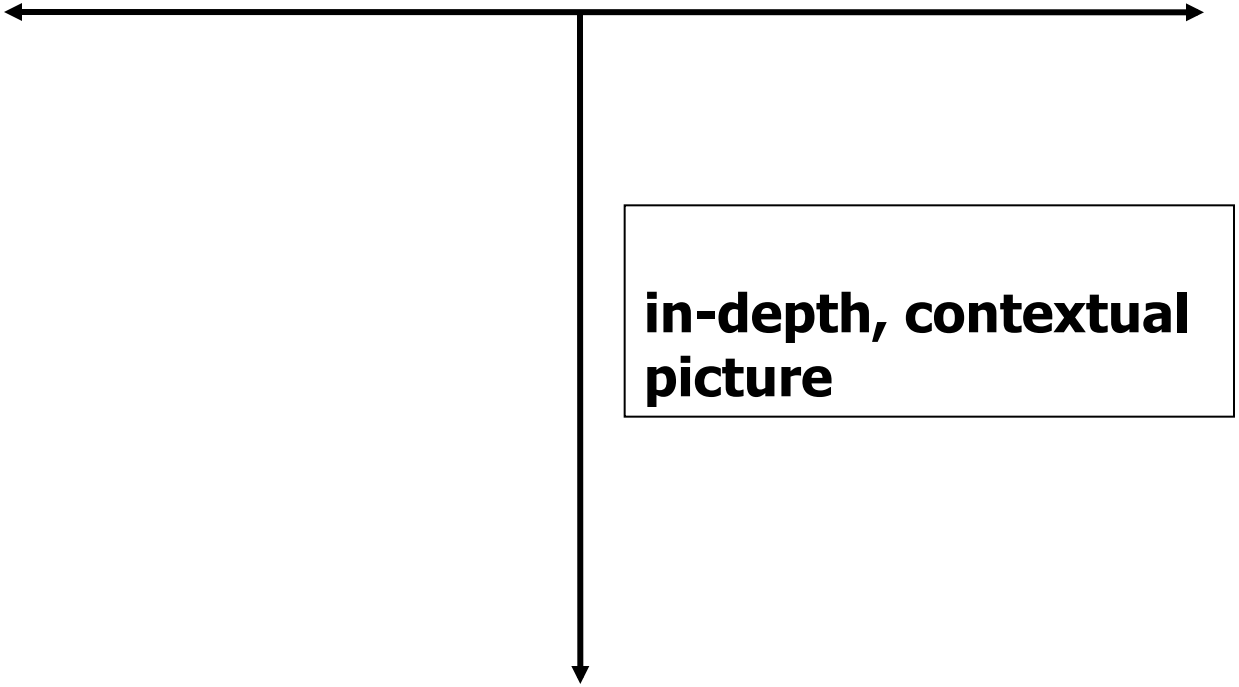
# Emergence of approaches to research over the 20th century

Quantitative Approaches 1900-1940

Qualitative Approaches 1960 - 2000

Mixed Methods Approaches 1980-2000

**Quantitative research: broad, generalizable trends**



# Advantages of qualitative & quantitative research

## Quantitative

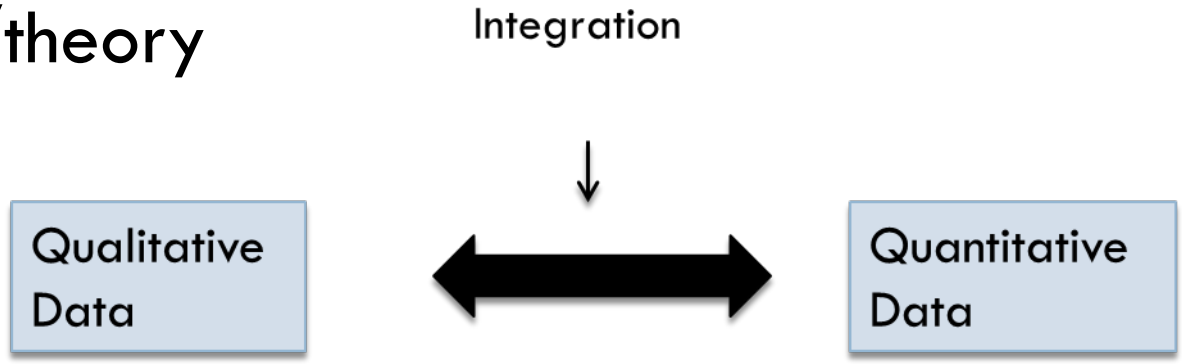
- We can study large numbers of people who are dispersed across a large geographic region
- We can test existing theories to see if they work
- We can develop precise measures
- We can reduce our information to numbers - useful to policy, decision-makers
- Decision-makers like numbers

## Qualitative

- We hear the voices of participants
- We go out into the communities where problems exist
- We rely on the participants to help us shape the research
- We learn the details of experiences – the stories
- We can study a few people and get in depth information about them
- People like to hear stories

# Core Characteristics of Mixed Methods

- Collection and analysis of both quantitative and qualitative data
- Rigorous methods
- Integration (merge/build/embed)
- Design
- Philosophy/theory



# Rationale for Mixed Methods

- Key assumption: that neither quantitative nor qualitative research by itself is sufficient to understand a complex research problem. Drawing on the strengths of quantitative and qualitative research add up to a better understanding of the research problem.
- Rationale for using mixed methods:
  - Obtain different, multiple perspectives, validation
  - Build comprehensive understanding
  - Have better contextualized measures
  - Need to explore before explain
  - Further understand experimental results, process and outcome
  - Involve the community
  - Track the process of program intervention

# Mixed Methods & CBPR

- Compare individual stakeholder responses with responses measured on questionnaires
- Have a more complete understanding through interviews and questionnaires
- Explore with individuals before administering a questionnaire so that the question will “fit” the participants
- Conduct a needs assessment and then engage in program implementation
- Explain questionnaire results in more depth

# What mixed methods is NOT

- Simply using the name, not methods
- Having quantitative & qualitative data available
- Analyzing & presenting data findings separately
- Calling categorical quantitative data qualitative
- Collecting qualitative data & quantitatively analyzing it

# Benefits of Mixed Methods Research

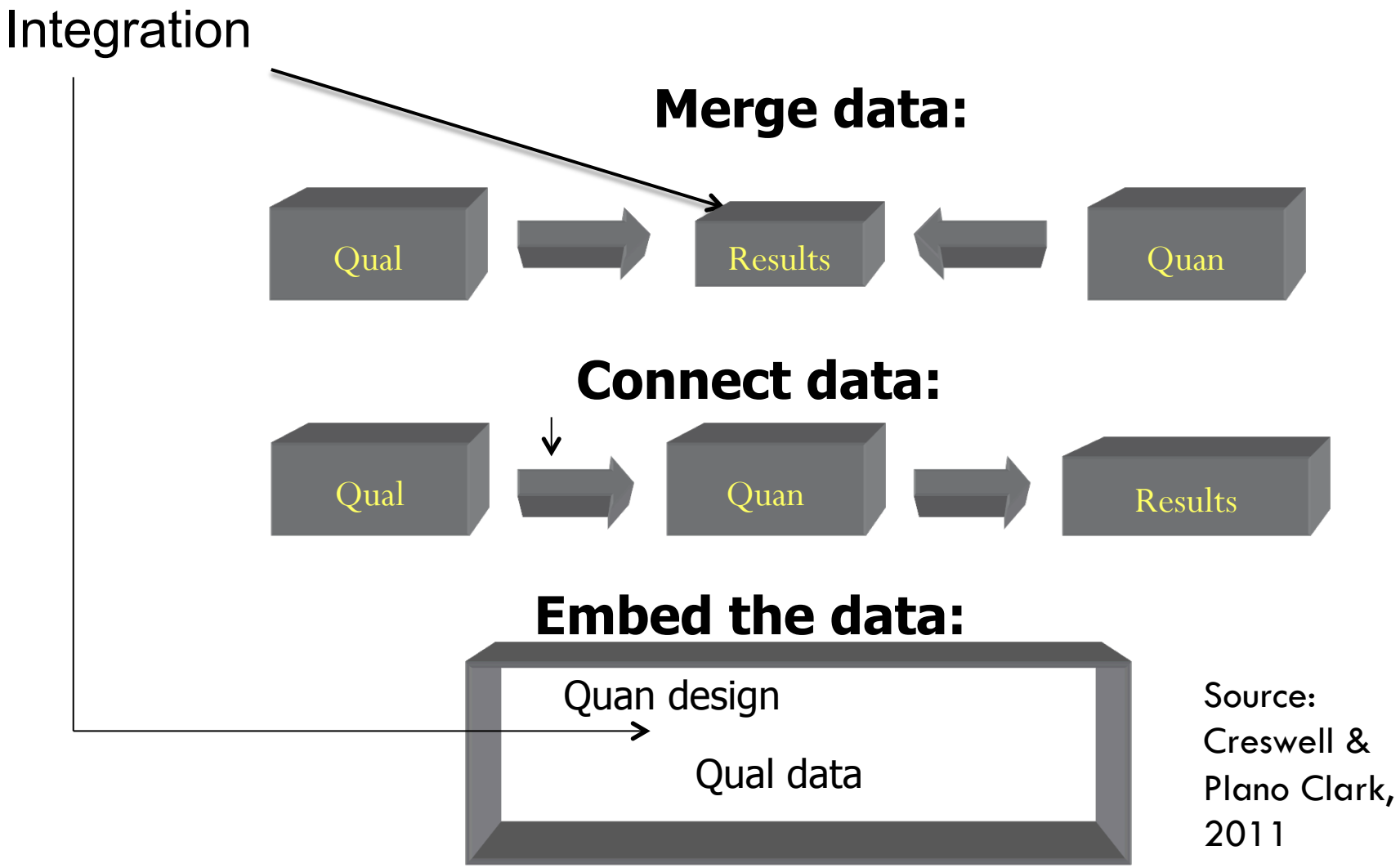
- Quan to Qual (make quantitative results more understandable)
- Qual to Quan (understand broader applicability of small-sample qualitative findings)
- Concurrent (robust description and interpretation)

Source: Huff, A. (2008). *Designing research for publication*. Thousand Oaks, CA: Sage.

# Challenges of Mixed Methods Research

- Skill level of researchers (quantitative, qualitative, and mixed)
- Adaptation of social science to health science
- Philosophical debates
- Tradition of methodology – discipline/country
- Potentially higher costs than single method
- Publication outlets

# Integration in Mixed Methods

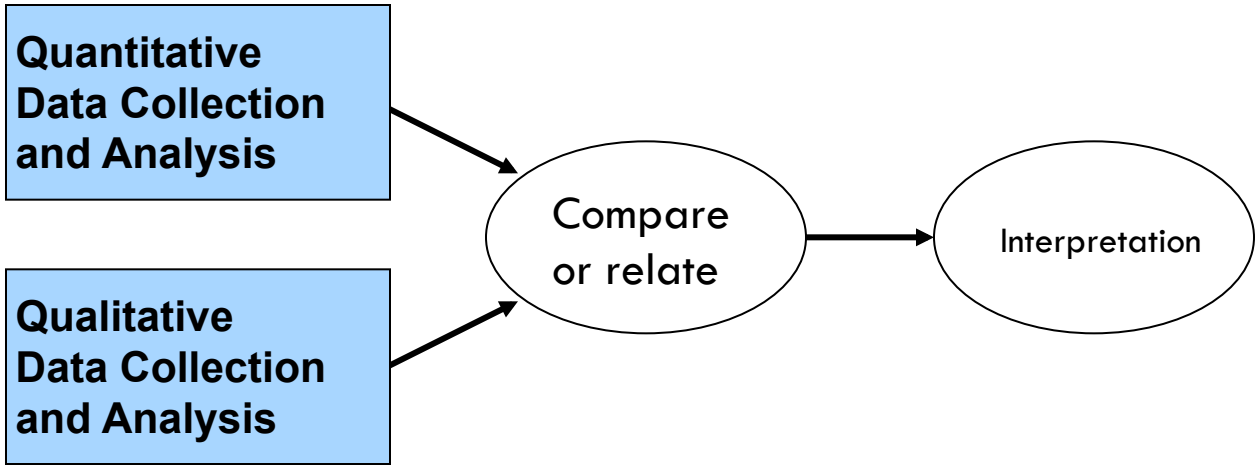



Source: Creswell & Plano Clark, 2011

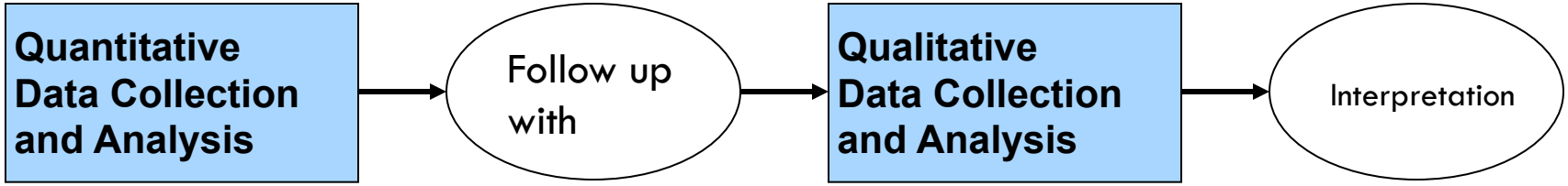
# 6 Types of Mixed Methods Designs

- Basic Designs
  - Convergent Design
  - Explanatory Sequential Design
  - Exploratory Sequential Design
- Advanced Designs
  - Embedded Design
  - Transformative Design
  - Multiphase Design

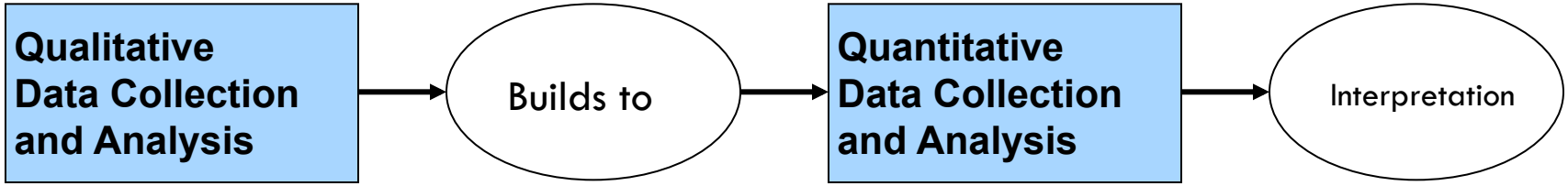
## Convergent Parallel Design




## Explanatory Sequential Design




## Exploratory Sequential Design



# Rationale matches the design

- Obtain different, multiple  perspectives
- Build comprehensive understanding
- Explain statistical results in more depth
- Have better contextualized measures
- Need to explore before explain
- Further understand experimental results
- Involve the community

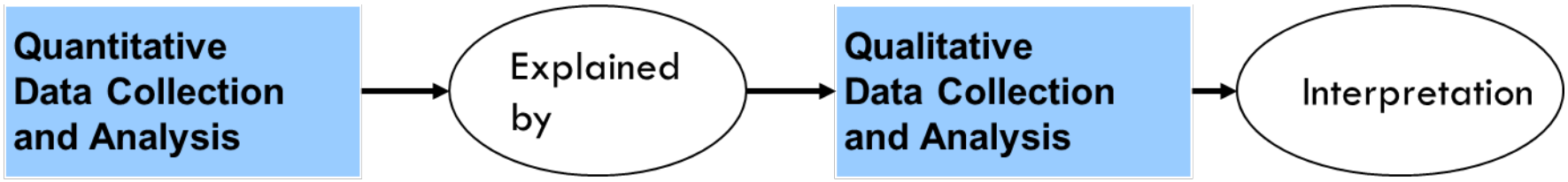
- Convergent Design
- Convergent Design
- Explanatory Sequential
- Exploratory Sequential
- Exploratory Sequential
- Embedded design
- Embedded Design

# Research questions match design

| | |
|---|---|
| Convergent Design | To what extent do the quantitative and qualitative results converge? |
| Explanatory Design | In what ways do the qualitative data help to explain the quantitative results? |
| Exploratory Design | In what ways do the quantitative results generalize the qualitative findings? |
| Embedded Design | How do the qualitative findings provide an enhanced understanding of the quantitative results? |

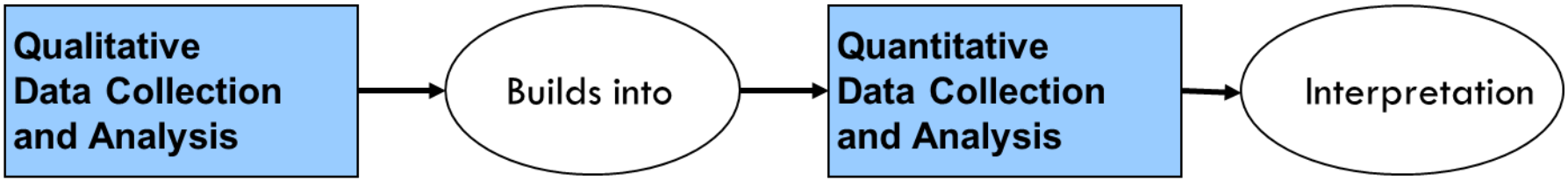
# Explanatory sequential design

1. Collect the quantitative data.
2. Analyze the quantitative data.
3. Determine what quantitative results need to be further explained. Determine what participants can help with this explanation.
4. Collect the qualitative data.
5. Analyze the qualitative data.
6. Explain how the qualitative data helps to explain the quantitative results



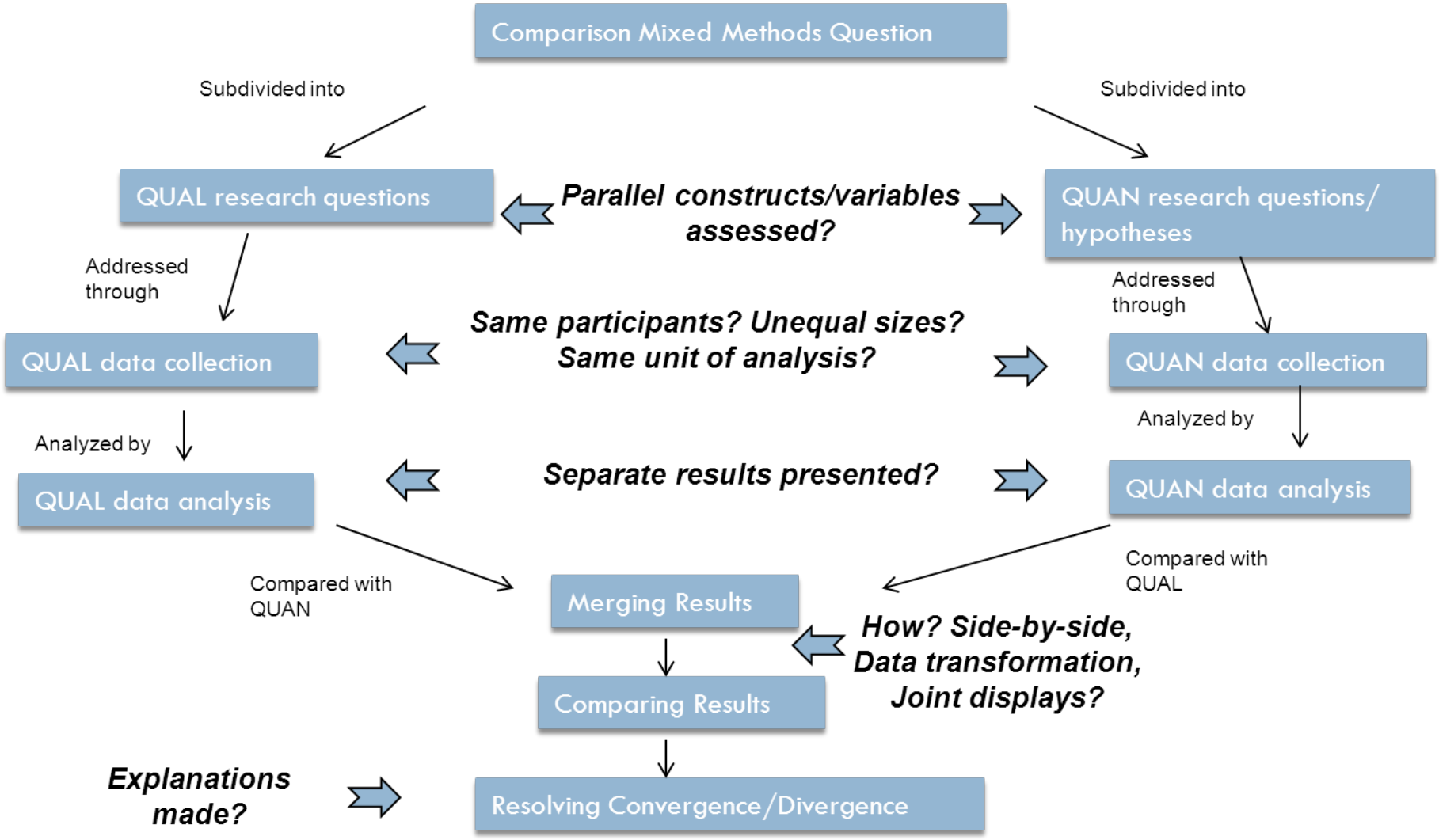
# Exploratory sequential design

1. Collect the qualitative data.
2. Analyze the qualitative data.
3. Design the quantitative strand based on what is learned from the qualitative results.
4. Use these results in various ways: develop a new instrument, develop a typology or taxonomy
5. Collect the quantitative data.
6. Analyze the quantitative data.
7. Explain how quantitative results help to generalize the qualitative data



# Convergent design

1. Collect the quantitative and qualitative data at roughly the same time and independently
2. Independently analyze the quantitative and qualitative data.
3. Compare the results from the quantitative results and the qualitative results.
4. Discuss a comparison of those results. Indicate areas of convergence or divergence between the quantitative and qualitative results.
5. For areas of divergence, provide explanations for the divergence, such as collect more data, reexamine the quantitative and qualitative results, or point out limitations in one of the databases or the other.




58 Figure. Procedures and Challenges in Comparing Quantitative and Qualitative Results (Convergent Design)

# A step-by-step approach for starting a mixed methods research project

1. What do you want to know?
2. What will be the detailed quantitative, qualitative, and mixed methods research questions that you hope to address?
3. What quantitative & qualitative data will you collect and analyze?
4. What rigorous methods will you use to collect data and/or engage stakeholders?
5. Will you frame your project in an overarching theory or approach?
6. How will you integrate the data?
7. What mixed methods design is the best fit?
8. What would a picture of your design look like?
9. What are some potential challenges to your design?
10. What are some ways to jointly display the data?

# Example: OSNAP intervention

**Title:**

Explaining Implementation Barriers & Facilitators on Children's Dietary Consumption in an Afterschool Group Randomized Control Trial

**Problem Statement:**

While much obesity prevention research has been conducted to determine the effectiveness of community-based interventions, there is a lack of evidence on how successful intervention are implemented in real world settings.

**Rationale:** Explain statistical results in more depth; further understand experimental results

# Study aims

- The **first aim** of this study is to assess the impact of community, provider, and organizational implementation factors on the effectiveness of an afterschool nutrition intervention by testing interactions with the main effects of the trial
- The **second aim** of this study is to explore the barriers and facilitators that site directors faced as they implemented nutrition changes in an afterschool program via one-on-one interviews
- The **third aim** of this study is to understand how the barriers and facilitators described by site directors help to explain the implementation factors that predict stronger intervention effects using an embedded, explanatory design

# Research Questions

1. What organizational, provider, and community factors predict stronger intervention effectiveness of the Out of School Time Nutrition and Physical Activity (OSNAP) group randomized control trial?
2. What types of barriers and facilitators do site directors experience as they implement nutrition changes in afterschool programs?
3. How do the interview data with site directors help to explain the differential effects in the intervention trial?

# Data collection & analysis

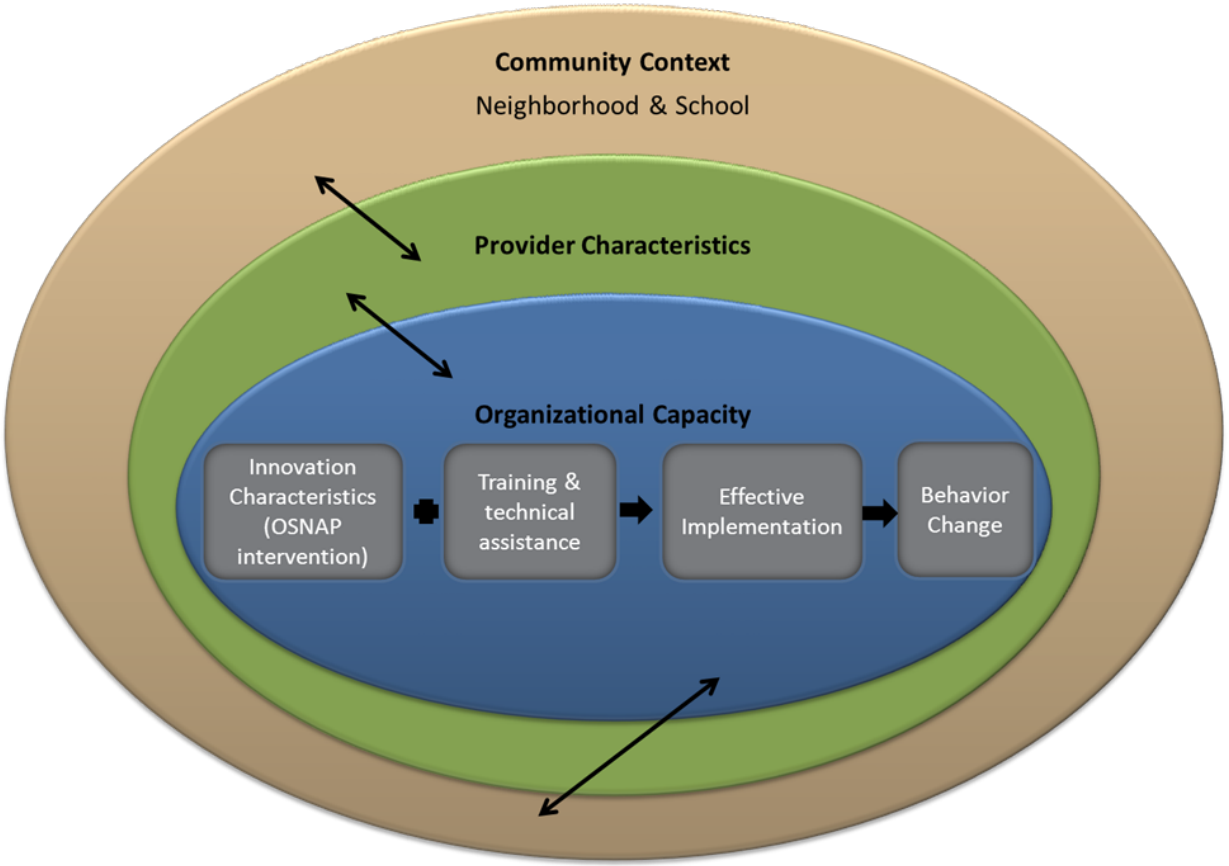
## Quantitative

- Plate waste protocol at baseline & follow up to determine snack consumption of children in programs (N=400)
- Survey of implementation factors with 20 site directors (10 I, 10 C) at baseline & follow up
- Linear regression analysis, testing for interactions with implementation factors

## Qualitative

- One-on-one semi-structured interviews about implementation with 10 intervention site directors at baseline & follow up
- Action planning document review of barriers & facilitators recorded throughout the intervention
- Thematic analysis

A multilevel ecological conceptual framework of afterschool implementation barriers & facilitators adapted from the Framework for Effective Implementation (Durlak and DuPre 2008)




| Community Context | Provider Characteristics | Organizational Capacity |
|---|---|---|
| **Neighborhood**<br>• Racial/ethnic demographics<br>• Homeownership<br>**School**<br>• Racial/ethnic demographics<br>• Poverty<br>• On-site kitchen facilities<br>• School support | • Education level<br>• Years of experience<br>• Turnover | • Program size<br>• Space<br>• Funding<br>• Organizational support<br>• Priorities<br>• Shared Commitment |

# Integration

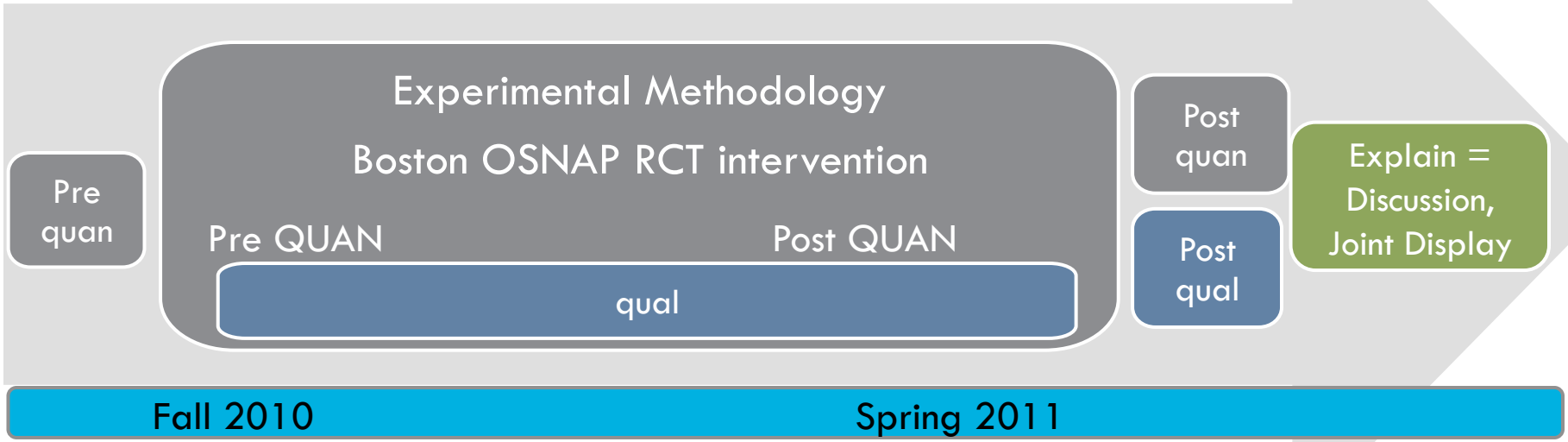
- Quantitative **follows up** with qualitative
- Qualitative **embedded** in a larger randomized control trial

# Type of Mixed Methods Design: Embedded, Explanatory Sequential Intervention

- Researcher collects and analyzes both quantitative and qualitative data within a traditional intervention design
- Adding qualitative data to enhance a quantitative design
- Purpose: use qualitative strand to explain/better understand quantitative results of an experimental trial
- Strengths: Straightforward, appealing to NIH/CDC/ quantitative researchers
- This study introduces qualitative during and after the trial

# Diagram of procedures

## An embedded, explanatory sequential intervention design of implementation and dietary outcomes in afterschool settings




**Procedures**

**Data collection:**

- Plate waste observations to determine dietary intake of children
- Survey of implementation factors afterschool directors

**Analysis:**

- Quan dataset of baseline dietary intake (N=270 I, 282 C) & implementation predictors (10 I 10 C)

**Data collection:**

- Action planning document review of barriers & facilitators (N = 10 Int)

**Analysis**

- Transcribe and conduct thematic analysis

**Data collection:**

- Plate waste observations to determine dietary intake of children
- Survey of implementation factors with 20 afterschool directors (10 I, 10 C)
- One-on-one interview with afterschool directors on barriers & facilitators (N= 10 I)

**Analysis:**

- Longitudinal dataset of dietary intake (N=188 I, 212 C) & implementation factors (N=10 I, 10 C)
- Regression analyses on the effectiveness of the intervention w/ implementation interaction terms
- Transcribe and conduct thematic analysis

# Potential Challenges with Design

- Can be hard to determine which quantitative results you want to explain with qualitative data until quantitative data collection is complete
- Uncertainty can make IRB approval difficult
- Can be challenging to determine who to sample for qualitative data collection

# 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

METHODOLOGY

Community Based Participatory Research

Systems Science

NEWS

OBSSR Job Opportunities

Applications for mHealth 2012 Training Institute are curently being accepted.

Mind-Body Interactions and Health Program Outcome Evaluation Report

Call for Papers on Systems Science Applications in Health Promotion and Public Health

New Federal Interagency Task Force to Promote Research on the Arts and



# Best Practices for Mixed Methods Research in the Health Sciences

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- Beyond the R Series - High-Quality Mixed Methods Activities in Successful Fellowship, Career, Training, and Center Grant Applications
- Reviewing Mixed Methods Applications
- Overall Recommendations
- Appendix A. NIH Working Group on Developing Best Practices for Mixed Methods Research
- Download Full PDF version (292KB)

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## THE NEED FOR BEST PRACTICES (download PDF version of this section - 52.5KB)

# Best Practices for Mixed Methods Research in Health Sciences

- Describes how to:
  - Write study aims
  - Write mixed methods research questions

# BREAK

# Mixed Methods Application

- Add action steps to your change tool given what you've learned about mixed methods today
  - What are some initial, small steps you can take to applied mixed methods to your work?
  - Given the rationale you chose earlier, what study design would you likely use?
  - What quantitative or qualitative skills might you need to develop to implement this design?
  - Who might you need to bring on board?

# Wrap up

- Lessons learned
  - How you think CBPR and mixed methods can come together in your work
  - Mixed methods concepts that are most applicable to the needs and interests of today's participants

# THANK YOU

*"The use of both qualitative and quantitative research, in tandem, provides a better understanding of the research problem than either approach by itself."*