PennState
College of Nursing

Mixed Methods Research

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NIDUS

Delirium Boot Camp
October 27-29, 2019

Take Home Points

BY THE END OF THIS PRESENTATION WE WILL HAVE DISCUSSED:

- A review of the basics of qualitative research
  - What it is, types of problems it addresses, purpose statements, sources of data, analysis, rigor
- The basics of mixed methods research
  - Essential characteristics
  - Designs including examples in delirium research
  - NIH Best Practices

Review of Qualitative research

Office of Qualitative & Mixed Methods Research, University of Nebraska, Lincoln

An approach wherein the inquirer:

- aims to gain insight
- asks participants broad, general questions, primarily inductive reasoning
- collects detailed views of participants in the form of words or images
- . . . in an effort to explore a central phenomenon (one key concept)

QUANTITATIVE

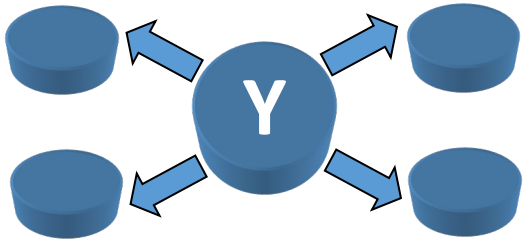
explaining or predicting variables

X → Y

The independent variable (X) influences a dependent variable (Y)

QUALITATIVE

understanding or exploring a central phenomenon



In-depth understanding of Y; external forces shape and are shaped by Y

Qualitative vs Quantitative

	QUALITATIVE RESEARCH	QUANTITATIVE RESEARCH
Type of questions	Probing	Limited probing
Sample Size	Small	Large
Info per respondent	Much	Varies
Administration	Requires skilled researcher	Fewer specialist skills required
Type of analysis	Subjective/Interpretative	Statistical
Type of research	Exploratory	Descriptive or casual

What types of problems are suited for qualitative research?

- when you are exploring a subject about which you don't know much in advance
- when you want to grasp the meanings, motives, reasons, patterns, etc., usually unnoticed in standardized approaches.

A good qualitative purpose statement will include:

- Single sentence"The purpose of this study . . ."
- Central phenomena
- Qualitative words (e.g. "explore," "understand," "discover")

"The purpose of the current exploratory study was to describe examples and qualitatively derived themes of nurse-facilitated PCC for hospitalized older adults with dementia and delirium." Yevchak, A. et al. *J Gerontol Nurs.* 2017;26:1-8.

What types of problems . . . related to delirium research are suited to qualitative inquiry?

Qualitative Approaches

DESCRIPTIVE

- Discovers/describes the who, what, and where of events or experiences through interviews (individual or group) or open-ended questions on surveys

NARRATIVE

- Explores the life of an individual using interviews and primary documents

PHENOMENOLOGY

- Explores the unique perspective, lived experience in long interviews in up to 10 participants

GROUNDED THEORY

- Investigates how inductively-derived theory about a phenomenon is grounded in the data of a particular setting through Interviews with 20-30 individuals to “saturate” categories and detail a theory

ETHNOGRAPHY

- studies cultural patterns and perspectives of participants in their natural settings through observations, interviews, and possibly artifacts

CASE STUDY

- examines the characteristics of a particular entity, phenomenon, or person through documents, archival records, interviews, observations, and physical artifacts

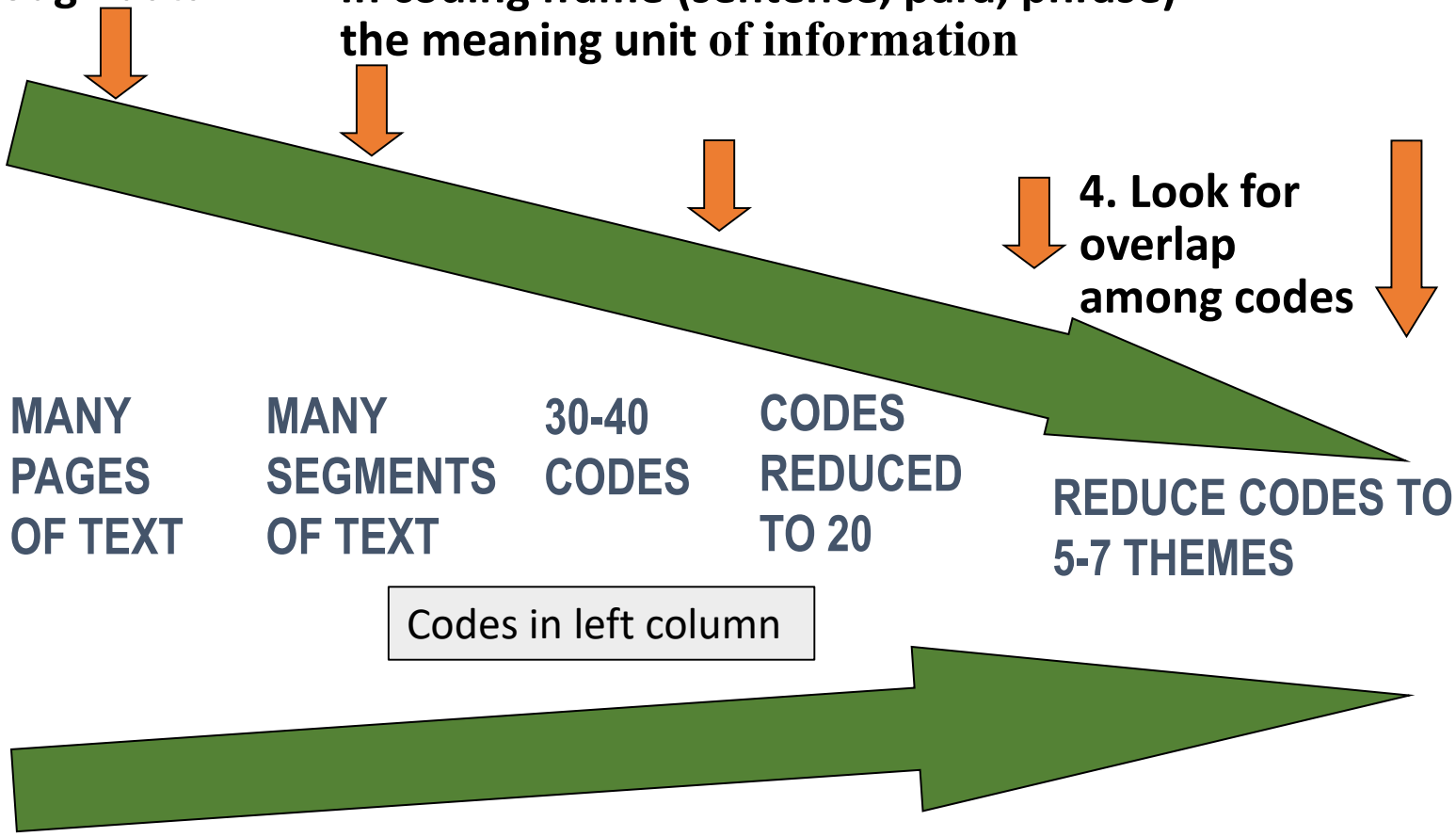
Qualitative coding process involves several steps

1. Transcribe the interview- set up is important

2. Read through data

3. Determine what the person is saying In coding frame (sentence, para, phrase) - the meaning unit of information

4. Look for overlap among codes



THEMES CAN:

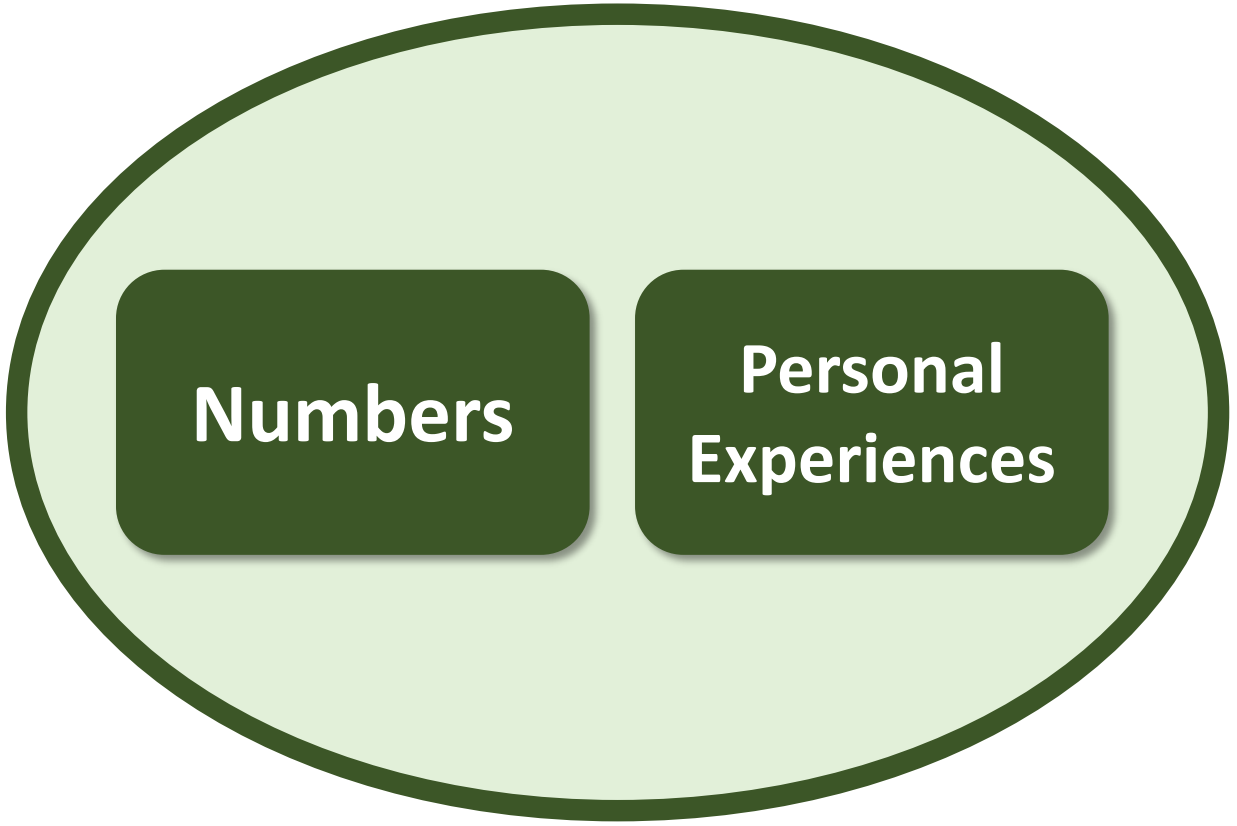
- Describe a setting or what occurred
- Be what you would expect
- Be what you would not expect
- Also be related
- Create a conceptual map

Adapted from Cresswell, 2016

Qualitative rigor

- **TRUSTWORTHINESS**
  - Member checks: recycling interpretation back to the key informants
  - Searching for disconfirming evidence
  - Triangulation: multiple data sources
  - Thick description: a thorough description of the context of the study
- **CONFIRMABILITY**
  - Collection of data in ways that allow for audits: audio recordings, full transcripts of interviews
  - Engaging a team approach
  - Audit trail
- **REFLEXIVITY**
  - Document beliefs, framework, theories underlying approach to the problem before beginning the data collection.
  - Reflections
  - Engage other perspectives in team analysis.

HOW WE MAKE SENSE



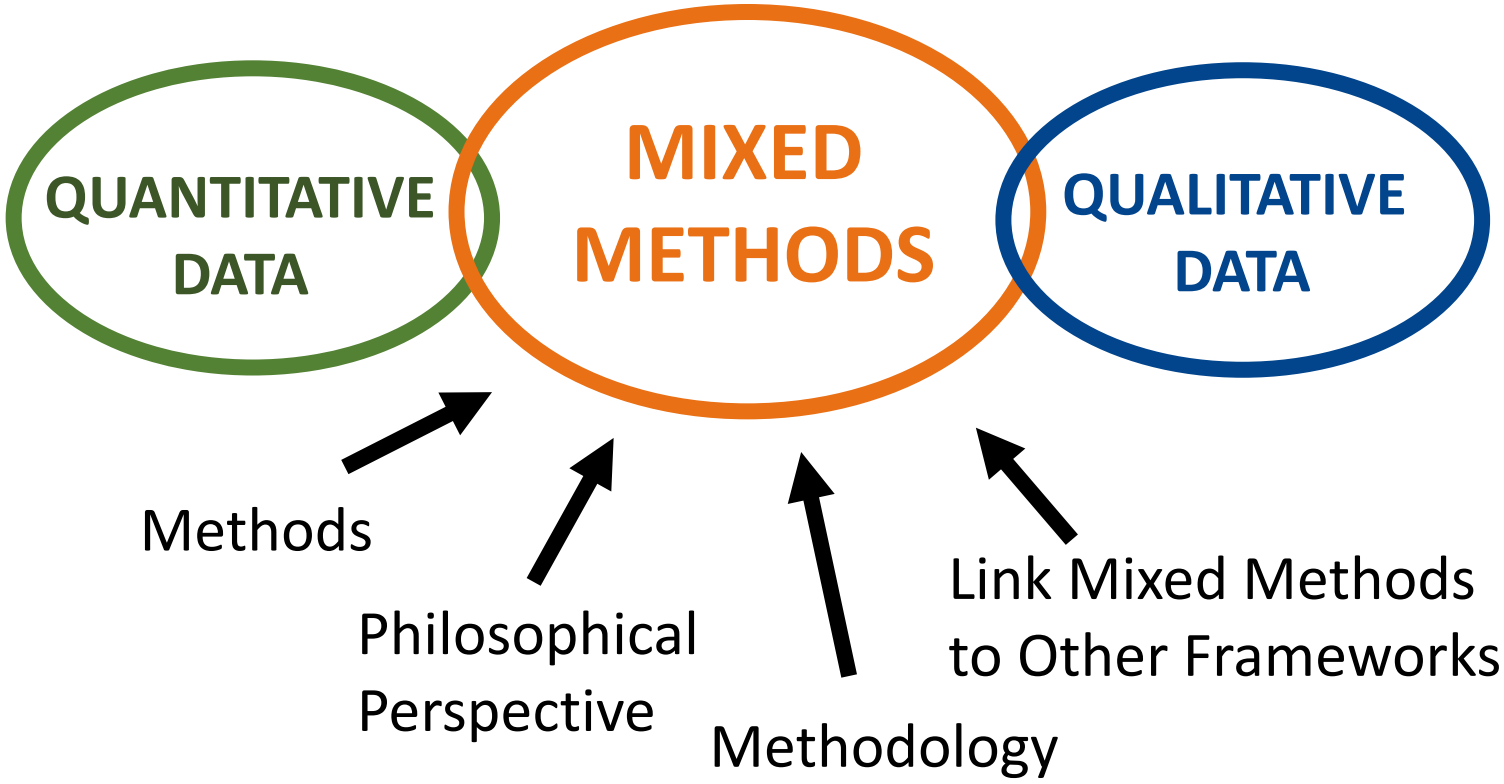
A Mixed Methods Approach

Mixed Methods

Design for collecting, analyzing, and mixing both quantitative and qualitative research (or data) in a single study or sustained series of studies to understand a research problem.

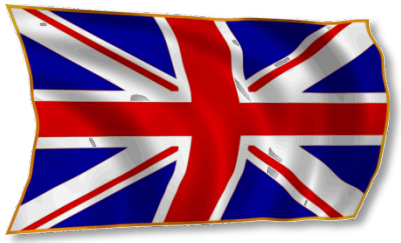
(Adapted from Creswell and Plano Clark, 2007)

Focuses on research questions that call for real-life contextual understandings, multi-level perspectives and cultural influences



Mixed methods developed in the social sciences and health/behavioral sciences (1985-1990)

- **Jennifer Greene**
  University of Illinois
  - EVALUATION
- **John Hunter** & **Allen Brewer** -
  Northwestern and Boston College
  - SOCIOLOGY
- **John Creswell**
  - EDUCATION



- **Alan Bryman**
  - MANAGEMENT
- **Nigel & Jane Fieldin**
  - SOCIOLOGY

- **Jan Morse**
  - NURSING

Mixed Methods Popularity

Number of Dissertations and Theses with "Mixed Methods" in the Title

Year Range	Number
2010-2015	3034
2005-2009	2524
2000-2004	532
1995-1999	100
1990-1994	26
1985-1989	17
1980-1984	3

Proquest Search Engine

Typical situations in which mixed methods is used…

- To compare results from quantitative and qualitative research
- To use qualitative research to help explain quantitative findings
  - Including adding stakeholder perspectives into our measured results
- To explore using qualitative research and then to generalize findings to a large population using quantitative research
- To develop an instrument because none are available or useful
- To inform intervention development/refinement
- To support implementation and dissemination research

M. Fetters, University of Michigan, 2014

Five Essential Characteristics of Mixed Methods Research

- The collection and analysis of BOTH quantitative and qualitative data to address to questions/hypotheses
- 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

Creswell, 2016

When Will You Use Mixed Methods?

- When qualitative research or quantitative research is insufficient to fully understand the problem

- When it is feasible and realistic:
  - Time
  - Economics
  - Skills available
  - Useful for stakeholders ?

Data Sources and Analysis

QUANTITATIVE

Data collection (**CLOSED-**ended)

- Instruments
- Behavioral checklists
- Records

Data analysis: numeric data

- For description
- For comparing groups
- For relating variables

QUALITATIVE

Data collection (**OPEN**-ended)

- Interviews
- Observations
- Documents
- Audio-visual materials

Data analysis: text and image data

- For coding
- For theme development
- For relating themes

Integration (point of interface) can occur during:

- **Data collection**
  (e.g., collecting quant and qual items on the same survey)
- **Data analysis**
  (e.g., qual data are converted into quant scores or when themes are analyzed based on quant dataset)
- **Data interpretation**
  (e.g., when results of quantitative analyses are compared with themes that emerge from the qualitative data)

Validity/Methodological Issues

DESCRIBE:

- Rigorous and systematic sampling, recruitment, data sources and collection and analysis
- Validation strategies for both qualitative (trustworthiness, credibility, transferability) and quantitative (including threats to internal and external validity) data
- How quantitative and qualitative components will be combined
  - **Concurrent**: comparing, relating and synthesizing (how will divergent findings be managed?)
  - **Sequential**: procedures for connecting
- Need a plan to resolve differences …

Creswell JW & Plano Clark VL. (2011). *Designing and conducting mixed methods research.* Thousand Oaks, CA: Sage.
Onwuegbuzie AJ & Johnson RB. The validity issue in mixed research. *Research in the Schools, 2006;13*(1):48-63.

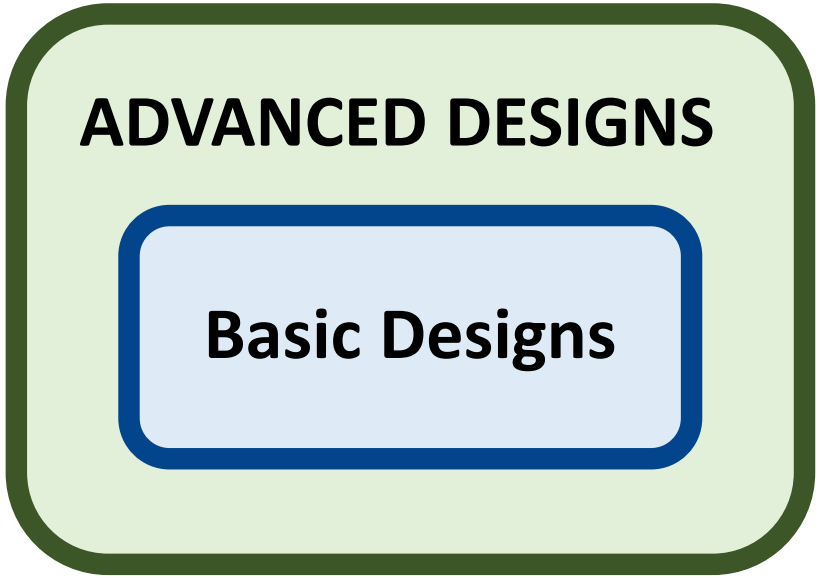
Mixed Methods Designs

BASIC DESIGNS

- Convergent Design
- Explanatory Sequential Design
- Exploratory Sequential Design

ADVANCED DESIGNS

- Intervention Design
- Transformative Design
- Multiphase Design



Examples of Mixed Methods Designs / Studies

Journal of Psychosomatic Research 79 (2015) 272–280

Contents lists available at ScienceDirect

Journal of Psychosomatic Research

ELSEVIER

Delirium superimposed on dementia: A quantitative and qualitative evaluation of informal caregivers and health care staff experience

Alessandro Morandi [a,b,*], Elena Lucchi [a,b], Renato Turco [a,b], Sara Morghen [a,b], Fabio Guerini [a,b], Rossana Santi [a,b], Simona Gentile [a,b], David Meagher [c], Philippe Voyer [d], Donna M. Fick [e], Eva M. Schmitt [f], Sharon K. Inouye [f,g], Marco Trabucchi [b,h], Giuseppe Bellelli [b,i,j]

Aim: assessed the experience of informal caregiver and staff (staff nurses, nurse aides, physical therapists) caring for patients with delirium superimposed on dementia

Core Design

A CONVERGENT DESIGN

QUANTITATIVE → **Merge results** ← **QUALITATIVE**

Merge results → **Interpretation**

Three days after resolution of delirium: informal caregivers and staff rated level of distress (0-4) to each item on the delirium-o-meter. Mean informal caregiver stress was moderate (2.3, SD1.1), higher than one month follow-up and higher stress as compared to staff.

Three days after resolution of delirium, interviews of informal caregivers and staff to describe experience and worries.

The qual component converged on categories of informal caregivers' and staff feelings related to the delirium experience, with implications for training and support. Specific symptoms cited by informal caregivers. Physical therapy had highest distress among staff.

International Journal of Older People Nursing

ORIGINAL ARTICLE

Experiences, understandings and support needs of family carers of older patients with delirium: a descriptive mixed methods study in a hospital delirium unit

Christine Toye RN, PhD
Associate Professor, School of Nursing & Midwifery, Curtin Health Innovation Research Institute, Curtin University, Perth, WA, Australia and Centre for Nursing Research, Sir Charles Gairdner Hospital, Perth, WA, Australia

Anne Matthews RN
Clinical Nurse Specialist, Corporate Division (formerly Clinical Nurse Specialist, Delirium Care Unit), Sir Charles Gairdner Hospital, Perth, WA, Australia

Andrew Hill RN, BAppSci
Clinical Nurse Consultant Aged Care, Sir Charles Gairdner Hospital, Perth, WA, Australia

Sean Maher MBBS, FRACP
Consultant Geriatrician, Sir Charles Gairdner Hospital, Perth, WA, Australia and Adjunct Research Fellow, School of Nursing & Midwifery, Curtin Health Innovation Research Institute, Curtin University, Perth, WA, Australia

Aim: Describe family carers' experiences, understanding of delirium and delirium care, and support needs.

Core Design

EXPLANATORY SEQUENTIAL DESIGN

PHASE 1

QUANTITATIVE
Data Collection and Analysis

→ Explained by →

PHASE 2

QUALITATIVE
Data Collection and Analysis

→ Interpretation

Survey (Likert) - highest rated items: distress about the patient's condition, worries about future care, need for information

Interviews: Themes included: 1) admission experience, 2) worries/ concerns (? dementia, emotional response of patient), 3) feeling supported

Mixed-Methods Approach to Understanding Nurses' Clinical Reasoning in Recognizing Delirium in Hospitalized Older Adults

Karen L. Rice, DNS, APRN, ACNS-BC, ANP; Marsha J. Bennett, DNS, APRN, ACRN; Tara Clesi, BSN, RN-BC; and Lisa Linville, DNS, APRN, FNP-BC, JD

PHASE 1

QUANTITATIVE
rate of agreement between nurses and expert diagnosticians in detecting delirium.
(Kappa statistic)

Explained by

PHASE 2

QUALITATIVE
semistructured Interviews of nurses (n=16) explored reasoning
Analyzed using grounded theory (open, axial, selective coding)

Interpretation

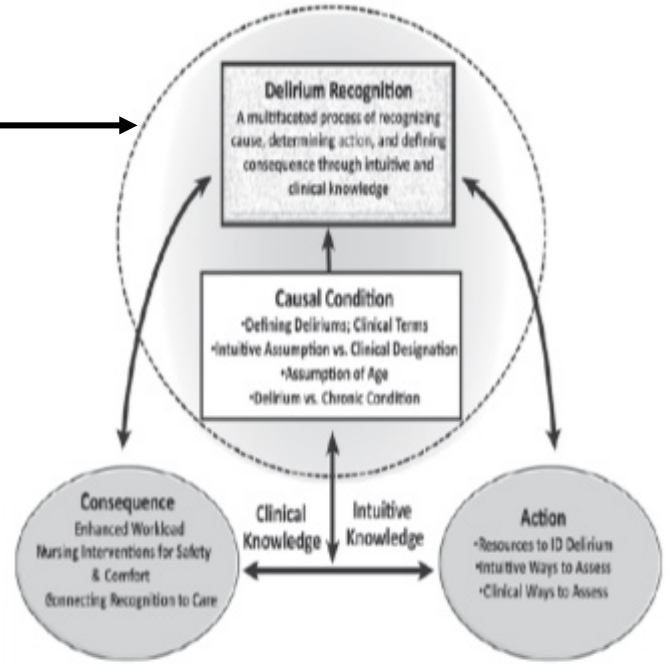
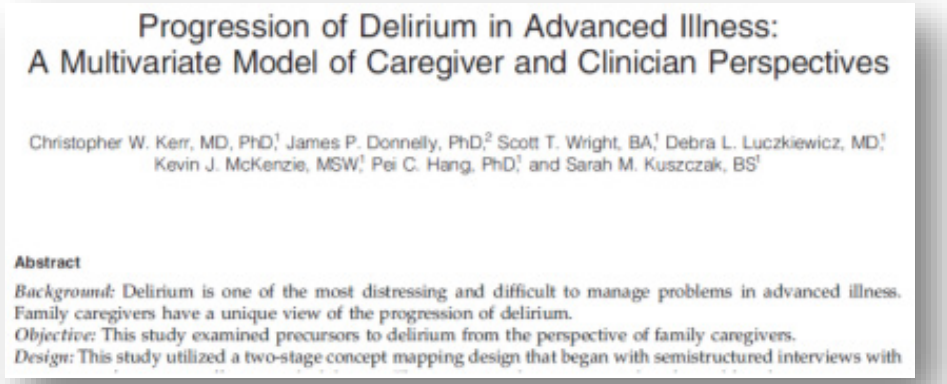


Figure. Theoretical framework explaining nurses' clinical reasoning in recognizing delirium in hospitalized

Rate of agreement when nurses' CAM ratings were compared with those of the researchers was poor, κ= 0.34 (95% CI [0.05, 0.64], p< 0.05). Nurses recognized delirium 23% (3 of 13) of the time.



Progression of Delirium in Advanced Illness:
A Multivariate Model of Caregiver and Clinician Perspectives

Christopher W. Kerr, MD, PhD,[1] James P. Donnelly, PhD,[2] Scott T. Wright, BA,[1] Debra L. Luczkiewicz, MD,[1] Kevin J. McKenzie, MSW,[1] Pei C. Hang, PhD,[1] and Sarah M. Kuszczak, BS[1]

Abstract

Background: Delirium is one of the most distressing and difficult to manage problems in advanced illness. Family caregivers have a unique view of the progression of delirium.
Objective: This study examined precursors to delirium from the perspective of family caregivers.
Design: This study utilized a two-stage concept mapping design that began with semistructured interviews with

Core Design

AN EXPLORATORY SEQUENTIAL DESIGN

PHASE 1

QUALITATIVE Data Collection and Analysis

Builds into

PHASE 2

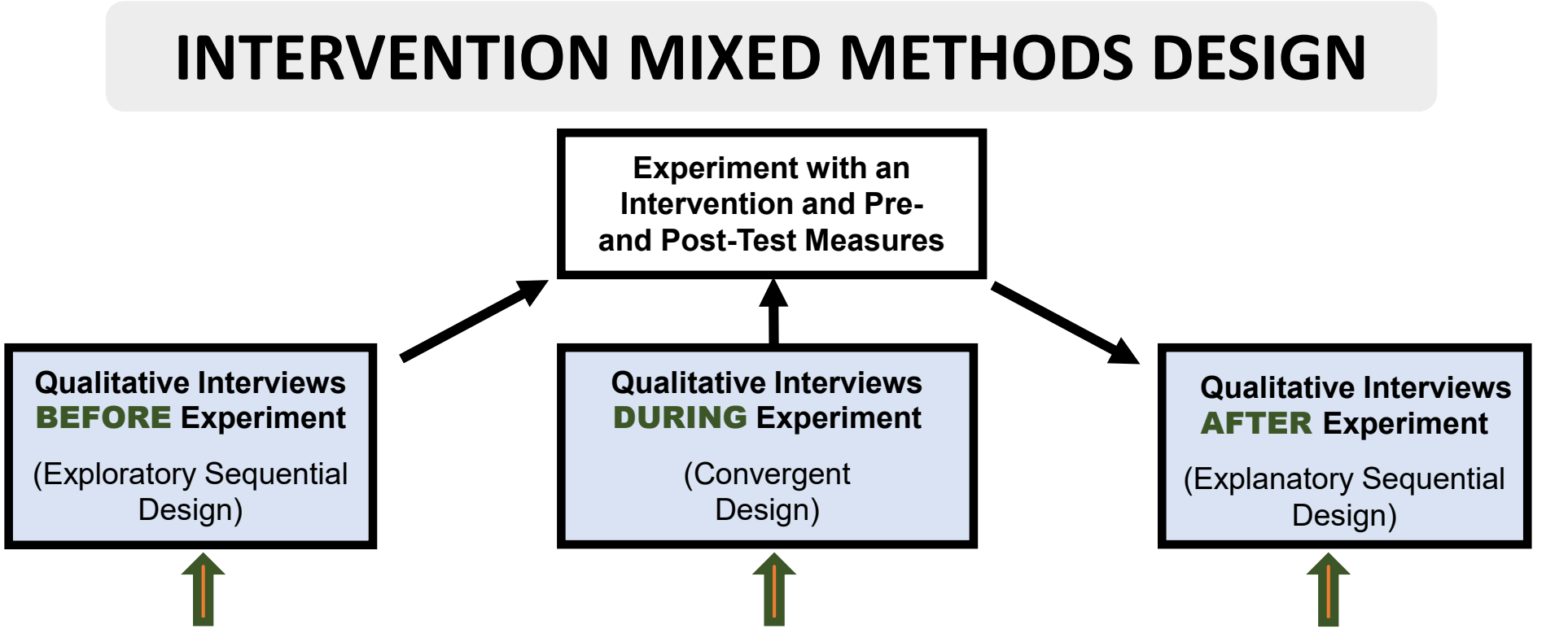
QUANTITATIVE Phase

Interpretation

Recorded interviews with caregivers of persons admitted to hospice (with delirium) about symptom development and progression of delirium.

Qual data was sorted and followed concept mapping procedures. Multidimensional scaling (MDS) of the aggregated sort items, hierarchal cluster analysis (cluster similarities) of the MDS coordinates yielded a 3 –factor delirium precursor model (sleep and rest, cognition, and physical , psychological, and caregiver distress.) Sleep disturbance was most prevalent and intense precursor.

Use an Explanatory Sequential Design, and Exploratory Sequential Design, or a Convergent Design in an Intervention Trial



Siddiqi N, et al. Stop Delirium!
A complex intervention to prevent delirium in care homes: a mixed-methods feasibility study.
Age and Ageing 2011; 40: 90–98.

Theoretical basis for delirium prevention intervention

Fieldwork to design intervention

Refining the intervention and evaluation

Review of literature on delirium occurrence and outcomes in medical inpatients, delirium prevention in hospitals and delirium in care homes

Interventions to change practice review

Developmental fieldwork

1. Acute confusion workshop
2. Fieldwork in two homes
3. Delirium practitioner log
4. Baseline staff interviews
5. Study reference groups

Before and after study to field-test the intervention and optimise trial parameters

Quantitative investigations

1. Care home surveys
2. Staff confidence questionnaires
3. Education sessions feedback forms
4. PCT data
5. Study documents

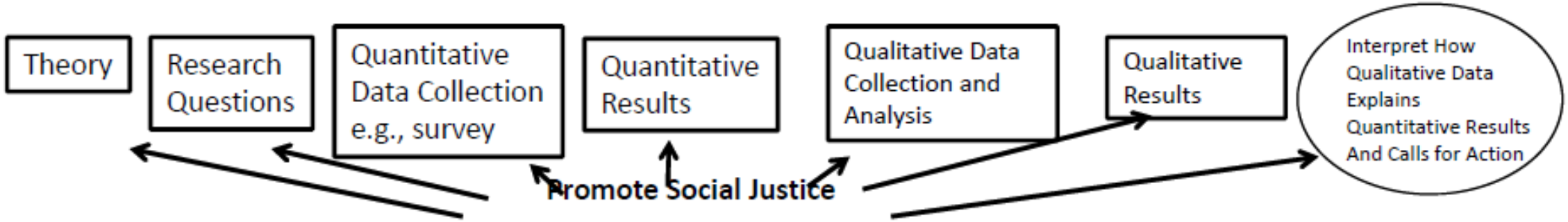
Qualitative investigations

1. Baseline staff individual interviews (7)
2. Post-intervention individual interviews (13)
3. Post-intervention staff focus groups (3)
4. Delirium practitioner log
5. Study documents

Established feasibility in diverse facilities
Intervention modified: training, use of champions
Important outcome: hospitalizations

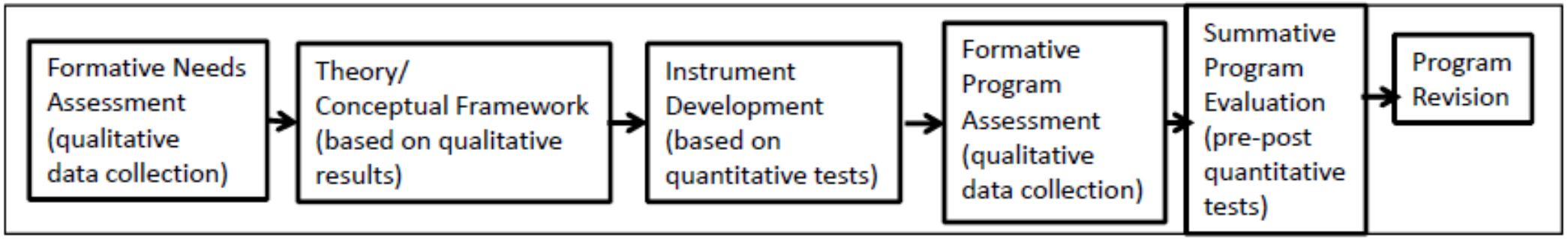
Other Advanced Designs

Social Justice Design (using an Explanatory Sequential Design example)



Multistage Evaluation Design (using an Exploratory Sequential Design example)

Single Program Objective



Mixed Methods *Integration* Statements

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

- "Integration will involve 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 will involve 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)
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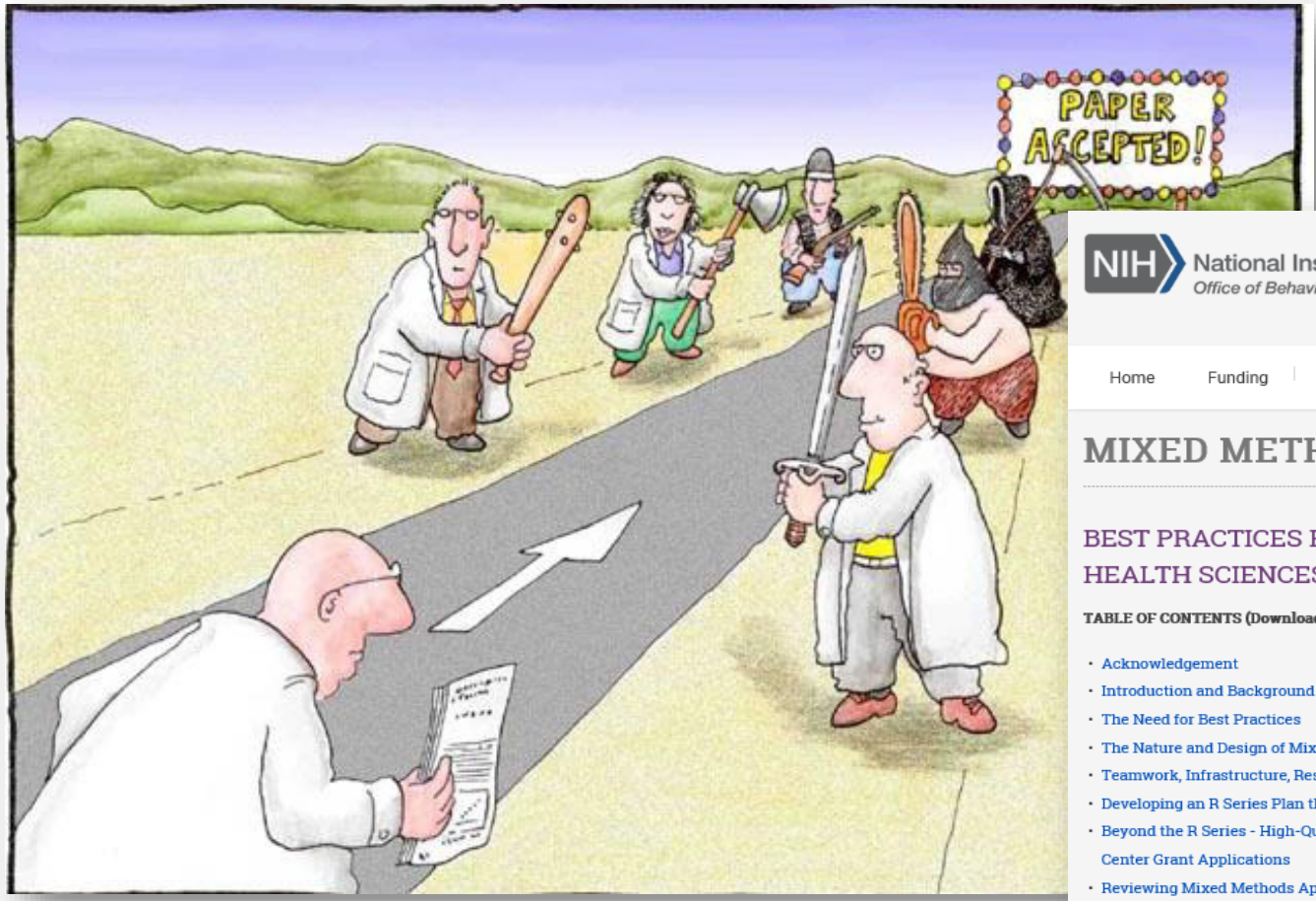
Bryman, A. Integrating quantitative and qualitative research: How is it done? *Qualitative Research,* 2006;6:97-113. Fetters et al. (2013). Achieving integration in mixed methods designs–principles and practices. *Health Services Research.* Morse, J. M., & Niehaus, L. *Mixed methods design: Principles and procedures*. Walnut Creek, CA: Left Coast Press, 2009.

Writing an R Grant



NIH National Institutes of Health
Office of Behavioral and Social Sciences Research

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MIXED METHODS RESEARCH

BEST PRACTICES FOR MIXED METHODS RESEARCH IN THE HEALTH SCIENCES

TABLE OF CONTENTS (Download PDF's for each section) Download Full PDF version (292KB)

- Acknowledgement
- Introduction and Background
- The Need for Best Practices
- The Nature and Design of Mixed Methods Research
- Teamwork, Infrastructure, Resources, and Training for Mixed Methods Research
- Developing an R Series Plan that Incorporates Mixed Methods Research
- 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

UPCOMING EVENTS

24 OCT — Director's Webinar Series presents Vitaly Napadow, Ph.D., LAc.

28 NOV — Director's Webinar Series presents Tamara Somers, Ph.D.

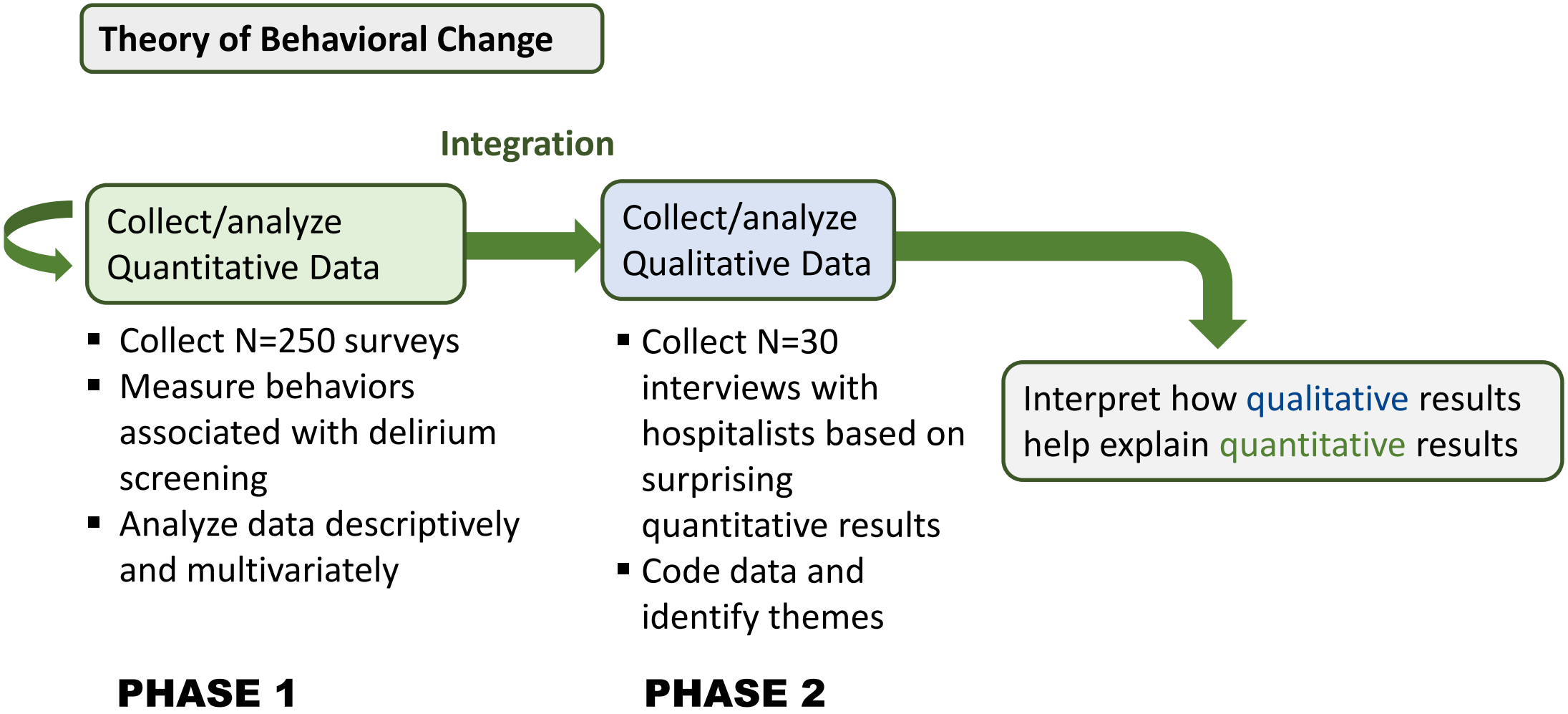
08 DEC — NIH Behavioral and Social Sciences Research Festival

NIH Best Practices for Mixed Methods Research in the Health Sciences

- The **theoretical and conceptual orientation** informs the design and is consistent across all phases of design
- **Explicit** quantitative **aims**, qualitative aims, and mixed methods aims
- Clearly identify **integration** (point of interface) in designs (Plano Clark & Ivankova, 2016)
- **Innovation**: why mixed methods?
- **Validation strategies** for each phase
  - Mixed methods – has its own validity, called "legitimation" (Onwuegbuzie & Johnson, 2006; Creswell & Plano Clark, 2011)
- Mixed methods **team** needs experience together and includes a researcher with qualitative experience/expertise
- **Publications:** Joint displays represent integration in a results or discussion

Creswell JW, Klassen AC, Plano Clark VL, Smith KC for the Office of Behavioral and Social Sciences Research. *Best practices for mixed methods research in the health sciences.* August 2011. National Institutes of Health https://obssr.od.nih.gov/training/mixed-methods-research/

Theory Informing an Explanatory Sequential Design



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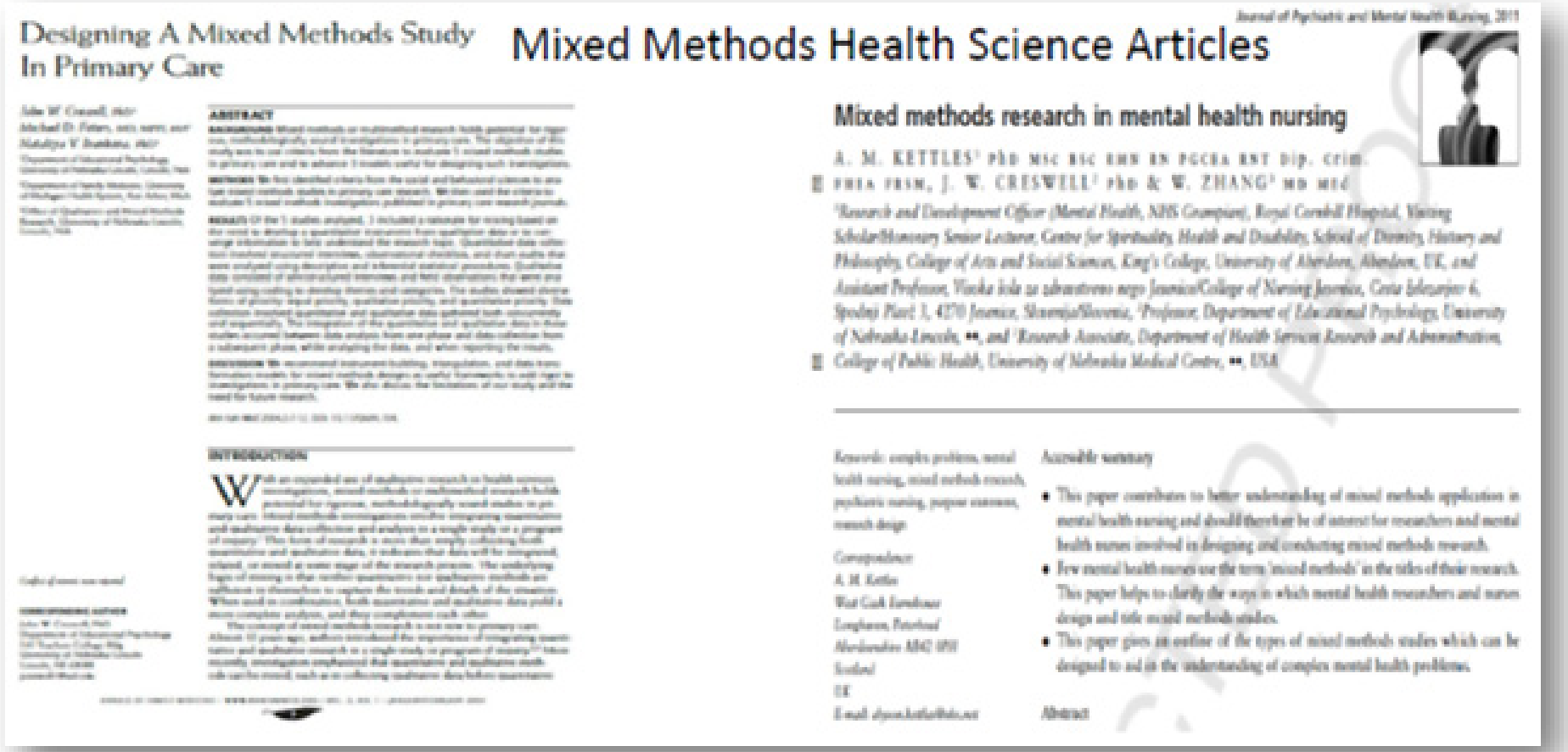
Innovation

- Has prior research in the area used a mixed method approach?
- Any new tools and products that will be part of the mixed method approach?

Research Strategy

- Introduce mixed method research and specific design
- Provide a definition and cite studies that have used from health/area of interest (Use search terms such as “mixed methods” or “quantitative and qualitative”)
- Name specific mixed methods design being used and cite studies (Search NIH RePORTER)
- Explain rationale: seeking a more comprehensive account of a phenomenon, examining structure and process, or generating and testing hypotheses
- Provide a diagram of overall quant and qual procedures: See Ivankova, Cressweel Stick (2006)
- Create a table outlining sampling, procedures, and analytic startgies utilized to address each of the study aims.



A few words about MM publications

The Flow of Components in a Mixed Methods 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

Publishing a Mixed Methods Project

TYPE OF DESIGN	TEMPLATE FOR METHODS SECTION
▪ **CONVERGENT Design**	▪ Methods – separate quan and qual ▪ Results – separate quan and qual ▪ Discussion – integration
▪ **EXPLANATORY Sequential Design**	▪ Methods – quan first, then qual ▪ Results and Discussion – quan, results to be explained, qual
▪ **EXPLORATORY Sequential Design**	▪ Methods – qual then quan ▪ Results and Discussion – qual, use of qual, quan

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

Questions?

Resources

- John Creswell Mixed Methods Site http://johnwcreswell.com/ (includes books and trainings)
- Creswell JW, Klassen AC, Plano Clark VL, Smith KC for the Office of Behavioral and Social Sciences Research. *Best practices for mixed methods research in the health sciences.* August 2011. National Institutes of Health https://obssr.od.nih.gov/training/mixed-methods-research
- Ivankova, N.V., Creswell, J., & Stick, S. (2006). Using mixed methods sequential explanatory design: From Theory to Practice. *Field Methods, 18* (1), 3-20. (developing diagrams)
- Krueger, R.A & Casey, M.A. Focus Groups: A Practical Guide for Applied Research, 4th Edition. Thousand Oaks, CA: Sage.
- Miles, M.B., Humberman, A.M, Qualitative Data Analysis: A Methods Sourcebook 3rd Edition. Thousand Oaks, CA: Sage.
- Plano Clark, V. L. (2010). The adoption and practice of mixed methods: U.S. trends in federally funded healthrelated research. Qualitative Inquiry, 6(6), 428-440.
- Saldana, J. The Coding Manual for Qualitative Researchers 3rd Edition, Thousand Oaks, CA: Sage.
- Song, M., Sandelowski, M., & Happ, M. B. (2010). Current practices and emerging trends in conducting mixed methods intervention studies in the health sciences. In: A. Tashakkori & C. Teddlie (Eds.), Handbook of mixed methods in social & behavioral research (2nd ed., pp. 725–747). Thousand Oaks, CA: Sage.